

# Water Law

Teaching Material

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# **CHAPTER ONE: OVERVIEW AND INTRODUCTION OF WATER LAW**

## **INTRODUCTION**

The concept and application of water law has been given a topic in Property Law classes in Ethiopian Law Schools. Despite its importance, it has never been given the proper emphasis on the discussions undertaken. Due to that, students have been told only few points about the theories of water rights. However, this cannot suffice. To understand the whole concept of water rights and their applications, students should study the facet of water and water law in detail. Therefore, in this chapter references will be made to the nature and development of water laws and regulations.

### **1.1. FEW POINTS ON WATER**

The oldest law books defined water as a movable, wandering thing which because of its nature must remain common property subject to usufruct rights only. For all life, water is necessary. We pay great attention to the clouds in the air, as rain on the soil, and as streams back to the ocean. We know that water is the most abundant liquid on the earth. Always we use or fight its tendency to find its own level. In considering its use and abundance and properties, however, we must keep in mind this main fact: water is needed for life. It is a simple truth that “water is life”. There is almost no living thing that could have life without water. Water, as basic resource, is vulnerable to pollution, evaporation and deterioration. Water has a great economic value for power generation, irrigation, industrial activities, domestic use, recreation and so many countless activities which play a great role for continuation of life on earth. Demands to water resources continue to increase and so does the need for conservation and more efficient uses. The world community has been passing through lots of political, economical, technological and industrial changes and advancements. All of these changes are sharply outlined water-law developments. Its multifaceted uses and the increasing demand towards the resource

result in continuous and unsettled disputes and disagreements between and among individual and sovereign states. Therefore, Water, having a chemical formula of H<sub>2</sub>O, is one of the most abundant, widely distributed and essential substance on the surface of the earth. It occurs in nature in the solid, liquid, gaseous states as ice or snow, water and water vapor respectively. Water is a necessary constituent in the cells of every animal and vegetable tissues and in the crystal of many minerals.<sup>1</sup>

Sea water contains on the average about 3.5% by weight of dissolved substances, particularly Sodium Chloride, Magnesium Chloride, Magnesium Sulfate, Calcium Sulfate, and Potassium Chloride. Snow is probably the purest natural resource of water and rain the next purest, although the later contains dissolved gases of the air as well as traces of carbon dioxide, chlorides, sulfates, nitrates and ammonia, with organic and inorganic dust held in suspension. Water from streams and lakes in mountain districts is relatively free from organic impurities but may contain dissolved inorganic salts, while that from lowland rivers and lakes may be highly polluted. Water from springs and wells has filtered through the ground and has been more or less purified from organic contamination but may contain inorganic salts.<sup>2</sup>

The oceans cover about 140,000,000 square miles or over 70% of the earth's surface. The areas are the primary source of moisture as it passes endlessly through the water cycle of nature, but sea water because of its high mineral content is not directly usable by man except for very limited purposes. The supply of water available to mankind over, on, and within the land masses of the globe in the form of fresh water is an extremely small part of the earth's supply- about 3% of the quantity found in oceans. This land-related supply is estimated to be about 33 trillion acre-feet, of which three- fourth is frozen within glaciers or polar regions. The remainder upon which human life dependent is found in the atmosphere, in lakes and rivers, and in and below the soil covering the earth's crust.

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<sup>1</sup> Robert, Emmet, Clark, *Water and Water Rights*, Vol.1, Indiana, (1967), Pp. 9

<sup>2</sup> *Ibid*, Pp. 10

## 1.2. CLASSIFICATION OF WATER RESOURCE

Having said the above points as to the nature, location and magnitude of supplies of water resource, now we are going to discuss about classifications of water resources. The scientific and legal classifications of water vary based on the different approaches of classifying it. The hydrologist generally considers all water as moving through the hydrologist cycle regardless of its location on the surface or beneath the ground. Considering its location, water resource can be classified into surface water and ground water; whereas considering issues related to ownership, it can be classified into public, private, nobody's water (*res nullius*) and common water.<sup>3</sup>

### 1. Public water

Public waters are those which are considered to be either the property of the state or held in trust by the state or the public authority. Normally, these waters are inalienable, i.e., they cannot be given away permanently, but only be the object of an administrative permission. Public waters are also imprescriptibly, i.e., in spite of long use they do not confer upon the user any right whatsoever. This legal status is to be found in civil law countries, where public water is generally considered as belonging to the public domain; that is a category of things which, in the public interest, are said to be the property of the state. As a consequence, only the state has the right to grant to others the right to use them. Public waters may be such either because they have been so defined by the law establishing the public domain or because they have been so declared subsequently. Generally, the criteria to identify public waters vary from country to country and may include their navigability or floatability, their being of public interest or their likelihood to become so.

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<sup>3</sup>Dante A., Caponera, *Principles of Water Law and Administration*, National and International, (1992), Pp 138

## **2. Private Waters**

Private waters are those which the legislation considers to be object of private ownership. This notion stems from the concept of land ownership to which it is closely attached. It is particularly relevant in the case of groundwater, on the basis of the legal maxim that the owner of the land owns everything located above and below his land, including groundwater. Generally, private surface water ownership is limited to rain water and to springs or waters located within ones land. Private ownership of water is either so defined in the legislation, or most generally, derives from the legal framework prevailing in anyone country. The concept of private ownership of water, whether surface or underground, can create problems where the achievement of rational water resources management is concerned.

## **3. Res Nullius**

Waters not belonging to anyone (*res nullius*) should be considered as nobody's water, which, however, are still subject to the possibility of appropriation. In some countries, the legal framework allows for the existence of this legal status of water.

## **4. Common Waters: Community or Tribal Waters**

Common waters (*res communis omnium*) are those waters considered as the common entitlement of the whole community. This is the doctrine followed by common law countries; the doctrine includes waters because of their transitory, elusive nature, which defies ordinary concepts of ownership. In such countries, the expression "water ownership" is avoided in legislative texts, which instead declare generally that the state has the power to control water utilizations. Community or tribal waters are those belonging to a given community or tribe at the local level. This legal status exists under customary law in many countries, and sometimes recognized by modern water legislation. It also applies at the municipal level.



It is by considering issues related to ownership that we have classified water into the above categories. We may have different categories considering the location where it situates, i.e., Surface Water and Ground Water.

## **I. Surface Water**

Surface water is water in a river, lake or fresh water wetland. Surface water is naturally replenished by precipitation and naturally lost through discharge to the oceans, evaporation, and sub-surface seepage. Surface waters may include; diffused surface waters, surface waters in ponds and lakes, spring waters and waste waters. Diffused surface waters, collections of still water wholly upon the land of one person and captured waters in private ditches and reservoirs have common characteristics. They rarely dedicated to public use and are subject to the proprietary rights of the owner of the land upon which they arise. Their source may be intermittent rainfall, melting snows, seepages, springs, or overflow water that becomes separated permanently from its stream source.<sup>4</sup>

Diffused surface waters differ from natural streams in that they are vagrant, spread over the surface of the ground without observable channels or breaks, and have no predictable flow. Unlike pond, swamp or marsh waters, they move from higher to lower ground, pass across the lands of various persons and may even serve as a source of supply for natural stream.

Vagrant surface waters and inter-tract reservoirs and ponds, not being *public juris*, generally belong to the person who captures or retains them upon his own land. Such person has a proprietary rather than a usufructuary right, and may divert water for any private or commercial use. His rights are limited only by the well known maxim *sic utere tuo* that he refrain from malicious or unnecessary harm to those below him.

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<sup>4</sup>Clyde O., Martz, *Rights Incident to Possession of Land*, USA , Pp. 185

Regarding liabilities in the unnecessary use of surface water there are two doctrines applicable in the common law legal tradition and in the civil law tradition. The common enemy doctrine is applicable in the common law legal system while the rule of natural servitude is applicable in the civil law tradition. By the common law view, recognized in half of the states, diffused surface waters are the common enemy of man. One is privileged to dam against them, throw them back upon upper lands, or deflect them in artificial channels upon adjoining lands, so long as he does not collect them in unusual quantities and discharge them with force upon such properties. The reasonable interference rule is a modification of the common enemy doctrine. It permits the lower landowner to obstruct and deflect natural surface drainage, but only so far as is reasonable, considering both the needs of his own land and the potential injury which his interference will cause to the properties of others. It merely requires him to use his land in such a way as to avoid unnecessary or disproportionate harm to his neighbors.

By the civil law doctrine, recognized by almost half of the states, lower lands are servient to the natural surface drainage from those above to the same extent that they are everywhere servient to the flow of natural streams. Accordingly, one cannot obstruct or deflect such waters to the injury of others unless the servitude across his land has been surrendered by grant or destroyed by adverse use. As the servitude exists only for natural drainage, however, the proprietor of the upper land is forbidden by the strict view from channeling the drainage or otherwise changing its natural flow in any way.

## **II. Ground Waters**

Water can be found beneath the ground almost everywhere. About 97 percent of the world's fresh water is ground water. Major reservoirs of ground water are referred to as *aquifers*. Ground water is fresh water located in the pore space of soil and rocks. It is also water that is flowing within aquifers below the water table. It is found in spaces between soil particles and rocks, and within cracks of the bedrock. Some ground water can be found beneath the land surface in most cases. Because of its availability and general good quality, ground water is widely used for household needs and other water

purposes.<sup>5</sup> Ground water is often taken for granted, but recent circumstances indicate that ground water is seriously vulnerable to *pollution* and *depletion*. Contaminants which threaten people's health have been found in many important ground water reservoirs.

Most people are more familiar with surface water than ground water. Surface water bodies such as lakes, streams and oceans can be seen all around, but not ground water bodies. Some important differences between ground water and surface water bodies are worth noting. Groundwater usually moves much slower than surface water. Water in a stream may move several feet per minute, but water in an aquifer may move only several feet per month. This is because ground water must overcome more friction or resistance to move through small spaces between rocks and soil underground. There are exceptions to this rule. An example is underground streams in limestone caverns where the water may move relatively fast.

The exchange of water between surface water bodies and aquifers is important. Rivers usually start as small streams and get larger as they flow downstream. The water they gain is often ground water. Such a stream is called a *gaining* stream. It is also possible for streams to lose water to the ground at some points. In these cases, aquifers are replenished or *recharged* by water from the *losing* stream. A stream which flows near the surface of an aquifer will lose water to the aquifer if the water surface in the stream is higher than the water table of the aquifer. A stream will gain water if the water surface of the stream is lower than the water table in the adjacent land. The natural input to ground water is seepage from surface water. The natural outputs from ground water are springs and seepage to the oceans.

### **Occurrence of Ground Water**

Occurrence and movement of groundwater are governed by the laws of physics and local geological conditions. Although most groundwater can occur in the form of underground

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<sup>5</sup> David H. Getches, *Water Law in a Nut shell*, (1997), Pp. 237

streams, most ground water is percolating water stored in the pores, or interstices of rock formations. The size of these interstices varies with the size of the rock particles; a bed of gravel has interstices visible to the naked eye, but clays have very minute particles and interstices. Interstices may be formed by geological processes at the time the rock was formed or created later by cracking or erosion.<sup>6</sup>

Porosity is the measure of the amount of open space within rock. It is defined as the percentage of the rock's total volume occupied by pore space. Other factors being equal, the greater the porosity, the more freely water can move through the rock and the more water that can be stored within. The force of gravity can cause water to move downhill through rock formation. Slowing this movement are the forces of molecular attraction is proportional to the surface area of the rock particles, which increases as their size decreases.

### **1.3. USES OF WATER**

Water is one of the most vital natural resources for all life on Earth. The availability and quality of water always have played an important part in determining not only where people can live, but also their quality of life. Even though there always has been plenty of fresh water on Earth, water has not always been available when and where it is needed, nor is it always of suitable quality for all uses. Water must be considered as a finite resource that has limits and boundaries to its availability and suitability for use.

Reconsider the following assertion: *The availability and quality of water always have played an important part in determining not only where people can live, but also their quality of life.* How? Discuss.

The balance between supply and demand for water is a delicate one. The availability of usable water has and will continue to dictate where and to what extent development will occur. Water must be in sufficient supply for an area to develop, and an area cannot

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<sup>6</sup> Ibid

continue to develop if water demand far outstrips available supply. Further, a water supply will be called upon to meet an array of off-stream uses (in which the water is withdrawn from the source) in addition to in-stream uses (in which the water remains in place).

### **The Water-Use Cycle**

Water is constantly in motion by way of the hydrologic cycle. Water evaporates as vapor from oceans, lakes, and rivers; is transpired from plants; condenses in the air and falls as precipitation; and then moves over and through the ground into water bodies, where the cycle begins again.

The water-use cycle is composed of the water cycle with the added influence of human activity. Dams, reservoirs, canals, aqueducts, withdrawal pipes in rivers, and groundwater wells all reveal that humans have a major impact on the water cycle. In the water-use cycle, water moves from a source to a point of use, and then to a point of disposition. The sources of water are either surface water or groundwater. Water is withdrawn and moved from a source to a point of use, such as an industry, restaurant, home, or farm. After water is used, it must be disposed of (or sometimes, reused). Used water is either directly returned to the environment or passes through a treatment processing plant before being returned.<sup>7</sup>

### **Uses of Fresh Water**

Uses of fresh water can be categorized as consumptive and non-consumptive (sometimes called "renewable"). A use of water is consumptive if that water is not immediately available for another use. Losses to sub-surface seepage and evaporation are considered consumptive, as water is incorporated into a product (such as farm production). Water

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<sup>7</sup> Solley, W. B., Pierce, R. R., and Perlman, H. A., *Estimated Use of Water in the United States in 1995*, U.S. Geological Survey Circular 1200 (1998).

that can be treated and returned as surface water, such as sewage, is generally considered non-consumptive if that water can be put to additional use.<sup>8</sup>

We use water in a lot of different ways. We use water for recreation such as swimming. We use water to wash objects. Water is used for electricity and irrigation. It is used to water plants; sprinklers also use water. Water is used for farming and growing crops.

### **Categories of Water use**

**Commercial water use:** includes fresh water for motels, hotels, restaurants, office buildings, other commercial facilities, and civilian and military institutions.

**Domestic Water use:** includes water that is used in the home every day, including water for normal household purposes, such as drinking, food preparation, bathing, washing clothes and dishes, flushing toilets, and watering lawns and gardens. Domestic water use is probably the most important daily use of water for most people.

**Industrial water use:** Water is a valuable resource to the nation's industries for such purposes as processing, cleaning, transportation, dilution, and cooling in manufacturing facilities. Major water-using industries include steel, chemical, paper, and petroleum refining. Industries often reuse the same water over and over for more than one purpose.

**Irrigation water use:** water can artificially be applied to farm, orchard, pasture, and horticultural crops, as well as water used to irrigate pastures, for frost and freeze protection, chemical application, crop cooling, harvesting, and for the leaching of salts from the crop root zone.

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<sup>8</sup> Perlman, Howard, *Water Use in the United States*, (Water Science for Schools, U.S. Geological Survey) <<http://ga.water.usgs.gov/edu/wateruse.html>>, as referred on September 2008.

#### **1.4. WATER AND SOCIETY**

The importance of water in all aspects of human activities is well known; one basic condition for human, animal and plant survival is the availability of water. It is through the combination of water with one or more basic natural resources that other resources are made available. Water, combined with land, provide plants and forests, which in turn are, indispensable to sustain human and animal life. Water is also an important element for social stability and the economic development of any community, country or civilization depends largely on its availability.<sup>9</sup>

Water resources are not evenly distributed, so that while in some areas of the world there may be excess water, in other areas there may be a shortage. On the other hand, the amount of water available in any state, area or basin is invariable, while water demands increase continually. Water demands for drinking purposes grow in parallel with population growth, while modern standards of living require increased amounts of water for domestic uses such as gardening and recreational purposes. Likewise, the increased world population necessitates more water for irrigation and livestock in order to satisfy increasing food requirements.

In all countries, agricultural and industrial development makes the construction of hydraulic works, such as irrigation systems, reservoirs and tanks, necessary. Industry particularly, that based on chemical processing, utilizes considerable quantities of water: oil refining, the manufacture of synthetics and paper making, to name a few. Thus, the availability of water is a prerequisite and the limiting factor to the agricultural and industrial development of any country.

In developing the use of water resources for various purposes, human activities have direct or indirect effects on the environment. Changes on the environment caused by over-exploitation of natural resources (land, water, forests, etc), in turn contribute to

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<sup>9</sup> Dante A., Caponera, *Principles of Water Law and Administration*, National and International, (1992), Pp. 1

further destruction of land and the spread of deserts. The indiscriminate dumping of urban and industrial wastes turns rivers into sewage canals, with the result that at a certain point the water is lost for further use. Irrigation practices not sustained by adequate drainage may cause soil erosion and the loss of previously good lands. Excess chemicals in the form of weed killers or fertilizers causes water contamination with disastrous consequences for downstream domestic, agricultural, fishing and industrial uses and the contamination of groundwater. Inadequate sewerage or drainage systems have made waters carries of water-borne diseases. The reduction of the discharge of rivers into the sea caused by excessive domestic, agricultural and industrial uses may lead to the increase of infiltration of brackish water into deltaic groundwater areas.

On the other hand, excessive floods, which may be caused by lack of watershed protection measure and by mismanagement of lands and forests, can destroy or render less usable what was once high production potential land. Radioactive contamination and toxic wastes spoil atmospheric water and cause air pollution, acid rain and endanger human, animal and plant life. Any water use, if not adequately planned and managed, both quantitatively and qualitatively, may cause detrimental side –effects to the water itself and to other natural resources. Since these negative effects can be avoided through the enhancement of adequate water legislation and the establishment of an appropriate water administration, it may be said that the success of the development and conservation of water resources in any country depends to a large extent on the effectiveness of its water laws.<sup>10</sup>

### **1.5. NEED FOR WATER POLICY, LEGISLATION AND ADMINISTRATION**

As a consequence of the above-mentioned realities, the needs is being increasingly felt for more careful consideration of all the problems related to the use of water resources, among which, in first rank, are the legal and administrative aspects involved. The need for formulating policies in water resource development programs and activities is also

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<sup>10</sup> Ibid, Pp. 2



felt. The overall objective of a water policy is to achieve the maximization of benefits deriving from available water resources and the most rational management.

A sound and well-balanced water resource policy should be viewed, as the case may be, at the national, basin, regional, and local project levels. It should be framed according to the existing situation and requirements in any particular state, region or basin, and be concerned with finding ways and means to satisfy existing and future water demands for different purposes on the basis of availability of water, existing uses, estimates of population growth and technical and financial possibilities. This requires proper planning for the allocation and management of the available water and financial resources at every level.

Just as a national water resource policy must be viewed within the context of a national overall development plan, as it may constitute either a catalyst or a barrier to such national plans, a water administration as part of a national infrastructure may act either as a stimulus or as a constraint upon the national development process. Likewise, a well conceived water legislation may constitute a means to implement water policy decisions and facilitate the rational utilization of water resources, while an inadequate water legislation can act as a hindrance to their utilization.

In many cases, existing legislation to manage and meet water demands and conserve the supply of water has come down from the days when the resource was considered inexhaustible. Time has overtaken the laws, which give users a free hand on waters, and advances in knowledge and technology have outdated many early types of control. The search for new sources has led to the extensive use of groundwater to trans-basin transfers, to storage and distribution schemes formerly under named size, to the recharging of aquifers, to the recycling of water and to the use of wastewater, since the existing laws may have no provisions for regulating these new sources or for controlling such projects.

To meet these new needs, innovative water laws must be designed, not only to facilitate and achieve efficient allocation or reallocation of resources and environmental protection, but also to aim towards the attainment of social, economic and other national goals. Water law reform may accompany land reform, in that the redistribution of land may call the redistribution of the water rights appurtenant to that land. Settlement schemes to open up new land to irrigation or to turn nomadic or pastoral people to farming may require special provision in water laws or special organizations to manage or distribute water. Programmes for the betterment of indigenous populations may need special provisions to enable them to compete with proposals for industrial development or commercial irrigation projects. Future holders of water rights may have different degrees of sophistication that require different treatment. Much free choice might be given to landowners and industrialists in developed countries, but a more paternalistic approach may be required for those whose introduction to what we call civilization is quite recent, whose transition to modern commercial life is incomplete, who may be recent graduates from nomadic or pastoral life or who may have been raised in a tribal or communal system to which some notions of law and property are foreign.

Modern planning, development and management of water resources must be based on water law principles which are implemented by legal procedures that authorize and facilitate these processes. It is important to recall in early days water laws referred mainly to legal rules governing the relationships among water uses, such as the riparian doctrine or the prior appropriation doctrine.<sup>11</sup> Nowadays, the objectives and interests of governments must also be taken into consideration. As a result, the system must regulate the relationship of water users vis-à-vis the state and clearly identify and define the powers of the state concerning all uses of water, both public and private.

*What issues are regulated under water law? What is water law all about?*

Water law is the field of law dealing with the ownership, control, and use of water as a resource. It is most closely related to property law, but has also become influenced by

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<sup>11</sup> You will be clear with these doctrines in the coming chapter

environmental law. Because water is vital to living things and to a variety of economic activities, laws attempting to govern it have far-reaching effects. Water has unique features that make it difficult to regulate using laws designed mainly for land. Water is mobile, its supply varies by year and season as well as location, and it can be used simultaneously by many users. As with property (land) law, water rights can be described as a "bundle of sticks" containing multiple, separable activities that can have varying levels of regulation. For instance, some uses of water divert it from its natural course but return most or all of it (eg. hydroelectric plants), while others consume much of what they take (especially agriculture), and still others use water without diverting it at all (eg. boating). Each type of activity has its own needs and can in theory be regulated separately. There are several types of conflict likely to arise: absolute shortages; shortages in a particular time or place; diversions of water that reduce the flow available to others; pollutants or other changes (such as temperature or turbidity) that render water unfit for others' use; and the need to maintain "in-stream flows" of water to protect the natural ecosystem.

Water law involves controversy in some parts of the world where a growing population faces increasing competition over a limited natural supply. Disputes over rivers, lakes and underground aquifers cross national borders. Although water law is still regulated mainly by individual countries, there are international sets of proposed rules such as the Helsinki Rules on the Uses of the Waters of International Rivers and the Hague Declaration on Water Security in the 21st Century.

Long-term issues in water law include the possible effects of global warming on rainfall patterns and evaporation, the availability and cost of desalination technology, the control of pollution, and the growth of aquaculture.

## **1.6. DEVELOPMENT OF WATER LAW**

History shows the intimate connection between economic and social development of a society and adequacy and dependability of water. Once ancient peoples settled around a

water supply area, the need for institutions and regulations for bringing water under control were immediately felt. Civilizations grew and prospered whenever their regulatory controls imposed upon water were efficient, and civilizations often declined or disappeared as a consequence of the softening or ineffectiveness of such regulatory controls.<sup>12</sup>

The earliest codifications may be found in the Egyptian Pharaonic Water Regulations, in the Hindu Laws of Manu, in the Babylonian Hammurabi Code, in the Chinese Water Regulations and in Roman and Moslem law. In the Mesopotamian region, the Hammurabi Code, formulated 4000 years ago, bears witness to the early importance that the settlers of the Tigris and Euphrates valleys attached to regulating water use and waterworks protection.<sup>13</sup>

Like the Nile, and the Tigris and Euphrates, the Indus and Ganges civilizations came to birth upon their banks around 3000 B.C. Documents relating to water laws are contained in the Manava-Dharma-Shastra or Laws of Manu 1300 B.C<sup>14</sup>., which quote important water regulations.

This has rightly led many authors to define the first developed social groupings as hydraulic civilizations.<sup>15</sup> Often, these civilizations are referred to by the name of the river valley around which they developed. Thus the Egyptian civilization is civilization of the Nile; the Hindu is the civilization of the Indus; the Chinese is the civilization of the Huang-Ho. Civilizations which developed during other and more recent historical period and which had great social impact also grew around important water points; such is the

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<sup>12</sup> Dante A., Caponera, *Principles of Water Law and Administration*, National and International, (1992), Pp11

<sup>13</sup> Detail will be made on these documents and codifications in the coming sub topics.

<sup>14</sup> The Manu Smriti was written as the words of the original creator, the “Imperishable One,” or “Brahmā”. By attributing the words to supernatural forces, the text takes on an authoritative tone as a statement on dharma, in opposition to previous texts in the field, which were more scholarly.

<sup>15</sup> Also known as a hydraulic despotism or *water monopoly empire*, is a social or government structure which maintains power and control through exclusive control over access to water. It arises through the need for flood control and irrigation, which requires central coordination and a specialized bureaucracy. Most of the first civilizations in history, such as Ancient Egypt, Sri Lanka, Mesopotamia, China and pre-Columbian Mexico and Peru, are believed to have been hydraulic empires.

case of the pre-Columbian, Peruvian and Meso American civilizations around the coastal valleys of Central and South America, the Khmer Civilization around the Mekong river, the Elam and Suziana civilizations around the Dez river (in South-West Iran) the Helmand civilization along the Helmand river between present Afghanistan and Iran, etc. Arabic civilizations, which originated in deserted areas, also developed and expanded from oases to river valleys, i.e., from well-watered points to better watered ones.<sup>16</sup>

All major human migrations and the birth of towns and communities have been closely correlated with the search for and the settlement around naturally irrigated areas and valleys adequately supplied with water. Early transportation was facilitated by waterways with consequent benefits derived from trade and interchanges.

Civilizations developed wherever the valleys in which people settled were subject to recurring floods which, in turn, brought natural flood irrigation on areas into which the rivers carried, together with water, fertile alluvial soil particularly suitable for agricultural development.

As soon as human groups settled around a water point or a river valley, the need arose for minimum water control in order to satisfy water demands and to ensure an equitable water distribution between different uses and users. It is from this need that the earliest water law systems developed. Their growth, persistence and character varied and were dependent upon many factors, such as local geo-physical and climatic conditions, socio-economic and managerial situations, and the religious-philosophical beliefs of the populations concerned.

In regions where water was abundant, water control was largely directed towards defense against harmful effects of water such as flood warning and control and fight against water invasion, land reclamation and embankment. In areas where water was scarce, this control developed towards the conservation of water supplies and adequate distribution of

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<sup>16</sup> Dante A., Caponera, *Principles of Water Law and Administration*, National and International, (1992), Pp11

the little water available; water regulations were more detailed and restrictive. It must be pointed out that, in early water regulations, the religious character of water, either as a gift, a reward or as a punishment by nature, God or the gods, is always present, possibly with some exceptions. Furthermore, the amount of labor required for successful water resources development and conservation activities is an important factor which determined and influenced the socio-economic organization and growth of the hydraulic civilizations.

It may also be said that the development and growth of early hydraulic civilizations were closely related to the degree of effectiveness of the administrative-managerial, religious and legal controls imposed on water use. So it can be noted that the diminished social concern over the management of water has been one of the main causes of the subsequent decay, and some times disappearance of early hydraulic civilizations. A typical example is the disappearance of the Mesopotamia civilization as a consequence of diminished administrative control over the canals which became burdened with silt. Likewise, throughout history, the intervention of external invaders with the destruction of waterworks and disruption of existing water management also made certain hydraulic civilizations disappear.

### **1.6.1. Development of Earliest Water Law Principles**

The very nature of water presented two precisely opposite challenges to the evolving early hydraulic civilizations: how to convey it to the land for irrigation where it was needed, and how to control it where it threatened men or was likely to cause damage. In the first instance, hydraulic civilizations developed where natural and recurring floods brought water and alluvial soil to the lands; at a later stage man-made aqueducts and irrigation canals provided for such need. In order to fight against harmful effects of water, dykes, dams and artificial hydraulic structures were built. As regards to the second aspect, the harmful effects of recurring floods obliged populations to pool their efforts

and organize themselves. These two physical aspects of water brought about the first quest and development of water law principles.<sup>17</sup>

The incalculable amount of labor necessary to ensure water control obliged a whole community to work for a common end, and, as a consequence of the union of efforts in water activities, a decisive step took place toward the elevation of a community to the level of a state. In fact, defense and divine worship constituted the combined action for this progression. Hydraulic civilizations necessitated and authority which planned the works, supervised their execution and brought them by coercion to successful completion. Such coercion must have taken place by means of water regulations under an appropriate water administrative authority. Government control over agriculture and commerce was subsequent to the construction of canals and navigation structures.

At the earliest stage of development of law, the chief valuable was land including water, cattle and slaves (for which water was needed), ships or boats (utilizing water) and the rest of movable items (food, household furniture, equipment), etc. However, unlike movables, land accompanied by the availability of water was, and is, the essential source of life in all the phases of human society. Land is fixed in extent, and all members of the community must have access to it in appropriate quantities. This is to how the rights-duties relationship of land and waters developed. Public interest of the community in land and water gave rise to their becoming public property. Individuals within hydraulic civilizations practiced a certain mode of conduct towards the use of community; in most places it developed so as to give rise to the notion that all lands and waters belonged to the community and that the rights of individuals or groups were either dependent or partial. In those communities where there was no land property, what vague notion existed with respect to land ownership probably went in the direction of communal property under various forms: tribal, property of groups intermediate between the tribe and the family, cases where land and water were vested in the chief, or a combination of all of these.

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<sup>17</sup> Ibid Pp. 13

## **i. Ancient Egyptian Water Regulations and Management**

### **Earliest Dynasties (3400-2650 BC)**

Very little is known of the water regulations of ancient Egypt, although Egyptian records relate that they existed. The most important codifications referred to are those of Horemheb at Kamak. None of these regulations seem to have survived. However, reliable records describe in detail the hydraulic structures built and the water administration through different periods, from which it may be assumed that a whole body of water regulations must have existed.

In the pyramid texts, the God Osiris is identified with the Nile waters. According to tradition, Menes, the legendary first of the Pharaohs, dammed the Nile to control floods. As early as the period of the first two dynasties (about 3400-2980 BC) there was a 'Constructor of the King' (*Medeh Nisout*) providing for public works. From that time the Nile was measured and recorded on the Palermo Stone. During the third dynasty (2980-2900 BC) the water administration under the Constructor of the King developed into two departments, at the head of which were a Master of Canals and a Master of Lakes. While no changes occurred during the fourth dynasty (2900-2750 BC), under the fifth dynasty (2750-2625 BC) a 'Master of Water Castles' was added to the water administration, and the state organization developed even further.<sup>18</sup>

The civil status of the population, the cadastre of lands, the registrar of all deeds, the water administration and the public works department were coordinated by the Central Chancery. Branch offices of these services were scattered all over the country, and officers recorded everything on papyrus conserved in the state archives. Through this organization and from the records, the state could assess and collect taxes through its revenue services. Under the fifth and sixth dynasties a larger degree of decentralization of services developed, together with a diminished concern for water works construction and

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<sup>18</sup> Ibid Pp.14



maintenance. It is during this last period that the civilization decayed; the deltaic towns became for a while small autonomous states governed by an oligarchy.

### **Later Dynasties (2650-300 BC)**

During the twelfth dynasty, the centralization of water administration was renewed. The district governors of the Old Kingdom had as their chief title 'Digger of Canals' and were responsible for the upkeep of canals and dykes, for patrolling and inspecting the banks when water reached its height and for organizing aid when disaster threatened. In the case of floods a state of emergency was declared, and obligatory corvées were organized to fight against water invasion. A larger network for measuring the height of the Nile (in Nilometers) developed, the records of which were used to compare with past records and to forecast possible floods downstream. The deterioration of dykes and canals was regarded as an offence punishable by death, and this principle continued to be maintained up to and after the Romans.

In ancient Egypt land and water belonged to the Pharaoh<sup>19</sup> who, as a living god on earth, granted its temporary use practically to whom he liked. Every community had to provide the Pharaoh with the produce of the soil through its *Xerp* or public officers in charge of a district. Water works were carried out by groups of 1000, 100, 10 or 5 men organized under a farm leader in working groups to whom a plot of land was granted for cultivation. The income deriving from cultivated land was controlled and assessed for taxation by public treasury officers who were themselves secretly controlled by the Pharaoh.<sup>20</sup> Although the Scribes recorded everything, it is unfortunate that, so far, no written water regulations have come to light, probably, as some authors have suggested, because the Pharaoh needed no law other than his own.

## **ii. Ancient Mesopotamian Water Regulations and Management**

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<sup>19</sup> Ibid

<sup>20</sup> Pharaoh is a title used in many modern discussions of the ancient Egyptian rulers of all periods. In antiquity this title began to be used for the ruler who was the religious and political leader of united ancient Egypt, only during the New Kingdom, specifically, during the middle of the eighteenth dynasty.

The ancient Mesopotamian civilization was basically a fluvial civilization. The rivers of Mesopotamia<sup>21</sup> provided water for irrigation and at the same time were means of transport. The distribution of water was one of the main concerns of the governors during the time of the first Babylonian dynasty, in which many important legal and administrative documents were elaborated as sources of the Acadian-Sumerian law.<sup>22</sup>

A series of records in the form of inscriptions are available concerning water regulations in the Babylonian<sup>23</sup>, Assyrian<sup>24</sup>, Hittite<sup>25</sup> and related civilizations, and new ones are being discovered even today.

Among the legal documents available, the Hammurabi Code deserves special attention. The Sumerians worshipped the god of inundation, and the Sumerian King Gudea (2492 BC) is reported to have ‘Constructed a new canal and maintained in an excellent state of repair the irrigation system of smaller canals.’ The Babylonian god Num personified the idea that water is the source of life, of all blessing and the element of creation. During this period a codified law was developed under Shulgi, the second king of the third dynasty, which laid down the basis of the Hammurabi Code. This code and the royal letters to local governors giving instructions for the upkeep of waterworks and canals constituted the basis for most of the water legislation in Mesopotamia, even when issued subsequently under new forms of codification.

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<sup>21</sup> Mesopotamia (from the Greek meaning "land between the rivers") is the area of the Tigris-Euphrates river system, along the Tigris and Euphrates rivers, largely corresponding to modern Iraq, as well as some parts of northeastern Syria, some parts of southeastern Turkey, and some parts of the Khūzestān Province of southwestern Iran.

<sup>22</sup> Dante A., Caponera, *Principles of Water Law and Administration*, National and International, (1992), Pp15

<sup>23</sup> Babylonia was a state in Lower Mesopotamia (Iraq), with Babylon as its capital. Babylonia emerged when Hamurabi created an empire out of the territories of the former kingdoms of Sumer and Akkad.

<sup>24</sup> Assyria is located in north Mesopotamia and spans four countries: In Syria it extends west to the Euphrates river; in Turkey it extends north to Harran, Edessa, Diyarbakir, and Lake Van; in Iran it extends east to Lake Urmi, and in Iraq it extends to about 100 miles south of Kirkuk. This is the Assyrian heartland, from which so much of the ancient Near East came to be controlled.

<sup>25</sup> The Hittites were an ancient Anatolian people who spoke a language of the Anatolian branch of the Indo-European language family, and established a kingdom centered at Hattusa in north-central Anatolia (on the Central Anatolian plateau) ca. the 18th century BC.

## The Hammurabi Code<sup>26</sup>

The prologue of the Hammurabi Code contains 26 reasons for praising the king, of which half except one refer to his activity as water ordained.<sup>27</sup> In the introduction of this code, King Hammurabi describes himself as ‘the gracious arbiter who has allotted... watering places to Lagash and Girsu...’ and ‘the giver of the water abundance to... drink.’<sup>28</sup>

Water is considered as possessing a divine character, and as means of punishment for various offences. Articles 53 to 56 are those dealing specifically with water control. Thus, Article 53 states that if a man has been slack in maintaining the bank of his fields and has not strengthened them and a breach has occurred whereby the waters carry away the harvest on the land, the man in whose land such breach has occurred shall replace the corn which he has caused to be lost. If he is not able to replace the corn, he and his goods shall be sold and the tenants of the water-land whose sesame the waters have carried away shall divide the proceeds from the sale (Article-54). A similar punishment is provided for in Article 55 in the case in which ‘a man has opened his trench for irrigation and has been slack and has let the waters carry away the soil on his neighbor’s land, he shall pay corn corresponding to his neighbor’s loss.’ Article 56 provides that if a man has released the waters and in so doing has caused the waters to carry away the works on his neighbor’s field, he shall 10 *gur* of corn for every *bur* of land.<sup>29</sup>

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<sup>26</sup> The Code of Hammurabi is one of the earliest known examples of human laws being defined and written down in an orderly way. Little is known about Hammurabi himself; he ruled Babylon nearly four millennia ago, from roughly 1792-1750 B.C. The code has 282 entries covering all sorts of civil interactions, from inheritance to theft to slave ownership. Some of the laws are general (anyone caught committing a robbery shall be put to death) and others quite specific ("If any one hire an ox-driver, he shall pay him six gur of corn per year"). The code's best-known dictum is "If a man put out the eye of another man, his eye shall be put out" -- commonly quoted as "An eye for an eye."

<sup>27</sup> Dante A. Caponera, *Principles of Water Law and Administration*, National and International, (1992), Pp15

<sup>28</sup> Ibid

<sup>29</sup> Dante A.,Caponera, *Principles of Water Law and Administration*, National and International, (1992), Pp 16

Finally, the Code ends with a supplication to various divinities to punish any one who would not comply with the regulations set forth. King Hammurabi exclaims: ‘May Ea, the great prince... stop his river at the source, and cause bread-corn, the life of the people, fail to grow on his soil...’ and ‘...may Ada, the lord of ever-flowing wealth, the controller of heaven and earth, my helper, deprive him of the rains from heaven and the flood water from the source, may he bring his land to ruin by famine and hunger, may the thunder in rage against his city turn his land into a heap left by the flood...’ The Code ends up stating: ‘I made it possible for my people to recline on well irrigated fields.’

### **iii. Water Law in Hindu legal System**

The hydraulic civilization of the Mohan-Jo-Daro (about 5000 BC) and the Indus Valley Civilization (about 3000 BC) which developed in the Indus Valley have many features similar to those of the Nile and Tigris-Euphrates civilizations: recurring annual floods, a strong bureaucratic water administration, a large number of water works and divine character of the waters.<sup>30</sup>

A glance at some of the elements of the Hindu doctrine will help us understand the legal system established by this civilization, as it was deeply influenced thereby. Hinduism, or Brahmanism, is considered by its followers neither as a philosophy nor as a religion, but as a living tradition expressing one form of the universal Truth. The Hindu doctrine is that of the supreme knowledge, of which all that is perceptible, materially or otherwise, is a component.

Man is considered both as a whole made of parts, and as a member of the community. Similarly, communities are seen as necessary components of Humanity, which, in the same way as minerals, plants and animals, is an element of the World, itself considered as a microcosm in relation to the Universe, or Cosmos, regarded as the substantial and formal expression of Truth. The Hindu, whatever his race, caste or personal degree of

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<sup>30</sup> Ibid Pp.18

perception of the Supreme Knowledge, is well aware of his effective participation therein, together with his environment, as a necessary element of Universal Harmony.

This concept of universal Harmony implies a necessary correspondence between the cosmic and human orders. As the Cosmos is represented as Manu or the prototype of Man (manava), such correspondence is necessarily present within the structure of every human community, all social groups having organs and functions similar to those of the human body. Harmony is achieved only when man's action, or Karma, corresponds to the functions assigned to him by his very nature. The same applies to communities, to Humanity, and to the total order of the Universe.

To the integral harmony resulting from conformity with the above described hierarchy corresponds, free of any moral connotations, the Dharma, or eminent principle of order, 'Law' around which the world accomplishes its revolution. In this sense, it constitutes the Sanatana Dharma, or Primordial Tradition and is regarded both as the fundamental Principle of the Hindu doctrine, or Brahma, the Divine Will and supreme Master of the Universe, and as the substance of the doctrine as a whole.

As Principle, the Dharma governs all levels of the cosmic and human order, and embodies the necessary conformity of all elements of the Universe with their very nature and purpose. In this sense, it is possible to envisage a Dharma specific to each being (swadharma), to each collectivity or to the whole humanity, for the full duration of its cycle of existence. In this case, the Dharma appears as the specific Law or Norm of each particular cycle, as formulated from its origin by the Manu which governs it, i.e., by the Cosmic Intelligence reflecting in this world the divine will be expressed as the Universal Order.<sup>31</sup>

As substance of the doctrine, the *Dharma* constitutes the content of the Sacred Books as a whole; in a restricted sense, however, it also expresses the legislative aspects of the doctrine as applicable to the social order. The traditional Hindu scriptures constitute the

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<sup>31</sup> Ibid

Veda. The sacred Books are, however, of two kinds: the *Shruti*, which emanate directly from the divine revelation, and the *Smriti*, containing the collection of the traditional Hindu commentaries.

The *Shruti* contains the four Vedas, or Fundamental Books, and the six *Darshanas*, or 'points of view' (branches) of the doctrine. The last *Darshanas*, entitled *Vedanta* (end and ultimate purpose of the Veda), contains the precepts of the *Santana Dharma* (*Lex Perennis*), as synthesized in the *Brahma-sutras*. The penultimate *Darshanas*, known as *Mimansa* or *Karmal Mimansa*, refers to the field of action (*Karma*), and represents one of the sources from which the principles of Hindu jurisprudence were developed.

The *Smitri inter alia*, contains, various treaties on the six fundamental sciences and four Practical Sciences or Arts, the Shivaite and the Vishnuite commentaries or books, and the *Dharma-Shastra*, or codes of law, which represent the Law of Manu as applicable to the social order.

#### **iv. The Water Regulations in the Code of Manu**

The most important documents relating to water law are those contained in the *Mnava-Dharma-Shastra* or Code of Manu,<sup>32</sup> the Ancient origin of which has subsequently been recorded in later texts.

For the Hindu, the Laws of Manu represent the expression of the divine will or principle of universal order, as the necessary norms of correspondence between the essential nature of man (*Dharma*) and his deeds (*Karma*). According to Rig-Veda belief, the Goddess *Sarasvati* gave birth to the rivers; she was the peacock-riding wife of the four-headed Brahma, creator of all things.

Chapter III, Sect. 151 of the Code states. 'Let him not entertain at a *sradha* (dinner)... he who diverts water courses and he who delights in obstructing them...' In Chapter IV,

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<sup>32</sup> *Ibid* Pp.19

Article 226 reads, ‘...a rich man must always without avoiding it and with faith, do charitable works as constructing a reservoir or a well or building a public fountain...’ and Article 229: ‘He who gives water obtains satisfaction.’

In these regulations we find the concept of public waters: ‘...Water’ along with other things ‘they declare to be indivisible’<sup>33</sup>. In the same order of idea we find that kings used to collect rights of way for crossing rivers<sup>34</sup> and that the law imposed upon the king special obligations with respect to public water such as to ‘organize vigilance and guards, both stationary and patrolling, and spies...’ on waters and on ‘houses where water is distributed’.<sup>35</sup>

The emphasis of economic and social concern placed on water in this code may be seen by checking the rigorous punitive system by which the common utilization of public waters was ensured. We find thus a moral sanction to consider ‘as a matter for exclusion from the society of the good people the sale of a consecrated reservoir’<sup>36</sup>; then, the obligation to punish with death ‘he who breaks the dam of a reservoir and causes loss of water by drowning him in the water or have his head cut off.’ The offender ‘may repair the damage but he shall have to pay the highest fine’<sup>37</sup>. But he ‘who shall take away the water, must be made to pay the first (or lowest) fine’<sup>38</sup>. Furthermore, ‘the fine of gold Masha and the obligation to restore everything to its original state’ shall be imposed upon anyone who ‘destroys a public fountain’<sup>39</sup>. Finally, the unlawful appropriation of the water of a well or cistern shall be punished by a ‘lunar penance’ – a minor one.<sup>40</sup> Waters were also considered an element of purification, as well as means to ascertain the culpability of a person for certain crimes. Special ceremonials had to be performed in this latter case. The control over water utilization and distribution was under the

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<sup>33</sup> Chapter IX, Sect. 219

<sup>34</sup> Chapter VIII, Sect. 404

<sup>35</sup> Chapter IX, Sect. 264-266

<sup>36</sup> Chapter VIII, Sect. 61 and 69

<sup>37</sup> Chapter IX, Sect. 279

<sup>38</sup> Chapter IX, Sect. 281

<sup>39</sup> Chapter VIII, Sect. 309

<sup>40</sup> Chapter XI, Sect. 164

responsibility of powerful water administration headed by a water superintendent; this high official was vested with full and undisputed power on all questions related to water.

#### **iv. Ancient Chinese Water Regulations and Management**

The water regulations of the Chinese hydraulic civilization evolved together with the particular legal, administrative, philosophic and political framework of China. Ancient Chinese legal thought was based on the belief in a close interconnection between the human social order and the natural cosmic order. This concept was particularly relevant with respect to water ownership, distribution, utilization and administration. Harmony and unity, prevailing throughout creation, were believed to be reflected in human behavior towards oneself, the neighbors, the family, the group, the society and emperor. Therefore, the foundation of social order was not necessarily the law (*fa*), but the *li*, a term variously translated as rules of propriety, rituals or customs, prescribing to everyone a behavior in harmony with the natural order. These are the views of the Confucian theory<sup>41</sup>, out of which Chinese legal thought developed.

Around 200 BC, these doctrines, based on moral and ethical influence as opposed to law enforcement, were for a time fought by the so-called school of Legalists who held that the law (written and known) to which everyone was subject, governed the relationships between human beings. It was the combination of the Confucianists 'and Legalists' theories or, as it has been said, the Confucianization of the law (*fa*) that gave birth to the Chinese legal system.

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<sup>41</sup> Confucius was a Chinese thinker and social philosopher, whose teachings and philosophy have deeply influenced Chinese, Korean, Japanese, Taiwanese and Vietnamese thought and life. His philosophy emphasized personal and governmental morality, correctness of social relationships, justice and sincerity. These values gained prominence in China over other doctrines, such as Legalism or Taoism (道家) during the Han Dynasty (206 BC – 220 AD). Confucius' thoughts have been developed into a system of philosophy known as *Confucianism*. It was introduced to Europe by the Jesuit Matteo Ricci, who was the first to Latinise the name as "Confucius."



Regarding the development of water regulations, it is closely followed the evolution of this legal history and philosophy.

The first reliable records on Chinese water law are to be found in the *Li-Chi*, or treatise on ceremonial rules, in which interesting and suggestive passage refer to the behavior of the ruler in the administration and regulation of water resources, in harmony with the natural behavior of nature and recurring seasons. As an example we may quote, ‘...In spring, all life starts and rains of heaven fall on earth, and therefore, let the waters run and irrigate the fields...;’ in the summer months, ‘built dams and dykes and store the waters for later consumption...;’ in the winter months, life ceases and therefore hardship arrives ‘...let inspection of works and collection of water rates and taxes be undertaken... punish offenders,’ etc.

From these regulations, it appears that no private ownership of water existed, and the government administration was responsible for the construction, repair and maintenance of hydraulic works, including bridges, navigation and fishing. Local officials derived their authority from the will of the emperor and could issue orders and regulations in compliance with the behavior of natural order. Labor was provided by the people concerned under a system of corves as part of their yearly obligations towards the state. Under shih-Huang-Ti; the first emperor of the Ch’in Dynasty (249-207 BC), the influence of the legalists was at its peak; the centralized administration enacted a uniform and publicized system of codification.

The subsequent Han Dynasty (200 BC-618 AD) codified the previous *Ch’in* system of laws, but again introduced the Confucian *li* (rules of propriety, custom) in the *fa* (law – punishment), or, as it has been said, humanization of law occurred. An ordinance on waters was enacted in 111 BC, and a new principle of ‘water equalization’ appeared in this text. Land and water resources were under the control of a director of agriculture, and a court architect was responsible for water control. The mountains and the seas, including lakes, streams, rivers swamps.... Are storehouses of heaven on earth and their ought to belong to the office of Shu-fu’ (Secretary of the Treasury).

Under Chinese water law principles the concept of private water ownership never appeared; the individual's duties in water matter would eventually lead to and enhance public without monopolizing the resource. The water administration was always in charge of all water activities, including navigation, flood control, floating, waterworks construction and upkeep, bridge control and water policing, while individual irrigation and fishing could be practiced provided they fit into a collective pattern. The obligations with respect to opening and closing ditches and canals, cleaning and upkeep of waterways, and 'turns of duty conscription,' or corvees, had to follow the natural seasonal variations and requirements according to the natural order. Punishment was provided for in the case of offences under the water codes, ordinances and regulations.

## **V. Hebrew Water Regulations and Management**

The Hebrews, once comprising a loose federation of tribes of mixed origin, have left us an invaluable code of early law, partly influenced later (400 BC) by contact with Babylon. The basic principles of this code are contained in the Bible, which today serves both Jews and Christians. But in the matter of water law the Christians have adapted themselves and accepted first the rules enacted by the Romans and subsequently those of the countries where they live. The Jews evolved their own legal doctrines and opinions from the Bible. These are contained in the *Talmud* a consolidated and unified digest of Jewish law, written between the fifth and third centuries BC. With respect to water regulation the Talmud includes a few references, which are the development of the basic principles contained in the Torah, or revelation of Biblical texts.

Water is a divine gift for the subsistence of human, animal and plant life: 'He sendeth the springs in to the valleys, which run among the hills. They give drink to every beast of the field: the wild asses quench their thirst. By them shall the fowls of the heavens have their habitation, which sing among the branches. He Watered the hills from his chambers.... He causeth the grass to grow for the cattle and the herb for the service of men....'

As a consequence of the benefits that water provides to all living creatures, water resources seem to be excluded from private ownership. Thus, under Talmudic Law: ‘Rivers and streams forming springs, these belong to every man.’ The existence of wells belonging to the public domain and the right for every traveler to use them is also recognized. Servitudes and rights of way limited the use of water on privately owned lands, and the principle of compensation for the use of water also existed.’ And the children of Israel said unto Him, ‘We will go by the highway, and if I and my cattle drink of thy water, then I will pay for it only, without doing anything else, go through on my feet.’

Water utilized for domestic and irrigation purposes was subject to a certain order of preference. In the case of several irrigators receiving water from a common well, the one closest to the well conduit filled his cistern first, and the other irrigators did so in descending order. In the case of irrigation water coming from a stream, including the right of upstream riparian to divert the flow, Talmudic law does not seem to provide a definite principle. One authority gives priority to downstream users, another to upstream riparian.<sup>42</sup> Maimonides, a famous Jewish author, rules with the latter but adds that ‘the stronger one’s right is superior’ in any dispute between riparian.<sup>43</sup> In another instance, a distinction is made between the law in Palestine, where the upper riparian has priority, and the laws in Babylon, which consider as the criterion the ease with which the respective owner may use the water.

As for the use of a spring owned and utilized by a town for domestic purposes such as drinking, watering of animals, laundering, etc., the order of priorities is established as follows: ‘A spring owned by the people of the city, their lives and the lives of others:

their lives take precedence over those of others; their beasts and the beasts of others: their beasts take precedence over the beasts of other; their laundering and the laundering of others; their laundering takes precedence over the laundering of

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<sup>42</sup> Dante A., Caponera, *Principles of Water Law and Administration*, National and International, (1992),

Pp22

<sup>43</sup> Ibid

others; the lives of others and laundering: the lives of others take precedence over their laundering.

For the maintenance of a well or of an irrigation ditch, all riparians shall assist those closer to the source of water; thus, ‘The most downstream owner repairs with all other riparians but repairs his own portion by himself.’ In the case of drainage operations it is the most downstream riparian who benefits from the help of all; the most upstream riparian, being the sole beneficiary of the most upstream segment of the drainage conduit, is alone responsible for its maintenance.<sup>44</sup>

### **1.6.2. Existing Systems**

To truly understand the existing systems of water law in individual countries it is necessary to know to some extent their political, religious, social and legal backgrounds together with other technical, physical, economic and related aspects. Water resources policies, administrations and laws have developed through intercultural and interdisciplinary contacts and largely reflect the influence of history and physical factors. A short description of some of the major water law systems is necessary as a starting point for a closer scrutiny of the existing situation in any one country.

In the eighteenth century, the French scholar Montesquieu made a wise statement when he said, ‘Civil and Political laws must be so fitted to the country for which they were enacted that it is a real coincidence if those of one nation apply to another.’<sup>45</sup> While earlier water regulations and administrations related mostly to one simple use or harmful effect of water and to penalties for offences in water activities, with the increase in different utilizations new concepts of water resources policy, administration and legislation have evolved.

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<sup>44</sup> Ibid

<sup>45</sup> Dante A.,Caponera, *Principles of Water Law and Administration*, National and International, (1992), Pp 65

Present water administration and regulation derive from the original legal systems prevailing in each individual country together with more modern concepts or interpretations which have often been superimposed on pre-existing regulations, local uses and customs. Generally, throughout the world, water law and administration derive from one or a combination of more than one of the following legal principles and systems: Customary law; Roman law, with its two main derivations, common law of England (and new USA doctrines) and civil law; Islamic law; and Soviet law. Discussion will be made on Water Law in Roman legal Systems, Common Law Legal systems and Civil Law legal systems.

### **I. Water Law in Early Roman Law**

Early Roman law recognized three classes of water rights: (i), private, which entailed unlimited and unrestricted use subject to sale, acquisition or transfer of the land over or under which the waters are located; (ii) common, entailing the right to use of such water to everyone for any purpose, without limit or permission; and (iii) public, when owned by the State, their use being subject to State control.

Roman law has exerted great influence on the legislation of practically all modern nations, and, in the course of history, the water law principles have taken three major directions.

The approach which confers a privileged position on the owners of land adjacent to watercourses, was one of the elements of Roman water law which in turn had a major influence on conceptions of water rights in the influential European legal traditions, prior to the introduction of modern water rights regimes. Indeed some of these influences can still be observed. For example, Roman law denied the possibility of private ownership of running water. The Institutes of Justinian published in A.D. 533-34 held that running water was a part of the “negative community” of things that could not be owned along with air, the seas and wildlife. At the same time it was recognized that things in the

negative community could be used and that the right to use the advantage of the resource needed to be regulated to provide order and prevent over-exploitation.

Roman law distinguished the more important, perennial streams and rivers from the less important seasonal water bodies. The former were considered to be common or public while the latter were private. The right to use a public stream or river was open to all those who had access to them. Roman law, however, recognized the right of the government to prohibit the use of any public water and required an authorization for taking water from navigable streams.<sup>46</sup>

In Roman law the right of ownership and use of water recognized to the landowner was necessarily limited both by similar rights of neighboring landowners and by the rights acquired by or granted to third persons by the state. As to the rights of neighbors, Roman law, which regarded water as a constituent part of the land, left the owner entirely free to dispose of all the water found on his land without any consideration for his neighbors but made him liable to suffer similar treatment at their hands.

## **II. Water Law in Civil Law Countries**

Water law principles in code countries are those which were codified by the Napoleonic Code and found similar treatment in the water laws of France, Spain, Holland, Portugal, Italy, etc. It is important to know that the feudal system, in which there was no concept of private ownership of water, and the feudal lords and the king, had full control over land and water within their jurisdiction, definitively ended with the French Revolution; a new social class, the bourgeoisie, emerged with new economic interests. They have strongly influenced the water laws of countries all over the world that were once under their cultural influence. According to "code countries" theories, waters may be either public or private.

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<sup>46</sup> Teclaff, L.A. 1985. *Water Law in Historical Perspective*, William S Hein Company, Buffalo, New York, Pp26

As a consequence of the new economic and political order, the Napoleonic Code classified water in to two categories: private waters and public waters. According to this definition, private waters were those located below, along or on privately owned land ; public waters were those which were considered to be 'navigable' or 'floatable,' this is understandable, as under the new setup introduced by the French Revolution every object necessarily had to belong to someone, either a private person, or the state or public domain. The third legal status of water, i.e., the concept of waters common to every body (*res comunis omnium*) which existed under Roman law, was eliminated from the new legislation, contrary to what was retained in the common law of England.. Likewise, the former pre-Revolutionary feudal system of land and water ownership disappeared. This constituted an important departure from the original Roman system which considered three types of ownership: private, common and public.

This distinction between public and private waters long retained an influence in the countries of the civil law tradition. Generally speaking, while an administrative permission was necessary for the use of public waters this was not necessary in the case of private waters. The distinction was maintained by the French Civil Code - the *Code Napoleon* - promulgated in 1804 after the French Revolution. Public waters were those which were considered to be “navigable” or “floatable” and belong to the public or national domain. Their use required a government permit or authorization.<sup>47</sup>

Private waters, which were those located below, along or on privately owned land, could be freely utilized subject to certain limitations of a statutory nature such as servitudes, rights of way etc. The right to use such private waters, both surface and underground, derived from land ownership which recognized the right of the owner to use at pleasure the water existing upon his land without any limitation. Similarly, the Spanish Water Act of 1886 considered all surface waters that spring on a privately owned parcel, as well as rainfall on that land, as private property, but only for its use on that land parcel (or the estate of which that land parcel formed a part).

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<sup>47</sup> Ibid

According to the civil law system, water may be public or private. Public waters are those belonging to the public or national domain, and their utilization is subject to a government permit, authorization or concession. In France, up to the law of 8 April, 1910, only ‘navigable and floatable’ waters belonged to the public domain. From that date, other types of water could be included in this category if acquired by the state for the purpose of public works. With the law of 16 December 1964, other waters were included in the public domain, such those necessary for domestic water supply, navigation, agricultural and industrial production.

The regime of underground waters under this system is rather ambiguous. According to Article 552 of the French Civil Code, for example, ‘The ownership of land includes the ownership of anything above and below. The owner may undertake underground ...any research which he wishes and abstract the relevant products there from...’ Water, as an accessory of land, is one of those products. However, the landowner only owns the water he is able to abstract; he has no rights on the aquifer itself, so that if his well dries up because of the activities of a neighboring user, he can claim no compensation. This situation arises in most countries which follow the civil law system.

Under the civil law system, one or more basic legal texts (constitution, land law, civil code, rural code, or other legal enactment) define the public domain, i.e., a category of goods which cannot be the object of private ownership. Generally, this category includes ‘public waters.’ As a consequence, the utilization of ‘public domain waters’ is subject to administrative authorization, permit or concession. Land laws, water laws or other legal enactments regulate the administrative regime of these waters.

Privately owned waters (i.e., those not being public waters) can be freely utilized, subject to certain limitations of a statutory nature, such as servitudes, rights of way, etc. The right to use such private waters, both surface and underground, derives from land ownership (possession), which recognizes to the owner (possessor) the right to use at pleasure the water existing upon his land without any limitation (*ius utendi et abutendi*). Yet the practice of the courts has limited this absolute right of use by making it subject to



numerous restrictions, particularly as regards the prohibition to pollute water, the care to be exercised like the 'father of the family' and the protection of the use of water belonging to the inhabitants of a village.

Finally, any right to use water under a permits system is subject to the payment of a water rate. Fees may also be collected in the case of water-related activities such as, inter alia, the extraction of gravel from river beds and for river crossings.

### **III. Water Law in the Common Law Legal System**

The common law of England continued to apply the old Roman concept that water was "*res communis*" and could not be the object of ownership, not even by the State or the Crown. Any limitation to the use of water is to be declared through regulation. Recently these uses have been brought under State control. This system has exerted immense influence in the Eastern States of the USA, and on all recent water regulations enacted on those countries once under English cultural Influence (Australia, New Zealand, India, Pakistan, Sri Lanka, Burma, Hong Kong, Singapore, Malaysia, etc.). Subsequently, in some Western States of the USA a new theory developed, the so-called "appropriation doctrine". According to the appropriative system, a water right is created in favour of the first who claims and uses the waters.

Within the USA, this doctrine of the Western States collided with Mexican water law principles, giving rise to the new theories of "correlative rights" and of the "beneficial uses of waters"

In Australia, the original principles had to be modified and adapted to the conditions of water scarcity and under population of the country. A detailed legislation was enacted in order to extend the right to use water to non-riparian, thereby encouraging irrigation in the hope of achieving a closer settlement upon the land.

In many countries following the common law system, many laws, ordinances, regulations or other legal enactments (principal or subsidiary) are issued for administering or regulating specific subjects related to water. Since they have sprung from needs arising from local conditions, water enactments deriving from the common law of England are not global, but pertain to a special region and often to a particular watercourse. Under the common law system, of which the riparian doctrine is the expression, there can be no ownership of or right of property in the running water of streams, rivers or natural channels. Such water, regarded as transient and fugitive, is *res comunis, public iuris*, i.e., it is common to all who can claim a right of access to it, and may be used in a reasonable manner by a riparian landowner. Only the water which accumulates or falls on one's land and is collected in artificial or natural drains and reservoirs may be privately owned; such private ownership is limited to the time of possession. The same principle applies to underground waters, which become the property of the person who abstracts them and retains them in his possession.

The concept of ownership is relevant only in relation to the bed or to the banks of a river and differs according to whether the river is tidal or non-tidal. According to court decisions, a river is tidal only as to such lengths as are within the regular ebb and flow of the highest tides; the bed of the river in those lengths, and of any estuaries, vests prima facie in the Crown as far up the river as the tide flows and up to the high water marks of ordinary tides along the shores of estuaries. The bed, however, may be the object of statutory title, or the Crown's title may be granted to an individual. In any event, ownership is subject to the respect of public fishing and Navigation rights as well as Crown's titles. As regards non-tidal rivers, there is a presumption, in the absence of evidence to the contrary, that the ownership in the bed vests in the owners of the adjacent land up to the middle of the river. The owner of land on both sides of the river is presumed to own the whole bed thereof. The public has no right to fish in such a river, except with the license or consent of the riparian owner, but a non-tidal river which is navigable is subject to a public right of navigation. The owner or occupier of land adjacent to a natural stream is entitled *jure naturae* (i.e., by the law of nature) to the use and enjoyment of the water flowing past his land as an incident of his ownership or

occupation of such land. Such use takes place *minister rio legis*, i.e., by virtue of the law, without the administrative interference of the responsible authorities. The right to the use of flowing water is known as 'riparian doctrine.' Furthermore, every landowner whose property abuts on the banks of a stream or body of water is entitled to have the water pass his land (or maintain a natural lake level) undiminished in quantity and not modified in quality. This is the 'natural flow' doctrine.

While the riparian owner has the right to use the water flowing through his land for a purpose not inconsistent with the rights of other riparian owners upstream and downstream, an upstream landowner cannot diminish the quantity or injure the quality of water which would otherwise descend, nor can a downstream proprietor block the natural water flow without his license or consent. Any unreasonable and unauthorized interference with the use of the water by a person entitled to it may be subject to an action for damages and may be restrained by injunction, even if there has been no actual damage to the plaintiff. The right of access to a stream includes, for a riparian owner whose land abuts on a navigable river, the right to moor vessels alongside his frontage.

By the end of the nineteenth century and the beginning of the twentieth, conditions were suited for a change from the riparian system throughout the British dominions. Indeed, it is possible to relate the development of irrigated agriculture to the abandonment of riparianism and the introduction of a permit system. For instance, in the period immediately preceding the First World War the State of Victoria, first among the Australian states to abandon riparianism, became much more advanced in this sector than its neighbors South Australia and New South Wales, which were slow in changing their laws. At the beginning of the twentieth century, the Canadian Provinces of Alberta, Saskatchewan and British Columbia vested all rights on water in the Crown, preserving only domestic and pre-existing riparian rights. For other purposes, a license was required.

In England and Wales a permit system was systematically introduced by statute in 1963. In other common law countries attempts are being made to establish a permit system, but difficulties of implementation are being encountered for lack of adequate legislation,

availability of manpower, extended size of the countries and, finally, for the resistance by the populations to the introduction of any control over their water activities, often based on customary rights. It is worth mentioning the attempts made in the United Kingdom during 1990 to privatize the water industry, i.e., to transfer the ten water authorities of the country to the private sector. It is possible that this policy is followed in other countries.

## **1.7. SCOPE OF WATER LAW**

Having the concept of the meaning and development of water law, it seems logical here to discuss the scope of water law. What issues are really covered under water law? The concept of the juridical status of water, including ownership, may be relevant for establishing successful control over the rights connected with the use of waters. The right to use waters is a concept distinct from water ownership; very often, however, such a distinction does not appear in existing water legislations. It is very important with respect to the administration of water resources, whether their use is exercised over publicly or privately owned waters. In any case, where waters are public property, any use may be subject to government authorization, permit, license or concession.

Procedures for the issuance of water use permits or authorizations may be more or less detailed, according to the administrative and economic situation of a country. They include provisions concerning the authority competent for the issuance of water use permits or authorizations, as well as kind, character, duration, reasons for forfeiture, suspension, renunciation, abandonment, renewal, extension and modification of such permits, procedures for the administrative determinations and claims against the issuance or refusal of permits.

Water law addresses also the problems of (i) waste and misuse of water, (ii) recycling and re-use of water, (iii) health preservation, and (iv) pollution control. These problems may be, to a large extent, taken care of through ad hoc provisions, obligations and limitations inserted in the permits, authorizations and concessions for water use, and the contracts attached thereto.

Provisions relating specifically to groundwater law may include (i) the establishment of areas, or districts, in which the search for, extraction and utilization of underground water are subject to control by the water administration; (ii) the licensing of drillers, (iii) obligations to recharge groundwater aquifers, (iv) limitations of consumption through various means, including the installation of water meters by the water administration, (v) procedures and requirements in the case of water found incidentally, and (vi) interference with minerals and oils.

In zones which have been declared as protected, restricted or rationed, the water administration may impose, by public announcement, limits to water withdrawals or diversions, prohibition of certain uses, priorities among uses and other limitations or obligations dictated in the public interest.

Water administrations is also another aspect water law. Planning the development and conservation of water resources requires a comprehensive and unified approach in order to have as much detailed knowledge as possible of: (i) the availability of water (inventory) both with regard to quantity and quality; (ii) existing utilizations; (iii) future needs and requirements on the basis of population growth. These, in turn, require that water be brought under a unified or coordinated administrative management.

Water law addresses this problem at every level, and it purports to define the duties, powers, functions and degree of decentralization of that administration, down to, and including, the associations of water users and special and autonomous water development agencies.

Water law further encompasses the international aspects of water resources administration, as it seeks coordination among national water policies and administrations affecting international drainage basins or simply the international sections of rivers and lakes.

## **1.8. LAND TENURE AND WATER RIGHTS**

### **1.8.1. General Overview**

Throughout history, in many societies and legal traditions, rights to use water and land have been closely inter-linked. Sometimes, particularly in arid areas, the right to use land depended on the application of water. More commonly, the right to use water depended on the use or ownership of land or structures built on such land. In a sense, this is not surprising as most water rights, apart from those relating to hydro-power generation, and so-called “in-stream rights”, relate to the use of water on land. So discussing water and water rights separately from land and land rights does not help students to grasp the idea. Therefore, this section is concerned with the interface between land tenure rights and water rights. The relationship between these two resources is of equal significance. Water is necessary for most productive uses of land. In a growing number of countries with arid climates the main constraint to agricultural growth is the availability of water rather than land. At the same time the use of land has major impacts on both the quality and quantity of water resources. In other words, decisions regarding the use and allocation of one resource impact directly or indirectly on the use and allocation of the other. To ensure sustainability, the need for an integrated approach to the use and management of these resources is increasingly recognized.

The principal mechanism for the allocation of land and water resources is the institution of legal rights: land tenure rights and water rights. The substance of such rights and the manner in which they are allocated have major implications for the use and management of land and water resources as well as for the social and economic development of states and their citizens, with particular impacts on the livelihoods of the poor.

At the outset it is important to recognize the fundamentally important role that land tenure rights have played throughout history in the socio-economic development of states and nations, a role that they continue to play. A primary production factor, source of employment and repository of personal wealth, land performs an economic function of

paramount importance. In many societies, both social status and power depended, and indeed continue to depend, on the size and structure of land holdings. What form land tenure rights should take and how those rights are or should be allocated therefore raise questions that are fundamentally political in nature. The answers to those questions, in the shape, form, content and allocation of land tenure rights, land tenure regimes and reforms to such regimes are themselves symptomatic of what are ultimately ideological expressions of the relationship between humans and the land.

In many jurisdictions, water rights have for a long time been considered as a subsidiary component of land tenure rights, a right to use water often being dependant on the existence of a land tenure right. In contrast to land tenure rights, however, debate over water rights and their reform has tended to be less concerned with ideology than with hydrology, with hydraulic engineering than with social reform. In short, water rights have had a much lower popular profile than land tenure and land rights.

However, in jurisdictions with arid climates or in times of drought and water shortage water rights rapidly climb national political and socio-economic agendas. The traditional response to water shortages has been an engineering response, through the construction of dams to store water and canals and pipelines to convey it to those places where it is needed. An increased awareness of the environmental costs of this kind of approach and a growing reluctance on the part of governments to meet the financial costs, together with the fact that in many cases the cheaper and easier schemes have been constructed, means that increased focus is being placed on the better management and allocation of available water resources.

Indeed as the world's water resources come under increased pressure, the importance of water rights is likely only to increase. Already, around one third of the world's population live in countries that suffer from moderate to high water stress. Continued population growth and the effects of climate change, a phenomenon whose eventual impacts are not yet fully understood, suggest greater pressure still: it is reckoned that the demand for water will increase by around 50 percent in the next 30 years and that around 4 billion

people, one half of the world's population will live in conditions of severe water stress by 2025.

Largely, as a response to increased concerns about the quality and quantity of water resources, the last thirty or so years have seen many countries undertaking substantial reforms to water sector legislation and thus to water rights. In contrast to the trend towards private ownership and private rights in the land tenure sector, reforms to water legislation have seen the assertion of state control over water resources and the introduction of complex regulatory mechanisms for the allocation of administrative water rights. Furthermore, in a number of jurisdictions, such water rights have become fully tradable and there is currently much speculation as to the extent to which this approach may be replicated elsewhere.

### **1.8.2. What Are Land Tenure Rights and Water Rights?**

First of all, land tenure rights and water rights are legal rights. As such they are capable of being asserted against the state and third parties in a court of law. In the case of a dispute, a right holder can legitimately expect a valid right to be upheld by a court and as necessary enforced through the machinery and coercive power of the state. Loss of, or damage to, a land right or a water right is *prima facie* subject to the payment of compensation and the right to such compensation is enforceable in the courts.

Second, land tenure rights and water rights have the same basic purposes. From the perspective of society they permit the orderly allocation of valuable resources. From the perspective of the right holder, they confer the necessary security to invest in the resource or activities entailing its use. When rights are secure and tradable the holder may also be able to use them as collateral through a mortgage to raise credit.

Third, while most societies since ancient times have had their own rules concerning rights to use land and water, modern conceptions of formal land tenure rights and water rights are both overwhelmingly influenced by European notions of land and water as reflected



through the two European legal traditions: the civil law tradition and the common law tradition.

Having considered their status, purpose and background the question what are land tenure rights and water rights? Needs to be answered, here.

**Land Tenure Rights:** As regards the substance of land tenure rights, a definition of “land tenure” proposed by FAO seems a logical place to start.<sup>48</sup> It is:

*A legal right which defines the relationship, whether legally or customarily defined, between people, as individuals or groups, with respect to land.*

The definition first suggests that land tenure rights are “legal rights” that define the relationship between people, whether as individuals or groups and land. However, it then goes beyond formal legal rights to include customary rights. Thus an examination of land tenure “rights” that addresses only formal rights will risk omitting coverage of a large aspect of the concept of land tenure.

Another definition notes that the expression “land tenure” is originally a legal term that means the right to hold land rather than the simple fact of holding it. The word “tenure” derives from the Latin term for “holding” or possession and its use in this context derives from the English feudal period when, following their conquest of England in 1066 the Normans declared all previous land rights void and replaced them with grants from the new King. As such the concept applied to the terms on which land was held, in particular the rights and duties of the holder.

Both of the main European legal traditions distinguish between property rights relating to land and those that relate to other goods. “Immovable” property rights in the civil law tradition and “real” property rights (or “realty”) in the common law tradition that relate to land are distinguished from “movable” or “personal” property, sometimes described as

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<sup>48</sup> <http://www.fao.org>, as referred on May 2008

“chattels”.<sup>49</sup> As it will be seen below, many ongoing reforms currently seek to promote the concept of private property rights, specifically rights of land ownership. But while important, ownership is not the only type of land tenure right.

The other principal type of land holding envisaged under the European legal traditions is leasehold tenure whereby land is rented by a “tenant”, someone other than the owner, for a specified period, usually in return for the payment of “rent”. The owner may be a private landowner or the state and rent can be payable either in money or in kind. While leases created in respect of certain types of land or premises may be subject to specific statutory provisions that restrict, for example, the level of rent that can be charged or the circumstances under which the lease can be determined or even extended, the parties to a lease are otherwise free to agree on the level of rent payable and indeed the term of the lease, which may last from a few weeks to a thousand years. Such an agreement, the “lease” or “lease agreement”, will usually specify the use or uses to which the land will be put and will also specify the mutual obligations of the parties. Of course the parties to a lease must also comply with any prescribed legal formalities concerning the form or content of a lease.<sup>50</sup>

Land tenure is, however, concerned with far more than ownership, lease and use rights. The unique and immovable nature of land means that it is frequently subject to numerous simultaneous uses, claims and legal rights. Take, for example, a single parcel of privately owned land. Part of this land may be subject to a lease. The remainder of the land may be subject to a legal charge or mortgage, whereby money is lent against the security provided by the land. An owner of an adjacent parcel of land may hold a right of way over part of the land parcel (an “easement” or “servitude”) or rights to use part of that parcel for a specific purpose, such as a right to graze livestock or to gather timber (a use

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<sup>49</sup> In the common law tradition a land parcel includes any buildings or structures attached to that land and they are thus included in the category of “real property”. Buildings and structures are similarly classed as immovable property in the civil tradition, although in some jurisdictions a building may be owned separately to the parcel of land on which it is situated.

<sup>50</sup> Quan, J, *Land Tenure, Economic Growth in Sub-Saharan Africa* (Eds) *Evolving land rights, policy and tenure in Africa*, DFID/IIED/NRI London, (2000), Pp. 33.

right or right of *usufruct*). At the same time the land parcel may benefit from a similar right over an adjacent parcel.

These kinds of relationships are all the subject of land tenure legislation, regulated either in the relevant code, in the civil law tradition, or in the other laws and on the basis of court decisions in the countries that follow the common law tradition. One way or another, such rules and principles have generally followed the spread of European concepts of land tenure.

**Water rights:** Modern water rights, by contrast, are not subject to multiple subordinate rights, even though the water that is the subject such rights is quite likely to be subject to multiple uses. So what are water rights?

The first point to emphasize is that water rights, as the term is commonly understood, have nothing to do with the so-called “right to water”, a putative human right which is claimed to exist either as a right in itself or as an ancillary aspect of the “right to food” created by article 11 of the International Covenant on Economic, Social and Cultural Rights.<sup>51</sup> Nor should water rights be confused with provisions contained in progressive constitutions such as the “right of access to water” found in that of South Africa.

Instead water rights are concerned with the removal (and subsequent use) of water from the natural environment or its use in that environment. In essence a water right is a legal right: to abstract or divert and use a specified quantity of water from a natural source; to impound or store a specified quantity of water in a natural source behind a dam or other hydraulic structure; or to use water in a natural source.

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<sup>51</sup> Article 11 of the International Covenant on Economic, Social and Cultural Rights, provides that everyone has a right to an adequate standard of living for himself and his family including adequate food, clothing and housing. The “Right to water” was developed in General Comment 15 on the Covenant by the Committee on Economic, Social and Cultural Rights. Such “General Comments” constitute authoritative interpretations of the provisions of the Covenant to clarify the normative contents of rights, States parties’ and other actors’ obligations, violations and implementation of the rights at national level.

But water rights frequently go beyond an entitlement to a mere quantity of the simple chemical compound which is water: the flow of the water is also an important component of a water right.

A “natural source” includes a stream, river or lake, a reservoir created by the damming of a river, a swamp or pond as well as groundwater from a natural spring or a well. Historically, much of the focus of water law, and thus conceptions of water rights, has been based on rights to abstract and use water from streams and rivers, more specifically from the abundant and perennial streams and rivers of Europe.<sup>52</sup> This, as will be seen, has had, and indeed continues to have, implications for the export of European notions of water rights to countries with vastly different climatic and hydrological conditions.

The main uses to which water abstracted on the basis of a set water right are agricultural (for irrigation and livestock watering), industrial including its use as a coolant in thermal power stations, and urban including use for domestic drinking water, household and commercial purposes. Rights to impound water are either a precursor to abstraction (for example where water is held in a reservoir prior to its use for irrigation) or relate to the use of water for hydro-power generation.

As to their legal form, while in some jurisdictions (such as the western states of the United States of America in which the “prior appropriation” doctrine applies) water rights are still created by operation of law, water rights are mostly now created on the basis of a legal instrument issued by the state agency responsible for water resources management (the “water administration”). Such instruments are variously described in legislation as “licenses”, “permissions”, “authorizations”, “consents” and “concessions”.

The question arises here is are they property rights? Arguably they are. The fact that they gain their existence from an administrative or regulatory procedure does not by itself preclude them from being property rights. After all, intellectual property rights in the

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<sup>52</sup> For practical reasons water in streams and rivers has tended to play a more important role than water in lakes and ponds as far as water rights are concerned as the gradient of flowing water makes it easier and cheaper to abstract. Water from a lake or pond must generally be pumped as the surrounding land will usually be above the level of the water body’s surface

form of trademarks and patents are usually acquired through an administrative procedure. A full discussion of this matter is beyond the scope of this material. The key point to note is that although water rights are now generally created under public or administrative law on the basis of legal provisions, they have, as will be seen, many but not all of the attributes of private property rights, such as land tenure rights. Indeed without such attributes, a water rights system simply would not be able to function effectively.

## **REVIEW QUESTIONS**

1. Discuss the development of Water Law. Try to address its development in early documents and in the two prominent legal traditions.
2. Water law addresses different issues and problems related to water use and administration. Discuss the scope of water law in detail.
3. Throughout history, in many societies and legal traditions rights to use water and land have been closely inter-linked. Discuss.
4. Define and discuss land rights and water rights.
5. Define surface water and groundwater.
6. How does groundwater occur?
7. Discuss the reason for the water conflict of water use in the Middle East and the endeavors taken to solve the problems.
8. Briefly discuss the reasons for the conflict of water in the Nile Basin.
9. How do you see the application of 1959 agreement between Egypt and Sudan in light of the international water laws?

## **CHAPTER TWO: THEORIES OF WATER RIGHTS**

### **INTRODUCTION**

Demands on water resources continue to increase and so does the need for conservation and more efficient uses. So more focus should be given on how to allocate and use water resources in a manner which can meet the increasing demands of the world community. Countries and states in different jurisdictions may set up different ways of allocating water rights to citizens. Prominently, all legal systems follow either the riparian doctrine or the prior appropriating doctrine and some the hybrid one. In this chapter, students will be clear with the concept of water rights and their applications to different kinds of waters in different legal systems.

### **SECTION ONE: RIPARIAN DOCTRINE**

#### **2.1. RIPARIAN DOCTRINE**

Water rights have four important dimensions;

1. Acquisition: How do you acquire the water right?
2. Enjoyment: What restrictions are on the water rights?
3. Loss: Under what conditions are water rights extinguished?
4. Transfer: Where, when, and to whom can you transfer water rights?

The doctrine of riparian water right encompasses lots of theories to entertain all the above dimensions. So what are riparian rights?

The original definition of "riparian" was derived from its Latin origin, *ripa*, meaning "bank of a stream." But in law, the term "riparian" may refer to land different than what geographically extends away from the stream. Legal definitions may be as inclusive as all the land under the continuous title of the same landowner whose ownership begins beside the stream. This doctrine may have originated in early English water law, which was

borrowed in part from Roman Civil Law. The doctrine recognizes the right of a riparian owner to make reasonable use of the stream's flow, provided the water is used on riparian land. Riparian land is that which is contiguous to a stream or other body of surface water.

Land ownership accompanies the right of access to, and use of, the water, and this right is not lost by nonuse. Riparian rights are a form of real property, a part of land law. The rights are appurtenant to the land; that is, they are attached to it in the sense that a person who purchases or inherits riparian land automatically acquires the water right. Under this doctrine, the law gives equal rights to the use of water to owners (possessors) of land which borders upon or touches a stream or watercourse. A riparian right to the use of water exists whether the use is made or not; hence, a riparian owner can initiate a use at any time and insist that his rights be accommodated with other uses or that a share of the water be allotted to him.

The nature of the right is usufructuary - the riparian does not own the water, but owns only the right to use it on his riparian land and to have it flow to his land so that it may be used. Riparian law seems to be based upon an unspoken premise that if rights to use are restricted to those persons that have access to the water through the ownership of the banks, and if those persons will restrict their demands on the water to reasonable uses, there will be enough for all.

The principle on which early riparian theory rested was that, land owners with property neighboring to a stream or body of water, had natural rights which enabled them to share equally in the privilege and benefits of the fortuitous location. The use of stream water, hence, is restricted to owners of land which is riparian to the stream. The right of such owner is said to arise from ownership of the land. No water right existed without landownership was, therefore, the premise from which the riparian theory preceded. If it is made clear that such rights arose automatically with the ownership of riparian land, one must emphasize the old maxim-use does not create, nor disuse abrogate the right.<sup>53</sup> That

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<sup>53</sup> Bontu, Tokuma, *Water Law in Ethiopia*, AAU, (1987), Pp.21

means, Land ownership accompanies the right of access to, and use of, the water, and this right is not lost by nonuse.

As we can understand from the above paragraph, the right to use water is a property right which says only persons who own land that is in actual contact with inland waters such as streams, rivers or lakes are granted riparian rights. Swamps and overflow lands are excluded; only land that is snowed under at the average high tide is considered to be riparian land.

An owner or possessor of land that abuts a natural stream, river, pond, or lake is called a riparian owner or proprietor. Water laws give riparian owners certain rights to water that are incident to possession of the adjacent land.

Second, riparian owners may be entitled to the "reasonable use" of a watercourse. States that recognize the reasonable use doctrine found the natural flow doctrine too restrictive. During the industrial revolution of the nineteenth century, some U.S. courts applied the natural flow doctrine to prohibit riparian owners from detaining or diverting a watercourse for commercial development, such as manufacturing and milling, because such development impermissibly altered the water's original condition.

## **2.2. RIPARIAN RIGHTS TO NATURAL FLOW**

The natural flow concept is tied with the maxim applied since 1625 that water runs and ought to run, as it has been accustomed to run. According to this doctrine, the fundamental right of each riparian owner on a watercourse is to have the body of water maintained in the natural state not diminished quantitatively or impaired qualitatively. The stream must be returned to its original course on leaving riparian land. On the other hand, it is stated that the riparian user may exhaust the entire flow if necessary to satisfy his domestic needs. He is also allowed to make use of water for artificial or commercial uses as long as he doesn't make substantial changes in its natural conditions. Therefore, the riparian doctrine allowed the riparian proprietor to enjoy the usufructory right to the ordinary flow along or over his land, in its customary channel, undiminished in quantity and unimpaired in quality except as changed by act of God. That means riparian owners



have a right to enjoy the natural condition of a watercourse, undiminished in quantity or quality by other riparian owners. Every riparian owner enjoys this right to the same extent and degree, and each such owner maintains a qualified right to use the water for domestic purposes, such as drinking and bathing. However, this qualified right does not entitle riparian owners to transport water away from the land abutting the watercourse. Nor does it permit riparian owners to use the water for most irrigation projects or commercial enterprises. Sprinkling gardens and watering animals are normally considered permissible uses under the natural flow doctrine of riparian rights.

Theoretically, this natural flow guaranteed each riparian owner the same rights irrespective of claims made by other riparian as, for example, where a riparian took the whole flow for natural resources, i.e , those arising from the necessities of life, and left nothing in the stream for the lower riparian. In other words, when a riparian owner's natural right was impaired he had to show his injury.<sup>54</sup>

### **2.3. REASONABLE USE AND RIPARIAN RIGHTS**

The reasonable use test applied to the purpose of the use of riparian doctrine and it determines whether a riparian has received a fair share as, for example, where there are two riparians on opposite sides of a stream. Unlike the natural flow doctrine, which seeks to preserve water in its original condition, the reasonable use doctrine facilitates domestic and commercial endeavors that are carried out in a productive and reasonable manner. Here the rights of a riparian is qualified only by the correlative rights of other riparians made by certain paramount rights of the public, to use the water for boating, bathing, hunting, fishing and recreation.

When two riparian owners assert competing claims over the exercise of certain water rights, the doctrine tries to measure the economic value of the water rights to each owner. It also try to evaluate the prospective value to society that would result from a riparian owner's proposed use, as well as its probable costs. Lots of factors may be considered.

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<sup>54</sup> Clark, Robert, Emmat, *Water and Water Rights*, Vol.1, (1967), Indiana Pp.289-292

The test of reasonableness is also applied to pollution problems where riparians have conflicting claims to purity and utility. The test is also applicable where the flow of the stream has been changed by dams, flood prevention structures, or where the current is changed. The test of reasonableness has great flexibility but it is also difficult to apply within the framework of the two sets of variables, the “utility of the use” weighed against “gravity of the harm”. The reasonable-use test has been criticized on the ground that it does not in fact produce results which are different from those reached under natural flow theory.

## **2.4. EVOLUTION AND CURRENT PRACTICES OF RIPARIAN RIGHTS**

The origin of the riparian doctrine is the subject of sharp disagreement. Some believe it is a product of the civil law; others maintain it has its roots in the English common law. The disagreement exists not only between the prominent legal traditions, but also between countries. For instance, many American writers asserted that there are many precedents in France and England, but riparian right, as of them, is essentially an American doctrine. There is also a difference markedly as to when did the doctrine occur. One point of view is that the common law of watercourses is not the ancient result of the English law, but is a modern French doctrine received into English law only through the influence of two eminent American Jurists, Story and Kent. The other thesis rejects the conclusion that the common law has been riparian in character from early times, and that American law, even before Story and Kent, was Riparian.<sup>55</sup>

With all the disagreements, many writers and published works stated that in Roman times the law was that people could obtain temporary usufructuary rights for running water. These rights were independent of land ownership, and lasted as long as use continued.<sup>56</sup> In Medieval times, however, the common law of the day treated a stream as static, meaning landowners owned parts of rivers, with full accompanying rights. Land owners could also seek damages for loss of water diverted upstream. Non-land owners did not

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<sup>55</sup> Clark, Robbert, Emmet, *Water and Water Rights*, V-I, (1967), USA, Pp.60

<sup>56</sup> Guerin, K., *Property Rights and Environmental Policy: A New Zealand Perspective*, New Zealand, (2003).

have us rights, except by obtaining a prescription. Over time, rights evolved from being land based to use based, allowing land owners to hold enforceable rights. That means a reasonable use right has evolved.<sup>57</sup>

Riparian doctrine, becoming part of the common law of England, it is developed there. England developed a regular system of courts and lawyers only after the Norman Conquest. Prior to 1066, English society is largely decentralized, and disputes concerning water were apparently settled locally. The early English law of water rights resembled the modern prior appropriation system (See the next section on prior appropriation). One who has made use of a stream for long period of time was entitled to continue even if the use deprived others of the natural flow of the stream. In the 18<sup>th</sup> century, the England courts modified this doctrine of “ancient use” and substituted a test of “prior use”. Under this test, one could not use or divert water if the effect would be to deprive a prior user of water. The principle protected earlier mills from interference with their water supplies by newer mills.

The prior use test was short-lived. In the 1820s the English courts began to accept a “natural flow” under which every riparian land owner, including important industrial users, had an equal right to use water in the stream a duty not to diminish the quantity of water otherwise flowing to proprietors lower in the stream. The principle of natural flow theory remained a law in England for a few decades until the English judges incorporated the “reasonable use” theory into English riparian doctrine. Application of reasonable use principle modified the natural flow theory by allowing each riparian the right to make all reasonable uses of the waters so long as those uses did not interfere with the reasonable use of others.<sup>58</sup>

In the United States, there are two divergent systems for determining water rights. Riparian water rights are common in the East (all those East of Texas, except Mississippi) and prior appropriation water rights (developed in Colorado and California)

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<sup>57</sup> Ibid

<sup>58</sup> Getches, David, H., *Water Law in a Nut Shell*, 3<sup>rd</sup> ed., USA, 1997, Pp.18

are common in the West. Each state has its own variations on these basic principles, as informed by custom, culture, geography, legislation and case law. California law, for example, includes elements of both systems.

Currently, in the United States, all riparian states have adopted some form of the reasonable use doctrine, departing from early riparian doctrine. Though some courts continue to use “natural flow” language, most actually apply some variant of reasonable use doctrine.

## **2.5. RIPARIAN LAND AND WATER COURSES SUBJECT TO RIPARIAN RIGHTS**

This section defines what constitutes riparian land and the type of water bodies in which the owner of adjacent land may hold rights.

### **What are Riparian lands?**

We may say that all land is a riparian land due to the fact that all landmasses are surrounded by bodies of water. However, we cannot manage water rights in this way. For the sake of feasible administration of water rights and water resource management, there should be an artificially created concept of ownership (possession) of land that distinguish between riparian and non riparian. Only the owner of a parcel of land sharing a border with the water courses (touching the watercourse) has riparian rights. Riparian rights to use water attach only to riparian land and do not extend to any portion of the tract that is outside the immediate watershed of the water body.<sup>59</sup>

### **Watercourses Subject to Riparian Rights**

Only certain waters are subject to riparian rights. Riparian rights only attach to water in watercourses and not in diffuse surface waters. Diffuse surface waters are waters that are spread over the surface, whereas a watercourse has a definite natural channel and a bed

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<sup>59</sup> Getches, David, H., *Water Law in a Nut Shell*, 3<sup>rd</sup> ed., USA, (1997), Pp 23

with banks. Diffuse waters are generally storm or flood drainage, and these do not constitute riparian rights. Waters subject to riparian rights, therefore, are Streams, Lakes, Ponds, Springs and other water bodies. Streams are watercourses which flow in a reasonably definite natural channel. Different from streams, lakes and ponds are static by their nature. Lakes rest at depressions and they are reasonably permanent. Ponds are relatively smaller bodies of water with an abundance of aquatic life. A spring is a concentrated flow of water coming to the surface from underground. Whether the owner of land with a spring on it has riparian rights depends upon the source of the spring. The riparian doctrine usually applies to springs emanating from definite underground watercourses, landowners being entitled only to make reasonable use of the waters from the springs.

## **2.6. NATURE OF RIPARIAN RIGHTS**

Under the riparian doctrine rights attach to riparian land; i.e., land bordering on a natural stream or lake, by virtue of its location. The riparian landowner does not actually own the water body, but does own numerous rights in it. In this sense the owner of the riparian land has a significant property interest in the water body.

The owner's rights include

- The right to flow of the stream
- the right to make a reasonable use of the water body provided reasonable uses of other riparians are not injured
- the right of access to the water body
- the right to fish
- the right to wharf out
- the right to prevent erosion of the banks
- the right to purity of the water
- the right to claim title to the beds of non-navigable lakes and streams

The ownership of riparian land not only creates rights it also creates duties. Each riparian land owner has a duty to refrain from interfering with the rights of fellow riparians. Riparian rights are further limited by public rights to use the surface of certain waterways. At common law all persons had the right to travel any navigable river and the associated rights to hunt and fish along the river. Today public uses include not only navigation but recreation, and public rights have been extended to non-navigable waters in many states.

### **Preference for Natural Uses**

Riparian law distinguishes between natural uses and artificial uses. Natural uses include those that meet the domestic needs of the riparian landowner such as drinking, washing and watering small gardens or a few livestock. Under the natural flow rule a riparian could use water for natural (i.e. domestic) purposes even if it diminished the flow to the harm of lower riparian.

The reasonable use doctrine also reflects a preference of natural uses. In most countries, particularly in most states of the United States, any riparian can make natural uses of the water in the adjacent stream regardless of the consequences to lower riparian, while artificial uses such as for irrigation and industrial purposes are subject to reasonable restrictions.

There are practical reasons for the preference for natural uses. First, such uses are unlikely to consume enough water to injure lower riparian. Second, enforcement of any restriction on domestic uses is difficult. Finally, such uses as are necessary to sustain life are bound to be reasonable. Irrigation, industrial and mining uses are artificial uses. So all these activities are subject to reasonable use doctrine.

Any riparian doctrine has the following characteristics:<sup>60</sup>

- Riparian rights are of equal priority

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<sup>60</sup> Bontu, Tokuma, *Water Law in Ethiopia*, (Unpublished), AAU, (1987)

- Ownership of land which is riparian to a stream confers rights to the use of waters of this stream
- An owner of such land may use the water only on the riparian tract of land and may not use it himself or sell it to others (it cannot be transferred)
- Between themselves riparian owners, on a given stream, may be subject to one of the two principle allocation theories; natural flow and reasonable use. Natural flow and reasonable use are two separate and distinct concepts recognized under the riparian doctrine relating to the right to use water.
- The Right is not quantified, rather it extends to the amount of water which can be reasonably and beneficially used on the riparian parcel
- Riparian rights are correlative, during times of water shortage; the riparian proprietors share the shortage
- Water may be used only upon that portion of the riparian parcel which is within the watershed of the water source
- The riparian right does not extend to seasonal storage of water
- The riparian rights remains with the land when riparian lands are sold
- A riparian right is not lost by non-us

## **2.7. LIMITS OF RIPARIAN RIGHTS**

### **i. Reasonable Use Limitation**

All riparian states follow some variant of the reasonable use doctrine. The reasonable use rule allows riparian landowners to use adjacent water if the use does not interfere with the reasonable uses of other riparians. Reasonableness thus is determined in comparison with the uses of other riparians. Riparian countries may have specific rules to deal with specific problems. They include preferences for some type of uses over others and rules governing municipal uses.<sup>61</sup>

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<sup>61</sup> Getches, David, H., *Water Law in a Nut Shell*, 3<sup>rd</sup> ed., USA, (1997), Pp 47

Under theoretical limits of the natural flow rule, each riparian had right to stream flow undiminished in quality and quantity and the right to make only limited uses of the water as it flowed past. The rule was empirical because a riparian landowner could obtain an injunction against any person who depleted the water flowing past the land, even if the landowner was not injured. Thus reasonable use principles prevailed.

Particularly in United States, disputes between riparians will be determined by comparing the reasonableness of the riparian with the reasonableness of the uses of other riparians. There is an analytical framework which should be followed by courts to decide over such questions. The determination of the reasonableness of a use of water depends upon a consideration of the interests of the riparian proprietor making the use, of any riparian proprietor harmed by it and of society as a whole. Factors that affect the determination include the following:

- the purpose of the use
- the suitability of the use to the watercourse or lake
- the economic value of the use
- the extent and amount of the harm it causes
- the practicality of avoiding the harm by adjusting the use or method of use of one proprietor or the other
- the practicality of adjusting the quantity of water used by each proprietor
- the social value of the use
- the protection of existing values of water uses, land, investments and enterprises;  
and
- the justice of requiring the user causing harm to bear the loss

## **ii. Limitations to non-riparian uses**

Most countries laws restrict use of water to riparian land. As it is stated before, riparian lands are only the portions of parcels that abut a watercourse that are within the same watershed. Because non-riparian uses are unreasonable per se, they are adverse to the



other riparian. A non-riparian use that is relatively more valuable to society than conflicting riparian uses presumably should be allowed.

## **2.8. LOSSES OF RIPARIAN RIGHTS**

Riparian water rights cannot be lost through non-use and are indefinite in duration. Therefore, a riparian landowner does not lose his/her riparian right by not putting the water to use. This is because, riparian rights attach only to riparian land, it follows that the owner of a riparian parcel also owns riparian rights in the adjacent water body whether those rights are exercised or not. Use cannot create the right and disuse cannot destroy it. Riparian rights can, however, be lost through prescription. Prescription, mostly found in common law legal traditions, is a process of involuntary transfer from one party to another. Under prescription, a party making open use of water for the proper time period, gains title to the water right superior to that of the original holder.

The second doctrine in water appropriation is the doctrine of Prior-Appropriation. So in the next section we will make detailed discussions on water rights acquired through prior appropriation.

## **SECTION TWO: PRIOR-APPROPRIATION DOCTRINE**

### **2.9. THE DOCTRINE OF PRIOR APPROPRIATION**

The prior appropriation, or “first in time-first in right”, developed in the Western United States in response to the scarcity of water in the region, i.e., to serve the practical demands of nineteenth century water users in the Western United States. The doctrine evolved during the California gold rush when miners in California needed to divert water from the stream to locations where it was needed to process ore. Customs and principles relating to water diversions developed in the mining camps in 1848, and disputes were resolved by simple priority rule. The main features of this doctrine states that priority of rights must be based upon actual use. The California Supreme court recognized the

doctrine in 1855. The court held that the parties were trespassers on the public domain and could not have riparian rights, but that the customs of the miners should prevail.<sup>62</sup>

Though the legal details about the theory of prior appropriation vary from country to country; however, the general principle is that water rights are unconnected to land ownership, as in riparian doctrine, and can be sold or mortgaged like other property. The first person to use a quantity of water from a water source for a beneficial use has the right to continue to use that quantity of water for that purpose. Subsequent users can use the remaining water for their own beneficial purposes provided that they do not impinge on the rights of previous users. Therefore, Priority of rights is the distinguishing feature of appropriation doctrine.

Unlike a riparian right, an appropriative right exists without regard to the relationship between the land and water. An appropriative right is generally based upon physical control and beneficial use of the water. These rights are entitlements to a specific amount of water, for a specified use, at a specific location with a definite date of priority. An appropriative right depends upon continued use of the water and may be lost through non use. Different from riparian rights, these rights can generally be sold or transferred, and long-term storage is not only permissible but common. Another feature of an appropriative right is that the water may be used in connection of non-riparian as well as riparian lands. The water right as shown earlier is separate from rights in land although it may be declared to be appurtenant to specific lands. However, it may be served from particular land. The water right is generally subject to transfer to a different place and to a new or different use.

The appropriation system creates two kinds of users; Senior and Junior Appropriators. A senior appropriator is a user whose appropriation is prior to all others. The rights that a senior appropriator possesses are impressive. The amount of water that a senior appropriator is authorized to use is dependent upon whether a particular state uses a

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<sup>62</sup> Robert Emmet Clark, *Water and water rights*, Indiana, (1967), PP. 293

permit system. In states without a permit system, the senior appropriator is entitled to a fixed amount of water equal to the amount that was originally withdrawn when the use first became vested. Some countries have established a permit system by which the senior appropriator is entitled to the amount of water specified by the permit. In these states, this amount is derived through a mathematical formula that incorporates many of the variables that determine the amount of water needed. These variables include water quantity limitations, conditions of transmissions, location of land, degree of slope, depth and character of soil, length of growing season, nature of crops and climate. The holder of such permit is perpetually entitled to the right to use this water allotment as long as the water is used beneficially.<sup>63</sup> Appropriators who enter into the inappropriate supply of water after the senior appropriators are known as junior appropriators. Senior appropriators who want to withdraw more water than their vested amount are considered to be junior appropriator for that additional withdrawal.

In this doctrine, priority is given to those with older water rights. Here the question is how can we establish older water rights? The right of individuals to use water under the prior appropriation system is based on application of a quantity of water to a beneficial use. Therefore, the date of the appropriation determines the user's priority to use water, with the earliest user having a superior right. If water is insufficient to meet all needs, those early in time of appropriation (senior appropriators) will obtain all of their allocated water; those who appropriated later (junior appropriators) may receive only some, or none, of the water to which they have rights.

There are four essential elements of the prior appropriation doctrine: intent, diversion, beneficial use and priority of water rights. That means, the cornerstone of the doctrine of prior appropriation is that a valid claim for water rights must be based on evidence of intent to withdraw water, the construction of a diversion, and putting the water to beneficial use. Let us discuss them one by one.

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<sup>63</sup> Andrew, A. Dzurik & David A., Theriaque, *Water Resource Planning*, London, pp.29

**Intent:** The Doctrine of Prior Appropriation entails that the acquisition of water requires that the appropriator demonstrate an intent to appropriate the water. Thus, one who diverts water away from its normal flow pattern in order to prevent flood damages is not an appropriator. Historically, intent was indicated by on-the-ground acts such as site surveys, land clearing, preparation of diversion points, and most importantly, posting of notice. Today, however, intent is generally indicated by the application of a permit. The appropriator is expected to demonstrate his/her intent to appropriate water and make beneficial use by filing of an application to appropriate and adherence to the requirements of the permit system.<sup>64</sup>

**Diversion:** Another essential component of a prior appropriation water right is diversion. A common method of diversion is to build a dam across a stream, directing water into a channel or ditch. Other methods of diverting water include reservoir, flumes, pumps, and even water wheels. However, some argue that physical diversion of water has been diminished as lots of states have been implemented various instream flow programs. A point of diversion, however, is still an essential element of a consumptive use water right. The diversion requirement historically provided notice to present and prospective appropriators that water had been appropriated. The capacity of diversion works could be used to define the quantity of water appropriated. These functions of the requirement are not important where there is a permitting system. Thus, this requirement of diversion is clear particularly before the introduction of permit system. During that time an appropriation was made by taking some physical act of reducing the water to the dominion and control of the appropriator.

**Beneficial Use:** Beneficial use is perhaps the most important characteristic in defining a prior appropriation water right. It is used to determine whether a certain use of water will be recognized and protected by law against later appropriations. The justification of beneficial use criteria is to prevent waste of water, which is an important consideration in areas of water shortage. Water rights can be lost for nonuse, as articulated "use it or lose it." Therefore, countries must determine what uses of water are acceptable. Countries

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<sup>64</sup> Getches, David, H., *Water Law in a Nut Shell*, 3<sup>rd</sup> ed., USA, (1997).

which follow prior appropriation consider domestic, municipal, agricultural, and industrial uses to be beneficial uses. Recognized types of beneficial uses may be defined and elaborated by countries laws.

**Priority of Water Rights:** The final essential feature of the prior appropriation doctrine is the priority of a water right. As described above, the first appropriator on a water source has the right to use all the water in the system necessary to fulfill his water right. A junior appropriator cannot use water to satisfy his water right if it will injure the senior appropriator. Senior appropriators, however, cannot change any component of the water right if it will injure a junior appropriator. Therefore, if a senior wants to change his place of use and this change will adversely affect a junior's interest, the junior can stop the senior from changing the water right. Any change of a water right (a change in time of use, place of use, purpose of use, point of diversion, etc) cannot cause harm to another water uses, regardless of priority.

## **2.10. WATERS SUBJECT TO APPROPRIATION**

Water resources subject to appropriations differ from countries to countries and from states to states. Some countries make lakes and streams subject to the right while others not. However, taking usual instances, we can make some points regarding the subjects of the right. Surface waters, for they are public waters, owned by the state and held in trust for the public and are open to appropriation. Appropriation doctrine also applies in most countries to lakes and streams. Diffused surface is not generally subject to appropriation. Ground water resources generally are not subject to appropriation. Generally, waters subject to appropriation can be classified into two:

1. Watercourses- which include Streams, Lakes, Ponds and Springs and
2. Water Made Available by Human Effort (in some instances)- Waters grouped here are Foreign (imported) waters and Salvaged waters. Imported or foreign water is not part of the stream and thus is not subject to appropriation. One an importer ceases using imported waters, they are similar to abandoned personally. They can be taken and used

by others. Salvaged waters are distinguished from foreign waters. The latter would not naturally be in a stream but for human effort. Salvaged water is recovered from existing uses or losses within the watershed. For instance, if seepage or evaporative losses are prevented by human effort, fuller use could be made of it. But it is not new to the stream in the sense that imported water is. Thus, salvaged water is subject to appropriation.

In addition to these, if groundwater is hydrologically connected with the stream, it is subject to appropriation as part of the stream.

## **2.11. TRANSFER AND LOSS OF APPROPRIATIVE WATER RIGHTS**

As we have discussed earlier, the doctrine of water rights states acquisition, enjoyment, loss and transfer of water rights. In the above paragraphs we have seen methods of acquisition of water rights and how can the appropriator enjoy those rights in prior appropriation doctrine.

Regarding transferability of water rights, generally speaking, appropriative water rights are transferable property. There are, however, three major requirements which inhibit the transfer of an appropriative water right:

1. Though an appropriative right does not depend on land ownership, some countries do require that the water is appurtenant to the land on which it is used. So in time of transfer, the rules prohibiting the severance of water right from the land on which the water is appurtenant should be considered,
2. Showing that there will be no injury to other appropriators; and
3. Establishing the extent of the water right for transfer

The traditional means of losing appropriative water rights are non-use or abandonment. Loss through abandonment is a consequence of the essential role that “use” plays in the definition of the right. The right does not come into existence without application of

water to beneficial use and cannot continue to exist without the continuance of beneficial use. Non-use in itself, however, does not always does not always constitute abandonment. A finding of abandonment often requires a determination of an intent to relinquish the water right. In other words, a appropriative right can be lost through non-use when intent to abandon can be demonstrated, or when the water right has not been used for a specified number of years.

## **REVIEW QUESTIONS**

1. Discuss the relationship between riparian rights and riparian land.
2. Natural flow and reasonable use are two separate and distinct concepts recognized under the riparian doctrine relating to the right to use water. Discuss.
3. Discuss riparian rights with reasonable use.
4. State and discuss types of water resources subject to riparian rights.
5. Discuss the limits on riparian rights.
6. What does prior appropriation doctrine mean?
7. Discuss the difference between riparian rights and prior appropriation doctrine.
8. The concept of prior appropriation was developed by the California miners. Discuss the development of prior appropriation doctrine briefly.
9. .What are the advantages of the prior appropriation system? What are the disadvantages?
10. What are the advantages of raiparianism? What are the disadvantages?
11. Which System of water rights is use in Ethiopia for surface water? For groundwater?



## CHAPTER THREE:INTERNATIONAL WATER RESOURCE LAW

### INTRODUCTION

Water resources, whether atmospheric, surface or underground, are not respectful of political boundaries. An appreciation of this fact will help us understand the tangentially international character of water and the need for adequate rules to regulate water use, conservation and management at the international level. International River law is one of the most unsettled areas of international law; it is an area where there are few rules of general applicability or validity. Whatever rules there are on the subject are contained largely in bilateral or in some cases multilateral river treaties, i.e., the Barcelona Convention of 1921 regarding navigation of international rivers which in fact are regional in nature. Rules regarding the use of international rivers for non-navigational purposes are relatively undeveloped. The Helsinki Rules on the Uses of the Waters of International Rivers, adopted by the International Law Association in 1966, have yet to be accepted by States. The same is true of the Institute of International Law Resolution on the Utilization of Non-Maritime International waters, adopted in 1961

Therefore, this chapter will discuss the principles and controversies in relation to international water resources. Particular emphasis will be made on laws and practices of Transboundary Rivers like Blue Nile (Abay).

### 3.1. GENERAL OVERVIEW ON INTERNATIONAL WATER RESOURCE LAW<sup>65</sup>

Due to its fluidity and the mobility of its nature, water cannot always be viewed in a purely national context. In fact, it may happen that the bed of a river or lake serving as the boundary between two or more states will shift as a result of erosion or avulsion, with consequences for the exact determination of the international boundary. Or it may be that

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<sup>65</sup> Dante A. Caponera, *Principles of Water Law and Administration*, National and International, (1992), Pp184

the use by one state of water belonging to an international basin jeopardizes the use that another state is making or may wish to make of the same water within its own territory.

For example, a dam built in the territory of one state for irrigation or power generation purposes may affect the natural flow of the river downstream on the other side of the border, or, conversely, may flood the territory of an upstream neighboring state. An upstream state may render the waters of a river unsuitable for certain uses in the territory of a downstream state by discharging pollutants. Many other examples could be cited.

Difficulties may arise not only on the main course of the river or around the banks of a lake, but also on the whole system of tributaries in the catchments area or international drainage basin concerned. The substantial unity of river/lake systems of a drainage basin is due to the fact that they are nearly always a component element of one and the same hydrologic cycle, and any action taken by a state which modifies the natural water regime within its territory, either quantitatively or qualitatively, will have repercussions on the waters of the same basin located in the territory of another state sharing the same water.

Likewise, the same negative repercussions may arise in the case of omission of any action by one state concerning the waters of an international basin which, if taken, could have alleviated or prevented an injury to the waters or other interests in the territory of another state; the best examples are those relating to the duty to warn about the arrival of floods or about other accidental events.

In the case of international ground waters, i.e., those waters extending across and below the territory of two or more states, the problem is more complex. Unlike surface waters, ground waters are not readily visible and it is difficult to determine without a specialized survey their exact location and characteristics. Underground water tables lie at different depths and may have an extension which does not respect the political demarcation lines and, in addition, may reach well inside the territory of different states. The use by any state of water belonging to one or another water table should be determined keeping in mind the international character of the underground basin.

At the beginning of its development, the law relating to international water resources, as it shall be defined below, was concerned mainly with the question of boundary demarcation between sovereign states; the regulation of water resources for domestic purposes, irrigation, timber floating, fishing, and other traditional water uses were limited to the national law of each state, or to bilateral agreements between bordering states. Only navigation on the main courses of the international waterways was the object of consideration at the international level, in view of the commercial interests involved. Thus, it is with reference to navigation that the law of international rivers and lakes developed. From the beginning of the twentieth century, new forms of water utilization have evolved on 'international' rivers, particularly for hydropower generation and irrigation; new international treaties have been concluded for the exploitation of water resources common to two more states. More recently, other treaties have seen the light for the prevention of the harmful effects of water, such as those caused by erosion or floods or for protection from natural disasters. Even more recently, the protection of water from pollution has become of major concern, and a number of treaties have been concluded for this purpose. Finally, the most recent world-wide concern for the protection of the environment has caused international action in the preparation of treaties for the protection of water resources in all of its forms and of other elements of the environment: air, space, oceans, land, forests and other natural resources directly linked with water. As a consequence, it may be said that the evolution of international water resources law has closely followed the economic, technical and social development of nations.

### **3.2. DEFINITIONS AND HISTORICAL REVIEW**

Simply stated, international water resources law, or international river law to the exclusion of the law of the sea, is that branch of international public law governing the relations among states, or between states and international organizations, in water resources matters.

Many definitions of international water resources, or international rivers or waterways, have been adopted by state practice and proposed by learned writings in the past, following the progress in the understanding of the nature and potentiality of inland waters for many uses and the damage that such waters could cause.

It is important to point out that the expression 'international river' includes two aspects: one geographic and the other legal.

According to classical theories, from a geographical point of view a river is 'international' if in the navigable portion of its course it is of interest to two or more states. From a legal standpoint, always according to international law, a river is 'international' when a riparian state ceases to have on the same the totality of the powers or competences which normally belong to a state on the navigable portion of a river located within its own territory or under its jurisdiction.

Generally, a river which is geographically international is also legally international; but it may happen that certain rivers are geographically national and at the same time are subject to an international legal regime. Thus, a river geographically national could not be international from a legal standpoint if it were not navigable.

Until recently, the theories of international water law have been unanimous in recognizing that a river may be international in two ways: either because it separates two or more states serving as a boundary, and in this case it is called contiguous international river, or because it crosses successively the territory of two or more states, of which some are called upstream and other downstream states, and in this case the international river is called successive.

The evolution of the expressions international 'river,' 'watercourse,' 'waterway,' 'river system' and 'drainage basin' shall be briefly indicated here below.

In the late eighteenth century, watercourses common to several states were referred to as *common rivers or watercourses*.<sup>66</sup> During the nineteenth century, the same were frequently described as international rivers or lakes. An expression enshrined in Article 108 of the Final Act of the Congress of Vienna of 1815.<sup>67</sup> Such expression refers to navigable waterways of concern to two or more states, either successive or contiguous, or to lakes crossed by a frontier or surrounded by several riparian states ('international' or 'frontier lakes'). The Act of Berlin of 1885<sup>4</sup> also referred to the rivers Congo and Niger as international rivers.

The peace treaties following the First World War (1919), however, used the expression *rivers declared international*. This meant that national waterways crossing the territories of the defeated powers could be considered international waterways and consequently subjected to freedom of navigation by the winning powers.

Another expression used in the Barcelona Convention of 1921 namely *waterway of international concern*, reflected the need for extending the principle of freedom of navigation to all flowing waters, whether international or national, provided, however, that the states concerned agreed thereon. This showed the growing interest of the international community in the freedom of communication.

Later on, the expression international rivers or lakes system acquired relevance in international practice, making it possible to extend the international rules to tributaries, canals and secondary courses as well to main streams. The expression was broad enough to include lakes and lake sources connected to main streams, though only concerning surface water. Underground waters were not covered.<sup>68</sup>

By the end of the 1950's, mainly as a result of studies carried out by the International Law Association (ILA), it was proposed to adopt the expression international drainage

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<sup>66</sup> Reichdeputations-Hauptschluss of 25 February, 1903

<sup>67</sup> Text in: Herstlet, E., *Commercial Treaties, a Collection of Treaties and Conventions between Great Britain and Foreign Powers*, Vol. I.

<sup>68</sup> Caponeram D.A., *The Law of International water Resource*, :Legislative Study, (1980), Pp. 5

basin. A precise definition was given by Article 2 of the Helsinki Rules adopted by the ILA in 1966, whereby. '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.'<sup>69</sup> Such concept, which is wider than those adopted in the past, connotes the entire system of main streams, tributaries and lakes, including ground waters.

The multiple and intensive uses to which water resources can be put, together with the rapid development of hydraulic engineering techniques and the latest economic theories of integrated river basin development, have necessitated the revision of the traditional criterion of 'navigability' of a river to designate it as international.

It has been realized that what is of international concern is not only the main course of a river, but also all the waters belonging to the same river basin or system, and that any human interference with the waters located in one part of a basin or system may affect waters located in another part of it, directly or indirectly.

If a state ignores this situation and behaves as if it had full sovereign jurisdiction over the waters located within its territory, disputes with neighboring states may ensue. The potential for disputes increases as the importance of water for the satisfaction of economic and social needs grows.<sup>70</sup>

The 'international drainage basin' concept is based on the consideration that the unity of the physical fact corresponds to a community of interests. This entails the need for avoiding a unilateral regulation by the individual states participating in the use of water resources belonging to the same international drainage basin, and the resulting fragmentary legal regime of the said water resources. Thus, the concept seems to offer a rational basis for planning the development of water resources, as within the basin all natural resources (land, water, fauna, flora) can be quantified.

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<sup>69</sup> Text in: *The International Law association*, Report of the fifty-second Conference, Helsinki, (1966).

<sup>70</sup> Pufendorf, S., Book 3, Pp. 233

The notion of 'international drainage basin' has given rise to perplexities and doubts by some states. For this reason the International Law Commission of the United Nations (ILC), charged with the study of the subject in order to prepare a codification thereof, has maintained the expression 'international watercourses,' thereby designating rivers, lakes, glaciers and underground waters, and has adopted in addition the new concepts of 'international watercourse system,' constituting, by virtue of their physical relationship a unitary whole, and that of 'shared natural resource.'

These two new expressions underline the substantial natural homogeneity of international water resources and the necessary interdependence of the states participating in their use. The reference to the 'system' allows to define the international character of the relations between states, not only on the basis of a physical circumstance, i.e., on the fact that the common river or lake is located in the territory of two or more states, but also on the circumstance that the use by one state of international water resources might have repercussions in the territory of another state or might limit the use the latter may wish to make of the same resources. It is therefore to the interdependence in the use of shared water resources that the attention of the lawyer is drawn.

### **3.3. SOURCES OF INTERNATIONAL WATER RESOURCE LAW**

In order to find the legal position of a particular situation or issue which arises in connection with the management of international water resources, it is necessary to know the sources from which the legal position of such a situation or issue derives. As shall be seen, these sources are various. They are indicated by Article 38 of the Statute of the International Court of Justice, which is the world court where international disputes in general, including water disputes, are handled. This article indicates the basis on which the Court shall decide the cases submitted to it. In the course of its proceedings and according to Article 38 of its Statute, the Court shall apply:

- ‘a) international conventions, whether general or particular, establishing rules expressly recognized by the contesting States;

- b) International customs, as evidence of a general practice as accepted as law; .
- c) the general principles of law recognized by civilized nations; .
- d) ... judicial decisions and the teachings of the most highly qualified publicists of the various nations, as subsidiary means for the determination of rules of law.’

It is to be noted that, as a consequence of the time when the Statutes of the International Court of Justice were drafted (just after the Second World War), Article 38:

- (i) Speaks about principles of law recognized 'by civilized nations; 'the expression 'civilized nations' can no longer be considered valid;
- (ii) does not consider the law-making activities of some subsequently created international bodies such as the European Economic Community (EEC) or those of other similar institutions possessing supranational powers, such as several other regional organizations (the Senegal Basin Authority, the Kagera Basin Authority, the Great Lakes Community of Central Africa, etc.);
- (iii) does not consider the procedures constituting a quasi-legislative activity of international organizations such as the Security Council of the United Nations, the United Nations General Assembly, etc., and the 'final acts' of *ad-hoc* international intergovernmental conferences, such as the Stockholm Conference of 1972 and the UN Water Conference of Mar del Plata of 1977.

### **3.3.1. International Conventions**

The expression 'international convention' corresponds to the terms: treaty, agreement, protocol, pact, charter, compromise, exchange of notes, final act, or other international instruments. International law does not prescribe any specific form for conventions or agreements. However, international agreements are generally written and constitute the most common procedure for creating rules of conduct and binding obligations between sovereign states. According to Article 2 of the Convention on the Law of Treaties, 14 the term 'treaty' means: 'an international agreement concluded between States in written form and governed by international law, whether embodied in a single instrument or in two or more related instruments and whatever its particular designation.'



International agreements generally take one of the following forms:

- (i) agreements open to signature and ratification by the contracting parties;
- (ii) agreements not subject to ratification (' in simplified form '), which enter into force upon signature or upon a supervening given set of circumstances;
- (iii) exchanges of notes, which enter into force on a specified date or upon the actual exchange taking place, i.e., upon receipt and confirmation by one state of the note transmitted by another state; and
- (iv). Instruments of a less formal nature

Article 38 of the Statute of ICJ distinguishes between general and particular international conventions.

### **General Conventions**

General conventions are multilateral agreements codifying rules of conduct in a given sector. They may be of universal or regional application. Among the general conventions of Universal application concerning international water resources, the following may be mentioned, the main content of which shall be indicated under each relevant subject:

- i. General Treaty of Vienna, 9 June, 1815, which internationalized the rivers of Europe<sup>71</sup>
- ii. Convention and Statute on the Regime of Navigable Waterways of International concern, Barcelona, 20 April, 1921, the purpose of which is to facilitate navigation.
- iii. Convention relating to the Development of Haydraulic Power affecting more than one State, Geneva, 9 December, 1923, which aimed at facilitating the transmission of of electric power among states
- iv. Convention on Transit of Land-Locked States, New York, 8 July, 1965. The purpose of which was to facilitate the transit of goods of land-locked states on the sea, thus recognizing the right of such states to free access to the sea.

The following are examples of conventions of regional applications

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<sup>71</sup> Caponera, *The Law of International Water Resources*, (1981), Pp. 173

- i. African Convention on the Conservation of Nature and Natural Resources, Algiers, 15 September 1968.
- ii. Act of Asuncion on the Use of of International Rivers (Argentina, Bolivia, Brazil, Paraguay, Uruguay), 3 June 1971.
- iii. European Agreement on the Restriction of the Use of Certain Detergents in Washing and Cleaning Products, Strasbourg, 16 September 1968.

### **Particular Conventions**

Particular conventions are those tending to regulate a specific aspect of international water resource management. They may be multilateral or bilateral. From the standpoint of form and substance, multilateral agreements may be divided into the following groups:

- i. agreements relating to the general development of an international water resource (river, basin, aquafire)
- ii. agreements relating to a specific utilization or development of an international water resource or basin;
- iii. agreements resulting from cooperation between States within the framework of institutions established for the purpose of utilizing international water resources;
- iv. agreements concerning technical and financial assistance between donors (States, international organizations or institutions) on the one side, and riparian States on the other, for the development of international water resources. '

Most of the existing agreements, however, are bilateral. Given the variety of possible forms, it is difficult to undertake an exhaustive classification. A United Nations study classifies them as follows:<sup>72</sup>

- (i) Framework agreements, i.e., agreements usually concluded in respect of contiguous watercourses, setting up a joint commission designed to facilitate the exchange of information and consultation;

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<sup>72</sup> Text in: *International Law Reports*, (1957), 101

(ii) Agreements for the integrated management of an international basin or water resource;

(iii) Agreements for the study of potential uses and development of an international basin or water resource;

(iv) Agreements for a specific use (navigation, timber floating, fishing, irrigation, hydro-power production, etc.) of an international basin or water resource;

(v). Agreements for the control of harmful effects of water (floods, erosion, salinization) of an international basin or water resource;

(vi). Agreements for the control of water quality (pollution, contamination) and environmental protection of international waters;

(vii) Technical and/or financial assistance agreements between donor States or international organizations and basin States;

(viii) Agreements calling for the harmonization of national laws governing water resources with a view to avoiding discrimination against users of different nationalities. Normally, in such cases, municipal legislation, i.e., the national law, is introduced and referred to as 'parallel' legislation, and the preparatory work is often done by a joint institution appointed by the States concerned.

### **3.3.2. International Customary Water Law**

International custom is mentioned by Article 38 of the Statute of the International Court of Justice as the second source of international law. It is generally recognized that international custom is constituted by:

- (i) The constant and uniform conduct by states (*inveterata consuetudo - usus*), together with

- (ii) Their conviction as to the obligatory nature of such conduct as being in conformity with a juridical norm (*opinio juris sive necessitatis*).

The two elements, just mentioned, have undergone criticism by some authors who have stated that *opinio juris* may conceivably not be one of necessity, and the time taken for custom to establish itself may not necessarily be a matter of centuries; in fact, a number of international rules have come into being in a very short period of time.

International custom may be general, i.e., binding upon all states, or particular, binding only upon a given group of states.

The identification of a rule of customary law of international validity governing international water resources is difficult. International state practice (conventions concluded between states, declarations of principle of international organizations, international judicial decisions and the most recent learned opinion) must be analyzed in order to assess the existence of a conformity in the states' conduct. Such conformity may be taken as a proof of the existence of a general rule of conduct.

In this connection, there is a clear affirmation of the general customary rule whereby the rights of states are limited in relation to any shared resource. The Permanent Court of International Justice, in its decision concerning the territorial competence of the River Oder Commission, recognized this rule by noting that 'when consideration is given to the manner in which States have regarded the concrete situations arising out of the fact that a single waterway traverses or separates the territory of more than one State, and the possibility of fulfilling the requirements of justice and the considerations of utility which this fact places in relief, it is at once seen that a solution of the problem has been sought not in the idea of a right of passage in favor of upstream States, but in that of the community of interests of the riparian States. This community of interests in a navigable river becomes the basis of a common legal right, the essential features of which are the perfect equality of all riparian States in the uses of the whole course of the river and the

exclusion of any preferential privilege of any of the riparian States in relation to the others. '

International custom has provided some of the most important rules for the use of shared water resources. The following may be mentioned:

- (i) Duty to cooperate and to negotiate with a genuine intention of reaching an agreement;
- (ii) Prohibition of management practices likely to cause substantial and lasting injury to other states;
- (iii) Duty of prior consultation;
- (iv) Equitable utilization of shared water resources.<sup>73</sup>

### **3.3.3. General Principles of International Water Resources Law**

The 'general principles of law' represent the third source of international law, to be resorted to in the absence of international conventions or customary rules. An analysis of general principles helps in the task of ascertaining whether or not international rules exist. Such a reconstruction has been made through judicial decisions and in learned writings. Which, in their attempt to affirm limitations to the sovereignty of states sharing common water resources, have been mainly based on certain principles outlined below:

- (i) The principle that there shall be no abuse of rights (*sic utere tuo ut alienum non laedas*).

Whenever a state makes use of its own territory in an arbitrary fashion thereby causing unjustified loss or damage in another state, such action should be deemed to be contrary to international law. Presently, almost all national legislations recognize this principle. Differences arise, however, as to the degree and scope of the rights acknowledged, and

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<sup>73</sup> Text in: *International Law Association*, Report of the Forty-Seventh Conference, Dubrovnik, London, (1957), pp.241

the degree to which abuses are prohibited. The laws of most countries prohibit intentional or culpable harm to others in the exercise of their rights.

(ii) The principle that co-basin states shall act in a way consonant with good neighborly relations.

Under the good-neighborliness principle, no state may engage on its own territory in activities likely to have negative repercussions on the territory of another state. Territorial propinquity obviously facilitates greater collaboration.

(iii) The principle that the national water laws of the basin states should be applied harmoniously in mutual disputes.<sup>74</sup> Almost all national water laws provide for a balancing of rights between competing users. Such principle informs, though without any marked determining force, the criteria of equitable apportionment and use of waters among the states concerned.

#### **3.3.4. Resolutions of Intergovernmental Organizations**

Article 38 of the Statute of the International Court of Justice, having been adopted prior to the emergence of the phenomenon, takes no account of the resolutions of intergovernmental organizations containing 'declarations of principles' of conduct in the relations between states.

Since then, many resolutions have been adopted by the United Nations General Assembly in the field of natural resources, of which water resources are a component.

Similarly, declarations and recommendations of major significance have been adopted at the conclusion of intergovernmental conferences convened by the United Nations General Assembly. Among these, the following may be cited:

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<sup>74</sup> Berber, F.J.A., Report on Food Control of the International Law Association, New York, 1972.

(i) Declarations of the United Nations Conference on the Human Environment, Stockholm, 16 June, 1972.<sup>75</sup>

(ii) Declarations and Resolutions of the United Nations Water Conference, Mar del Plata, March, 1977.<sup>76</sup>

(iii) Declarations of the United Nations Conference on Desertification, Nairobi, 9 September, 1977.<sup>77</sup>

Finally, a great number of resolutions, recommendations and declarations have been adopted by the United Nations Economic and Social Council, the Economic Commission for Europe and, outside the United Nations system, by the Organization for Economic Cooperation and Development (OECD), by the Organization of the American States (OAS), by the Council of Europe, and by the Asian-African Legal Consultative Committee.

The legal value to be given to these resolutions, recommendations, etc., especially where 'declarations of principles' are concerned, given the universal vocation of the United Nations, has been the object of lengthy doctrinal discussions. Neither actual state practice nor the preparatory works leading to them warrant an affirmative reply as to their legal status as full-fledged legislative or quasi-legislative sources of international law. However, these resolutions, recommendations and declarations have considerably influenced the processes of formation of general rules of international law. Likewise, 'they have had the function of crystallizing opinions and state practice whence international customary rules take their origin and develop.

### **3.3.5. Judicial Decisions**

Water law principles regulating the relations among co-basin states have also been developed through judicial decisions by courts and arbitral tribunals. Judicial decisions may be classified into:

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<sup>75</sup> International Law Association, Helsinki Rules, Article 9

<sup>76</sup> European Conference on Water Pollution, UN Doc. E/ECE/311,4

<sup>77</sup> See the Trail-Smelter Dispute in the Canadian Yearbook of International Law, 1973, PP.213

- i. judgments and advisory opinions of the international courts;
- ii. awards rendered by arbitral tribunals; and
- iii. Decisions of national tribunals.

### **i. Decisions of International Courts**

The expression 'judicial decisions' contained in Article 38 of the Statute of the International Court of Justice covers, *inter alia*, the decisions of the International Court of Justice and those of its predecessor, the Permanent Court of International Justice.

However, Article 59 of the Statute of the International Court of Justice provides that 'the decision of the Court has no binding force except between the parties and in respect of that particular case.' Thus, the decisions of international tribunals have no force of precedent.

In spite of this, the Court's decisions not only expressly recognize the evolution of international law when determining the law to apply in a specific case, but, through the interpretation of the international law in force and its application, they clarify that law, thereby paving the way for its progressive development.

Moreover, the jurisprudence of the Court plays an important role in the codification of international law, as the International Law Commission submits its draft articles to the General Assembly of the United Nations together with a commentary which includes a full summary of the precedents and other relevant material, including the judicial decisions of the Court.

Among the cases submitted to international courts in the field of water resources, the following deserve to be mentioned:<sup>78</sup>

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<sup>78</sup> Dante A. Caponera, *Principles of Water Law and Administration*, National and International, (1992), Pp192



- (i) The case relating to the territorial jurisdiction of the International Commission of the River Oder, Judgment of 10 September, 1929. It was decided that the powers of the Commission extended to the sections of the tributaries of the Oder, Warthe and Netze situated in Polish territory.
- (ii) The Oscar Chinn Case, Judgement of 12 December, 1934.<sup>79</sup> This case, between the United Kingdom and Belgium, dealt with an alleged violation by Belgium of the principle of freedom of navigation.
- (iii). The diversion of water from the Meuse, Judgment of 28 June, 1937. While in the case concerning the diversion of water from the Meuse the decision was based on particular treaties concluded between the parties, in the case relating to the territorial jurisdiction of the International Commission of the River Oder, the Court invoked the principle of *community of interests of riparian states*, which could be considered as one of the customary rules of international law.<sup>80</sup> In the Oscar Chinn Case, the decision was based on the Convention of Saint Germaine, which confined the principles of freedom of navigation and freedom of trade.

Regarding advisory opinions, those of the International Court of Justice are only open to international organizations, have consultative nature and are not binding on the requesting bodies. An example of advisory opinion requested by the Council of the League of Nations to the Permanent Court of International Justice in the field of water resources is the one concerning the jurisdiction of the European Commission of the Danube between Galatz and Braila,<sup>45</sup> delivered on 8 December, 1927.

## ii. Arbitral Awards

The contribution to international water resources law made by arbitral awards has been significant. Among the cases submitted to arbitration, the following may be cited:

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<sup>79</sup> Declaration of Montevideo concerning the industrial and agricultural use of international rivers, Art. 2

<sup>80</sup> Principle 21 of the Stockholm Declaration, 16 June, 1972

- Helmand River Delta Case, Arbitral Awards of 19 August, 1872, and 10 April, 1905.
- San Juan River Case, Arbitral Award of 22 March, 1888.
- Kushk River Case, Arbitral Award of 22 August - 3 September, 1893.
- Faber Case, Award of 1903.
- Tacna-Arica Case, Award of 4 March, 1925.
- Trail-Smelter Case, Awards of 16 April, 1938, and 11 March, 1941.
- Zarurnilla River Case, Arbitral Award of 14 July, 1945.
- Lake Lanoux Case. Award of 16 November, 1957.
- Gut Dam Case. 15 January, 1968, 12 February, 1968, and 27 September, 1968.

The awards rendered in these cases reveal a tendency towards the construction of the rights of riparian states in terms of limited territorial sovereignty in respect of shared water resources. The principle of the innocent use of rivers which emerged during the Faber Case can be regarded as yet another principle of international water resources law that has gained currency.

### iii. Decisions of National Tribunals

National courts have also contributed to the evolution of international law. Such courts, particularly those of federal states in their decisions concerning water disputes, have invoked a variety of highly relevant concepts.<sup>81</sup> In the United States, in one of its first water disputes (*Kansas v. Colorado*), the Supreme Court upheld the principle of equality of rights between the two states.<sup>82</sup> In other cases, the Supreme Court has applied the theory of equitable apportionment.<sup>83</sup> Such theory was also upheld in India in 1941, in the case of *Sind against Punjab* concerning the Indus waters.<sup>84</sup>

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<sup>81</sup> Caponera, *International River Law*, Pp. 179

<sup>82</sup> Dante A. Caponera, *Principles of Water Law and Administration*, National and International, (1992), Pp 194

<sup>83</sup> *Nebraska V. Wyoming* (1945), *New Jersey V. New York* (1931)

<sup>84</sup> Report of the Indus Commission, 1942, Pp.10

As regards Europe, in the judgment of the German Staatsgerichtshof on the Donauversinkung case the principle of equitable apportionment was resorted to, while in another case (Wurttemberg v. Baden) the German Supreme Court based its decision on the principle of equitable utilization. In Switzerland, the equality of rights between cantons for the use of public watercourses was affirmed, and in Italy the Court of Cassation recognized the principle of community of ownership (Electricite de France v. Compagnia Imprese Elettriche di Liguria).

The question arises as to whether municipal law, i.e., the law applied by national tribunals, can be transformed into customary international law concerning water resources. The only method by which municipal law can be transformed into international law is through its recognition as 'general principles of law.' Therefore, in order to establish this, one must prove its consistent application in international practice.

In some countries such as Germany, constitutions recognize international law as part of the law of the country, but even in such cases, the decisions of national courts do not constitute a source of international law. If in municipal disputes the court expresses the principle of the equitable apportionment of water, it might imply that the solution was based on law and equity (*ex aequo et bono*). One may only state that in almost all national water law systems will be found the principle that one state by using water must take into account the needs of neighboring states. Such a principle, however, is identical to the principle of customary law.

### **3.3.6. The work of the Institute of International Law**

The Institute of International Law has, since the end of the last century, given attention to international river law. Among its resolutions, one may mention the following:

- International Regulation on River Navigation, Resolution of Heidelberg, 9 September, 1887:
- International Regulation regarding the Use of International Watercourses for Purposes other than Navigation, Declaration of Madrid, 20 April, 1911;

- Regulation governing Navigation on International Rivers, Resolution of Paris, 19 October, 1934;
- Resolution on the Use of International Non-Maritime Waters, Salzburg, 11 September, 1961;
- Resolution on the Pollution of Rivers and Lakes and International Law, Athens, 12 September, 1979.

### **3.3.7. The work of the International Law Association**

The largest professional organization devoted to international law, the International Law Association (ILA), has made a notable contribution to the development of international water resources law through:

- Statement of Principles, Resolution of Dubrovnik, 1956;
- Resolution on the Use of the Waters of International Rivers, New York, 1958;
- Recommendations on the Procedures concerning Non-Navigational Uses, Hamburg, 1960;
- The Helsinki Rules on the Uses of the Waters of International Rivers, Helsinki, 1966;
- Articles on Flood Control, New York, 1972;
- Articles on Marine Pollution of Continental Origin, New York, 1972;
- Maintenance and Improvement of Naturally Navigable Waterways separating or Traversing several States, New Delhi, 1974;
- Resolution on the Protection of Water Resources and Water Installations in Times of Armed Conflict, Madrid, 1976;
- Resolution on International Water Resources Administration, Madrid, 1976;
- Regulation of the Flow of Water of International Watercourses, Belgrade, 1980;
- Articles on the Relationship between Water, Other Natural Resources and the Environment, Belgrade, 1980;
- Rules on International Ground waters, Seoul, 1986;
- Complementary Rules Applicable to International Water Resources, Seoul, 1986.

Special attention has to be paid to the Helsinki Rules, as they embody principles that have been formally accepted by many countries cooperating in the integrated development of international basins in Asia, Africa and Latin America.

It is in the Helsinki Rules that the concept of equitable utilization has received its definitive formulation. Article 4 stipulates 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. ' In quantifying this reasonable and equitable share, due weight must be given to all relevant factors in each specific case. These factors are indicated in Article 5; the choice, however, is not limited to them. No use, or group of uses, must be granted priority according to subjective criteria.

In accordance with the principle of equitable utilization, states 'must prevent any new form of water pollution or any increase in the degree of existing water pollution in an international drainage basin which would cause substantial injury in the territory of a co-basin State.' Article 9 of the Helsinki Rules defines the term 'water pollution' as 'any detrimental change resulting from human conduct in the natural composition, content, or quality of the waters of an international drainage basin.' Basin states should take all necessary steps to eliminate existing pollution, so as not to cause substantial damage in the territory of a co-basin state.

Finally, the Helsinki Rules recommend that information be exchanged between states and procedures be established for the prevention and settlement of disputes.

### **3.3.8. The work of the Asian-African Legal Consultative Committee**

The Asian-African Legal Consultative Committee has undertaken the study of the legal aspects of water resources. This body, which includes specialists in water law from Asian and African countries, has produced a set of very relevant 'propositions.' These

propositions, formulated in New Delhi on 18 January, 1973,<sup>85</sup> contain rules which were inspired by the Helsinki Rules of the International Law Association.

After defining the term 'drainage basin,' as a result of which a 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, the propositions affirm that such reasonable and equitable share is to be determined on the basis of all the relevant factors in each particular case.

### 3.4. MAJOR ISSUES IN INTERNATIONAL WATER RESOURCES LAW

|                                    |                 |
|------------------------------------|-----------------|
| <b>3.4.1. Boundary Demarcation</b> | <b>290, 668</b> |
|                                    | <b>72,0000</b>  |
|                                    | <b>3200</b>     |
|                                    | <b>9.5</b>      |

An important issue concerning international water resources law is the one which relates to the demarcation of boundaries on rivers which separate or cross the territories of two or more sovereign states. This question is one of the first to have arisen in the development of international water law and has given birth to a number of disputes between states, sometimes leading to armed conflict.<sup>86</sup>

Some of these disputes arise even in the absence of formal international agreements and for a number of reasons: modification of an original border, dubious validity of treaties establishing a boundary, colonial character of some of the agreements, caducity of some of the provisions contained in the treaties or for other reasons.

International court decisions and arbitral awards have also been rendered on questions of boundary demarcation. The learned jurists who have dealt with these questions are not

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<sup>85</sup> Text in: *Asian-African Legal consultative Committee*, Report on the 14<sup>th</sup> Cession, New Delhi, (1973), Pp 7

<sup>86</sup> The conflict which has arisen between Iran and Iraq as regards the border on the estuary of the shatt-al-Arab river can be mentioned.

always in agreement with the solutions to the issues at stake. State practice and the various solutions which have evolved in connection with boundary demarcation are briefly analyzed below.

### **1. Boundary on a Successive River**

The fixation of a boundary on a successive river or watercourse, i.e., a river crossing the territory of two or more states, does not pose great problems as regards the actual determination of the boundary itself. The frontier runs along an imaginary straight line which cuts the river or watercourse and joins at the two banks the extreme limits of the land frontier between the two states. The river in this case is cut in as many sections as there are states crossed by the river. In this case, legal difficulties may come about in connection with the right of passage for navigation purposes on the river or on the right to cross the river for other uses such as timber floating, etc. Other questions may arise concerning the level of the water flow at the river boundary and the quantity or quality of the water crossing river boundary. However, these questions do not belong to the issue of boundary demarcation on rivers, rather, to those arising from the uses of the river for navigation or for other purposes. Where the interests of the upper and lower riparian states are not similar, and between the interests of the riparian and non-riparian states in the case of navigation.

### **2. Boundary on a Contiguous River**

The fixation of a boundary on a contiguous river, i.e., on a river separating the territories of two or more sovereign states, has always had controversial aspects for a number of reasons. This may be of a physical-geographic nature, as the size, the nature and the behavior of the river water vary considerably, and of a legal nature, in that the issues can only be settled on the basis of an agreement between the states concerned, as no clear-cut rule of international law exists in this respect.

Problems may arise even when an international boundary agreement exists; in this case, the dispute may relate to a number of questions such as: the inflexibility of a treaty as compared to a new physical solution; the interpretation, the application or the particular relevance of a treaty or indeed to its own total or partial validity; or to a number of other legal questions.

As to the ways in which the boundaries on a contiguous River have been fixed throughout history, these are indicated here below.

### **Boundary at the Banks (*River Res Nullius*)**

A medieval theory set the boundaries at the banks of the river, while the river itself was considered *res nullius*, i.e., belonging to nobody. This was stated in the Latin Maxim: *Rheuns est una ripa Galliae et altera Germaniae limes*, one bank of the Rhine belonged to Gaul and the other Germany. However, this practice only prevailed during Middle Ages, as the Rhine then constituted the border between Roman and Germany worlds.

### **Boundary at the Banks (*river res comunis*)**

There have been cases in which the boundary has been fixed at the banks of river, while the river itself was considered *res comunis*, i.e., the common and undivided property of the two riparian states. This was the case, *inter alia*, of a treaty between Prussia and Netherlands of 7 October 1816, dealing with the Rhine, the Moselle and others. This regime also applied to that portion on the Moselle river separating Luxemburg and Germany.

### **Boundary at one of the Banks**

This is the case when the boundary of one state extends up to the bank of the opposite riparian state, and its territorial jurisdiction includes the whole river. There are many



treaties which have fixed this type of river boundary, among which one of the first was the Treaty of Osnabruck of 24 October, 1648, concerning the Oder River. At present the same situation applies to various international rivers on the basis of treaties signed, generally, between strong colonial power and a less strong independent state. This was the case, for instance, of the boundary fixed on the Shatt-al-arab, which gave to Iraq sovereignty over the whole river up to the bank of Iran, thus allowing Iraq to control and collect tolls from the traffic entering the Shatt-al-Arab (modified by the Algiers Agreement of 6 march, 1975).

### **3. Natural Modifications of the Boundary on a Contiguous**

It is possible that a natural modification of a contiguous river may cause a disruption in the existing boundary.

Ancient Roman law distinguished between sudden modifications due to violent causes and gradual modifications due to process of sedimentation; in the first case, the boundary remained fixed on the old line of demarcation, while in the second case it followed the low shifting of the watercourse.

The legal effects of the shifting of the bed of a contiguous river as a consequence of natural factors can only be determined on the basis of the will of the concerned states, as expressed in agreement. If changes occur after a boundary has been conventionally fixed, said states have to resort to a second convention if they want to amend the provisions concerning the boundary.

Any modification or interpretation of an existing boundary treaty should be the object of an agreement between the states concerned. Thus, Article 30 of the Treaty of Peace of Versailles following the Second World War states:

It shall be the duty of the boundary commission established by the present Treaty to indicate if the boundary line shall follow, in the case of shifting, the course of the channel now so defined, or if it shall be determined in a permanent manner

according to the position of the watercourse or the canal at the moment of the entry into force of the present Treaty.

#### **4. Boundary on a Bridge over a Contiguous River**

The legal questions raised by the ownership, construction, operation and maintenance of bridges crossing contiguous rivers are many. Here we are concerned only with the determination of the boundary on the bridge in relation to the existing boundary on the river, median line or thalweg.

Generally, it is the median line which determines the border on the bridge.<sup>5</sup> However, difficulties arise when the boundary on the river is determined by the thalweg. In this connection, the Treaty of Versailles of 28 June, 1919, at Article 66 declared that the sovereignty over the bridges crossing the Rhine belonged to France up to the German bank, although the border on the river was fixed on the thalweg. This clause was modified in 1930 by an agreement which determined the border at the middle of the bridge. Other agreements have been concluded during recent years concerning bridges which cross contiguous rivers.

No rule of international water law exists concerning the boundary to be fixed on international bridges; the riparian or basin states should determine between themselves the legal regime of the bridge by means of an international agreement.

#### **3.4.2. Navigation**

Ancient civilizations did not consider the possibility of navigating on rivers, which were considered as sacred; express prohibitions to navigate on rivers were contained in the laws of Persia and Egypt. According to Roman law, rivers were *res comunis*, i.e., common to everyone. The state had only the right to control and to collect taxes for the maintenance of watercourses; navigation was free.

During the Middle Ages navigation was made subject to all sorts of harassments and fiscal measures which hindered development, even to the point of certain waterways being closed by treaty, as in the case of the Scheldt by the Treaty of Munster of 30 January, 1648.

After the feudal period, in the sixteenth century, Grotius, who is known as the father of international law, introduced the *principle of freedom of innocent passage*, i.e., the principle according to which rivers should be open for transit for legitimate purposes; however, a person intending to exercise the 'right of innocent passage had to apply for permission. A permission could only be denied for well stated reasons; otherwise a violent reaction could be Justified.

This conception was restricted by Ziegler, a commentator of Grotius, who asserted that unless a servitude allowed for it expressly, an agreement was necessary to establish a right of passage.<sup>87</sup> According to Pufendorf, a famous Swedish jurist and follower of Grotius, a right of transmit must be granted when requested for honest and necessary reasons, in conformity with the law of natures another author, Wanel, asserted that the right of passage was an imperfect right, since its request left to the grantor the freedom of deciding whether or not the right had to be accorded.<sup>88</sup>

### **Internationalization of Navigation**

It was with the peace Treaty of Westphalia (Munster) of 1648 after the war between France and Germany that navigation became a matter of international concern. Article 9 of the Treaty provided that rivers be given their ancient freedom and security and be so maintained forever, as they had been before the war, although before the Treaty there had been neither freedom nor security on international rivers. In addition, the declared

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<sup>87</sup> Dante A. Caponera, *Principles of Water Law and Administration, National and International*, (1992), Pp205

<sup>88</sup> Ibid

principle of freedom was contradicted by the closure of the river Scheidt by the United Provinces (the Netherlands) by virtue of the above-mentioned Treaty of Munster.

A large number of bilateral treaties according freedom of navigation to the contracting parties were concluded between 1648 and 1800.

The inhibitory system prevailing throughout the Middle Ages was strongly shaken by the French Revolution. A Decree of the interim Executive Council of the French Republic of 16 November, 1792. declared:

1. That the difficulties and obstacles to which navigation and commerce, both on the Scheidt and on the Meuse, have been subject are contrary to the fundamental principles of natural law that the French people have undertaken to respect.
2. That the course of rivers is common, inalienable property of all riparian land ... ' Based on these considerations, the Council instructed the chief general of the French army during the Belgian expedition to take all measures and to employ all means available to ensure freedom of navigation and transport on all courses of the Scheidt and the Meuse rivers.<sup>89</sup>

During the following years, such principle was incorporated in various conventions, among which we may quote the treaty of 16 May, 1795, between France and the Batavian Republic concerning navigation on the Rhine, Scheidt and Moselle, and the Campoformio Peace Treaty of 17 October, 1797, between France and the Austro-Hungarian Empire. Here, also, freedom of navigation was restricted to riparian states only.

In 1798 at the Congress of Rastadt concerning the peace between France and the German Empire, the French plenipotentiaries proposed absolute freedom of navigation on the Rhine for all flags, including those of non-riparian states, subject to the condition that

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<sup>89</sup> Decree of the Provisional Council of the Convention, 16 November, 1792.

consent be granted thereto by France and the Empire. The proposal was not accepted, and the Congress ended with the murder of the French plenipotentiaries. This shows the animosity surrounding this issue, which continued to be debated during the successive two centuries.

A convention relating to the right to navigate on the Rhine was concluded between France and the German Empire at Paris on 15 August 1804. This convention, which at least implicitly excluded non-riparian from the enjoyment of such right, was inspired by the concept of community of interests to the benefit of riparian and created a Franco-German administration for the collection of taxes.

Progress in the regulation of international rivers was made with the conclusion of the Treaty of Paris of 30 May 1814, which established that navigation and commerce on the Rhine be open (free) to all flags, with the possibility for riparian states to levy certain tolls. In addition, the Treaty provided that the extension of this regime to other international rivers be studied during the future Congress of Vienna.

### **3.4.3. Non-Navigational uses of Water**

Since ancient times, civilization and development have been based on the availability and use of water resources for domestic, agricultural and commercial purposes. Many ancient civilizations developed along rivers: the Tigris and the Euphrates, the Nile, the Huang Ho, the Indus, the Ganges and the Tiber. Even then, conflicts arose on the allocation and use of waters flowing through two or more political units. People felt the need for a body of rules governing water use. At the same time, two principles were recognized, i.e., that of the sovereignty of the states on the territory where water resources of interest to other states were located, and that of international cooperation and solidarity as a basis on which to organize the joint use of water resources.

The historical development of international water law has followed closely that of political, economic, technical and social needs. According to such needs, on which

depends the prevailing of one water use over another, the development process is more or less marked.

If, in the past, conflicts were primarily related to navigation and small-scale uses, today they cover a much wider spectrum. Water diversions by one riparian state may have negative effects on the uses that another state intends to make of the same water.

As far as the non-navigational uses of water are concerned, they include irrigation, floating, domestic uses, fishing, hydroelectric power production and industrial uses.

We shall now investigate the latest theories concerning these uses for which the river basin concept is particularly relevant.

### **1. Absolute Territorial Sovereignty**

Nowadays, few accept the thesis according to which a state is the absolute master of its own territory, empowered to use the resources it encounters therein without any consideration for the effects it may cause beyond its frontiers. Such thesis was sustained by the Attorney General of the United States, M. Harmon, in 1895, in a controversy between the United States and Mexico concerning the diversion and use of water from the Rio Grand Rejecting the Mexican claim to the effect that prior agreement between the two countries was necessary on the grounds that the United States could not make use of the river water in such a way as to markedly reduce the flow, Harmon stated,

'The fundamental principle of international law is the absolute sovereignty of every Nation as against all others within its own territory, all exceptions, therefore, to the power of a Nation within its own territory must be traced up to the consent of the Nation itself. They can flow from no other legitimate source.'

On this premise, 'the rules, principles and precedents of international law impose no liability or obligation upon the United States.'<sup>90</sup>

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<sup>90</sup> Moore, Digest of International Law, *The Law of International Water Resource, Legislative Study*, (1980), Pp.7

This theory is known as 'absolute territorial sovereignty' and is favored by upstream states. It is an extreme theory which ignores the rights of the downstream states. In the 1950's the USA renounced the principle as not conducive to cooperative arrangements, and it was never applied. The Advocate General of East Punjab, India\_ referred to the principle in the wake of the Indus dispute. However, the 1960 Indus Treaty does not reflect this principle. In the case of the Ganges dispute, for quite some time India subscribed to the notion that the Ganges, if not an Indian river, is 'essentially an Indian river.' The theory fails to appreciate the dual character of a state, namely, that territorial sovereignty is a source of obligations as well as of rights.

## **2. Absolute territorial integrity**

The theory of 'absolute territorial integrity' is upheld by lower riparian states and corresponds to the 'theory of natural flow,' whereby a state is entitled to expect that the same volume of water, uninterrupted in quantity and unimpaired in quality, flow into its territory. The concept of the natural flow theory likewise awards 'rights without duties' to the lower riparian states. It includes a right of veto against any upstream water utilization that is likely to disturb the natural flow. This theory was never accepted in international law and practice, since it was conceived as unworkable. It was retained by Egypt, Pakistan and Bangladesh in the 1950's, which are downstream states.

## **3. Limited Territorial Sovereignty and Integrity**

The two aforementioned territories, territorial sovereignty and territorial integrity, are unworkable and may lead to lengthy discussion among the co-riparian. Instead, limited territorial sovereignty and integrity is based on the assertion that every co-riparian is free to use the waters of shared rivers within its territory on condition that the rights and interests of all the other co-riparian states are taken into consideration. In this case, sovereignty over shared waters is relative and qualified. The co-riparians have reciprocal rights and duties in the use of the waters of common rivers. Physical unity creates a

unique legal unity leading to the formulation of a 'community of interests, ' and the waters of the shared rivers so become *res comunis*.

This theory is well accepted in international law, as it was recognized by the Permanent Court of International Justice (PCIJ) in 1929, in its judgment on the territorial competence of the River Oder Commission, when it affirmed that states have a common legal right to the resources of a shared river, not only a right of passage, the essential characteristic being the community of interests of all the parties in the use of the river and the exclusion of preferential privilege of any riparian state in relation to others.

#### **4. Shared Natural Resources Concept**

This theory, which has emerged during the last twenty years. starts from the UN General Assembly resolutions on the permanent sovereignty over natural resource by the states. That sovereignty is limited by the similar rights of countries sharing the same basin. It reinstates the community of interest approach and attributes a positive duty to render active cooperation in the rational development and utilization of the shared water resources.

#### **4. Equitable Utilization, Apportionment, Participation**

The latest theory concerning the use of international waters for purposes different from navigation has been referred to as 'equitable utilization,' 'apportionment' or 'participation.' It is derived from the work of the International Law Commission of the United Nations, which in different instances has designated such cooperation in this way.

It is to be noted that the equitable and reasonable utilization theory derives from the Helsinki Rules and states that the right of a co-basin state is to be regarded in the light of a similar right of another co-basin state. It does not purport to identify clearly the respective share of a basin state in the waters; this has to be ascertained on a case-by-case basis.



Equitable apportionment, on the contrary, is a notion favored by engineers, who like to 'apportion' waters. However, this apportionment approach is more difficult to achieve in view of the various interests involved and the need to quantify the water of the basin in order to reach agreement. This is the case of Egypt.

The expression 'equitable participation' corresponds to that of 'equitable utilization.' This is an obvious development of a legal principle appreciating the physical facts of water, the sovereignty claims, the shared natural resources concept and the community approach. It is a flexible rule which provides scope to establish justice and fairness on the basis of circumstantial factors. The principle was initially developed by federal courts in various countries.

The reciprocity of respective rights and duties of states sharing a common basin acquires the force of a rule of conduct generally applicable to the relations between such states. The rule includes the obligation to refrain from causing substantial damage to other states concerned with the same international water resources. Emphasis is placed on the 'seriousness' of the damage, as it is only in such case that the violation of a rule of international law may be envisaged. This duty entails the further obligation to take all necessary preventive measures in order that the question of damage or appreciable harm shall not arise in international relations where water resources are concerned.

## **6. Procedural Rules**

The general rules governing the conduct of states summarized so far constitute substantive law. In addition, procedural rules have to be taken into account. A procedural rule of general applicability, not limited to hypothetical situations where damage or harm might arise, is the one requiring that *stares shall inform and consult each other*.

Such obligation was the object of consideration by the International Law Association in 1956. According to Article 6 of the Resolution of Dubrovnik of that year, 'A State which proposes new works (construction, diversion, etc) or change of previously existing use of

water which may affect the utilization of water by another State, must first consult with the other State. In case agreement is not reached through such consultation, the States concerned should seek the advice of a technical commission; and if this does not lead to agreement, resort should be had to arbitration.’<sup>91</sup> Ten years later this position became less rigid. The Helsinki Rules of 1966, in fact, recommend that each basin state ‘furnish relevant and reasonably available information to the other basin States’ concerning the waters of a drainage basin within its territory, the relevant water uses and the intended projects. The fixation of a deadline for submitting views or raising objections is also provided for.<sup>92</sup> Similarly, in 1979 the Institute of International Law affirmed the existence of a duty to cooperate, through exchange of information and data, consultations and scientific cooperation, in international water resources pollution matters,<sup>93</sup> The International Law Commission has fixed the deadline for objection at six months.

The rule of reciprocal information and consultation, together with that governing the conduct of states with regard to the management of international water resources, has been embodied in a number of international instruments, such as the Convention of 1923 relating to the Development of Hydraulic Power Affecting more than one State, the Declaration of Montevideo of 1933, and also, more recently, in Article 3 of the Charter of the Economic Rights and Duties of States, which reads, ‘In the exploitation of natural resources shared by two or more countries, each State must cooperate on the basis of a system of information and prior consultations in order to achieve optimum use of such resources without causing damages to the legitimate interests of others.’

It should, however, be noted that the obligation to consult does not imply the corresponding powers of veto. It does not mean that one state is obliged to obtain the consent of all interested states, and by that token to conclude an agreement with them before it may proceed. Such an obligation would conflict with the sovereignty principle

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<sup>91</sup> Text in : *International Law Association*, Report of the Forty-Seventh Conference, Dubrovnik, (1956), London, Pp.241

<sup>92</sup> Article 29

<sup>93</sup> Institute of International Law, *Resolution on the pollution of rivers and lakes and international law*, (1972), Pp. 197

and with the principle of equality of rights and community of interests. Both of these being looked upon as an expression of the priorities of today's international community.

#### **3.4.4. State Succession and the Legal Status of International Water Rivers<sup>94</sup>**

The problem of utilization of the waters of international rivers has several aspects. Among them state succession and the legal status of international rivers are the most important aspect of the problems. In essence, the question concerns the extent to which the legal status of an international river which is one or more of the State party to the treaty of another state.

##### **State Succession in General**

States are international persons. They are subjects of international law and as such have rights and obligations under international law. There are various ways whereby a state comes into existence: as a result of gaining independence from a colonial power, secession from an already existing state, secession of a part of a state to another State, dissolution of a state into two or more new States; or the uniting of two or more States into one. In all this cases, the original international personality of the state disappears and a new international personality of international rivers and lakes, London, 1981, person appears on the scene. In other words, there occurs a succession of one international person (the state) by another. Such an occurrence is by no means infrequent, although it is less frequent than changes of government.

The concept of succession of states is one of the most controversial areas of international law and for this reason very few general principles of international law have emerged. Analogies drawn from municipal law concepts of succession are frequent in the writings of jurists and are sometimes also to be found in state practice. A natural tendency also manifests itself among writers and in State practice to use the word "succession" as a convenient term to describe any assumption by a state of rights and obligations with

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<sup>94</sup> Raph Zacklin, Gerald, Grham, *The legal regime of International Water Resources*

respect to territory which has come under its sovereignty, without consideration of whether this is succession by operation of law or merely a voluntary arrangement of the State concerned. This approach is to be viewed cautiously, for it neglects fundamental differences and may lead to unjustifiable conclusions derived from municipal law.

The subject to State succession has been on the agenda of the International Law Commission (ILC) for over twenty years. The commission has divided the topic into two parts: State succession in respect of treaties, and State Succession in respect of matters other than treaties. A draft convention on the first part of the topic was finalized and submitted to a conference of plenipotentiaries in Vienna in 1977. Due to the intense debate generated by a number of articles in the draft convention, a second session was required in order to complete the work in August 1978.

The approach adopted by the ILC at the Vienna Conference was to consider “succession of States” as denoting simply “a change in the responsibility for the international relations of territory, thus leaving aside from the definition all questions of the rights and obligations as a legal incident of that change”. Hence, a clear distinction must be made between on the one hand the replacement of one State by another, and, on the other hand, the transition of rights and obligations.

### **Succession in Respect of Treaties**

Once a succession of states, i.e., a replacement of one State by another, has occurred, the question is what impact such an occurrence has on the treaties concluded between the Predecessor State and other States (or international organizations). In respect of treaties generally, the question is whether the successor State inherits all of the treaties concluded by the predecessor state, some of them, or none of them. There are essentially two schools of thought in this regard. The first is that a successor State does not inherit by operation of law any of the treaties concluded by its predecessor; in other words, it starts with a *clean state*—hence this school of thought is called “Clean State Principle of State Succession”. The second school of thought rejects this principle in part and argues that

there are *certain types* of treaties which devolve upon the successor State under international law. Although the absolute clean state principle has its adherents, it is generally rejected as being unrealistic. Among the newly independent States that have emerged over the past three decades or so, only one or two have openly stated that they inherit none of the treaties of their predecessors, in effect expounding the absolute clean-state principle. The theory that a successor inherits all the treaties of its predecessor is regarded as equally unrealistic.<sup>95</sup>

In preparing the draft convention on succession of States in respect of treaties, the International Law Commission adopted the clean-state principle as a basic principle of the entire draft. Article 16 of the convention provides that:

*A newly independent state is not bound to maintain in force, or to become a party to, any treaty by reason only of the fact that at the date of the succession of States the treaty was in force in respect of the territory to which the succession of State relates.*

In its commentary on the draft of this article, the Commission stated that the majority of writers took one view, supported by state practice, that a newly independent state begins its life with a clean state, except in regard to “local” or “real” obligations. The clean state is generally recognized to be the traditional view of the matter. It has been applied to earlier cases of newly independent states emerging either from former colonies (the United States, the Latin American republics) or from a process of either secession or disbursement (Belgium, Panama, Ireland, Finland). This view was also expressed in the legal opinion given by the United Nations Secretariat in 1947 concerning Pakistan’s position in relation to the Charter of the United Nations. Assuming that the situation was one in which part of an existing state had broken off and become a new state, the Secretariat advised the General Assembly and the Security Council that ‘the territory which breaks off, Pakistan, will be a new state, it will not have the treaty rights and

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<sup>95</sup> Ibid Pp. 179

obligations of the Old State, and will not of course, have membership in the UN.’ In general the clean state principle is:

*A convenient way of expressing the basic concept that a newly independent state begins its international life free from any obligation to continue in force treaties previously applicable with respect to its territory simply by reason of that fact.*<sup>96</sup>

But, as indicated earlier, this rule is not accepted in its absolute sense and there is a category of treaties which is unaffected by a succession of states, including what are variously described as treaties of a “territorial”, “dispositive”, “real” or “localized” character.

### **Dispositive or Localized Treaties**

A number of international lawyers advance the theory that real, dispositive or localized treaties are binding on the territory affected notwithstanding any succession of states. But it has always been difficult to define such category of treaties. Most writers regard dispositive treaties as not being of a political character. It is argued that they relate to a particular territory and are real treaties. That is why they are transmissible in the case of state successions and form an exception to a clean-state principle. Such arguments are by no means new.

Treaties may be localized if they:

- a. are in the nature of objective territorial regimes created in the interests of one nation or the community of nations;
- b. are applied locally in virtue of territorial application clauses
- c. touch or concern a particular area of land<sup>97</sup>

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<sup>96</sup>Ibid 159

<sup>97</sup> International Law Association, *The Effect of Independence of Treaties*, Pp. 352

The fundamental notion of localized treaties is that a territory is impressed with a status which is intended to be permanent (or relatively so) and which is independent of the personality of the State exercising the faculties of sovereignty. The restrictions imposed by the treaty are less of a controversial character than they are equities in favor of the beneficiary State. A dispositive treaty is thus more a conveyance than an agreement, and as such is an instrument for the delimitation of sovereign competence within the impressed territory.

### **3.5. CASES OF AGREEMENTS INVOLVING MAJOR ISSUES IN INTERNATIONAL WATER RESOURCES**

With forgoing as background, we may now examine specific international agreements and consider them from the point of the major issues in relation to international water resources; like navigation, boundary demarcation and state succession.

#### **3.5.1. THE CASE OF NILE RIVER**

##### **I. General Description of Nile River**

The Holy Bible in the Old Testament calls it *felege ghion*. The Egyptian Pharaohs used to praise it as one of their goddess *hapy*. The ancient Greeks and Romans call it *nilus*. The Ethiopians call it *Abay*.<sup>98</sup> The Nile which is shared by 10 river basin countries, is the main vital water artery in the North-Eastern region of Africa. The countries are: Burundi, The Democratic Republic of Congo (DRC), Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania and Uganda of which the DRC and Eritrea lie to a lesser extent in the basin. Egypt, the most downstream. The river has two main tributaries, the white Nile originating in Burundi, and the Blue Nile rising in Ethiopia. These are joined by the Atbara River North of Khartoum, Sudan.

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<sup>98</sup> Zewdie G/Silassie, *Social Study on the international aspect of Nile Basin problems*, (2005), Pp. 2

Nile is longest river that encompasses ten riparian countries from river *Cogra* in Burundi and Rwanda and the Lake *Tana* in Ethiopia to its delta in Egypt on the Mediterranean Sea. The basin area covers around 3 million square KM or nearly 10% of the landmass of the African continent. While the Nile is 5, 584 KM long flowing northwards from lake Victory through Uganda and into the Sudan where, it meets Blue Nile in Khartoum. The Blue Nile also covers a distance of 1,529 KM from its source in Lake *Tana* to Khartoum contributing more than 86% of the water in the Basin. Ethiopia contributing more than 86% of the Nile waters from three major tributary rivers namely the *Abbay*, *Tekeze*, and *Baro* which originate from the central highlands, in the North West and South West of the country respectively.

In terms of population number, the basin area is one of the most populated areas where the growing number of population in the riparian countries increases the demand for water in areas like agriculture, drinking water, and hydraulic energy and for other vital economic sectors. According to the current UN report, within the next 25 years the population in the basin is expected to double.

Abbay (Nile) as a transboundary river involves the national interest of all riparian nations. Because of this, several battles have been fought; numerous diplomatic and political engagements have been made throughout history, in order to secure their interest on Nile. Egypt, a country almost devoid of rainfall throughout the year, badly needs the waters for survival. The Sudan is the other riparian country that needs the water of Nile for irrigation, agriculture and power generation. These two countries especially Egypt took the issue of Nile very seriously.

To date, the prevailing water policy regulating the distribution of water among the countries of the Nile Basin is a bilateral 1959 agreement attributing the largest share of the river's flow to Egypt, the down stream, non-contributing country, with the rest allocated to Sudan, leaving other countries in the Nile Water shade without specific shares. The high rate of population growth in the region propels governments to continuously seek food, and thus water security, to match increasing demand.



Agricultural development in other basin countries could be enhanced with more adequate distribution of water resources. Measures have been proposed to alleviate potential water shortages, including improved utilization of water in Egypt, and construction of nacreous dams and canals. There are, however, disagreements with particular countries rejecting or accepting these plans depending on which country will benefit most.<sup>99</sup>

## **II. Conflicts in the Nile Basin**

The Nile basin experienced a long period of conflict spanning the ancient Egyptian civilization, the colonial reign, and continuing to the modern day. Historically, the river provided the Egyptian with almost all their fresh water, and has long been regarded as the cultural symbol of Egypt dating back to the time of the Pharaohs. The Egyptian were always concerned that the Nile's waters may stop reaching them and, as a result, have tried to bring the entire Nile valley under their rule, invading Sudan during the reign of Queen Sheba, the Roman rule of Nero, and at numerous other instances.

Colonialism marked the beginning of the modern history of the Nile conflict in the 20<sup>th</sup> century by realizing the significance of the Nile water for the prosperity of the colonies, particularly Egypt. Upon reconquering Sudan in 1898, the British removed vegetation that was obstructing navigation along the river, creating alternative drainage paths to divert and improve the flow. Signing an agreement with Ethiopia in 1902 was necessary to ensure the security of the water supply, since Ethiopia provides 80% of the Nile water and the British had no control of the Ethiopian portion. Britain also had to negotiate with France and Italy to prevent their intervention with its dominance over the Nile basin. In 1929, Britain sponsored the Nile water Agreements on the river. The bilateral agreement divided the Nile's Water between the two most downstream countries, without consulting any of the other involved parties. Egypt was provided with the monopoly over the resource and Sudan was allocated a mere 5% of the river's flow.<sup>100</sup>

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<sup>99</sup>M.El-Fadel, Y.El-Sayegh and D. Korbothly, *The Nile River basin a Case Study in Surface Water Conflict Resolution*.

<sup>100</sup> All African.com, Inventory of Conflict and Environment, (May 2008).

Following the independence from colonialism, disputes between countries in the Nile River basin became inter-stated and assumed internationally debatable dimensions. The most comprehensive treaty that addresses sharing the Nile's water remains the 1959 water Agreement on the Full Utilization of the Nile River Water, between Egypt and Sudan. Many countries of the Basin including Ethiopia were not consulted over the final terms of the 1959 agreement and their water rights have not been expressly mentioned. As a result these countries have been invalidating the agreement and requesting the recognition of its contents to take their own interests into account. These disadvantaged countries, including Ethiopia, claim their right to equitable water distribution because the Nile represents the only renewable water resource in the region, hence leading to an ongoing debate regarding the most appropriate and efficient management strategy of its waters.

Although Ethiopia possesses population nearly the size of Egypt's, the later continues to argue that the bilateral agreement is irrevocable since its population growth is likely to double by 2025, and access to this volume of water is vital to its ability to support the growing population. Furthermore, Ethiopia has been left out of the negotiations because the two lower basin countries have traditionally claimed that the country can sustain itself solely through rain-fed agriculture. However, successive drought-induced famines in the last decades have proven otherwise. Despite its substantial natural resources and potential for agricultural production, Ethiopia is one of the poorest countries of the world with food insecurity as a major problem. It has so far been able to develop very few part of its irrigation and hydropower potential through its share of the Nile system. One avenue for moving toward poverty reduction and increased food security may be through developing the country's vast arable land, which requires more water. Egypt feels threatened by the potential demand of Ethiopia for more water. In this context, even the construction of small dams using only<sup>101</sup> 0.5 BCM of the river's annual flow triggered Egypt to use its diplomatic influence in the 1990s to block an African Development Bank loan to Ethiopia.

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<sup>101</sup> Ibid

At present, the only regulatory instrument among Nile riparians is a 1959 agreement between Egypt and Sudan. This agreement, drawn up after the building of the Aswan Dam, does not take into account either projected needs or the present political situation, and necessary cooperation among states seems unlikely in the current climate. Competition for Nile water is thus likely to increase, as is the potential for future conflict.

In addition to potential problems with neighbors over future water supplies, Egypt also faces severe internal problems over water use and management. In Cairo, for example, an open canal of effluent runs through residential areas to a large lake converted into an open cesspit. It is drained by a further canal into the Mediterranean Sea, contaminating both the Mediterranean and its beaches, and killing fish and wildlife.<sup>102</sup>

Recent efforts toward cooperation were portrayed in 1998 when all countries, except Eritrea, joined in a dialogue to create a regional partnership to facilitate the common pursuit of sustainable development management of the Nile's waters. They jointly adopted an inclusive transitional mechanism for cooperation until a permanent cooperative framework is established. In May 1999, the overall process was officially named as the Nile Basin Initiative.

### **III. International Agreements on the Nile Basin**

There are several agreements on the Nile, the most important being the 1929 Agreement, later replaced by the 1959 agreement. Though many agreements and treaties have been made at different times, all of them lack all inclusiveness and failed to provide mutual benefits. Besides, the parties to the agreement were not the real riparian themselves. For instance, the colonial masters like Great Britain, Italy, Belgium and France, representing

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<sup>102</sup> Edmund O'Sullivan, *Environment Debate Gathers Momentum, Middle East Economic Digest*, May 29, (1992), Pp. 19.

their colonies have signed in postcolonial era. Even those agreements that were signed in postcolonial era lack all inclusiveness and impose onerous obligation on the other state.

### **1. The 1902 Agreement**

This agreement was signed between Britain and Ethiopia in Addis Ababa on May 15, 1902. The agreement was made to delimit the boundary between Ethiopia and the then Anglo Egyptian. Article III of the agreement is very much controversial as there is a discrepancy between the Amharic and English version. The English version states that:

*His majesty Emperor Minilik the II King of Kings of Ethiopia, engages himself towards the government of his Britannic Majesty not to construct or allow to be constructed any work across the Blue Nile, Lake Tana or the Sobat which would arrest the Nile Water except in agreement with his majesty's Government and Government of Sudan.*

The major controversy lays in the word “arrest”, in the Amharic Version; this word is put in such a way that could give meaning as “not to stop fully the flow of the waters of Nile”. However, in the English version the word arrest is put to give the meaning of “not to use” the water of the Nile without the prior agreement with the British government. Ethiopia, a major source of Nile water has a natural right to use its natural resources found within its territorial limit, but this agreement does not say anything about the reciprocal right Ethiopia has rather the English version imposes an obligation that prohibit Ethiopia from using the Nile without the consent of the government of Great Britain. As it imposes an onerous obligation on Ethiopia, forgoing all rights reserved to Britain makes the agreement to be null and void according to international law.<sup>103</sup>

Furthermore, there are several grounds on the basis of which one could argue that the agreement could either be invalidated or should be re-negotiated. Firstly, the International

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<sup>103</sup> Seife, Ayalew, *The Nile Water Crises: a Demand for Justice (the NBI: a Way Towards a Basin Wide Legal Arrangement)*, (unpublished), (1999), Mekelle, Pp. 11

Law Commission expects riparian states to update previous agreements in light of the principles enunciated in the draft submitted to the Generally Assembly.<sup>104</sup>

Ethiopia can also invoke the principle of *clausula rebus sic stantibus*: a fundamental change of circumstances. It is almost a century now since the treaty was concluded. Having regard to the population growth, technological development, need of water for drinking and sanitation, the situation has fundamentally changed since the treaty was concluded. It is possible to say that had the parties then foreseen the present need for water of both for upper and lower riparian states, they wouldn't have entered into the type of treaty. There has been a fundamental change of circumstances. It has been provided in the 1969 Convention on the Law of Treaties that a fundamental change of circumstances can invalidate an existing treaty.

Ethiopia may also invoke other grounds. By 1902, Ethiopia was a very weak and backward state compared with the great European states that were interested in this part of Africa. In the 1906 tripartite treaty, Britain, France and Italy settled questions directly involving Ethiopia by themselves without consulting it. That was the period where the colonial powers were in a position to impose their will on Emperor Menelik. It is, therefore, possible to argue that the treaty was an imposed one. Imposed treaties being contrary to the very principle of sovereignty of states needs re-negotiation in light of the principle of sovereignty and equality of states which now prevails and underlies the relationships of states. Germany, France and England, for example, had imposed their treaty over China at around the same period. China invoked this principle and made the other sides agree for the renegotiation of those treaties.<sup>105</sup>

Fourthly, as stated above, the treaty imposes on Ethiopia only duties and confers on Great Britain all the rights derived from the treaty. So is a one sided treaty and such a treaty is called a leonine treaty-one side takes the lion's share of the benefits to be derived from the treaty. Such a treaty also needs re-negotiation. When the Vienna Convention on Law

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<sup>104</sup> Getachew Abera, Politics of Nile, [chora.virtualave.net/egyptandnile.htm](http://chora.virtualave.net/egyptandnile.htm), Accessed on February 2009

<sup>105</sup> Ibid

of Treaties was negotiated, there was an understanding that such treaties need re-negotiation.<sup>106</sup>

## 2. The 1919 Agreement on the Lake Tana<sup>107</sup>

The increasing demand for the production of cotton in the world market in the early 1900s put pressure on cotton plantations in Sudan and Egypt. Especially after World War I, it became clear that the growing interest of British over the Nile Basin particularly Egypt and Sudan. It is because of such development that the 1919 and the 1929 agreements were signed.

Britain and Italy have signed an agreement in 1919 over Lake Tana of Ethiopia. According to this agreement in respect to Great Britain's interest to control the Lake Tana region, Italy offers to support Great Britain to get from Ethiopia the concession to carry out works of barrage in the Lake itself. Following this in 1925, an exchange of notes modified this agreement in such a way that could expand British claim of controlling the Lake Tana region. The Article reads:

*Italy recognizes the prior hydrological right of Egypt and Sudan.....not to construct, on the head of the Blue Nile and the White Nile (Sobat) and, in their tributaries any work which might sensibly modify its flow in to the main river.*

Ethiopia opposed this agreement and notified its position to the government of Italy and Britain.

## 3. The 1929 Agreement<sup>108</sup>

The 1929 Nile Waters Agreement was concluded between Great Britain and Egypt, the former as the colonial power responsible for the Sudan (It is called the Anglo Egyptian

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<sup>106</sup> Ibid

<sup>107</sup> Ibid

<sup>108</sup> Ibid

Condominium over Sudan). The agreement was made mainly to secure the Nile water for Egypt by limiting the rights of the Sudan and rejecting that of the remaining lower riparian. Under the term of this agreement Egypt acquired the right to control or veto any construction on the Nile that could affect her interest in terms of quality or quantity. Egypt also acquired the right to use 48 billion cubic meters of the Nile flow per year and only 4 billion cubic meter was allocated to the Sudan. In addition to this, Sudan gave recognition of Egypt's historical and natural rights with respect to the water of Nile. This agreement was meant to establish a prior appropriation right for Egypt and to a limited extent to Sudan. This agreement could not have any validity, since, it is made between the two states, Egypt and Britain on behalf of the Sudan which does not include any of the upper riparian.

This was a colonial agreement that was made during the colonial era. And it is an unfair agreement since riparian countries are asked to be bound by an agreement to which they are not a party.

#### **4. The 1959 Agreement for the Full Utilization of Nile**

This agreement was signed between Egypt and Sudan for the Utilization of the Nile Water on November 8, 1959. Change of regime in Sudan marked the beginning of the demand to revise the 1929 agreement as it got its independence in 1956. Besides, Egypt has this plan of building the Aswan dam and before that it was important to make a new deal of water allocation and on the way to get the recognition of the international community in order to get fund to finance the project of Aswan dam. Because of this the 1959 agreement was signed between the two down stream nations; Egypt and Sudan. This agreement effectively bought Sudan's approval for the dam by greatly increasing the amount of water under its control and allowed Egypt to undertake a serious of Nile development projects. The validity of such an agreement starts to be questionable. The name of the agreement, i.e., "Full utilization of the Nile Water", by itself entails that as if Nile water starts in the Sudan and ends in Egypt and left no room for the other riparian.

According to this agreement, among the 74 billion cubic meter as measured in Aswan 55.5 was allocated to Egypt. They also agreed to divide proportionally the evaporation and sea passages.

As the previous agreements, this one is also considered to be null and void for other riparian countries. Because, it made only between two down stream nations so it should be applicable to them. This treaty is only a bilateral treaty. As a bilateral treaty, it is only binding upon the Sudan and Egypt. It cannot in anyway bind Ethiopia or any other state that is not a party to the treaty. Therefore, Ethiopia wouldn't be obliged to respect it.<sup>109</sup>

Ethiopia had registered two notable protests in 1956 and 1957 against the conclusion of the agreement between the Sudan and Egypt even before the agreement between the Sudan and Egypt even before the treaty was concluded. Ethiopia's aim for protesting was to quash any possible thought by the Sudan and Egypt that they were giving rise to customary international law. Most importantly, Ethiopia's protest was aimed at not recognizing any existing benefits or prior appropriations which would result from the 1959 agreement.

#### **IV. What Does International Law Say about the Conflict on the Nile River?**

International water laws address the basic interests of the international community to maintain global peace and security. Their application nevertheless remains limited, since they still lack maturity, sophistication, clarity and enforceability, and hence are rendered powerless when a country chooses to ignore the laws in question.

The law of international rivers deals with two kinds of rivers. The first one governs Boundary Rivers while the second deals with successive rivers. Boundary Rivers occur along the boundary of two or more sovereign states. There is, therefore, common/joint sovereignty over Boundary Rivers. This common sovereignty determines the law applicable to the waters of Boundary Rivers. The law developed together with the need to

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<sup>109</sup> Getachew Abera, Poletics of Nile, [chora.virtualave.net/egyptandnile.htm](http://chora.virtualave.net/egyptandnile.htm), Accessed on February 2009



delimit and ultimately demarcate state boundaries. The law of Boundary Rivers developed much earlier than the law relating to successive rivers. There are well-settled rules of international law regarding Boundary Rivers. Nevertheless, as regards successive rivers, as each segment of the successive river occurs within the sovereign territory of a state, the territorial state is absolute and exclusive sovereignty on that segment. This sovereign power can, of course, be limited by the state's consent given either in the form of treaties or customs.<sup>110</sup> So the rights of lower riparians depend on bilateral agreements concluded with the upper riparian and the right given to them nature itself, the fact that they are lower riparians.

In theory, international waters are to be distributed fairly and rationally among countries within the river's watershed. The Helsinki Rules on the Uses of the Waters of International Rivers, adopted by the International Law Association in 1966, provide a guideline for the proper utilization and administration of international rivers in cases where no specific agreements or traditional understanding prevail. It sets equitable allotments to countries in a basin not by equal shares but according to specific variables that help prioritize their various needs, such as:

Topography of the basin, particularly the size of the river's drainage area in each country;

- Climate conditions governing the basin
- History of water utilization up to present-day usage
- Population
- Comparative costs of alternative means of satisfying the economic and social needs of each country
- Availability of other water resources to each basin country and
- The avoidance of undue waste and unnecessary damage to other countries.

Although these rules are generally accepted, they are nonbonding in international law. If applied to the Nile Basin case, there is no doubt that Ethiopia, Sudan and particularly all the equatorial countries rank higher than Egypt and almost all variables entitle them to a

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<sup>110</sup> Ibid

larger portion of the Nile water. This emphasizes the strong interrelation between political and international water conflicts, whereby the politically and economically dominant country generally prevails and controls an international water resource.

Later, upon the request of the UN, the International Law Commission (ILC) produced a draft convention on non navigational use of international watercourses and was adopted on May 21, 1997 by the General Assembly. Upon its adoption, 103 voted in favor, 3 against, 27 (including Ethiopia and Egypt) abstained. To bring the document into force, 35 instruments of ratification are expected but only 16 are found to ratify it. This convention serve as general framework to ensure utilization, development, management, conservation and protection of international watercourse. The Convention defines the term international watercourse in a broader manner as ‘a system of surface waters and ground waters constituting by the virtue of the physical relationship as a unitary a whole’.

In its part II the convention sets the principle regarding equitable utilization of international watercourses in relation to other riparian states. Article 5 states that there should be equitable and reasonable utilization and participation. This article introduces a new concept about equitable participation, in order to encourage state parties to take part in the utilization of shared resources among riparian states. The ICJ ruling in the *Gabcikovo Vs Nagymaros*, a case between Czechoslovakia and Hungary support the provision of this convention (Article 5(2)). ICJ states the obligation of equitable participation and to establish a joint regime of cooperation between for the utilization, protection and conservation of the water resource.

In its Article 6, the convention tries to discuss as to what does equitable and reasonable utilization mean. The article puts illustrative list to determine the equitability of use with different physical, environmental, economic and demographical factor.

***Article 6: Factors Relevant to Equitable and Reasonable Utilization***

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

- a. Geographic, Hydraulic, climatic, ecological and other factors of a natural character*
- b. The social and economic needs of the watercourse states concerned*
- c. The population dependent on the Water course State*
- d. The effects of the uses of the watercourses in one watercourse state on the other watercourse state*
- e. Existing and potential use of the watercourse state*
- f. Conservation, protection, development and economy of use of the water resource of the watercourse and the costs of measures taken to that effect*
- g. The availability of alternatives, of comparable value, to a particular planned or existing use*

***Article 7: Obligation not to Cause Significant harm***

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

The no significant harm principle (stated in article 7) creates a controversy as to how it is going to be determined and implemented. For instance, Ethiopia an upstream nation wants to develop hydraulic projects on the Nile and downstream nations on the other side objects on the ground that this project would substantially harm their established use. Currently there are two understanding regarding equitable utilization and no harm principle.<sup>111</sup> Some argue that in this part of the convention, the overriding principle is the no harm principle. In such a case, Egypt and Sudan may show occurrence of significant harm on the established right, since there is going to be a change in the water quantity

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<sup>111</sup> Ibid Pp.24

when it is used for irrigation and domestic conception. Others argue that even if the convention strikes a balance, it favors an equitability principle.

Article 10 of the Convention also state as no state can claim priority of use over the other riparian in international watercourse. This seems a challenge to the doctrine of prior appropriation.

***Generally speaking, there is neither Customary International Law nor a treaty that entitles Egypt to Nile Waters within Ethiopian territory.***

## **V. Initiatives towards Cooperation: From HYDROMET to NBI**

In spite of the above mentioned problems on the Nile Basin area, different attempts have been made to take an integrated action to use the water resource of the Nile between the riparian states.<sup>112</sup>

The first Nile based organization was HYDROMET (the Hydro Metrological Survey of the Equatorial Lakes), which was established to make a hydro metrological survey around the lake found in the equatorial region. It was established with the sole purpose of collecting and analyzing hydro metrological data to manage the water balance of the upper Nile catchments and to give prediction as to the occurrence of flooding. As this initiative failed to incorporate the issue of water allocation, Ethiopia did not join the organization until 1971 and later joined as an observer. Its failure to incorporate Ethiopia, the major source of the Nile Waters, as a paramount member made the organization to be weak and lack all inclusiveness.

In 1983, Undugu replaced the Hydromet under the primary objectives of promoting trade, infrastructure development, and environmental protection among its member states. Similarly, Ethiopia, Kenya and Tanzania excluded themselves from being an active

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<sup>112</sup> Seife, Ayalew, *The Nile Water Crises: a Demand for Justice (the NBI: a Way Towards a Basin Wide Legal Arrangement)*, (unpublished), 1999, Mekelle, Pp. 6

member and assumed an observer status. Again, this initiative did not take into account major issues like, water allocation.

TECONILE (Technical Cooperation Commission for the Promotion and Development on Nile) is the third regional organization that replaced the Udungu. TECONILE is an extended version of Hydromet initiative, which is established by the Nile Council of Ministers Agreement in 1992 in Kampala, Uganda. Upon the agreement of Nile-COM (Nile Council of Ministers of Water Resources) six of the ten riparian states namely the DRC, Egypt, Sudan, Tanzania and Uganda were represented as a permanent members while later on Ethiopia, Eritrea, Kenya and Burundi opted to participate as observers. Its main concern was environmental protection and water quality control but later when the Nile Basin Action Plan was drafted in 1995, it incorporated the issue of equitable entitlement of the Nile water to all riparian states as the agenda. Beside this, TECONILE played an important role in organizing “Nile Conference” back in 1993. Following this, consecutive conferences have been made almost in all riparian nations. This forum has created venues to the basin States, International Organizations, Leaders and politicians to develop common understanding of the water problem of the basin. However, the main problem related with TECONILE is its ambitious projects that were estimated to cost 100 Million US dollar. The money actually raised was too small to cover the intended projects.<sup>113</sup>

Finally, the Nile Basin Initiative (NBI) succeeded the TECONILE in February 1999. The NBI during its inauguration in Dares Salem, Tanzania, raised the issue of “Water Entitlements” as its primary agenda. Because of this, all the basin states, including Ethiopia, that were not active members in the previous initiatives become members. The NBI is currently governed by the highest decision organ called the Nile-Com that is composed of Ministers of Water affairs of all riparian States.

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<sup>113</sup> Ibid Pp.7

### **3.6. WATER AND CONFLICT**

Ismail Serageldin, former vice president of the World Bank, echoed a then commonly-held belief when he warned in 1995 that “the wars of the next century will be about water”.<sup>114</sup> Several characteristics of water could support such gloomy prediction. First, water is a fundamental resource, indispensable to all forms of life on earth. Reliable freshwater resources are crucial to human and environmental health, as well as economic development: almost every sector of human activity depends on water resources, through agriculture, industrial production or power generation. Second, there is no direct substitute for water, unlike other resources such as oil. And third, fresh water is becoming scarce. Even though fresh water is renewable to some extent, supplies are not infinite and its availability is diminishing due to population growth, economic development, and increasing pollution. Access to water is, therefore, a question of life or death, which easily becomes an emotionally charged debate. The facts that water also plays an important role in many traditional and religious customs deepens its emotional value.

Nevertheless, with a single exception in 2500 B.C., a war has never been fought over water, and a broad majority of experts support the view that such wars are not likely. However, competing demands for water resource that cross international boundaries have led a persistent tensions and often hampered economic development. For example we can take tension among Turkey, Syria and Iraq has constrained construction of the Southern eastern Anatolia project.<sup>115</sup> By threatening political and social stability, incidents of interpersonal violence can become national or international concerns.

In his topic we will explore some points on how conflicting interests in and lack of access to adequate water resource can lead to political tensions and water disputes, which can contribute to instability, and ultimately increase the threat of conflict on both the intra- and interstate levels.

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<sup>114</sup> Woodrow Wilson International center for Scholarships, Water and Conflict.

<sup>115</sup> Ibid

### **3.6.1. How is Water Linked to Conflict?**

#### **Access to adequate Water and Conflict**

The most direct link between water and conflict lies in disputes over access to water of adequate quantity and quality. While these disputes arise on all geographic scales, from the local to the international level, they are likely to contribute to conflict only on the local and interstate level.

Competing claims for scarce water supplies are the most obvious cause of water-related conflict. Tension over water allocation can increase when water is scarce, but even when the resource is not severely limited, its allocation among users and uses can highly be contested. The coexistence of variety of users and uses makes the emergence of conflicting interests over water unavoidable: parties claiming their share of water often belong to different sectors, such as agriculture or industry, or to different population groups, such as different clans or ethnic groups. But conflicts also emerge within these groups, for example between subsistence and commercial producers or between rural and urban population. As cities often withdraw water from, and release wastewater to, areas outside their administrative boundaries, thus affecting a mostly rural population, If competing claims for the use of a water resource are not settled in a way that is acceptable to all stakeholders, they can lead to a dispute and even to a violent conflict, between the parties or with state authorities. For example, conflicting rural and urban water need led to violent protests in the province of Shandong, China, in the downstream section of the Yellow River Basin. In July 2000, thousands of farmers clashed with police, protesting the government's plan to divert water to cities and industries from a reservoir that provided irrigation for local farmers. Several people died in the riots. In Owens Valley, California, farmers bombed a pipeline supplying water to Los Angeles in the 1920s.<sup>116</sup>

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<sup>116</sup> Ibid

Water quantity also is one of the main issues in disputes between upstream and downstream water users. Diverting water for irrigating fields or to supply drinking water to large cities can reduce the amount of water that flows downstream. The timing of water flow is also important; thus, the operation of dams is also contested. For example, upstream users might release water from reservoirs in the winter for hydropower production

### **3.6.2. Water Conflict in the Middle East**

Water ownership, management, and use are among the most critical problems confronting the modern Middle East. These water problems have become interwoven with deep-seated political, demographic, economic, and even religious conflicts, making it difficult to isolate technological and legal issues that, on their own, might be equitably resolved. Reducing regional political tensions is thus a prerequisite for reaching agreements and promoting cooperative efforts among states sharing mutual resources. The Jordanian-Israeli agreements on water sharing may set an important precedent for the region, inspiring confidence that cooperation rather than conflict can relieve tensions and resolve long-standing problems.<sup>117</sup>

**1998:** Continued Syrian development on the upper Yarmuk leads to increased salinity in the lower Yarmuk and Jordan Rivers, lower water levels in the Dead Sea, and reduced irrigation water for Jordan's East Ghor development project. In addition, up to 40 percent of the Yarmuk's waters have been diverted. Jordan's access to the Yarmuk, one of its principal sources for irrigating the Jordan Valley, is threatened, as is Israel's downstream flow. Jordan faces a devastating crop failure as a result. Jordanian diplomatic protests, echoed by Israel, are ignored by Syria, which threatens military action against Jordan if its development plans suffer interference.

**2005:** Turkey has fully implemented its GAP (Southeastern Anatolia Project) project, with disastrous impact on Syria's available Euphrates water, the flow of which is reduced

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<sup>117</sup> Mary e. Morris, *Studies in Conflict & Terrorism*, Jan-Mar (1997), Vol. 20 Issue 1, p1, 13



by 40 percent. The impact on Iraq is even worse--it now receives only one-eighth of its 1989 supply. An increasing rate of population growth in both Syria and Iraq, agricultural catastrophe in the form of crop failure in Syria, and increased indebtedness on the part of both countries, leads to a destabilization of domestic political and strategic positions. The deprivation of Euphrates water is the last straw for Iraq and Syria: They see Turkish dams built to improve the Turkish economy as a major security threat as well as an attempt by the West to use its ally, Turkey, as a weapon against Arabs. In addition, focus on Turkey serves internal purposes for both Syria and Iraq as a means of solidifying internal support against an external enemy.

Thus, despite their mutual antagonism, Syria and Iraq form an uneasy alliance against Turkey. They pursue a series of diplomatic and military actions to isolate Turkey, citing human rights violations as well as water exploitation and misuse to gain support from both Turkey's NATO allies and from Arab states who may be willing to support an oil embargo against any NATO state coming to Turkey's aid. Reports are received that a joint Iraqi-Syrian force is planning an attack on Turkey's southernmost dams.<sup>118</sup>

These scenarios are not as fanciful as they might appear. In a region where water ranks above oil as the most precious resource, water ownership, management, and use are some of the most difficult and serious problems that the modern Middle East confronts. They are eminently solvable if considered and resolved on their own terms as legal and technological problems. In the Middle East, however, water problems are entangled with unresolved border issues, massive population increases, diminishing agricultural resources, increasing industrialization, and changing living standards, in addition to geographic reality and issues of religion, culture, politics, and tradition. All of these elements complicate a difficult multinational resource management problem in a region where inter- and intrastate hostilities prevail. With no binding international law regarding shared resources and no measures of enforcement, water is already a fundamental political weapon in this region. It has also been used as a military weapon, a dangerous precedent for a region plagued by long-standing, corrosive differences.

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<sup>118</sup> <http://www.mideastweb.org/strategy.html>, May, 2008

Destruction or spoliation of natural resources has been a military tool throughout history. Armies have poisoned wells, salted the earth, and destroyed crops, from the Punic Wars to the Gulf War. Not surprisingly, then, the militarization of water conflicts in the Middle East has occurred in the past and may well continue into the future. Armistice agreements signed in 1949 between Israel and the Arab states, for example, did not deal with water, nor was the postwar atmosphere congenial to cooperation. Each of the riparians along the Jordan River system moved to utilize the water unilaterally. In the absence of cooperative efforts and in the presence of unresolved political and security disputes among riparians, the only viable means to access or secure water rights was frequently seen as military force. The 1994 agreements between Israel and Jordan over ownership and use of mutually shared water resources may point the way toward future resolution of water problems, but vast areas of disagreement remain throughout the region.

While water issues in the Middle East are primarily matters of scarcity, allocation, use, and management--and thus most properly internal state matters--water has become both a legitimate source of friction between regional states and a mask for other underlying tensions. Syrian, Jordanian, and Israeli disputes in the 1950s and 1960s, for example, illustrate instances where water was a primary source of conflict. Iraq's 1980 attack on Iran over the control of the Shatt al-Arab, a disputed boundary between the two countries since 1639, illustrates the use of water as a surrogate issue. Competition for fresh water factors into many regional political controversies as well, including the Israeli-Palestinian dilemma, tensions among Syria, Iraq, and Turkey, and potential problems among Ethiopia, the Sudan, and Egypt.

The Jordan River system has witnessed more severe international conflict over water than any other river system in the Middle East. Prior to the signing of the Jordanian-Israeli peace accord in 1994, the Jordan River area was the most likely water conflict flashpoint in the region, since both Israel and Jordan had moved into full use--and subsequent

shortage conditions. The 1994 agreements, however, have, at least for the present, defused the situation, replacing confrontation with negotiation.<sup>119</sup>

The main source of water for Jordan is the Yarmuk River, a major tributary of the Jordan River that flows through the East Ghor Canal. Other sources of water for Jordan include aquifers of limited potential, such as the now nearly depleted Azraq Oasis that supplies Amman. The East Ghor Canal, designed by Jordan in 1957, was to be the first section of an ambitious plan, the Greater Yarmuk Project, itself an outgrowth of the water sharing agreement developed in the early 1950s by U.S. envoy Eric Johnston. The project was to include the construction of two dams on the Yarmuk, including the Unity Dam on the border between Jordan and Syria, construction of a West Ghor Canal with a siphon across the Jordan River to connect it with the East Ghor, construction of seven dams to utilize seasonal flow on side wadis flowing into the Jordan, and drainage facilities. The United States agreed to finance the building of the Unity dam and the two irrigation canals, as well as Israel's National Water Carrier system, which was to divert water from the Jordan River as well. Israel was to provide Jordan annually with 100 million cubic meters of water from the Sea of Galilee.

In 1964, however, Israel effectively annexed the waters of the Sea of Galilee by damming its southern outlet without international agreement and extending the National Water Carrier to the south. In retaliation, an Arab League summit conference decided to divert the northern Jordan River's tributaries, the Hasbani River and Wazzani springs in south Lebanon and the Baniyas River on Syria's Golan Heights, through Syria and down to the Yarmuk. The Arab headwater diversion project began in 1965; Israel responded with a series of aircraft and artillery attacks on the diversion project, which in 1967 culminated in raids into Syria and an increase in water related hostility that set the stage for the 1967 Arab-Israeli War. Israel's search for water security can be considered one of the principal causes of the 1967 war.

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<sup>119</sup> Ibid

The 1967 Arab-Israeli War resulted in an Israeli victory that increased existing Israeli fresh water reserves and ground aquifers (in the West Bank) and riparian rights over upstream tributaries to the Jordan by almost 50 percent. It disrupted work on the East Ghor Canal as well, since the ceasefire lines gave Israel control over half of the length of the Yarmuk River, compared to 10 km before the war. Further development of the Yarmuk was thus dependent upon Israeli consent. The Jordanian-Israeli peace accord of 1994, however, may alleviate much of this problem, since it provides for the building of the East Ghor Canal and the reapportionment of at least some of the disputed water between the two countries.<sup>120</sup>

With the emergence of the Palestine Liberation Organization (PLO) after the 1967 war, the struggle for water took on an increasingly political cast. The PLO mounted intensive campaigns against Israeli settlements in the Jordan Valley, peaking in 1968-1969 with raids against Israeli water installations. Israel's initial response was a series of military efforts to stop PLO activities. By 1969, however, the Israeli cabinet changed its methods: In an attempt to pressure King Hussein to move against the PLO, Israel attacked the East Ghor Canal several times, causing extensive damage to Jordanian irrigation.<sup>121</sup> In 1970-1971, King Hussein expelled the PLO from Jordan and the Canal was rebuilt, although the master plan has never been implemented. While perceptions of mutual interest between Jordan and Israel have led to amicable resolution of potential crises in the last 20 years, further development work on the East and West Ghor Canals effectively has come to a standstill. Full utilization of the Canal has been hampered by the presence of silt and debris; past efforts to remove the debris have been halted by Israel for fear that the level of the Jordan River would be affected. Even if the East Ghor Canal was fully utilized, however, it could not meet the needs of Jordan's rapidly increasing population, which is doubling every 18 years.

In addition to water received from the Yarmuk River and West Bank aquifers, Israel derives over 20 percent of its water from the disputed Golan Heights, which contains the

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<sup>120</sup> Ibid

<sup>121</sup> Thomas Naff and Ruth C. Matson, *Water in the Middle East: Conflict or Cooperation?* Boulder, CO: Westview Press, 1984, p.45

headwaters of the Jordan River that supplies both Jordan and Israel. Together, the West Bank and the Golan Heights contain up to two-thirds of the water Israel uses. Israeli and Syrian negotiations over the Golan Heights thus involve more than strategic issues; for both countries, access to scarce water resources is also a consideration.

Israel's military presence since 1978 in south Lebanon also has real or perceived water implications: The Israeli presence guarantees the uninterrupted flow of the Wazzani Springs and the Hasbani River, which originate in Lebanon and flow into Israel. Lebanon has also long suspected Israel of designs on the Litani River, which originates in Lebanon's central mountains and flows into the sea 40 miles south of Beirut. Despite consistent Israeli denials of interest in the Litani because of the expense involved to successfully divert Litani waters into Israel, many Lebanese remain convinced that the Litani is the real reason for the continued Israeli occupation of southern Lebanon. However, the waterway of real issue to Israel is not so much the Litani (which has a much reduced flow by the time it reaches southern Lebanon), but the Wazzani Springs, which feed into the Hasbani River. The Hasbani, along with the Baniyas Springs, empties into Lake Tiberias (Lake Kinneret), providing water for the Negev Desert via the Israeli National Water Carrier.

## **REVIEW QUESTIONS**

1. Discuss the reason for the water conflict of water use in the Middle East and the endeavors taken to solve the problems.
2. Briefly discuss the reasons for the conflict of water in the Nile Basin.
3. How do you see the application of 1959 agreement between Egypt and Sudan in light of the international water laws?
4. Explain the difference between boundary rivers and successive rivers. Do you think there exists a universally accepted International Law regarding the utilization of successive and contiguous rivers?
5. Briefly discuss the absolute territorial sovereignty in relation to utilization of water resources by upper and lower riparians. What rights do you think the lower riparian states can exercise?
6. The utilization of International Successive rivers by lower riparians depends upon the comity of upper riparians. Comment.

# CHAPTER FOUR:ETHIOPIAN WATER LAW

## INTRODUCTION

The country, Ethiopia, located on the horn of Africa, is a mountainous country and five times the size of the United Kingdom. It is bordered by Sudan, Eritrea, Djibouti, Somalia and Kenya. Regarding the water budget, the climate of the country is characterized by a pronounced rainfall variability. Annual rainfall varies from less than 100 mm along the border with Somalia and Djibouti, to 2400 mm in the southwestern highlands, with a national average is 144 mm per year. In the southern and eastern highlands, there is marked bi-modal rainfall distribution, with the first and smaller rains (*belga zenab*) peaking in April and the second in September (*keremt zenab*). The main dry season extends from October to February, being longer and drier in the north. Rainfall variability is very important particularly in the lower rainfall areas of the North-East highlands where the recurrence of drought is a common phenomenon. Considering the hydrology of the territory, most rivers are seasonal and about 70 per cent of the total runoff takes place during the months of June and August. Dry season flow originates from spring and provides base-flow for small-scale irrigation. Ethiopia known to be the “water tower” of Northeast Africa is subdivided into 12 river/drainage basins. In this chapter we will discuss about the laws and policies of the country on water resource management.

### 4.1. WATER RESOURCE IN ETHIOPIA

With its current per-capital freshwater resources estimated at 1,924 m<sup>3</sup> , Ethiopia is endowed with one of the largest surface freshwater resource in Sub-Saharan Africa. However, only 2% of the potential is annually utilized, 86% of that going to irrigated agriculture. On the other hand, Ethiopia’s land resource potential for irrigation development, disregarding available water, is very large. Ethiopia, with its different geological formations and climate changes, is endowed with considerable water resources

and wetland ecosystems, including 12 river basins, about 14 major lakes, and some manmade reservoirs. About 123 billion cubic meters of water runs off annually from the above sources. Most of them are trans-boundary Rivers

A review of master-plan studies and related river-basin surveys shows that the aggregate annual runoff from the 9 river basins amounts to 122 billion m<sup>3</sup>. The 3 largest river basins (Abbay, Baro-Akobo, and Omo-Gibe) contribute 76% of the total runoff from a catchment area comprising only 32% of the total area of the country. Those 3 river basins have much larger specific discharges than the other 7 river basins, as table 1-2 shows. Their large runoff stems from the fact that the river basins occupy the western and southwestern parts of Ethiopia, where the highest concentration of rainfall occurs. The 3 Eastern River basins are dry. They include Afar-Danakil, Aysha, and Ogaden.<sup>122</sup> The three largest basins (Abbay, Baro-Akobo and Omo-Gibe) contribute 76% of the Nile River flow from a watershed area comprising 32% of the country's territory. The country contributes to about 85% of the Nile River flow. On the other hand, Afar-Dankil, Aysha and Ogaden basins are dry revealing the spatial and temporal distribution of water resource in Ethiopia.<sup>123</sup> The distribution of water resource in the Country is directly related to the prevailing rain pattern that has become increasingly erratic. 70-80 % of the runoff comes from the rainy season ranging from July to September. Of the total annual runoff about 83% originates from Abbay (Blue Nile), Baro Akobo, Tekeze (Atbara) and Omo Gibe river basins limiting the contribution of other eight river basins about 17%.

Regarding surface water quality, River water in Ethiopia is, with a few exceptions, generally good quality with respect to suitability as a source for drinking and for irrigation with respect to salinity hazards and chemical pollution. However, treatment will be required against biological contamination and turbidity which is very high in almost all the river waters. The exceptions to this are rivers in the Rift Valley Lakes system and the River Akaki in the vicinity of Addis Ababa. Most of the lakes in the Rift valley Basin have poor water quality owing to the presence in the valley of extensive

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<sup>122</sup> FDRE, Ministry of Water Resource, water Resource Development program Main report, 2002, page 12

<sup>123</sup> Getachew Abdi Zerfu, *Management Aspects of Rural water Sustainability in Ethiopia*, International Institute for Infrastructural, Hydraulic and Environmental Engineering, (February 2002), Pp.9



saline and alkaline springs .The rivers flowing out of such lakes are also contaminated. In some cases, the saline springs join the rivers directly and affect their quality. Industrial effluent from big cities, such as Addis Ababa, can quickly and severely impair water quality. Water quality has been analyzed at Aba Samuel Reservoir on the Akaki River, downstream of Addis Ababa, which has been affected by 26 industrial discharges. These industries are discharging their industrial effluents in the Little and Greater Akaki Rivers which finally join the Aba Samuel Reservoir.<sup>124</sup>

**Table 4-1. Surface-water resources of major river basins<sup>125</sup>**

| No. | River basin  | Catchment area (km <sup>2</sup> ) | Annual runoff (BM <sup>3</sup> ) | Specific discharge (l/s/km <sup>2</sup> ) |
|-----|--------------|-----------------------------------|----------------------------------|---|
| 1   | Abbay        | 199 812                           | 52.6                             | 7.8                                       |
| 2   | Awash        | 112 700                           | 4.6                              | 1.4                                       |
| 3   | Baro-Akobo   | 74 100                            | 23.6                             | 9.7                                       |
| 4   | Genale –Dawa | 171 050                           | 5.80                             | 1.2                                       |
| 5   | Mereb        | 5 700                             | 0.26                             | 3.2                                       |
| 6   | Omo-Gibe     | 78 200                            | 17.90                            | 6.7                                       |
| 7   | Rift Valley  | 52 740                            | 5.60                             | 3.4                                       |
| 8   | Tekeze       | 89 000                            | 7.63                             | 3.2                                       |
| 9   | Wabe Shebele | 200 214                           | 3.15                             | 0.5                                       |
| 10  | Afar-Danakil | 74 000                            | 0.86                             | -   |
| 11  | Ogaden       | 77 100                            | 0                                | -   |
| 12  | Aysha        | 2 200                             | 0                                | -   |
|     | Total        | 1 136 816                         | 122.00                           |   |

Surface water resources, as we can see from the table, are ample though their distribution limits their availability. The Country is also known for its ground water, though its potential has not been assessed in detail.<sup>126</sup> However, it is widely reported that Ethiopia possesses a groundwater potential of approximately 2.6 billion m<sup>3</sup>. Not only are the yield levels of water wells too low (less than 5 liters per second) but wells are generally too

<sup>124</sup> Zewdie Abate, *water resources Development in Ethiopia, an Evaluation of Present Experience and Future Planning Concepts, A management Method for Analyzing a key Resource in a Nations Development* (1994), Pp. 41

<sup>125</sup> Ibid

<sup>126</sup> Federal democratic Republic of Ethiopia Ministry of Water Resources, <http://www.mowr.gov.et>, 11/15/2008

deep to justify economic exploitation of groundwater resources for irrigation purposes in Ethiopia.

Ethiopia has abundant surface and groundwater resources potential of which groundwater has a lion share. With regard to groundwater, the exact potential of the country is unknown so far. However, it is widely reported that Ethiopia possesses an extractable groundwater resources potential of approximately 2.6 billion metric cube mostly in its Western, Southern, Southwestern, and Central low lands. The preliminary estimated amount of yearly groundwater recharge of the country is about 2.6 billion metric cube.<sup>127</sup> Recent studies indicated that the potential is much greater than this amount. Most of the developed groundwater resources are mainly used for domestic and industrial water supply.

Ground waters in unconsolidated aquifers are usually of excellent quality, being naturally filtered. The water is normally clear, colorless and normally free from microbial contamination and thus requires minimal treatment. As a consequence of the slow travel times in the flat plains and due to the long contact time with the sediment, the groundwater often contains significant quantities of minerals in solution. High concentrations of fluoride are common in most of the rift valley boreholes and springs. The concentrations are above 1.5 parts per million (PPM) which is over the limits of drinking water established by the World Health Organization.

**Table 4.2. Groundwater Potential, Average annual runoff the major river basins and corresponding surface area and runoff percentages<sup>128</sup>**

| No | River Basin | Area in Km | Annual Runoff | Groundwater Potential in | Surface area of | Annual runoff as a |
|----|-------------|------------|---------------|--------------------------|-----------------|--------------------|
|----|-------------|------------|---------------|--------------------------|-----------------|--------------------|

<sup>127</sup> Getachew Abdi Zerfu, *Management Aspects of Rural water Sustainability in Ethiopia*, International Institute for Infrastructural, Hydraulic and Environmental Engineering, (February 2002), Pp.9

<sup>128</sup> Ibid Pp.11

|     |                  | square    |       | Metric Cube | River Basin as percentage of the total area (5) | percentage of the total annual runoff (%) |
|-----|------------------|-----------|-------|-------------|---|---|
| 1.  | Abay (Blue Nile) | 210,846   | 52.62 | 1.8         | 18.6  | 42.6                                      |
| 2.  | Awash            | 112,696   | 4.6   | 0.14        | 9.9   | 3.7                                       |
| 3.  | Baro-Akobo       | 74,102    | 23.55 | 0.31        | 6.5   | 19.0                                      |
| 4.  | Genale-Dawa      | 171,042   | 5.88  | 0.03        | 15.1  | 4.8                                       |
| 5.  | Tekeze           | 90,001    | 8.13  | 0.2         | 7.9   | 6.6                                       |
| 6.  | Wabi-Shebele     | 202,697   | 3.16  | 0.04        | 17.9  | 2.6                                       |
| 7.  | Omo-Gibe         | 78,213    | 17.96 | 0.1         | 6.9   | 14.6                                      |
| 8.  | Mereb            | 5,7000    | 0.15  | 0.05        | 0.5   | 0.1                                       |
|     | Rift Valley      | 52,739    | 5.63  | 0.1         | 4.6   | 4.6                                       |
| 9.  | Dankil           | 62,882    | 0.86  |             | 5.5   | 0.7                                       |
| 10. | Ogaden           | 72,121    |       |             | 6.4   |   |
| 11. | Aysha            | 2,223     | 0.86  |             | 0.2   | 0.7                                       |
|     | Total            | 1,135,262 | 123.4 | 2.77        | 100   | 100                                       |

**Table 4.3. Water Supply coverage in Ethiopia<sup>129</sup>**

| Regional Sate | Population (x 10 <sup>6</sup> ) |       | Water Supply Coverage in percent total population of respective |       |
|---------------|---------------------------------|-------|---|-------|
|               | Urban                           | Rural | Urban   | Rural |
| Tigray        | 622                             | 3072  | 59  | 29    |
| Afar          | 99                              | 1117  | 44  | 14    |
| Amhara        | 1690                            | 14615 | 96  | 23    |
| Oromia        | 2648                            | 19706 | 76  | 24    |

<sup>129</sup> Ibid, Pp.14

|                  |      |       |    |    |
|------------------|------|-------|----|----|
| Diredawa         | 229  | 89    | 68 | 37 |
| Harari           | 97   | 63    | 25 | 17 |
| Somali           | 560  | 3138  | 14 |    |
| SNNPR            | 958  | 11557 | 83 | 24 |
| Gambella         | 36   | 175   | 35 | 14 |
| Benshangul-Gumuz | 47   | 490   | 27 |    |
| Addis Ababa      | 2495 | 0     | 70 | 0  |

## 4.2 . USES AND DEMANDS OF WATER RESOURCE IN DIFFERENT SUB – SECTORS IN ETHIOPIA

### I. Irrigation

Irrigation systems are supplied from run-off, from river flows or from storage releases by pumping or diverting from weirs and by cutting through river banks. There are very few dams to store surplus supplies for use at low flow periods.<sup>130</sup> Irrigated farmlands countrywide in 1991 comprised some 64,000 small-scale schemes and 112,105 medium- and large-scale schemes. Ethiopia’s Ministry of Water resource reports that the total area under irrigation increased from 176,105 in 1991 to 197,250 in 1998. Most of that increase, a total of about 21,145 hectares of modern small-scale irrigation schemes, stemmed from growth in small-scale irrigation in the various regions. Little or no development occurred in medium- and large-scale irrigation during that period. Irrigation coverage has not grown significantly since then.<sup>131</sup>

On a per capita basis, Ethiopia has developed irrigation over an area of a mere 0.3 ha per 100 people, vis-à-vis its potential of about 4.0 hectares per 100 people. Despite the vast potential, irrigation infrastructure has remained underdeveloped while Ethiopia has

<sup>130</sup> Zewdie, Abate, Water Resource Development in Ethiopia, An Evaluation of of Present Experience and Future Developing Concepts, 1994, Pp. 47

<sup>131</sup> FDRE, Ministry of Water Resource, water Resource Development program Main report, 2002, page 13

endured persistent drought and famine. There are 4 categories of irrigation schemes countrywide. They include traditional schemes, modern communal schemes, modern public schemes, and modern private schemes.<sup>132</sup>

**Traditional small-scale schemes:** up to 100 hectares in area, built and operated by farmers in local communities. Traditionally, farmers have built small-scale schemes at their own initiative, with Government technical and material support. They manage them in their own users' associations or committees, irrigating areas of 50 to 100 ha, the average ranging from 70 to 90 hectares. A total of 1,309 such schemes existed in 2000, covering an estimated 60,000 hectares. Farm families use traditional systems in irrigating such crops as cereals, pulses, oilseeds, sugarcane, vegetables, fruits, and chat, over areas ranging from 0.2 to 0.5 hectares. The average farm size for current planning purposes has been set at 0.25 hectares.

Water users' associations have long existed to manage traditional schemes. They are generally well organized and effectively operated by farmers who know each other and are committed to cooperating closely to achieve common goals. Typical associations comprise up to 200 users who share a main canal or branch canal. They may be grouped into several teams of 20 to 30 farmers each. Such associations handle construction, water allocation, operation, and maintenance functions.

**Modern communal schemes:** up to 200 ha, built by Government agencies with farmer participation. Normally the government constructs communal schemes with farmer participation for areas extending from 20 to 200 ha. Modern communal schemes were developed after the catastrophic drought of 1973 as a mean to improve food security and peasant livelihoods by providing for cash income through production and marketing of crops. There are 288 modern communal schemes in Ethiopia that are capable of irrigating a total of approximately 30,000 ha.

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<sup>132</sup> Ibid

Modern communal schemes are generally based on run-of-river diversion of streams and rivers, and may also involve micro-dams for storage. Beneficiary farmers usually operate and maintain them through users' associations with, in some regions, on-farm support from zonal departments of agriculture and support for headwork and main canals by zonal departments of water, mines, and energy. Irrigation commissions or authorities provide technical support in such regions as Amhara, the Southern Nations Nationalities and Peoples Region (SNNPR), Oromiya, Tigray, and Affar.

**Modern private schemes:** up to 2,000 hectares, owned and operated by private investors individually, in partnership, or as corporations. Private estates pioneered the development of medium and large-scale irrigation projects in the Upper Awash region during the 1950s and 1960s. They were unexpectedly nationalized in the mid-1970s. During the 1990s some private schemes, mostly in the form of limited companies, re-emerged with the adoption of market-based economic policy but have expanded relatively slowly. Currently 18 modern private irrigation projects are operating in some form over a total area of 6,000 hectares. They are located in the Oromiya, SNNPR, and Affar regions.

**Public schemes:** over 3,000 ha, owned and operated by public enterprises, as state farms. The history of public involvement in large-scale irrigation is relatively recent, having started late in the 1970s. Others, notably Gode West, Omo Ratti, and Alwero-Abobo, began late in the 1980s and early in the 1990s, but have not yet been completed. Most large-scale schemes, except the Finchaa Sugar Estate (currently operating successfully), have been suspended because public involvement was withdrawn as a result of Government changes. The recently issued water management policy has, however, committed the Federal Government to small- and large-scale project development in the new millennium.

Large-scale schemes being operated by public enterprises extend over an area estimated at 61,000 ha. Two regions, Oromiya and Affar, account for nearly 87 per cent of all public irrigation schemes, with 73 per cent being located in the Awash Valley. The SNNPR and Somali regions contain 9.9 and 3.3 per cent, respectively, of public schemes.

## **II. Hydroelectric power**

Sub-sector overview Ethiopia is endowed with vast energy resources. The gross hydropower potential of the country is estimated at 650 TWh per year of which 25 per cent could be exploited for power. Over 70 billion m<sup>3</sup> of natural gas, more than 1,000 MW of geothermal power, and several hundred millions of tons of coal and oil shale constitute the energy potential so far estimated.<sup>133</sup> In spite of very substantial hydropower potential, Ethiopia has one of the lowest levels of per capita electric energy consumption in the world. Traditional energy resources such as fuel wood, dung, crop-residues, and human and animal power are estimated to generate 95 per cent of the energy actually consumed. Electricity and oil products supply the remaining 5 per cent. The electricity supply is generated domestically, with hydroelectricity accounting for over 90 per cent of supply. Oil is imported in the form of refined products.

Annual energy consumption is about 25 kWh per capita for electricity, 16 kgoe (kilograms of oil equivalent) per capita for petroleum, and 276 kgoe per capita for other sources, mainly of biomass origin. Per capita electricity consumption is among the lowest in the world, while petroleum consumption is much below the world average of about 600 kg per capita per annum.

The major consumer of the energy is the household sector, which accounts for 82 per cent of the total energy supplied. The transport sector utilizes more than 70 percent of the imported oil, while agriculture consumes only 3 percent. Therefore, Ethiopia's huge hydroelectric generation potential has barely been exploited. About 160 GWh/year could be produced if 1 quarter of the potential could be exploited economically by today's technologies. That estimate agrees with the estimate in studies by Water and Power Consultancy Services (WAPCOS). WAPCOS refers to the "technical" potential (although it would be more appropriate to say the "economic potential") and gives the parallel figure of about 145 GWh/year. The WAPCOS study considered water regulation options

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<sup>133</sup> Ibid

that require dam/diversion weir lengths of less than 750 meters and dam heights below 120 meters in establishing “technical” or “economic” potential. The installed capacity, corresponding to 145,000 GWh/year output at an average plant utilization factor of 0.6, would be about 27,000 MW. The supply system itself is currently capacity-constrained, with hydroelectric generation capacity hard put to meet demand in terms of peak power and annual energy output. The situation is exacerbated by low rainfall. Reservoir siltation in older plants has reduced storage capacity, thereby accentuating spillage requirements in flood situations and water shortage in dry years.

### **III. Fisheries and in land Navigation**

Conservative estimates put the potential yield of fish resources at 96,000 tons per annum including over 64,000 tons from the national water in the Red Sea and over 30,000 tons from inland waters. Recent study has identified nine major rivers and tributaries (Abbay, Awash, Omo-Ghiba, Genale-dawa, Wabi Shebelle, Baro-Akobo, Tekeze, Mereb and Barka) that, if harnessed for irrigation and hydropower, could also be used for fish production.<sup>134</sup> In addition, the lakes of, for example, the Rift Valley, as well as the existing reservoirs (Koka, Fincha, Melka Wakana and Gilgel Gibe) have large potential of fishery development.

The FAO study (1986) defined the fish-farming zones and species suitable for these zones, based on water temperature, local climate conditions and water quality. Accordingly, the hot low lands are found to be suitable for warm-water species like tilapia, claries and prawns. The highland perimeter and central highlands are suitable for cold-water fish such as trout.<sup>135</sup> However, it has been concluded that other species could also be developed selectively on the basis of detailed studies on cost benefits, biotechnology and utility criteria as there are over 100 species of fish reported to be found in Ethiopia. In spite of the tremendous potential for their development fisheries play a minimal role in water resources development project. Ethiopian river flow towards the lowlands on

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<sup>134</sup> Zewdie, Pp. 55

<sup>135</sup> Ibid



precipitous slopes through deep canyons. River navigation thus of limited potential and is practiced only on the River Baro during the rainy season. In conclusion, it is appropriate to consider the development of fisheries as part of the water resources development projects and to increase the production of fish in the country in order to meet the increasing demand of food.

The transportation potential of Ethiopian waterways and water bodies has not been fully exploited for economic development. The socio-economic impact of water transport at the regional or local level may be significant in areas where road transport is difficult. The income to be generated especially from tourism is not negligible, if modern and efficient transport systems are organized. Some rivers, for example the Baro-Akobo, are navigable. The Baro River is a good case in point: the Gambella Regional Government has undertaken the Baro River Transportation Study. Lake Tana is the water body used for transportation purposes between Bahir Dar and several islands as far as Gorgora.

#### **IV. Drinking water Demand**

The urban and rural drinking-water demands depend on many factors such as climate, socio-economic conditions, the quality of water and its cost. The urban water supply standards vary from town to town. In Africa, the demands range from 80 to 145 liters per capital per day. Apart from the domestic water supply demands, there are a number of other uses by the urban population. These are mainly of public services, commercial applications and fire-fighting. The commercial use include hotels, offices, business and trade establishments. The public services include public bathrooms, swimming-pools, street flushing and park maintenance. In large cities, the total non-domestic use may be 50% higher than the domestic demand. Leakage is an important factor affecting the effectiveness of water distribution. From the point of the maintenance of good standards of health and sanitary conditions, the present domestic water supply status in the towns and cities of Ethiopia is inadequate.<sup>136</sup>

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<sup>136</sup> Ibid pp.52

### 4.3. WATER SECTOR DEVELOPMENT PROGRAM (WSDP)

The Water Resources Management Policy is one among the key policies emphasized in economic development policy. To realize policy objectives, strategies were formulated that have emanated directly from the sector development policy and are consistent in indicating the ways and means of concretely implementing the policy objectives. The Government of Ethiopia has approached the formulation of the WSDP within an integrated policy and strategic framework. As water is multidimensional in nature, linkages with other sectoral policies and strategies have become inevitable, such as Disaster Prevention and Management, Energy, Health, and Conservation policies and strategies which have been prepared and put in place since 1993.<sup>137</sup> In addition there is a legislative framework to support these policies and strategies. More specifically, the principles put forward by the Ethiopian Water Resources Management Policy are explicitly linked to a broader policy framework at Regional and Federal levels. Similarly, the water policy has given rise directly to the National Water Strategy that in turn forms the basis for the development of WSDP. It is crucial that these linkages between the various levels of policy and planning are explicit.

WSDP is the instrument for implementing the water resources management policy. It follows the already identified and accepted strategy for water-resources management in the country. It identifies priority intervention areas in a 15-year time horizon and includes priority projects identified through various sources. Major list of projects came from river-basin master plans, where resource potentials and their priority areas for long-term (30–50 years) interventions are identified on the basis of individual river basins. The WSDP, therefore, provides a fertile ground for the development of individual projects within its priority intervention areas.

A classical Integrated Water Resources Management (IWRM) framework, *inter-alia*, contains a national policy, strategy and legislation, and an investment plan either at the national or basin level. Other important elements of the framework are coordination,

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<sup>137</sup> FDRE, Ministry of Water Resource, water Resource Development program Main report, 2002, page25

financing and monitoring mechanisms to implement the plans; governance mechanisms to ensure transparency and accountability, and a unique organization responsible for the whole thing. With the preparation of WSDP, Ethiopia is about to complete the first part of the IWRM framework. At the same time, the WSDP provides guidelines as how to move ahead with the second part of the framework.

#### **4.4. ETHIOPIAN WATER RESOURCE MANAGEMENT POLICY**

In 1999, one of the major tasks of the Ministry of Water Resources (MoWR) was the formulation of a comprehensive and integrated water resources management policy. The major goal of the policy is to enhance and promote all national efforts that seek to efficiently and optimally use the available water resources for sustainable socioeconomic development. The policy contains two sections addressing three sub-sectoral issues, namely water Supply and Sanitation (WSS), Irrigation, and Hydropower.

The water resources policy underpins various national efforts, including the:

- Development of water supply and sanitation services, including livestock watering
- Development of irrigated agriculture
- Development of hydroelectric power
- Development of inland water transport
- Development of fisheries and aquatic resources
- Protection and conservation of water resources

**Objectives of the Water Resources Policy: The major objectives of water Resource policy are to:**

- Develop the water resources of the country for the benefit of the people, for strategic planning and national wellbeing, and for sustainable security
- Conserve and enhance water resources and the overall aquatic environment of the country and protect the resources from degradation, pollution, depletion, waste and misuse on a sustainable basis.

- Ensure the provision of basic water needs at the household level.
- Allocate and apportion water based on comprehensive and integrated plans and optimum allocation principles that incorporate efficiency of use, equity of access and sustainability of the resource.
- Manage and combat drought and famine as well as other slow on-set disasters through the efficient allocation, redistribution, transfer, storage and use of water resources.
- Combat floods through sustainable mitigation, prevention, rehabilitation and related measures.
- Maintain, improve, regulate and monitor the quality of all water resources.
- Utilize, protect and conserve the country's trans-boundary water resources for the socioeconomic development of all the peoples of Ethiopia.

### **Policy Principles**

The following are the fundamental policy principles that guide the sustainable and efficient management of water resources in Ethiopia:

- Water is the common and indivisible natural endowment and asset of all the peoples of Ethiopia.
- Every Ethiopian citizen has the inalienable right to access to sufficient water of acceptable quality to satisfy basic human needs.
- Water shall be recognized both as an economic and a social good as well as a private and public good for all-around, viable, fair, and sustainable management.
- The development of water resources shall be underpinned by an integrated framework needs assessment and objective-oriented and capacity-based planning.
- Management of water resources shall recognize and incorporate social equity norms, including equitable access.
- Economic efficiency in water resources management shall be insured.
- System reliability and sustainability shall form the basis of plans, programs, projects, infrastructures and schemes in water resources.

- Environmental integrity shall constitute a central part of water resources management.
- The participation of stakeholders (including communities and women) in the relevant aspects of water resources management shall be promoted and ensured and the participatory approach--involving users, decision- and policymakers, planners, implementers, and donors--shall be promoted.
- The principle of "some for all, not all for some" shall be adopted and promoted

The water resource management policy covers most of the issues that need to be considered in the overall water resource management of the country. To give a few examples:

- Article 2.2.5.A.1. mentions the recognition of water as economic good ,
- Article 2.2.2. States that the pricing of water supplies shall aim at full cost recovery, while rural tariff settings need to be prepared on the objective of recovering operation and maintenance costs. However, conditions are forcing to apply full cost recovery tariffs in the rural areas at the moment,
- Article 4.1.1. States that the management of water supply systems shall be ensured to be at the lowest and most efficient level of institutional set up, which provides for the full participation of users and to promote effective decision making at the lowest practical level. This is in accordance with the agreement to the United Nations Development Program and Vision 21,
- In Article 2.3.1.2.1. the policy talks about sustainable water supply services to all the peoples of Ethiopia, as much as conditions permit is clearly stated as an objective.

Water policies should including the following four main objectives: (i) ensure the availability of water to all elements of society, including the poor and the underprivileged, and to take into account the particular needs of women and children; (ii) develop a legal and regulatory environment that will help the process of decentralization and sound environmental management that will improve the investment climate for the

private sector in water development and management, (iii). bring institutional changes that will help decentralize the management of water resources and enhance the role of women in the water development, and (iv) develop a state of knowledge and capability that will enable the country design future water resources management plans by itself with economic efficiency, gender equity, social justice and environmental awareness.

In general terms, the Ethiopian water Resource Management Policy addresses almost all the aforementioned issues by calling for an integrated approach; the incorporation of cross-sectoral interests; the special treatment of women, the disadvantaged, the unprivileged and rural communities; the participation of the private sector; a decentralized approach (rural-centered); prioritization of water uses; and the adoption of a basin approach.

*Discuss the points that the policy fails to address?*

Although the private sector has been mentioned here and there in the policy document, it failed to robust enough to attract and involve the sector. Implicitly, it seems that the policy is inclined to sustain the status quo under which the State will serve as the sole investor, implementer and manager of water projects in the country.

The policy also failed to mention and underline the need for the establishment of a permanent legal and institutional framework on shared river basins, most particularly on the Blue Nile (Abbay), which could entitle Ethiopia to equitable and reasonable share of the common water resources. It is incumbent upon any future water policy or the revision thereof to take this framework in to consideration.

The policy is developing giving due attention to general, cross-cutting and sectoral issues. Inland water transportation, aquatic resources and tourism and recreation issues have been addressed under the general aspects of the policy. Issues related to water allocation and apportionment, environment, watershed engineering, water resources management information system, monitoring, assessment and auditing, water cost pricing (economics

of water), ground water resources, disasters, emergencies and public safety, transboundary waters, gender; research and development; water quality management; and enabling environment have been dealt under the umbrella of cross cutting issues. The sectoral part of the policy discusses specific issues in areas of water supply and sanitation, irrigation and hydropower.

Among the issues raised in the policy, let us make some highlights on issues related to water allocation, integration of developments, basin development, transboundary water, water pricing and tariff setting.

### **Water Allocation and Apportionment<sup>138</sup>**

Regarding water allocation and apportionment, the policy sets detail principles on how water should be allocated and apportioned:

1. Recognize that the basic minimum requirement, as the reserve (basic human and livestock needs, as well as environment reserve) has the highest priority in any water allocation plan.
2. Ensure that water allocation gives highest priority to water supply and sanitation while apportioning the rest for uses and users that result in highest socio-economic benefits.
3. Enhance and encourage water allocation that is based on efficient use of water resources that harmonizes greater economic and social benefits.
4. Ensure that water allocation shall be based on the basin, sub-basin and other hydrological boundaries and take into consideration the needs of drought prone areas.
5. Adopt the principle that water allocation shall not be made on permanent basis, but rather on an agreed time horizon that fits best with the socioeconomic development plans, especially pertinent to water resources, subjected to appraisals and revisions in light of new developments.

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<sup>138</sup> Taye, Assefa, *Digest of Ethiopia's National Policies, Strategies and Programs*, 2009, Pp. 318

*To what extent these principles are reflected in the Water Resource Management proclamation?*

### **Integration Developments**

The water resource management policy document underlies the importance of ‘integrated approach to water resource development for optimal utilization of the Country’s water resources’. An integrated water resource management (IWRM) promotes the coordinated development and management of water, land and related resources to maximize the economic and social welfare in an equitable and sustainable manner. The concept of IWRM, which seeks an efficient blend of all available resources (fresh surface water, ground water, precipitation and drainage water) to meet demands of the full range of water users (including agriculture, municipalities, industry and in-stream flows), is adopted in the management of water demand as well as water supply.

### **Basin Developments**

The water policy has recognized and adopted the hydrologic boundary or basin as the fundamental planning unit in water resource management domain. It also indicates that water resources amendment need to be compatible and integrated with other natural resources as well as river basin development pals and with goals of other sectoral developments in health, mines, energy, agriculture, etc.

### **Transboundary water issues**

The policy addresses issues related to Transboundary waters in the following ways:

- Study on sustainable basis Ethiopia’s stake and national development interests in the allocation and utilization of transboundary waters;
- Promote the establishment of an integrated framework for joint utilization and equitable cooperation and agreements on transboundary waters;



- Ascertain and promote Ethiopia's entitlement and use of transboundary waters based on those accepted international norms and conventions endorsed by Ethiopia,
- Foster meaningful and mutually fair regional cooperation and agreements on the joint and efficient use of transboundary waters with riparian countries based on equitable and reasonable use principles
- Comply with those international covenants adopted by Ethiopia and manage Transboundary waters accordingly.<sup>139</sup>

*Compare these principles of the policy with the case of Nile, what initiatives have taken to implement the principles of the policy on transboundary water issues?*

### **Water Pricing and Tariff Setting**

The policy relating to water pricing commits to:

- recognize water as a natural resource with an economic value and ensure that fees are paid for services rendered,
- recognize water as vulnerable and scarce natural resource and ensure that all pricing systems and mechanisms should be geared towards conservation, protection and efficient use of water as well as promote equity of access.
- ensure that the price for water should neither be too high to discourage water use or nor too low to encourage abuses and overuse of water
- promote the tariff setting shall be site specific, depending on the particulars of the project, location, the users, the cost and other characteristics of the schemes,
- ensure that the basic human needs of water for disadvantaged rural communities, who cannot afford to pay for development of water systems, shall be borne by the government, as appropriate, and in so far as the communities are able and willing to cover the operation and maintenance cost of their own,
- ensure that pricing for urban water supplies shall aim at full cost recovery,

The policy has also specific stipulations pertaining to tariff setting. These are to:

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<sup>139</sup> Taye, Assefa, *Digest of Ethiopia's National Policies, Strategies and Programs*, 2009, Pp. 319

- ensure that Tariff structures are site specific and determined according to circumstances,
- ensure that the rural tariff settings are based on the objective of recovering operation and maintenance costs while urban tariff structures are based on full cost recovery,
- ensure that tariff structures in water supply systems are based on equitable and practical guidelines criteria,
- establish a ‘social tariff’ that enables poor communities to cover operation and maintenance costs,
- establish progressive tariff rates in urban water supplies that are tied to consumption rates,
- develop flat rate tariffs for communal services like hand pumps and public posts.

## **4.5. WATER RESOURCE MANAGEMENT IN ETHIOPIA**

### **4.5.1. Development of Water Resource Management in Ethiopia**

Water resource development approaches and organizations in Ethiopia have evolved over time. Prior to the mid-50s, only a small portion of Ethiopia’s water resources was developed and the government’s administrative role was minimal. In 1956, a Water Resource Department was established under the Ministry of Public Works and communications to handle multi-purpose investigation of the Blue-Nile (Abbay) basin. Over the years, it undertook river basin studies and water well drilling programs. Parallel to this the Awash Valley Authority (AVA) was established in 1962 assuming responsibilities for all water activities in the Awash valley. Its mandates include water planning, development and operation, including water rights demonstration, in the valley.<sup>140</sup>

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<sup>140</sup>Ibid, Pp. 314

Due to the growing need for water in many parts of Ethiopia, a national Water Resource Commission (NWRC) was established in 1971 and received responsibility for all aspect of water use and development in the country, especially water supply for domestic purpose was the National Water Resource Commission (NWRC). In addition to other responsibilities this Commission was further entrusted to provide institutional and managerial facilitation for a clean and adequate water supply for domestic use and livestock watering purposes. The commission's powers were broad but were not fully exercised and implemented due to financial and organizational constraints as well as lack of commitment and willingness of public authorities to accept a national authority over a water resource development and management. As a result, the Ethiopian water Resource Authority (EWRA) was established in 1975 under the Ministry of Mines, Energy and water Resources. Three agencies namely, Land and water Studies Agency, Rural water Development Agency and Urban water Sewerage Agency were established under the umbrella of the Authority. The AVA, however, retained its responsibilities for the Awash Valley.

In another measure of recognition, the Valleys Agriculture Development Authority (VADA) was established in 1977. It had similar powers and duties as AVA except that its jurisdiction was extended to water resources encompassing the whole country. In order to avoid conflict with AVA, VADA created the Awas Valley Development Agency (AVDA). However, the latter has admitted powers compared to those that were enjoyed by AVA.

A further recognition took place in the water sector when a new National resources Commission (NWRC) was established in 1981 by incorporating VADA and AVDA under the Water Resource Development Authority (WRDA). The NWRC, in fact, was composed of the Water Resource Authority, the water Resource Supply and Sewerage Authority (WASSA), the Ethiopian Water Works Construction Authority (EWWCA) and Meteorological Services (NMS).

After about decades of operation, NWRC was dissolved and all the aforementioned Authorities, save EWWCA, were made accountable to the Ministry of Natural Resources and Environmental Protection (MNREP), which was established in 1993. Following the dissolution of MNREP in 1995, water resources management in Ethiopia has been elevated to a ministerial level in the same year when the government established the Ministry of water Resources (MoWR) as a Federal Institution for the water sector by Proclamation No. 4/95.<sup>141</sup>

At present, the Regional Administrations are responsible for the development, operation and maintenance of urban and rural water supply systems in their Region. In 1992, the Water Supply and Sanitation Authority's functions (WSSA) were transferred to the Regions and water development became decentralized. Until then, the WSSA was the principal agency responsible for water development in rural and urban areas (except Addis Ababa). But, under Proclamation No.7/1992, the Transitional Government of Ethiopia drew a new administrative map of the country according to the new organization of the territory. The new map set out the borders of 14 Regions on the basis of ethnic and linguistic criteria. The number of Regions was subsequently cut back to nine by combining nine member states and the capital Addis Ababa, also as a Region.<sup>142</sup>

WSSA has been absorbed into the Ministry of Water Resources (MoWR) and became the Department of Water Supply and Sanitation (DWSS). However, the relationship between the MoWR and the Regional Administrations appears rather unclear. How the decentralization of water management will be carried out in practice needs to be spelt in more detail and lack of comprehensive water legislation should be addressed. The local authorities, on one hand, have the opportunity to determine the needs of their areas. The Central Government cannot adequately plan what is beneficial for each local zone. Local Authorities are closer to the people and can understand their needs better. On the other hand, the Regional bureaus responsible for water management are short of trained and technical staff.

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<sup>141</sup> Ibid Pp. 315

<sup>142</sup> Caral Corona, *Integrated Water Resource Management and Politics: the Case of Ethiopia*: Pp. 1

Ministry of water resources is responsible for formulating policies for the water sectors at national level, for long term planning strategies, the setting of generic standards and for the coordination of projects and their funding together with foreign donor agencies. It is also responsible for legislation with regard to utilization and protection of water resources as well as the allocation of water between regional governments. It also provides technical assistance and advice upon request to the regional governments of the country.

Generally, the powers and duties of MoWR that are outlined in Proclamation No. 4/95 and No. 471/2005 include:

- Undertake basin studies and determine the country's ground and surface water resource potential in terms of volume and quality and facilitate their utilization
- Determine conditions and methods required for the optimum and equitable allocation and utilization of water bodies that flow across or lie between more than one Regional States among various uses,
- Undertake studies and negotiations for treaties pertaining to the utilization of boundary and transboundary water bodies and follow up the implementation of same,
- Carry out the study, design and construction works to promote the expansion of medium and large scale irrigation dams
- Issue permits and regulate the construction and operation of water works relating to water bodies,
- Administer dams and hydraulic structures constructed with federal budget unless they are entrusted to the authority of other relevant bodies
- Ensure the provision of meteorological services

**Table. 4.4. Water Supply and Sanitation Institution Roles and Responsibilities<sup>143</sup>**

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<sup>143</sup> Teshome, A. *Performance and Future Prospect of Water Supply and Sanitation in Ethiopia (Part II)*, P.5

| <b>Institution</b>            | <b>Responsibility</b>   |
|-------------------------------|---|
| <b>Federal</b>                | <ul style="list-style-type: none"> <li>• Policy setting: preparation &amp; enforcement of policies, standards, and regulations</li> <li>• Technical assistance to regional bureau for big projects</li> <li>• National database development</li> <li>• Coordination and resource mobilization for the Water Fund</li> </ul>   |
| <b>Regional water bureaus</b> | <ul style="list-style-type: none"> <li>• Preparation of regional policies, and regulations</li> <li>• Study, design, supervision and regulation of water supply projects</li> <li>• Construction of schemes: spring developments, small &amp; large gravity schemes, motorized schemes, boreholes and shallow wells</li> <li>• Contract out to the private sector</li> <li>• Build the capacity of zonal and woreda water offices</li> <li>• Set water tariffs</li> </ul>   |
| <b>Zonal water offices</b>    | <ul style="list-style-type: none"> <li>• Capacity building and technical support to the woreda</li> <li>• Implementation and monitoring assignments from regional bureau</li> <li>• Operation and maintenance in complex cases</li> <li>• Woreda water desks</li> <li>• Construction and maintenance of hand-dug wells and spring developments</li> <li>• Monitoring construction done by regional bureau or private contactors contracted by the bureau</li> <li>• Simple operation &amp; maintenance</li> <li>• Peasant associations/kebeles</li> <li>• Community mobilization and contributions of labor and/ or cash</li> <li>• Site selection</li> </ul> |

Each of the 9 regions and the Dire Dawa Administrative area has a Regional Water Bureau (RWB). RWBs roles include project implementation and scheme operation, but this has changed to one of program planning, management, coordination and capacity

building in the region. RWBs are now responsible for approving the Woreda programs as well as consolidating M&E reports of the Woredas for transmittal to MOWR. The planning and management of town water supply and sewerage services are the responsibility of Town Water Boards who are expected to contract out operation and maintenance services to Town Water Utility Operators under performance or service contracts. Addis Ababa Water Supply and Sewerage Authority (AAWSA) has the responsibility for management of water and sewerage services in Addis Ababa.

#### **4.5.2. Legislations on Management of Water Resources in Ethiopia**

Provisions related to water use and administrations are primarily incorporated in the 1960's Ethiopian Civil Code. Among other issues, the Civil Code sets many principles on Water use and administration. Though priority shall be given to the community regarding the usage of all running and still water<sup>144</sup>, water can also be owned privately.<sup>145</sup> Regarding use of water, the code classified Domestic use,<sup>146</sup> Irrigation,<sup>147</sup> Industrial Use.<sup>148</sup>

*Priority of domestic use, riparian doctrine and underground water as a public domain are the prominent features of water law in the Civil Code's provisions.*

Currently, working provisions on water resource management are found in Water Resource Management Proclamation No. 197/2000 and its implementing regulation no. 115/2005. Therefore, the provisions of the Civil Code on Water Law are repealed if they are not consistent with the provisions of the proclamation and the regulation.

For a country to protect and utilize its water resource in a way it produces the highest social and economic benefit to the community, production of strong legal instrument is

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<sup>144</sup> Article 1228(1)

<sup>145</sup> Article 1229

<sup>146</sup> Articles 1232- article 1235

<sup>147</sup> Articles 1236-1241

<sup>148</sup> Article 1242-1243

really mandatory. Considering this a proclamation on Water resource Management has been issued with objective of protecting and utilizing the water resource in a way it can secure the highest social and economic benefits of the peoples of Ethiopia. Article 3 of the Proclamations affirms this point.

*The purpose of the Proclamation is to ensure that the water resources to the country are protected and utilized to the highest social and economic benefit of the people of Ethiopia, to follow up and supervise that they are duly conserved, ensure that harmful effects of water are prevented, and that the management of water resources are carried out properly.*

From the readings of this provision we can identify two important concepts as the purpose of the proclamation:

1. Protection and utilization of the Country's water resource for the highest social and economic benefits of the people of Ethiopia.

The following questions may be derived from the above statement:

- What does protection of Water Resource mean?
- What methods are employed for the protection of water resource for the highest economic and social benefit?
- How can we utilize water resource?
- What methods are stated in the proclamation on the utilization of water resources?

Among other things, the proclamation sets some fundamental principles.

#### ***Article 6- Fundamental principles***

- 1) The Integrated Basin Master Plan Studies and Water Resources legislative framework shall serve as point of reference and ensure that any water resource is put to the highest social and economic benefit to the people of Ethiopia*
- 2) The social and economic development programmes, Investment plans and programmes and water resources development activity of any person, shall be based on the*



*country's Water Resources policy, the relevant basin Master Plan Studies and Water Resources laws .*

- 3) The Supervising body shall ensure and administer that the management of any water resource is put to the highest social and economic benefit of the Ethiopian people In accordance with the provisions of the Ethiopian Water Resources Policy, Basin Master Plan Studies and Water Resources laws*
- 4) Management of the water resources of Ethiopian shall be In accordance with a permit system.*

### **The Purpose of the proclamation**

As in the Civil Code, the proclamation also adhere the principle of priority of domestic users. According to Article 7 of the proclamation, preference shall be made among users. Domestic use shall have priority over and above any other water use. Domestic use means the use of water for drinking, cooking, sanitation or other domestic purposes.

In line with the principles of the Constitution, the proclamation introduces the public ownership of water resource of the country. As of Article 40 (3) of the FDRE Constitution, ownership of urban and rural land other natural resource is exclusively vested in the state and in peoples of Ethiopia. Similarly, the proclamation also states as water resource is the common property of the state and peoples of Ethiopia.

Different from previous water laws of the country, the proclamation has introduced permit system in setting the means in which water resource can be used. Accordingly, any person who wants to construct waterworks, or supply water, or transfer water which she/he abstracted from a water resource or received from another supplier, or release or discharge waste water into water resource needs a permit to do so from the supervising body.<sup>149</sup> Any application for water use permit must be presented to the supervising body with the necessary details. The application should contain the following information<sup>150</sup>

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<sup>149</sup> Article 11 of the Proclamation

<sup>150</sup> Article 3 of Water Resource management Regulation No. 115/2005

- The name and permanent address of the applicant
- The location of the water resources and the intended place of use
- The intended use of water resource
- The volume of water required monthly and annually
- The intended method and manner of use of the water resource
- Where appropriate, investment certificate
- Feasibility studies and maps reasonably required by the supervising body

After analyzing the application, the supervising body will issue the permit within sixty days, where the proposed use of water doesn't infringe any person's legitimate interest or entail pollution or harmful effects on the water resource and the environment. The supervising body, with justified and written reasons, may deny the permit. It can also revoke or suspend the permit where the holder of the permit fails to observe or fulfill his/her obligations. In this case, the dissatisfied party may bring complaints against the decisions first to the supervising body and then he/she can also appeal to the competent court within sixty days as of the date on which the decision was given.<sup>151</sup>

Water use and allocation (particularly in rural areas) faces lots of disputes and disagreements. Disputes have been observed between permit holders and between a permit holder and a third party concerning rights or obligations arising from permits. In principle it is the supervising body which is given the power to settle disputes in such cases. Water use disputes will be taken to the court of competent jurisdiction in the form of appeal only.<sup>152</sup> Whereas, when the dispute is related to the permit and when the parties are the supervising body and the permit holder, the controversy is expected to be solved through negotiations. In the event that agreement cannot be reached through negotiations, the case shall be settled by arbitration.<sup>153</sup> The subsequent regulation sets the detail on how arbitration is going to take place.

Article 36 of Regulation No. 115/2005 states the following:

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<sup>151</sup> Article 18 Regulation No. 115/2005

<sup>152</sup> Article 9 (1) &(2) of Proclamation No. 197/2000

<sup>153</sup> Article 9 (3 &4) of Proclamation No. 197/2000

1. *Subject to Article 9 (2) of the Proclamation pending disputes arising between the supervising Body and the permit holder which could not amicably be settle within 60 consecutive days either party may request to solve the dispute through arbitration. Thereby:*
  - a. *each party shall nominate two arbitrators and inform the other party*
  - b. *the arbitrators nominated by the parities shall nominate a third arbitrator as presiding one in case the parties failed to agree accordingly the application shall be as provided in the civil code of Ethiopia*
  - c. *the arbitrators shall be governed by the relevant laws of the regional and federal governments*
  - d. *the parties shall have the obligation to provide information demanded by the arbitrators and cooperate there with*
  - e. *the party against whose a decision is given shall have the obligation to be bound thereby, however, a party disfavored shall have the right to appeal to the court having jurisdiction.*
2. *The sit the arbitration shall be in the town where the head quarto r of the supervising body is located.*
3. *The parties shall the obligation to cover the expenses necessary to the arbitrators*
4. *The provisions of the Ethiopian Civil Code and Civil procedure Code shall be applicable on matters which are not covered by this article.*

As the proclamation states, the provisions of the civil code are still applicable to the extent that they are in agreement with the provisions of the proclamation.<sup>154</sup>

*Which provisions of the civil code do you think are in agreement with proclamation and still in effect?*

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<sup>154</sup> Article 32 (2) of Proclamation No. 197/2000

#### **4.6. RESOLVING WATER USE DISPUTES: THE CASE OF ETHIOPIA**

Disputes between individuals, between states, and between states and individuals over water use is very common in all parts of the world. These conflicts will grow in number, because the demands that spawn them will continue to increase with the swelling population. In Ethiopia, where agriculture takes the lion share in the country's economy and where there is serious shortage in Water supply, disputes over water use are not uncommon particularly in the rural regions. Countries employ different mechanisms in their water laws to resolve disputes which arise from water uses. Among the methods, the following are the most common:

**1. Prioritize Use:** As we have discussed in the previous chapters, water has diverse uses. It has domestic uses, industrial uses, irrigation, fishing, hydropower, recreational uses and others. Individuals may need water for different purposes. One may need it for domestic use and the other for industrial. The government may want to establish a hydroelectric plant while its citizens are in desperate need of drinking water. In a situation where there is shortage of water resource, protecting all these interests may not be possible. In that case, dispute will arise. To resolve such kinds of conflicts, countries have introduced rules of prioritization. In most cases, domestic use has given priority. This is a method of allocating a fluctuating supply on the demand side, that is to prioritize the use or user. The historic rights doctrine does this by giving progressively lower priority to progressively more-recent users, regardless of how the water is put to use. Prior uses are generally protected in international treaties, although more recent uses are not put at risk of losing their supply.

Countries give highest priority for drinking water for humans, followed by drinking water for animals both of these uses are sacrosanct and neither may be denied anyone for any reason at any time. The next priority is irrigation water which flows through the canal system. The last priority is irrigation water brought to land through modern means. A

villager might use a pump to bring new lands into cultivation, for example, but his or her lands would be the first to be cut off in years of low flow.

*If this is the case in international law and practice, how do you see Ethiopia's right over Nile?*

On the Nile dispute between Ethiopia and Egypt, it is difficult to rationalize Ethiopia's not being able to develop its water resources for drinking or food crops so that Egypt can continue to grow cotton for export. In this context, it is also troublesome to justify Israeli swimming pools at the expense of Palestinian drinking water.

The Ethiopian civil code adheres priority of domestic use. Look at the following provisions:

**Art. 1233. - 2. Right of neighbors**

*A landowner who has water in excess of what he requires for domestic purposes shall give his neighbors the water indispensable for their domestic use, where they cannot get water elsewhere except at exaggerated costs.*

*How do you see the applicability of this provision in light of the current land policy (laws) of the country?*

**Art. 1237. - 2. Priority of domestic use.**

*(1) Where the use of water for purposes of irrigation is or may be detrimental to persons downstream who use such water for purposes other than domestic, the said persons may, where they show the existence of vested rights to their benefit, object to the water being used for irrigation.*

*(2) There shall be deemed to be vested rights on the use of water for purposes other than domestic where apparent or notorious works or installations have been done on the ground with a view to using the water for such purposes.*

**2. Allocate time, not quantity:** In cases of shortage of water resource, countries usually allocate time duration through which the water will reasonably be allocated among users.

This method takes no consideration of the quantity that the user is going to consume. For instance, within the time given the farmer, in case of irrigation, may use the water in unlimited quantity. International water agreements generally allocate shared water as an absolute quantity in volumetric terms. The Transboundary Freshwater Dispute Database includes a collection of 150 water-related treaties investigates the 49 of those which delineate a water allocation between nations, finding that nine simply divide water equally while the other 40 have specific volume allocations. This latter arrangement requires that one nation bear the full brunt of a fluctuating supply. In the unratified Johnston arrangements between the riparian states of the Jordan River, for example, Israel was to receive the remainder of the river's flow after each nation had received its set allocations. Generally, it is the upper riparian which receives this burden; it is easier to plan for delivery of a set amount to a lower riparian than it is for an upper riparian to try and consume a fixed amount and deliver the fluctuating remainder downstream.

This principle entails that when we allocate water we should allocate by time, not quantity. This is true whether the allocation is between villages, between lineages (large extended family units), or between individual users. Some examples of how this works at different levels: Generally, if two villages share a canal, each village is allocated set days of the week four days for the upstream riparian and three for the downstream riparian, for example.

Allocating by time allows for two benefits. The first is that it relegates micro-management of the fluctuations of the river to the smallest possible management unit the individual user thus spreading risk as broadly as possible. For example, when one has rights to one hour of irrigation, the irrigator himself plans for greater and lesser supply at the most local level. The alternative method of allocating a set volumetric amount would concentrate risk among those users selected to bear the burden of fluctuation. In a prior appropriation setting, for example, risk would be concentrated among the most-recent irrigators; in an international arrangement, all of the risk would fall to the users of one country. The second benefit of time- over volume-allocations has to do with the potential of water markets. Economists have long advocated a degree of market structure for water resources to encourage greater efficiency of use. Allocating by a riparian rights doctrines,

or by a historic rights doctrine with clauses to "use or lose" one's allocated water, provide no incentive for a user to conserve. However, if one is able to sell that portion of one's allocation which is saved through conservation measures for a greater price than the cost of conservation, it is argued that the "invisible hand" can then guide water to its most efficient use.<sup>155</sup>

- *Do you think that this rule is advantageous for the right of Ethiopia over the Nile River?*
- *What do you think on the position of the civil code on this principle?*

**3. Protect downstream and minority rights:** In the absence of a treaty, upstream riparians have a hydrological advantage in developing the water. Particularly, the case is sensitive in case of Transboundary Rivers. In the absence of political constraints to the contrary, these upstream riparians have occasionally abused this advantage. For instance, India was able to divert a disproportionate amount of the Ganges River to flush the port of Calcutta for years, for example, even to the objection of downstream Bangladesh. Similarly, the Turkish Southeast Anatolia Project on the Euphrates and US development of the Colorado proceeded despite the objections of downstream riparians on each respective stream.<sup>156</sup>

When two villages share a major canal for example, the canal itself is manifestation of an agreement where delivery to the downstream village is explicit downstream investment in irrigation infrastructure clearly depends on a guarantee of future deliveries. As mentioned above, the villages divide water by time perhaps four days per week for the upstream village, three days to the downstream village. These agreements are so imbedded in history that deviation from them would be immediately harmful.

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<sup>155</sup> Aaron T. Wolf, *Indigenous approaches to water conflict negotiations and implications for international waters*, International Negotiation: A Journal of Theory and Practice. Volume 5:2, December 2000.

<sup>156</sup> Ibid

Usually, the concept of equity and the protection of the rights of the weak. One story explains this, after two brothers divided a parcel of land, a well was found on one of the parcels. When the well-less brother insisted on a portion of the water, the two brought their plight to a local judge who found that, while the well belonged solely to the one brother, they should share the water for the sake of peace in the family. This tale was used to explain that solutions are not solely about right and wrong, but also about preserving honor, pride, and peace amongst all the disputants.

This is generally true in the international community as well. Recognition and protection of downstream rights is present in most treaties abuse generally comes about only in the absence of an agreement.

*Do you think that water law in Ethiopia adequately protect rights of downstream?*

Refer to the following provision:

**Art. 1236. - Irrigation. - 1. Right of owner**

*(1) An owner whose land is crossed or bordered by running water may use such water for irrigating his land.*

*(2) Such right may not be exercised to the detriment of those who, on the land or downstream, use such water for domestic purposes or to water their cattle.*

**4. Alternative dispute resolution:** Alternative Dispute Resolution (ADR) refers to "a wide variety of consensual approaches with which parties in conflict voluntarily seek to reach a mutually acceptable settlement".<sup>157</sup> It generally seeks to move parties away from zero-sum, or distributive, solutions, towards those in which all parties gain positive-sum or integrative.

ADR distinguishes between unassisted negotiations, those between the parties of a dispute alone, and assisted negotiations, where an individual is designated as the facilitator, mediator, or adjudicator.

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<sup>157</sup> Ibid



One of the greatest gaps in international water dispute resolution is the lack of just such recognized authority. One writer describes the elaborate process by which the International Law Commission, the United Nations legal body, has taken to design a draft code for international waters. The 24-year effort, only recently approved by the General Assembly, includes terms defined by politics rather than science, vague and contradictory doctrines, and no enforcement mechanism. Even approved, international law applies only to States, and therefore ignores many of the ethnic minorities who might claim water rights. Furthermore, the International Court of Justice requires not only that both parties to a dispute agree to the Court's jurisdiction, but also that they agree to the specific point of law to be decided. Given these constraints both on legal guidelines and on the venue for legal resolution, it is hardly surprising that water treaties are rarely explicitly informed by general legal principles, or that the International Court of Justice has decided only a single case regarding international water law.<sup>158</sup>

Alternative Dispute Resolution theory describes a toolbox of "process techniques", the methods by which a facilitator or mediator helps guide negotiations through to an acceptable agreement. Many of these techniques, generally described in the ADR literature as modern, Western, methods, apparently, have been used by indigenous people for centuries if not millennia.

The application of ADR in Ethiopia will be discussed in the coming topic.

*Can we use ADR for resolving water use disputes in Ethiopia?*

## **4.7. Traditional Water Resource Management Practices in Ethiopia**

### **4.7.1. Importance of Customary Water Law**

Customary water law and administration exists all over the world and still plays an important role in water management, particularly at the users' level. Customary practices are either local, regional or tribal, and they may derive from well established rules. Often

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<sup>158</sup> Ibid

they have persisted in spite of the introduction of subsequent water institutions and legal systems. Custom and traditional uses have often determined, and still continue to determine, water rights and their administration. Traditional customary water rights are generally not written nor registered, but are transmitted orally from generation to generation.

Custom has been defined as the spontaneous expression of the formation of a right, while the written law represents its codified form. Historically, it is also the first and exclusive source of juridical rules; we have seen how customary law has been based on the constant and uniform observance of rules of conduct accomplished by the members of a social community with the conviction that it corresponds to a legal need or obligation. From early times custom has had a decisive influence in the formulation of an objective right. When legislation came into being, it considered custom as an important source, either autonomous or parallel to other sources. As the output of written legislation increased, the state took over the power to enact legal precepts and, as a consequence, custom has slowly been superseded by written legislation.

While written codification has lessened the importance of custom as a source of law, the influence of custom is still felt in many fields, particularly in those relating to the use of land and water resources at the local level.

Generally, customary water law deals with subjects such as:

- (i) Customary legal status of water;
- (ii) Customary water right distribution and management;
- (iii) Customary procedures for the settlement of disputes among water users;
- (iv) Customary water administration.

Some countries have neither written water laws nor adequate water administration. These countries have to rely on local uses and customs, which vary from region to region, instead of written legislation and a modern water administration. One advantage of customary and traditional law over written law is its flexibility, making adaptation to

local needs at a particular moment easier. At the users' level it is a system generally well known, respected and followed. Sometimes it is the only system known by the population; therefore, it cannot be ignored or overlooked. As an example, we may quote a particular case in Africa. An official of the water department of the capital went to a village in order to carry out an inspection of a water distribution system. He was badly received by the traditional customary water administration, which ignored completely his official function. On the other hand, customary law has the character of uncertainty since its limits are often not well defined or determined. Furthermore, its modification is a slow process and cannot always keep pace with modern developments in water utilization which often necessitate profound and rapid transformations.

In the process of modernizing water resources management and before introducing or implementing modern concepts of water resources policy, administration and legislation, there is the need to undertake a preliminary analysis of the existing legal practices, including the prevailing customs. This survey is necessary in order to define and delimitate clearly the existing customary and traditional water rights.

The advantage of a written codification is that it gives the society to which it refers the assurance of a well defined quantity and quality of water, and a clear delimitation of individual rights.

In countries possessing written water legislation with an adequate water administration, local usages and customs are generally left as they are only for minor water utilizations and in cases where the codified law lacks specific provisions relating to them. Traditional customary rights are usually recognized by subsequent water regulations on the basis of detailed procedures. These generally include a preliminary inquiry and their subsequent recognition in the manner prescribed by the water law. The written recording or registration of existing customary water rights is one of the main characteristics of practically all modern water regulations. It is obvious that these procedures for adapting customary and traditional water rights to modern requirements necessitate an adequate institution responsible for undertaking the administration of the regime of water rights.

In the arid region of Northern Africa and the Middle East, where water is scarce and precious, orally transmitted regulations are prevalent and strictly adhered to by the users on the basis of the principles of Islamic water law, in spite of more recent water regulations which are often less known or ignored.

The same situation prevails, particularly at the users' level, in countries deriving their water regulations and administrations from the Chinese system of law (China, Japan, Korea, Vietnam). In these countries, despite more recent water administrations and written legislations sometimes copied from the west, the traditional Chinese water management practices still represent the known and respected water rules at the users' level.

To some extent, the Hindu and Buddhist principles of law have influenced and are still represented in the customary water laws of Bali, Myanmar (Burma), Kampuchea (Cambodia), Sri Lanka, Laos, Vietnam, Thailand, and, to lesser degree, India.

In Africa South of the Sahara, customary law has great relevance and is still respected, particularly for water use and distribution. This customary law is specifically recognized by statute in many countries, in spite of subsequently adopted legislation of a western type. Private ownership of water is unknown and the principle of 'community of interests' exists, whereby an individual has only a right to use land and water. These traditional and customary water administrations and institutions coexist with government administration.

In several countries of Latin America, where large American Indian communities exist, pre-Colombian customary and traditional water regulations and institutions deriving from Inca, Aztec and Maya civilizations continue to govern water at the users' level.

The difficulty of adapting modern system of water resources policy administration and legislation to traditional and customary regulations and institution must not be

overlooked. Since they are well known and respect at the users' level, these customs often become a major concern when changes are required in modern water resources planning and management. An effective policy in this respect must be formulated in order to bring them gradually under administrative control. As has been said, customary law cannot be ignored when introducing new legislation. It is also necessary to set up by legislation an appropriate administrative machinery to recognize as far as possible the provisions of customary law.

#### **4.7.2. The Ethiopian Case**

The water resources endowment of Ethiopia exhibits tremendous spatial and temporal variability and poses significant development and management challenges. People in the rural areas depend on scarce water supply. Consequently, both intra- and inter-ethnic conflicts over the use of natural resources are common in most of rural areas in the country. To resolve these water conflicts, the people have developed different traditional mechanisms. For instance we can take the Traditional Dispute Resolving Mechanisms on Water Resource Management in the Borena Zone, Oromiya Region and Enderta Woreda, Tigray Region.

The traditional mechanism of resolving conflicts and managing natural resources (land, water and forests) in the Borena Zone is derived from the Oromo institutions of *Gadaa*, *Aadaa*, *Seera* and *Safuu* and the associated cultural administrative structure. The Oromo society in general and the Borena in particular have their own indigenous water resource management system. This includes on how to effectively utilize available water resource and administer it. The water rights depend on the scarcity of water and the labor spent. Surface water, such as a river or water found in natural depressions or pools after a rainstorm, is regarded as a gift of God for all to use. Waters accumulated in a *haroo* (pond) or an *ella* (traditional dug well) dug manually or by machine, is regarded as property of a particular group (sub-clan or clan) with respect to the cost of maintenance. Downpour accumulated in *harros* that are manually dug is subject to serious regulations.

Generally, those who have dug improved or maintained the water resources have priority of access.

The Boren's *ella* is administered by *abba Hireegaa* (Father or administrator of the *ella*), who has the responsibility to oversee the operation and maintenance of the *ella*. Everybody who comes to water their livestock have to participate in desalting the *haroo* and *ella*. The pastoralists Borenas are fully aware of how to utilize their scarce water resources. During their rainy season they utilize *lolaa* (flood water) while they fetch water from *haroos* and *ellas* during the dry season. They have their own program of watering their animals during the dry season.

The rangeland of the Borenas is arranged according to the availability of seasonal water resources. They divide their grazing land into *fora* (dry season) rangeland and *warra* (wet season grazing land). Though people are not paying cash for the use of traditional ponds and dug wells, they cooperate in digging and maintenance activities and abide to the instructions of *Abba Hireega*. There is a clear sense of ownership and organization. Any intervention shall take such indigenous water resource management traditions into consideration.<sup>159</sup>

The traditional water resource management systems in Tigray Regional Government, Enderta Woreda is also noticeable. The main source of surface water basins in Tigray Region are Tekeze Basin, Mereb Basin and Afar Depression.

| River basin  | Catchments area (km <sup>2</sup> ) | Annual runoff (BM <sup>3</sup> ) | Specific discharge (l/s/km <sup>2</sup> ) |
|--------------|------------------------------------|----------------------------------|---|
| Mereb        | 5 700                              | 0.26                             | 3.2                                       |
| Tekeze       | 89 000                             | 7.63                             | 3.2                                       |
| Afar-Danakil | 74 000                             | 0.86                             | -   |

The Regional Bureau of Water Resource is the responsible organ for the total administration of water resource in the region. There are also Water Resource Bureaus at

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<sup>159</sup> Getachew Abdi Zerfu, Management Aspects of Rural water Sustainability in Ethiopia, International Institute for Infrastructural, Hydraulic and Environmental Engineering, February 2002, Pp 46

the Woreda level. Among the Woredas the Enderat Woreda is the most important one for our discussion. In Enderta Woreda, *Tabia Hagere Selam*, there are dams for irrigation purposes and wells for drinking water purposes. Due to the shortage of water and the communities' reliance on the available water in the Woreda, lots of conflicts have been recorded.

## **Irrigation**

In Woreda Enderta there are three dams which have been constructed for irrigation purpose, the dams are Hizat Wedi Cheber (in *Tabia Dediba*), Cheleko Ma'ihel (in *Tabia Cheleko*) and Gereb Adamharai (in *Tabia Freselam*). When disputes arise between/among upper riparian and lower riparian in using the irrigating water, the community has established traditional institution called *Abo Mai* (the father of water) for disputes on small scale irrigation; and *Abo Gereb* (the father of River) for disputes on large scale irrigation.

While discussing the methods to be employed to resolve water disputes, we have stated the method of "allocate time not quantity" as the most usual ones in different countries. The principle entail that when we allocate water we should allocate by time, not quantity. Similar to this principle, the *Abo Mai* in Tigray allocate the time (regardless of the quantity) to the community around the dams. Riparian farmers in the community are expected to use the water for irrigation within the time limit they are allowed to do so. If one crosses another's time and use the water, he will be sanctioned (fined) as a consequence. According to the customary practice, a person will be fined by 50 Birr per a cross. The Woreda's social court execute the decisions of the *Abo Mai*. Incases where the dispute cannot be resolved by the *Abo Mai* and the social court, the issue will be brought to the attention of Woreda's Bureau of Water Resource.<sup>160</sup>

## **Drinking Water**

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<sup>160</sup> Mahider Teka, Head of Water Resource Regulation Department, Bureau of water resource at Enderta Woreda, Interview on 23 July 2009.

To tackle the problem regarding shortage of drinking water, different endeavors have been employed by the Tigray regional government. Construction of wells and other drinking water projects can be cited to this effect. Considering the wells in the region, the wells in Enderta Woreda are remarkable. Due to shortage of drinking water in the Region and lack of detailed laws for settlements of water disputes, water conflicts while using the wells are very inevitable. The following can be considered as source of conflicts regarding drinking water in Enderta Woreda:

- Questions related to ownership of waters in the water point are the main sources of conflicts. Sometimes, according to Mahider,<sup>161</sup> no water catchments has been marked while digging the wells so people disagree on questions related to ownership of the water,
- Individuals may not keep their turn while fetching the water,
- Water users may quarrel with the guards at the water point,

To resolve these and other related conflicts over a water point, the community around the water point established a committee consists of six individuals; three females and three males, who are called Drinking Water Committee. The structure of the committee is:

- Chair Person
- V/President
- Auditor
- Cashier
- Property Administrator
- Water sanitation

The committee collects money from the community in monthly basis and that will be used for the administration of the water point (like to cover guard's salary and constructing fences). The committee has established Water Day, which is celebrated monthly. It is on that day that the committee gathers and listens to complaints and conflicts. After listening to the disputants, the committee will pass on a decision basing their customary practice. The decision then will be communicated to the *Tabia*. If the

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<sup>161</sup> Head of Water Resource Regulation Department, Bureau of water resource at Enderta



conflict cannot be resolved through these organs, the case will be brought to the attention of the Woreda's Bureau of water Resource.

## **REVIEW QUESTIONS**

1. Discuss the development of Ethiopian Water Law.
2. Identify the provisions of the Civil Code on Water law which are still in force.
3. Discuss traditional dispute resolving mechanisms on water conflicts in your community.
4. Discuss the subjects of customary water law in detail.
5. Explain the means through which water can be privately owned according to Ethiopian Law.