



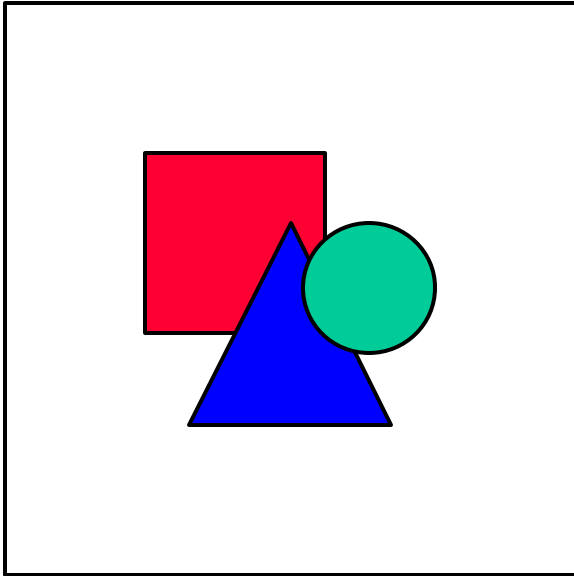
*Académie de l'Eau*



**PROPOSAL FOR A STRATEGIC GUIDE  
TO ASSIST IN THE CONSTITUTION OF  
INTERNATIONAL INTER-STATE  
COMMISSIONS FOR SHARED WATER RESOURCES**

**- DRAFT VERSION -**

**April 2002**



The purpose of this document is to propose “strategies” to develop between countries that share the same water resources in order to ensure that they are managed efficiently.

After a review and analysis of the various means available: treaties, conventions, international rules of law, directives, consultancy aids and their link up to external financing, a strategic Guide is proposed, which describes the various stages that need to be followed to constitute international agreements or commissions that ensure integrated and sustainable management of bordering or cross-bordering water resources.

This Guide is based on information gleaned from 16 case studies of shared water resources involving more than sixty countries on four continents. In particular, it details the case of international rivers that have been the subject of a “Permanent inter-state international commission” for jointly managing diverse problems. Finally, it examines some examples of “preliminary collaboration measures” through the help of external conciliators, in order to resolve disputes that exist between parties and make progress towards joint management.

This document was prepared by the “**Eaux partagées**” (**Shared Water**) working group of the French Académie de l’Eau, chaired by **A.-L. ROUX**, which proposed successive versions in Bahia (Brazil) in November 1998 and in Zakopane (Poland) in October 2000 at the general assemblies of the Réseau International des Organismes de Bassins, RIOB (International Network of Basin Organisations).

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## **1. SHARED WATER RESOURCES IN THE WORLD AND THE NECESSITY OF JOINT MANAGEMENT FOR THE MUTUAL BENEFIT OF ALL PARTIES.**

The international character of a waterway is determined:

- by geography, if it flows through two or more countries,
- by arbitration, if the riparian State does not consider itself to be in full possession of its sovereign national powers from a navigational point of view.

According to the United Nations, the number of rivers shared between several countries has grown to about 245, due to the break up of the USSR and Yugoslavia and the appearance of new States. Among these 245 water basins, 70 are located in Africa, 55 in Europe, 40 in Asia, 33 in South America, 24 in Central America, 15 in North America and 6 in the Middle East.

Figures 1 and 2 from Nguyen Tien Duc (ref.1) show the international basins and countries whose water resources come from outside their national boundaries and the percentage of this resource.

It will be seen that the linear notion of a transboundary river, which developed from the river's navigational function, has extended to encompass firstly the basin supplied by the river's tributaries and secondly to ground water and the water table that contribute to the water supply of the river.

Thus, more than 40% of continental fresh water resources are shared. This justifies the interest that international organisations have in water resource management.

The Paris Conference in March 1998 (ref. 2) underlined in its declaration that *"a shared vision for the riparian countries is important for the effective development, management and protection of transboundary water resources."*

Its programme of priority actions is dealt with in an entire paragraph reprinted below :

*"Considering the relevant chapters of Agenda 21, the Rio Declaration and the programme for further implementation adopted by the United Nations General Assembly, the riparian States are encouraged to co-operate among themselves in matters relating to transboundary water resources, taking into account the interests of all the States concerned."*

*To this end, it is particularly desirable to:*

- ◆ *promote the exchange of reliable and comparable information between the riparian countries,*
- ◆ *develop dialogue on all levels, including at the level of the relevant international institutions and arrangements whenever possible,*
- ◆ *define multi-year priority action programmes of common interest to be implemented in order to improve water management and pollution control.*

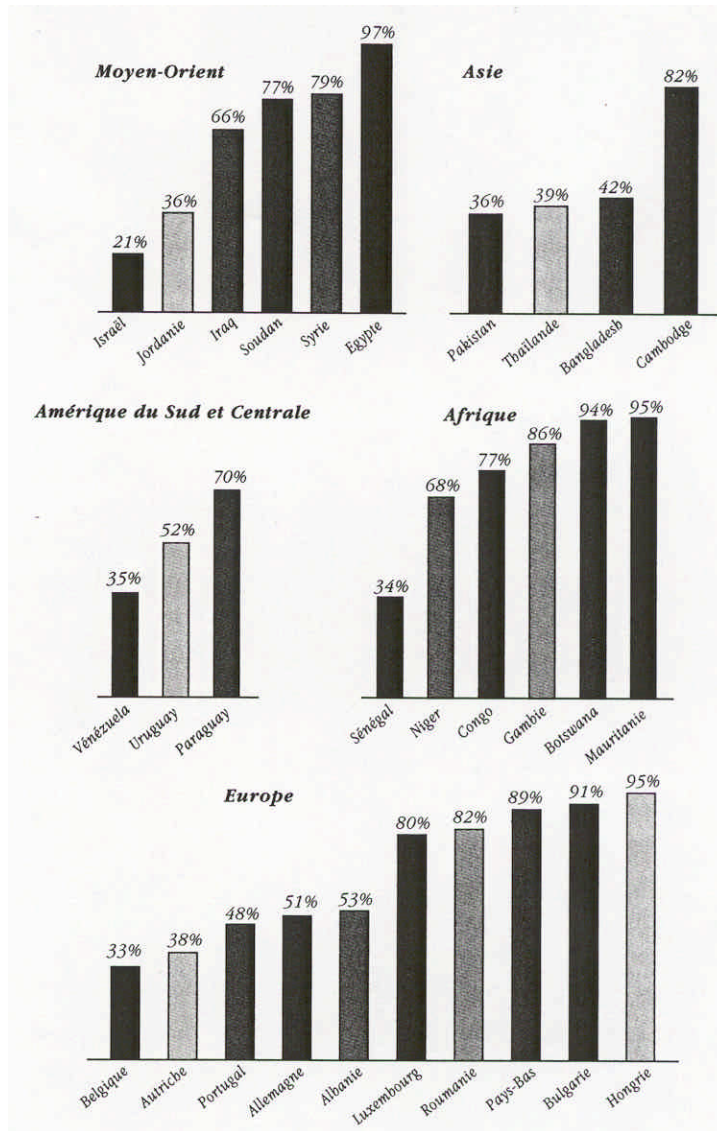


Figure 1 – Countries whose water resources come from outside its boundaries and percentage of this resource

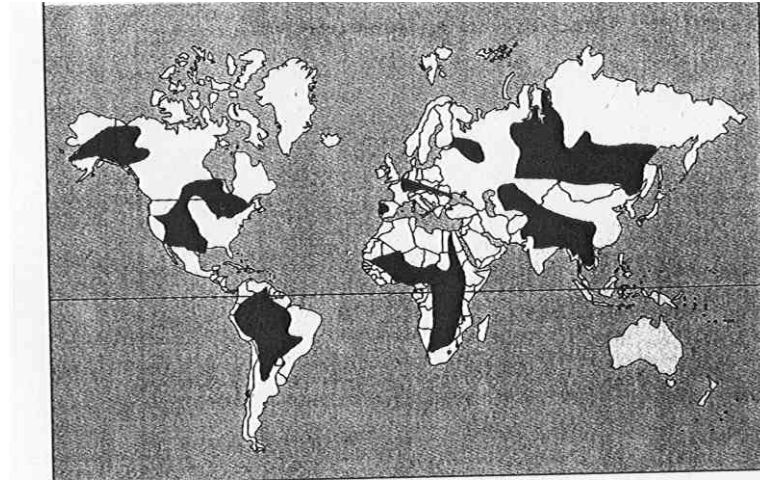


Figure 2 – International river basins

*There are more than 215 transboundary rivers in the world <sup>(1)</sup>. The action of bi- and multilateral institutions in the field of transboundary freshwater resources development and management should be enhanced and facilitated.*

*The Global Environmental Facility should take into account this Programme of Priority Action under its existing relevant focal areas to build institution-based operational program activities to meet Global Environment Facility guidelines. In particular, capacity-building projects should include actions to promote the dissemination of information and increasing awareness among technical and political decision-makers and to support preliminary feasibility studies at the national level, consistent with overall national development strategy in the countries concerned."*

This management of transboundary freshwater is not possible unless the States concerned accept a restriction of their sovereignty regarding water resources. A convention or treaty between the countries is necessary to define the agreement. We will see that this loss of sovereignty can also be consolidated by international conventions.

This is also demonstrated by the National Sovereignty and International Water (ref. 3), which was prepared by a panel of experts chaired by Mr. Gorbachev for the second Forum in The Hague in May 2000.

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<sup>(1)</sup> 215, 200 or 245 : The number of international basins varies, depending on whether only the river or certain of its tributaries that give rise to the creation of basins are taken into account (for example the Rhine, the Moselle and the Sarre).





## **2. HISTORICAL REVIEW OF THE DIFFERENT MEANS USED**

### **2.1. Treaties for settling specific points and their limitations**

#### **Agreements regarding navigation**

Historically, the first manifestation of interdependency problems relating to shared waterways appeared through the very sensitive question of the delineation of borders between countries, a question that is still very delicate since the course of a river changes over time. From the Middle Ages up to the First World War, the freedom of navigation on the large rivers was a frequent problem. First arising in Europe for the Po, the Rhine, the Oder, the Danube and the Elbe leading to many well known treaties : Munster and Westphalia (1648), Campo Formio (1797), Venice (1815), Paris (1856), Berlin (1885), Versailles (1919) and Saint-Germain (1919), and later for the Congo and the Niger at Berlin in 1885. In most cases, the freedom of navigation concerned not only the signatory nations but also third party nations. However, certain conventions, like those for Senegal (1972) and Gambia (1978), limit the freedom to the boats conveying merchandise and goods of the contracted States, or to boats chartered by these States.

The agreement between Iran and Iraq concerning the regulation of navigation on the Chatt el Arab signed at Baghdad in December 1975 can also be cited. One of the rare agreements in Asia, it was put into question 10 years later during the conflict that broke out between the two countries.

#### **Conventions concerning hydroelectricity**

Beginning at the end of the 19th century, the development of hydroelectricity brought about a new type of interdependence between States. A new series of international agreements came about, in particular, the first Barcelona Convention of 1921 and the Geneva Convention of 1923 regarding the development of hydroelectricity. The conflict between the United States and Mexico over the Rio Grande River occurred around the same period (1895) and was at the origin of the famous Harmon Doctrine (absolute territorial sovereignty) that was abandoned in 1950.

We can also cite the more recent agreement of June 1953 between Syria and Jordan signed at Damascus for the construction of an important 500 million m<sup>3</sup> dam, El Makaren, built for the production of electricity and for irrigation. Such agreements allow a division of costs, as well as the production of electricity and rate quotas for irrigation.

In the same spirit, the Geneva Convention of December 1923 involving several States established the regulations for the share out of the hydraulic power produced.

#### **Sharing resources**

The share out of resources can be egalitarian between riparian nations, such as that implemented between the USSR (today Armenia and Azerbaijan) and Turkey through the protocol of January 1927 for the sharing of the water from the Kars. This river was subjected to the same plan

upstream between Persia (today Iran) and the Socialist Federal Republic of Russia (convention of February 1921) and between the USSR and Iran (August 1957).

Egalitarian share out is also used on the Columbia River between the USA and Canada.

On the other hand, quantitative divisions are used between Iran and Afghanistan (Kabul, May 1973). Afghanistan delivers 22 m<sup>3</sup>/s to Iran in normal periods. This is also the case between Cameroon and Chad (Mondou, 1970), where withdrawal quotas for each country are specified.

At times, the division can be territorial, as it is with the Indus (Karachi, 1960) between India and Pakistan, where each country has exclusive use of the water from tributaries that are situated entirely in their country.

Finally, it can be noted that countries faced with shortages must organise mechanisms of reconciliation. In this regard, the interweaving of a hydrographic network in the Iberian Peninsula quickly offered a point of reconciliation between Spain and Portugal. These countries have had to establish a sharing of their resources, particularly on the Tage and Douro rivers encompassing hydroelectric equipment, drinking water and irrigation supply.

Although agreements on a basin level, with the set up of ad-hoc organisations, are all that exists right now between the two countries, the system will no doubt develop at the request of Portugal, which wants to move towards integrated and sustainable development of resources with the maintenance of water flows and water quality, allowing the preservation of the aquatic ecosystems.

### **Shared ground water**

International agreements relating to ground water are not numerous and are rather recent: in 1925, an agreement was signed between Egypt and Italy concerning the Ramba wells and, in 1927, between the USSR and Turkey regarding frontier water. Because underground water was disregarded in the treaty signed in 1944 between the United States and Mexico concerning the use of the Colorado and Tijuana rivers, it encountered great difficulties. In 1947, the peace treaty between the Allies and Italy established mutual guarantees between Italy and Yugoslavia (today Croatia) for the use of springs in the Gorizia region. Ground water was also the subject of a series of international agreements in the 1950's and 1960's between the countries of Eastern Europe such as Hungary and Yugoslavia, (today Macedonia) in 1955, between Yugoslavia and Bulgaria in 1958, Czechoslovakia (today the Czech Republic and Slovakia) and Poland in 1960, Poland and the USSR (today Russia, Lithuania, the Republic of Belarus and the Ukraine) in 1964, and Poland and the GDR (today Germany) in 1965.

Ground water (generally springs and rarely the water table itself) are sometimes directly mentioned in a certain number of international agreements dealing with :

- border problems, like the agreement in 1888 between France, representing Djibouti, and England, representing Somalia, the treaty of Versailles (1919) that mentions the underground water between Belgium and Germany, the agreement of 1923 between Syria and Palestine, the exchange of notes in 1924 between France and England regarding the border waters between Chad, Central Africa and Sudan, the agreement

on the border between Spain and Portugal in 1926, between Turkey and Persia (today Iran) in 1932, and finally, the more recent 1973 agreement between Argentina and Uruguay on the sharing of the Rio de La Plata.

- mining questions, like the agreement of 1843 between Belgium and the Netherlands for the exploitation of coal, the agreement of 1934 between Tanganyika and Rwanda - Burundi, and the agreement between Belgium and the Netherlands concerning the exploitation of coal mines along the Meuse River.

**Many of these treaties include an article stipulating that conferences should be held in order to modify certain items and to ensure proper and effective dialogue. However, only very few of these monitoring conferences have actually taken place. For this reason, it can be considered that treaties of this nature are limited to setting out very precise and useful measures, but do not lead to the necessary dialogue to take things any further.**

On the other hand, it is interesting to mention an analysis from Wolf and Amner (ref. 4) of 145 treaties, of which one hundred and twenty-four are bilateral and only twenty-one are multilateral. The majority (51) are the result of the happy conclusion arising from litigation between two States or between two allied States and a third party (15), while 22 treaties do not mention any disagreement and forty-seven do not give any details. Moreover, it can be noted that numerous treaties have been signed thanks to financial compensations (46), land compensation (6) or other types of compensation, unrelated to water (10), and eighty-three are only related to water. Concerning their objectives, 57 treaties focus on hydropower, 53 on water supplies, 9 on industrial uses or navigation, and only 6 on pollution and 13 on flooding. Finally, seventy-eight treaties have monitoring provisions while 67 do not.

## **2.2. Present rules and principles of international law for water management**

*As André WULF (ref. 5) stated during the Kaslik Congress in Lebanon :*

*"A true international law concerning waterways does not yet exist. What we have now is a mosaic of juxtaposed texts, where there continuously appears the component tendencies and principles of a law that needs to be defined and strengthened in the coming years.*

*The international waterway law appears as a law emerging from nearly 200 legal constructions implemented on different waterways of the planet.*

*This international law was originally limited to the regulation of relationships between States in order to insure that interests or particular uses such as navigation or hydroelectricity were shared. It is currently confronted by demands growing in number and quality linked mainly to demographic growth, irrigation and flooding, in a geopolitical context that is at times difficult, where the concern for national sovereignty is sometimes put above concerns for the protection of water resources".*

It has been seen in the simple cases cited above that agreements between parties accept restrictions regarding the sovereignty of States over their rivers when rivers are considered to be an international and shared resource.

The most complex cases only allow certain consensus principles to stand out.

The first principle that emerges is that of "equitable and reasonable use".

It requires that a State uses the water of a waterway in a manner which does not deprive other riparian States of their rights of equitable and reasonable use. This rule is called non-injurious use of the territory.

This principle is illustrated throughout the international judicial precedents in the analogous air pollution sector.

The affair of the Trail smelting works is the oldest and the most well-known. It was confirmed in 1949 by the International Court of Justice in the affair of the strait of Corfu between the United Kingdom and Albania, later by the arbitral French-Spanish sentence of 1957 in the affair of Lake Lanoux. Under the terms of this principle, as regards pollution, a State must not modify the chemical composition of water by discharging untreated substances. It must also take measures to reduce existing pollution.

The principle has been consecrated on the universal plan (principles 21 and 22 of the Declaration of Stockholm on the environment in 1972).

Recently, in its judgement of September 1997 concerning the dispute between Hungary and Slovakia, the International Court of Justice in The Hague declared that the commissioning of the Gabčíkovo development by Slovakia was an internationally unlawful act, since it deprived Hungary of equitable and reasonable use of water from the Danube (see below, § 3.2.).

Finally, it can be noted that a hierarchy between the principles of equitable and reasonable use has been established, the first overriding the second, signifying that the economic preoccupations of the community take precedence over its will to protect the environment.

A mandate was given to the UNEP (United Nations Environment Programme) to propose measures that the UN should adopt to develop co-operation between states to conserve shared water resources. The project entitled "**Principles regarding shared water resources**", prepared by a working group made up from representatives from 17 countries, was adopted by consensus by the general assembly on the 18<sup>th</sup> December 1979 to serve as the basis for an "International convention on shared water". Unfortunately, this never saw the light of day, since the concept of shared water appears blurred in many countries.

The two important conventions of Helsinki and New York for the protection of fresh water were organised in this context.

## **The Helsinki Convention of 17 March 1992**

After some thirty years of work, the United Nations Commission for Europe, of which the USA and Canada are also members, adopted this convention for the protection and use of transboundary waterways and international lakes.

It enumerates the main principles to include in treaties joining riparian countries to the same waterway or lake based on the best available technology (BAT) and on the best environmental protection actions (BEP), including in particular:

- the commitment to prevent, control and reduce water pollution that can produce harmful effects in other countries, to manage the transboundary waterways in a rational, ecologically healthy and equitable way, and to assure the conservation and, if necessary, the restoration of aquatic water tables.
- the obligation to avoid transferring pollution from one sector of the environment to another.
- it is based, finally, on the principles of precaution, of the polluter-payer, and the rights of future generations
- it also evokes the means necessary to attain these objectives, particularly the prevention of pollution at its source and the introduction of waste authorisations, the use of the best technology available, the concept of which is defined in an appendix. Waste and discharges must be controlled with the "objective means" imposed in a progressive plan. Impact studies must be systematically carried out.
- finally, the convention proposed ways and means of co-operation between States for surveillance, research, and exchanges of information for warning systems and public information.

## **The New York Convention of August 1997**

As Jean-Louis OLIVER remarked (ref. 6) *"International Law considered through the international agreements regarding shared waterways is progressively enriched according to the conditions of technological development and economic activities"*. Although the joint definition of a catchment area by the French and English goes back to the 17<sup>th</sup> century, the judicial and diplomatic approach to the use of shared waterways first developed according to a strictly linear "first dimension", ignoring the "second dimension" of the catchment area and the "third dimension" of the underground water table(s).

This concept of the catchment area was first implemented at the national institutional level in Germany at the beginning of the 20<sup>th</sup> century to deal with the industrialisation of the Ruhr. It appeared on the international scene in this country in 1929, during a conflict that questioned the territorial competence of the Commission of the Oder, a conflict that was put before the Permanent Tribunal of International Justice created by the Society of Nations. On this occasion, the Tribunal went beyond the concept then in effect, opposing the notion of absolute territorial sovereignty to the notion of absolute territorial integrity defended by the States "upstream". For the first time, it pointed out the solidarity and community interests that join the tributary States of the same catchment area in the exercise of their rights and obligations regarding the use of their common superficial waterways.

The notion of a catchment area reappeared after the Second World War in the work of the Association of International Law. For the first time, superficial and underground water systems were simultaneously taken into account, according to quantitative and qualitative aspects. This approach was both global and balanced within the framework of the natural physical unity that makes up a catchment area (even if it is not always perfectly adapted in regards to the underground water).

Following this work in 1997, the United Nations General Assembly adopted a "Convention on the rights relative to the use of international waters for purposes other than navigation" :

- In Part I, it enlarges the notion of a waterway or catchment area to include all the tributaries and lakes having the same water supply and including the underground water table of which it is a part.
- In Part II, it raises the principle of equitable use and use which does not cause significant transboundary harm and clearly defines that if there is harm, it must be evaluated according to the criterion of equity and conform to the notion of protection of the waterway.
- Parts III and V make provisions for a system of modification and consultation on the possible harmful effects of measures taken, as well as in emergency situations, based on principles contained in international agreements.
- Part IV touches not only on the problem of environmental pollution, but also on the protection of the ecosystems of the waterway in question:

*"It includes in particular the obligations of protection of the ecosystems, the prevention of pollution and the protection of the environment taken from several regional treaties and Convention No. 2 of the United Nations on the law of the sea and certain instruments of international environmental law."*

In this way, waterways are not considered in isolation but as a part of a whole in which elements interact with each other.

This convention, which has been adopted by 103 countries after 27 year's work, must, if it is to have the force of law, be ratified for 35 countries, which could take another 10 years!

Thus it suffers from the fact that two countries have refused to sign: firstly, China, which is concerned, in the north, by the many waterways it shares with Russia, particularly the Amour and, in the south, the Mekong, which it shares with Vietnam, and, secondly, Turkey, which is worried about the Tigris and the Euphrates.

### **2.3. Inter-state conventions for sustainable management**

**The limitations and inflexibility of the international treaties cited in § 2.1., combined with urban growth and industrialisation just after the second world war, has meant that many rivers have become polluted and unfit for use and has led States to collaborate in order to act together according to an agreed programme, each operating on its own territory.**

This concept of the quality of the natural environment first came about with problems regarding preservation of fishing-grounds and public health. These issues were evoked in the articles of the Italian Swiss Convention of June 1906 and in the Treaty of January 1907 between the United States and Great Britain (for Canada) regarding the water quality of the Great Lakes.

Next, the objectives were enlarged not only to include mandatory behaviour but also concrete results for the reduction of waste discharges.

▪ **The course of the Rhine** is completely exemplary from this viewpoint, with **two conventions to control pollution** signed in Bern in December 1976 by all the riparian States within the framework of the International Commission of the Rhine to control pollution, created by the Bern Agreement in 1963. Another convention was signed in September 1996 in Strasbourg for the elimination of wastes coming from navigation.

The first, called the “**Chlorides convention**”, took steps to limit the salt content of the Rhine, a technological solution with inter-State financing. *"An additional protocol dating from 1991 should definitively regulate the reduction of the chloride content of the Rhine making provisions for :*

- *the selective storing on French territory based on the concentration of chlorides at the German - Netherlands border and the volume of the Rhine river;*
- *the evacuation of the salty dike land waters of Wieringermeer directly into the Waddensee.*

*All of these measures were financed by the riparian States."*

The second, called the "**Chemicals Convention**", came into force in 1979 and concerns the discharge of chemical wastes into the Rhine. It defines the toxic substances that require prior permission (black list) and products considered less harmful (grey list). It states that national reduction programs must be established. Besides defining the authorisation procedures of limited waste discharge in terms of concentration and flow, it establishes the quality objectives defined by the combined emissions and impacts with water composition.

The third convention concerns **wastes coming from navigation**. It prohibits all discharge of waste into the river and anticipates storing zones along the river banks. For oil wastes it includes a tax of 52 French centimes per litre of gas oil paid at purchase that allows the boats free access to draining and recovery stations built with funds from this tax.

Finally, the Rhine Action Program makes provisions to accelerate the reduction of toxic wastes and to significantly diminish the nutritive elements (nitrogen phosphate) coming from community wastes. Its final objective is to make the water of the Rhine ready for transformation into drinking water and to avoid polluting the North Sea with the river sediment.

▪ Another example, the **Convention on Lake Geneva**, signed in Bern in December 1976, also prohibits the discharge of waste from boats, carrying through the action of the Lake Protection Commission bringing together the Swiss and French authorities. It concerns progressive clean-up, particularly of phosphorus with the suppression of phosphate detergents to stop eutrophication and provides systematic construction of purification stations for domestic water and runoff.

▪ **The protection of the Moselle**, a tributary of the Rhine, can be cited with the convention signed in December 1961 between the Federal Republic of Germany, France and Luxembourg creating an international commission to control pollution. This convention, like the one signed for the Sarre, another tributary of the Rhine, are strictly co-ordinated with the Rhine Commission. Such commissions develop inter-State co-operation and organise quality surveillance by measuring and warning networks in order to monitor the clean-up process that has been implemented.

The balance sheet for the activities of International Commissions are expressed by a more global action in favour of ecology. For example, at the time of the adoption of the Bern Agreement on the Rhine in 1963, the focus was on water quality. While the Rhine Action Program is more ambitious as regards the quality of water, as well as the quality of the physical and biological environment. It takes into consideration the quality of the aquatic environment, the political contribution for water management, land-use management, as well as the protection of nature and silviculture. The aim is to tie in ecological concerns with protection against flooding at the local, regional, national and international level.

**These commissions agree on a precise action programme concerning hydraulic structures coming under the responsibility of each of the member states. When a hydraulic structure straddles two countries, its completion may be entrusted to either country, or carried out by the Commission itself or even carried out by a third party organisation.**

#### **2.4. External support tools for concerted inter-state management**

Two important tools, described below, have recently been developed by the European Union and by a Protocol of 14 countries in the southern horn of Africa, and will now act as important aids in the constitution of inter-state Commissions.

▪ ***The European Union and its Guidelines***

In order to ensure that actions are undertaken in a co-ordinated manner, the European Union has grouped together its 50 separate Guidelines on water into its Water Guidelines for 2000/60.

These are based on management at a hydrographic basin level, and involve the following seven concepts:

- |   |
|---|
| Define the objectives<br>Draw up an inventory<br>Define the methods to use<br>Programming means<br>Planning approach<br>Associated strategies<br>Final measures |
|---|

The Union's aim is the protection of the environment, which should not be disrupted in any way by sustainable water management.



The European Union places a strong emphasis on its concern for the management of shared water resources within its frontiers. It has decided to join the Commissions concerning rivers such as the Oder and the CIPO. The Water Guidelines provide for the link up of national hydrographic basins with hydrographic districts by organising the management of these water resources at a district level, as outlined in the paper by M. THIEFFRY (Université Paris II) taken from the “Séminaire de droit comparé sur l’eau” organised in 2000-2001 jointly by the French Académie de l’Eau and the University Sorbonne-Panthéon (ref. 7).

Hydrographic basins that extend over the territory of several member states must be integrated into international hydrographic districts. The member states are not, in this respect, under any obligation, but the Guidelines allow them to ask the European Union to facilitate the creation of an international hydrographic district.

The member states must, however, take appropriate measures to apply the Water Guidelines to the portion of the international hydrographic district that lies within their territory (article 3.3), with :

- An analysis of its characteristics, a study of the impact of human activities on the conditions of surface water and ground water and an economic analysis of the use of the water resource.
- A programme of measures that take account of the results of the analyses, in order to meet the objectives that have been set. These programmes can echo the measures stemming from the legislation that has been passed at a national level and which cover the whole territory of a member state. If appropriate, a member state may adopt measures that are applicable to all hydrographic districts and / or portions of international hydrographic districts located within its territory.
- The member states assure co-ordination in order to produce a unique management plan for the international hydrographic district. If such a plan does not exist, the member states must draw up a management plan that covers at least the parts of the international hydrographic district located within their boundaries in order to attain the objectives set out in the Water Guidelines.

However, once again, these measures must be “appropriate”, which leaves a certain margin for interpretation as regards their nature. Moreover, the co-ordination of measures taken for the application of the Water Guidelines in a district coming under the jurisdiction of several member states must be ensured jointly by these member states (article 3 § 4).

The Commission must be notified of any problems that cannot be dealt with at the level of a member state. The Commission must then reply within a period of six months and, without doubt, take appropriate measures even though the Water Guidelines does not explicitly say this (article 12). In the case of hydrographic districts that extend beyond the territory of the European Union, the member states, apart from applying the Water Guidelines within their territory, now only have to seek to establish co-operation with the third party countries concerned. This co-ordination must then be “appropriate”, in order to meet the objectives of the Guidelines over the whole hydrographic district, by a sort of extra-territorial application of European environmental law (article 3 § 5 ). It may be noted in passing that although this wishful thinking regarding community policy towards water could lead to interesting observations as regards international public law, the implementation of the objectives of the Guidelines over the whole of an international hydrographic district extending beyond the Union would have the advantage of

avoiding any competitive imbalance resulting from differences in the legal and economic systems between water users that carry out an economic activity in these different countries

▪ ***The Shared Water Protocol for the southern horn of Africa (SADEC)***

This protocol presently groups together fourteen member states, mainly for the management of water in the different rivers and their basins, not only to improve their efficiency in terms of land use management and sustainable development, but also to facilitate co-operation between member states linked by water courses and “joining them together”.

The rules relating to the systems for sharing out water resources that have been elaborated within the SADEC by the co-ordination unit for the water sector are very good examples for illustrating how a subsidiarity system relating to the territories of basins within a community of states works in practice.

The Treaty, signed in 1992 in Windhoek in Namibia, concerns South Africa, Namibia, Angola, Botswana, Lesotho, Malawi, Mozambique, Swaziland, Tanzania, Zambia and Zimbabwe, joined by Zaire, Mauritius and the Seychelles.

**It particularly concerns the Zambezi, the Limpopo and the Orange River.**

The Protocol that stemmed from the work carried out in Maseru (Lesotho) in 1996 comprises 17 articles that define the following eight principles:

- The respect of the sovereignty of each country
- The application of international rules of law
- Simultaneous action on the development, protection and conservation of the environment
- Close co-operation in studies and projects
- Pooling of data and information
- Equitable use of water resources
- Use of permits for discharges and withdrawals
- Obligation to use protection measures against pollution that are compatible with maintaining peace

And provide for :

- The creation of a Co-ordination Unit
- The creation of basin commissions
- The creation of basin authorities
- And a procedure for settling disputes.

Various working groups have made it possible for various amendments, designed to help the measures to get off the ground, to be passed, particularly the bringing into alignment of disparities in the United Nations protocol of April 1997 concerning water use.

This protocol has been backed by US AID and various support organisations, notably DANIDA (Danish International Development Assistance). This back up mainly involves the harmonisation of national legislation, the definition of boundaries and the preparation of a guide for shared water resources.

Following these measures, the **Zambezi Commission, the “Zamcom”** was created.

**These two tools - the European Water Guidelines and the SADEC Protocol – could serve as models for other countries.**

▪ ***Another interesting tool is the International Joint Commission (IJC)*** that the United States and Canada have set up in accordance with the 1909 Treaty for adjoining water courses, in order to advise both governments concerned in an objective matter.

In particular, the Commission looks at requests for approvals for projects concerning bordering and cross-bordering water courses, and is also able to regulate the exploitation of hydraulic structures. It helps both countries in the protection of the environment in border regions, including the application of the Bilateral Agreement concerning the quality of water in the Great Lakes and the improvement of the quality of air in these regions. Finally, it advises the governments concerned on any new issues that could lead to disputes between the neighbouring countries.

The IJC is still organised and still operates in accordance with the rules and principles set out in the initial treaty of 1909 (article 8). It is made up of six members, three for each country, and it meets at least twice per year, alternatively in Washington and in Ottawa.

In practice, the IJC behaves like an institution that is common to both of the countries concerned. Decisions can be taken by a majority vote; however, as things have turned out, up till now they have always been taken by a unanimous vote. If the casting of votes is shared, the question is put before the respective governments.

According to the treaty of 1909, the IJC must give its agreement to any project that could modify the level or the flow rate of the shared water (articles 3 and 4). Moreover, the IJC can carry out studies or consultations and has the right to make recommendations at the request of the two governments concerned (article 9).

A large number of questions of common interest have thus been put before the IJC, such as :

- The level of the Great Lakes
- Pollution in Lake Ontario, Lake Eyrie and other water courses

In order to work in the most efficient manner, the IJC has created numerous committees and working groups, which have been made up as a function of the needs and area of expertise required.

**This type of IJC, which the United States and Mexico also use for the two rivers that they share, the Colorado and the Rio Grande, could also be created in the case of certain rivers that only concern two countries.**

## 2.5. The possible role of financial backers

By relying on existing measures contained within international water laws that provide them with guarantees, financial backers, especially the World Bank, contribute through loans to helping to set up of International Commissions, as will be seen for the Senegal River, and in paragraph 3.5.

## 2.6 The experience of water management in federal countries

The experience of water management in countries with a federal structure can be valuable because the problems between federal States is similar to those of riparian countries dealing with an inter-State water basin. The problems are simpler because the federal State can easily impose the regulations to respect, with tensions between the States being, in theory, non-existent. Spain resolved its problems with its "Hydrographic Federations" when several different autonomous communities were concerned. The rule is that the authority for water issues comes from the "Hydrographic Confederation".

In Germany, the Lander, very autonomous when it comes to their own management including the management of water, passed agreements among themselves to unify their regulations for the water of their common rivers. The most important institution of co-operation between regions is the LAWA (*Länder Arbeitsgemeinschaft Wasser*), which brings together all the Ministers of the Environment of the various Lander.

A very good example of joint water management in a federal country is that of the **Murray Darling River in Australia**, whose catchment basin covers an area of 1 million km<sup>2</sup> and which concerns four federal states.

This zone includes 75 % of the farmland in Australia, 25 % of its livestock and 60 % of farming products, and accounts for 35 % of the total farming production, representing an annual total of 10 billion Australian dollars.

The problems faced today arise from the immigration from Europe, which has profoundly modified the environment and led to the clearance of 50 % of the forests and the creation of 1 100 000 ha of irrigation, through the construction of dams upstream for the benefit of downstream areas. This heavy dependency, 43 % in normal years and 90 % in dry years, has led to the canalisation of rivers and destroyed the flora and fauna. The result has been an increase in salinity in downstream water, which is both costly and increasing at a rate of 1 to 2 % per year.

In order to remedy this situation, and following on from numerous studies, an agreement was passed between the Federal State and the four states concerned in order to promote equitable, efficient and sustainable management and planning between water resources and land.

A ministerial council at the summit, with a permanent technical secretariat and a consultative committee have been set up. The work that has been carried out has made it possible to intercept saline discharges before they reach the Murray River in 14 sectors, by arbitrating between irrigation development and the protection of the soil. Financing for these actions is shared

between the upstream and downstream areas. Finally, the strategy has made it possible to reduce by 20 % the salinity of the Murray through financing by the federal states upstream, to the benefit of the downstream water. Now, algae growth is going to oblige the Commission to deal with the input of nutrients.

### **3. WHAT HAS BEEN LEARNT FROM THE 16 CASE STUDIES ON INTERNATIONAL RIVERS <sup>(1)</sup>**

The case studies have been grouped together in four paragraphs, according to the standard of living in the countries, whether similar or not, and the contrasts existing between upstream countries that have bountiful water resources and those downstream that lack water. We have then attempted to group together some shared conclusions and to propose desirable areas of progress.

#### **3.1. The case of riparian countries with a high standard of living and analogous cases**

##### **▪ The cases of Lake Geneva and the Rhine**

The International Commissions for the protection of the water of Lake Geneva (CIPEL) and the Rhine (CIPR) could be considered, understandably, as success stories in shared basin management.

The essential points one could draw from their experiences would be, in summary :

- The establishment of the Commissions was preceded by an initial dialogue phase between experts of the concerned parties, working within an unofficial structure, in order to arrive at an agreement on the technical base-line situation. What is the real situation regarding the water resources in the basin, their quality, and future issues ? Why is it necessary to improve this situation, what are the objectives that are acceptable for all, and the means to achieve them? This preliminary dialogue phase has permitted experts of the parties concerned to agree on the main issues while using the same language and the same technical data.
- From this basis of understanding, the political phase was initiated with the preparation and signing of Conventions, with the pursued objectives, and the establishment of the Commissions, with their role and areas of authority made clear. The fixed objectives were sufficiently global to rally the parties on a consensus and to leave a minimum of flexibility to the programs and plans of action to be prepared and to implemented by the Commissions. Some additional protocols or clauses could be signed when it was necessary to implement programs with well defined objectives and delays.
- The structure of the Commissions comprises, on the one hand, a technical level with the working groups in charge of the various sectors and co-ordinated either by a Group of co-ordination (*CIPR*) or by a technical subcommittee (*CIPEL*), and on the other hand, a political level assured by the plenary Committee (Geneva lake) or the competent Conference of Ministers for the Rhine. The rotation of the chairmanship of the commission, committees and ministerial conferences between the signatory countries assure a balanced partnership and a sustained solidarity spirit, that is essential for an integrated management of the shared basins.

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<sup>(1)</sup> To which the Parana will be added at the end of 2002, which will take the total up to 16. These 16 rivers concern 65 countries, 20 in Europe, 25 in Africa, 13 in Asia and 7 in America.

- In order to provide impetus to their actions, the Commissions have either taken a wilful approach (the Lake Geneva Action Plan), or seized opportunities, such as the Sandoz accident on the Rhine, which has led to general objectives for the whole river quality.
- The commissions have always proceeded by taking **successive steps**, beginning with sector-based actions (floods, pollution, etc.) on the river or lake, then by extending these actions progressively to tributaries and the basin as a whole, ending up in overall actions that lead to sustainable development in all of its aspects.  
Today, these two commissions have launched 20 year programmes (2000-2020), whose purpose is to protect the environment through the mobilisation of surface and ground water, in order to cover the requirements of the towns and cities, farming, industry and tourism, without forgetting the economic and social aspects of development, in close collaboration with local populations and other interested bodies. These ambitious programmes are based on the European Water Guidelines, which require member states to take identical measures at the hydrographic district level. The Swiss cantons concerned by Lake Geneva wish to act in a similar manner.
- Financing of the running of the Commission is ensured in an equitable manner by the parties concerned and actually has not raised any major problems. It is relatively modest in relation to the investment in works in every country for pollution abatement and to achieve the objectives jointly defined within the framework of the Commissions. The partners of the Lake Geneva Commission (Switzerland, France) as those of the Commission of the Rhine (Germany, France, Luxembourg and Netherlands) are countries with similar economic levels ; this has enabled the works programs to progress at the expected rhythm and to attain the expected results.

- **The case of the Escaut**

In the case of the Escaut, the organisation of the Commission that was set up in 1995, in accordance with the 1992 Helsinki Convention (cf. 2.2.), was inspired by the model used for the Rhine. It groups together the Netherlands, France and, in the case of Belgium, three federal regions, Wallonia, Flanders and Brussels and the federal states, which is a good example of the analogy pointed out in § 2.6. between the case of independent states and that of federal states. This falls completely within the measures outlined in the European Water Guidelines.

- **The Shared Atlantic Watersheds of the Iberian Peninsula**

Spain and Portugal recognise that although the conventions of 1964 and 1968 have permitted a fruitful co-operation between the two countries, they are no longer adapted to the requirements of shared basin management and environment protection. Consequently, the two countries have started negotiations for a new convention and possibly a commission for the shared basins. In the context of the future European Guidelines, the experience of the Commission of the Rhine could be especially interesting for the establishment of such a structure, although it would not have to go through all the progressing stages of the CIPR. In Spain as in Portugal, it would be necessary to already take into account the numerous stakeholders as users, environmentalist associations, without speaking of the *Autonomas* of Spain.

- **The case of the Saint-Laurent and the North American Great Lakes**

As has been pointed out in § 2.4., these are **committees** that have stemmed from the International Joint Commission (IJC), which replace the International Commission and its various working bodies. They draw up bilateral agreements between the USA and Canada for different action programmes for the Saint-Laurent and the Great Lakes as regards their level, their pollution and following up any work that is carried out. Based on these committees, the organisation, which is based on working groups, is analogous to that of the Commissions.

### **3.2. The case of countries with contrasting standards of living and support from external tools**

- **The case of the Oder**

Since 1966, the Oder, which concerns Germany, Poland and the Czech Republic, has had an International Commission for the Protection of the Oder against Pollution, the ICPO. This commission, which is based on the CIPR model, has a further partner, the European Union, which played an important role in its creation. Initially set up with the aim of reducing pollution in the river, the extent of the flood of July 1997, which probably is only likely to happen less than once every hundred years, and which flooded 10 % of the basin and required the evacuation of more than 150 000 people, led to an additional objective being set, that of flood control.

**This example of how the impact of a catastrophe has helped to mobilise effort has been reflected in other commissions, for the Rhine with the Sandoz accident near Basle, which led to serious toxic pollution, for the Danube with the accident that occurred in Rumania on a sub-tributary of the Tisza, itself a tributary of the Danube, and also the Escaut, certain sections of which were completely deprived of both oxygen and aquatic life.**

The presence of the European Union, which is now backed up by its Water Guidelines, is essential for helping less economically developed countries act without slowing down too much the financial completion of projects that Poland and the Czech Republic could not carry out at the same speed as Germany.

**Guarantee mechanisms should be developed in order to make it possible, with the backing of the European Union and its Water Guidelines, to mobilise external financial backers such as the EBRD, the IDP or the World Bank.**

- **The case of the Danube**

The Danube, which in 1994 acquired a commission based on the CIPR model, which replaced the navigation commission, saw its members increase by four with the break up of the former Yugoslavia. It now comprises 17 members, and its activities were seriously disrupted for almost 10 years during the Balkan War. Disputes concerning work on the Gabcikovo project and the



serious pollution of the Tiza by cyanide and heavy metals, leading to environmental damage, speeded up these changes and have lent weight to the decisions taken.

**The “Gabcikovo – Nagymaros” project**, which was the subject of a treaty between Hungary and Czechoslovakia at the time of the USSR in 1997, involved the development of a 200 kilometre stretch of the river, covering multiple objectives: electricity production, aid to navigation, and flood control. The work that was started in 1978 was contested by Hungary, one of the signatories, after the change of regime, which feared the negative effects on the environment, ground water and drinking water. Finally, the dispute between Slovakia (in place of Czechoslovakia) and Hungary was put before the **International Court of Justice in The Hague**, which pronounced its judgement in September 1997, twenty years after the initial treaty was signed.

This judgement is interesting, since it enables progress to be made in international legislation concerning transboundary water and international law concerning the environment. **One of the novel points is the recognition, by the International Court of Justice, of a situation called ecological “necessity”** that could be invoked by a State to escape from an obligation, but only if there is serious, real and imminent danger. However, when it comes to the environment, the effects are often measured over the long term and, as a result, are rather uncertain. Therefore, although this recognition of an ecological necessity is definitely a step forward in international jurisprudence concerning the environment, the restrictions that the Court gives it considerably reduces the impact by not retaining the precautionary principle.

Finally, the Court did not declare the construction itself of the solution implemented unilaterally by Slovakia on its own territory illegal but did however rule that the **commissioning of the works was an internationally unlawful act, since Slovakia appropriated for its own use and benefit an international water course and thus deprived Hungary of its right to an equitable and reasonable share of the natural resources of water from the Danube. This judgement thus also lends weight to the principles of the 1997 United Nations Convention regarding the use of international water courses for purposes other than navigation.**

Crises due to environmental problems have at least one virtue: they contribute to the implementation and development of jurisprudence and legislation in this matter.

The catastrophe that occurred on the Danube in January - February 2000 from a gold mine in Rumania has led to legislation being reinforced, and improvements in the control and monitoring of water quality in the Danube and other European water courses.

Finally, it needed the major political changes that took place in Central and Eastern Europe at the end of the 1980s to bring about an awareness of the necessity of overall management covering the whole of this basin. Thus, in September 1991, **the Danube States**, which met in Sofia, **backed up by the international community and, in particular, by the European Union**, agreed to implement and develop the EPDRB (Environmental Programme for the Danube River Basin) and to draw up a new convention. This convention “The Danube River Protection Convention” (DRPC), signed by all riparian countries on the 29<sup>th</sup> June 1994 in Sofia **was based, for the first time, on an overall approach which takes into account environmental, economic and living environment issues.** It set out three major objectives:

- Sustainable and equitable water management, including the protection, restoration and rational use of surface and ground water
- Control of risks arising from accidental pollution by hazardous substances and close monitoring of natural phenomena such as floods, freeze ups and ice break ups.
- Reduction in the pollution levels discharged into the Black Sea.

It will cost around 4.5 billion Euros.

There are many difficulties in implementing a programme of this nature. For example, it is difficult to determine the priorities over such an extensive basin, and this is compounded by the very different economic power of the states that lie upstream and downstream in the basin, which does not make it easy to make choices.

**This study of the awareness of environmental problems by the Danube States (moreover, to various extents) and the changes in the organisational measures implemented in an attempt to solve them is interesting not only for the Danube basin itself, but also provides food for thought for other existing or indeed future international basin commissions. As regards the Danube itself, the progressive inclusion of different Danube States into the European Union could help better management of shared water resources throughout the whole of this region.**

### **3.3. The case of poor countries and the need for support from external financial backers**

#### ▪ **The Senegal River basin**

Unlike the other cases, which concern developed and relatively rich countries in the Northern Hemisphere, the Senegal river basin is situated in an arid area where 2.5 million inhabitants live, for the most part in great poverty.

Financing is again one of the main problems of the Senegal River basin. The conventions to which the three riparian countries have subscribed have permitted a satisfactory regional co-operation for almost three decades. Taking into account the level of their socio-economic development, a great part of the infrastructure investments has been borne by external funding agencies, although one of the three components, the navigation infrastructure, is still in search of financing.

Nevertheless, the basin management entered into the post-dam phase. The assistance, relatively minor in financial terms, the countries of the Senegal river basin could expect from the industrialised nations and of the international organisations for the implementation of a real system of management and monitoring, is primordial to optimise the important investments already realised, while protecting the fragile environment of the basin, and therefore to assure sustainable development.

This means enhancing the volume of water in the **Manantali Dam**, which was completed in 1988, more than 8 billion cubic metres for farming development in the valley on the left bank in Senegal and on the right bank in Mauritania, especially in the **delta, which is protected from salt ingress by the Diama dam**. Out of 375 000 irrigable hectares, around one third are

effectively irrigated using light equipment thanks to a major training effort and the involvement of farmers by the two development companies in the delta that have been created in Senegal and in Mauritania. This new strategy took advantage of the crisis of 1993-1994 by abandoning heavy equipment, has borne fruit : 390 000 tonnes of cereal were produced in 2000.

It should be pointed out:

- That the OMVS (Senegal River Development Organisation) is an international organisation with consultative commissions and a directorate with the council of ministers governed by three conventions that stipulate that the structures, including the Manantali and Diama dams, are indivisible assets and subject to shared ownership.
- That Guinea signed, in 1992, a framework co-operation agreement and is on the point of joining the OMVS, thus covering the whole catchment area.
- That the objectives of the two structures that have been completed are not limited to irrigation but also supplying water to Dakar and Nouakchott, improving navigation, reducing floods and generating electricity.
- That the OMVS has now entered the “post dam management phase” and has set up an environment observatory, resources trend charts, a network for monitoring flow that is managed in real time and consensus units throughout the whole valley covering all end users.
- Finally, that the OMVS reflects the political stability and state of peace between the states, and especially between Mauritania and Senegal.

#### ▪ **Lake Chad**

The Lake Chad Commission was created in 1964, initially between Nigeria, Niger, Cameroon and Chad; the Central African Republic joined the Commission in 1994.

Its brief initially concerned part of the 427 000 km<sup>2</sup> supply basin, around one sixth of the total area of the basin, but which provides more than 95 % of the water, and was then extended to 967 000 km<sup>2</sup>.

The objective was to protect the 25 000 km<sup>2</sup> occupied by the lake in 1960, which was supplied mainly by the Logan and the Chari in the east. The role of the Commission has, until now, been mainly scientific: to analyse the reasons for the reduction in the surface area of the lake, and how to restore it to 2 000 km<sup>2</sup> by the end of the 20<sup>th</sup> century. The reasons are twofold: low rainfall since 1968, mirroring the situation throughout sub-Saharan Africa, which is perhaps a first sign of climatic variations, and the local consequences of deforestation, the deterioration of soil through slash and burn farming and the effects of irrigation and stockbreeding.

The only means available to the Commission to maintain the 2 000 km<sup>2</sup> of the lake is to encourage riparian countries to make better use of the water and to develop integrated management, especially as regards new works for mobilising water that are under consideration.

#### ▪ **The Aral Sea**

The Aral Sea is located within Kazakhstan and Uzbekistan in central Asia, new independent republics that have formed since the break up of the USSR. This sea is the victim, not yet of climatic changes, but of a reduction in the water flow from the Syr Daria in the north and the Amou Daria in the south, which has been rashly used for irrigating the cotton crop. This virtual drying up of the water flow at the river mouth has led to a 66 % drop in the sea level, causing an increase in salinity and a reduction in the surface area. However, up to 1960, this water mass, the

fourth largest enclosed water tract in the world in terms of surface area, was in an ecologically stable equilibrium. Today, previously prosperous ports are now forty kilometres away from the new coastline, and the soil in the zone cleared of water has been left to the open air, dispersed by the wind and has become toxic to both humans and farming. Moreover, the increase in the salinity of the water and in the levels of pollution, due to untreated urban and industrial discharges have practically destroyed the fish populations.

Collaboration between the two countries concerned, Kazakhstan and Uzbekistan, and backed up by Russia and the international community, has built up to find solutions to this situation and restore a balance. The construction of a dyke to separate the contribution from the two rivers, a partial and not very satisfactory solution for each country involved, failed since it was not done properly. Today, it appears that the only solution is to manage the water resources better by using sparing irrigation and increasing efficiency in order to reduce the amount of water consumed. A lot of effort, with considerable financial backing from the international community, will be necessary. We should however remain optimistic, since all of the partners involved clearly wish to attain a satisfactory conclusion.

- **The case of the Mekong**

4 800 km long, and the tenth most important river in the world in terms of hydraulic potential, the Mekong concerns China in the north, Laos, Burma, Thailand, Kampuchea (or Cambodia) and Vietnam.

The Mekong was studied in a co-ordinated manner between 1957 and 1975, and some work was started, thanks to the “**Mekong Committee**”<sup>1)</sup> which is run under the aegis of the ESCAP (Economic Commission for Asia and the Far East) of the United Nations.

The withdrawal of Kampuchea during the Khmer Rouge period led to Laos, Thailand and Vietnam setting up a temporary Committee, which ran for 15 years. It enabled productive meetings to be held, which led to a revival of co-operation between the Mekong Commission in 1995 and the five partner countries, not including China. **The new Commission, organised on classical lines**, comprises, on the one hand, the addition of a group of donors and international agencies (World Bank, Asian Bank, Economic and Social Commission for Asia and the Pacific - ESCAP - , Murray Darling River Commission) and, on the other hand, national committees (figure 3).

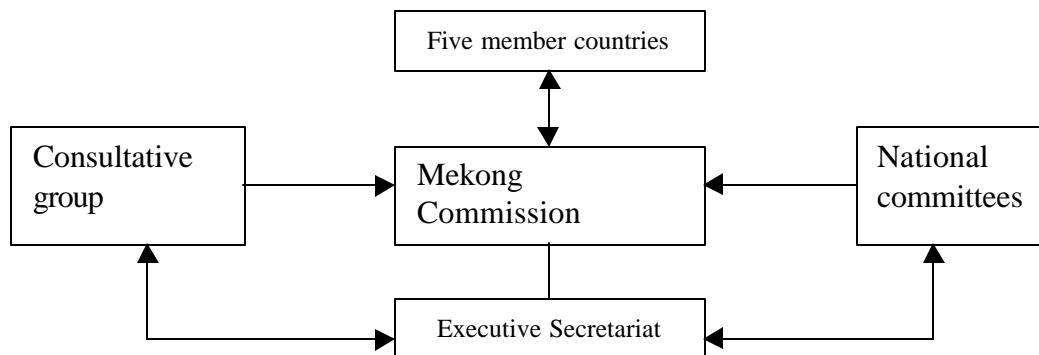


Figure 3 – Organisation of the new Mekong Commission

It has undertaken to prepare two documents for 2005:

- The first document will set out the rules for using and transferring water, and will be prepared using modelling tools and socio-economic and environmental analysis methods.
- The second document will set out the development programme for the basin and raising the 40 million dollars required for these studies.

The new Commission now recognises the need to keep to the following rules:

- To turn to negotiation in case of disputes
- To take all social, economic and environmental aspects into account
- To pool acquired experience
- To set up a permanent executive secretariat.

However, although this new Mekong Commission appears to be considered by many as a model of cross-boundary co-operation, not all of the obstacles seem ready to disappear, if some observers are to be believed. These observers consider that the imperfect knowledge we have of the ecosystem of the river will prevent any development project being passed. The need to raise 40 million dollars for indispensable studies, which would cement the agreement of the riparian states involved, is also not guaranteed. Moreover, they consider that perfect co-ordination between international agencies and national programmes is still a long way off.

For Paul J. SMITH and Lt. Col. Charles H. GROSS of the Centre d'Etudes et de Sécurité Asie-Pacifique, co-operation between riparian countries will remain difficult in the absence of China, which has always refused to join the Mekong Commission, arguing that “whatever measures it takes to equip the part of the Mekong on its national territory, it is a purely internal Chinese matter”, but which however sits on the ESCAP (Economic and Social Commission for Asia and the Pacific), on which this Commission depends. Observers generally agree that this is the most important challenge faced by the new Commission.

#### ▪ The case of the Zambezi

This major river in the southern horn of Africa, 2 740 kilometres long, and with a basin of 1 300 000 km<sup>2</sup>, is shared between eight countries that are all members of the SADEC, of which five : Zambia, Angola, Zimbabwe, Malawi, respectively occupy 40.7 – 18.3 – 15.9 – 11.4 and 7.7 percent of the total. The average annual water flow at the sea is 3 600 m<sup>3</sup>/s with an average of 5 000 m<sup>3</sup>/s during the rainy season and 1 500 m<sup>3</sup>/s in the dry season. It concerns 28 million inhabitants, of which 20 million are living under the poverty level.

Much of the equipment was prepared and installed during the colonial period, such as the big **Kariba** and **Cabora Bassa** dams for generating electricity, with a generating capacity of 4 500 MW. Others also involve navigation purposes, particularly the Shire project to connect Lake Malawi to the sea and thus help navigation. In total, more than 200 000 hectares were irrigated with a potential of 7 million hectares. Fishing was prosperous, with more than 200 000 tonnes taken each year, which accounted for almost all of the animal protein in the coastal areas. However, these productive investments that were put in place had disregarded the protection of the environment and did nothing or very little to reduce the pollution discharged by towns and factories and did nothing to deal with low water levels, by using the water from the dams rather than only passing the stored water through the turbines as a function of the actual electricity requirements.

For this reason, the desire to build up a partnership that could act in a more efficient manner has been increasingly felt by the new governments of riparian countries, something that has been made possible by the SADEC Protocol. Good preparatory work was carried out, starting in 1997, thanks to the ZAC Plan by setting up measuring stations and by standardising hydrometric data in line in order to gain a clearer picture of the basin as a whole.

The effective constitution of the Commission, the “**ZAMCOM**”, dates from 1997. This is responsible for water management in the basin and sub-basins on behalf for the riparian countries. It has three organisational levels:

- At the summit, the Commission comprising delegates from eight countries, which depends on an inter-governmental assembly for making decisions about administrative matters and the execution of studies and actions,
- At an intermediate level, the acting body that works with the local agencies responsible for the sub-basins or with the authorities delegated by the states
- At the bottom level, ties with user associations and representatives from the business sector.

The aim is to programme the various integrated actions that need to be carried out in each of the sub-basins in order to equitably share out water resources, while taking account of the various end use requirements (supply, irrigation, electricity production, navigation, tourism, health), while at the same time taking action to limit floods and severe low water levels.

This supple and flexible organisation depends, in the first instance, on a better knowledge of basic data, which has been standardised beforehand, which makes it possible to have a clearer idea of the overall potential of the basin and the problems that need to be solved.

### **3.4. The case of strong contrasts between upstream countries (with abundant water resources) and those downstream (which lack water) and the role of conciliators**

#### **▪ The case of the Ganges and the Brahmapoutre**

The Ganges, the Brahmapoutre and the Meghna (GBM) drain 1 700 000 km<sup>2</sup> mainly in India, in Nepal, in Bhutan, and in China upstream and downstream of Bangladesh where they meet up in a vast common estuary. Their maximum total flow rate is 200 000 m<sup>3</sup>/s, whereas the minimum flow rate is only 3 000 m<sup>3</sup>/s.

Bangladesh, a densely populated but small country (120 000 km<sup>2</sup>), which is situated downstream, is mainly farming land. 75 % of its labour force is involved in farming, and this accounts for 60 % of its exports. It depends on the monsoon and, in the dry season, on the water from these three rivers, which are vital for Bangladesh, and especially the Ganges.

The Ganges is also vital for India, where it is used to irrigate 860 000 km<sup>2</sup>, but also downstream where the flow that reaches Calcutta in the dry season is very insufficient.

**In May 1974, this led to a joint declaration being issued by India and Bangladesh** on the importance, for both countries, of increasing the flow rate of the Ganges in the dry season. A joint commission, the JRC (**Joint River Commission**), has been created with the aim of making proposals for meeting this objective. In 1997, it resulted in a document that, in Articles VI and IX, recognised this vital need.

Unfortunately, the projects put forward by India and Bangladesh are totally divergent. India is proposing diverting the water from the Brahmapoutre to the Ganges via a gigantic canal 300 kilometres long in order to re-supply the Faraka dam, and then send the excess further north.

Bangladesh is proposing a series of dams upstream of Nepal on the Ganges which would even out the flow rates and generate electricity. It rejects India's proposal, which would reduce its irrigation, which in the dry season uses water from the Brahmapoutre.

**This situation led to a stalemate for almost twenty years, but efforts by the World Bank and the United Nations have born fruit.**

Now, it seems that there has been a rapprochement of the various viewpoints through recent treaties, firstly between India and Bangladesh, and secondly between India and Nepal, which were both signed in 1996. The 1997 Mahé Declaration and the 1998 Colombo Declaration at the SAARC (South Asian Association for Regional Co-operation) Summit for inter-regional co-operation enable a new perspective to be taken towards a joint approach to these shared water resources.

- **The case of the Nile**

The Nile, 6 671 km long, and with a basin of nearly 3 500 000 km<sup>2</sup> is the third largest river in the world. It concerns 10 countries. Its source is in Burundi, at an altitude of more than 2 100 m, and after crossing several major central African lakes, the White Nile joins, at Khartoum, the Blue Nile, which flows from Ethiopia before reaching the Aswan Dam and crossing Egypt for the last 1000 kilometres before it reaches the sea.

In fact, one can consider that there are two different Niles, since the Nile coming from the south loses a large part of its flow crossing the Bahr el Gazal marshes. When the Nile leaves the marches, it only has a fifth of the volume of water coming from Ethiopia.

**This explains why the problems of the four downstream countries involved (Egypt, Sudan, Ethiopia, Eritrea) may be treated almost separately from the problems of upstream countries;** upstream countries have, until now, been mainly interested in the hydroelectric potential but are now starting to think about irrigation. However, thanks to the "Jonglai Canal", which should partially short-circuit the marshes and reduce the losses, the impact of the new withdrawals will be eclipsed.

Downstream, Egypt, which is more than 90 % dependent on water from the Nile to sustain its present population of 60 million inhabitants, is in competition with the Sudan and will doubtless be in competition in the future with Ethiopia, which acts as the "header tank" for the Blue Nile.

In 1929, Egypt was allocated, on the initiative of Great Britain, 48 billion m<sup>3</sup> of the water from the Nile compared to 4 billion m<sup>3</sup> for Sudan. This share out of the resource was denounced by Sudan as soon as it gained independence in 1957. Sudan constructed the Roseieres dam on its territory, complementing the Sannae dam, and has claimed for itself, in addition to hydraulic energy, 10 billion m<sup>3</sup> for its irrigation requirements.

On the same date, Ethiopia also denounced this share out.

**The construction of the major Aswan complex, inaugurated in 1964**, which holds 157 billion m<sup>3</sup> of water, allowed 10 billion kWh of electricity to be generated. Thanks to its complementary Tochka basin, Aswan has considerably increased the annual volumes of water available to Egypt and the Sudan, 55.5 billion for the former and 18.5 billion for the latter country, leaving only 10 billion m<sup>3</sup> to the others. On the other hand, it reduces the flow reaching the Mediterranean Sea by more than 10 billion m<sup>3</sup>. **This 1959 agreement between Egypt and the Sudan was once again denounced by Ethiopia.** Ethiopia, which controls the source of the Blue Nile, and noting that it supplies more than 80 % to the Egyptian Nile, has asked for the agreement to be renegotiated, but this has been turned down by Egypt. Faced with this refusal, Ethiopia has, in the first instance, planned the construction of dams that will, in the longer term, withdraw 12 billion m<sup>3</sup>. At the same time, the initial agreement between the Sudan and Egypt has now been put into question due to the increase in Sudan's requirements.

**It was therefore necessary to come to an understanding for shared water, in order to allow for demographic growth.** The population of 250 million in the basin will rise to 400 million in 2025 and nearly one billion by 2050! With considerable support from the CIDA (Canadian International Development Agency), an organisation for technical co-operation organisation, the “**TECCONILE**” was created in 1992, which groups together six of the ten riparian countries as members, with the others acting as observers.

It organised ten annual conferences, which were held successively in the 10 capitals, with the aims of developing the resources in a sustainable manner for everyone, ensuring the joint management of resources and eradicating poverty. Finally, discussions between experts have helped an exchange of views and to consider the best options.

**These efforts have borne fruit.** In 1999, in Dar es Salam, the “**Nile Basin Initiative**” (NBI) was created to replace the TECCONILE. The NBI, which benefits from the back up of three major international institutions: the World Bank, PNUD and UNICEF (Nile Team), the CIDA and the FAO, led by Italy, groups together all of the partners, except Eritrea. The NBI is run by a Council of Ministers from 9 countries (the NILE Commission) and is backed up by a technical consultative committee (NILTAC). It has a permanent secretariat in Entebbe (Uganda), in the former head office of the TECCONILE. Its objective is a sustainable development plan for the Nile (Shared Vision) and the implementation of various investment programmes that concern at least two countries.

**In conclusion, succeeding in persuading ten countries with diverging interests to take part in discussions is quite a considerable feat.** According to the Egyptian representative, calm had returned at the latest conference in Addis Ababa and constructive exchanges could take place, after eight years of “very hard-headed discussions”.

However, in spite of the positive signs that were apparent at the “Congress of the Nile 2002” conference, such as the evident need to co-operate together and the multiplication of contacts between riparian countries, there is still some way to go. Important difficulties still remain and have not yet been completely overcome. In particular, there are still many obstacles standing in



the way of a favourable evolution in the collective management of the Nile, the most important of which is the 1959 share out agreement between Egypt and the Sudan, which is contested by other riparian countries that consider themselves wronged, but which Egypt does not seem willing to re-consider. The recent armed conflict between Ethiopia and Eritrea is also not likely to facilitate reconciliation.

In its conclusions, the “Congress of the Nile 2002” in 1999 denounced the fact that numerous handicaps still stood in the way of overall, integrated management, such as “the absence of political will and commitments, political instability, distrust between riparian states, economic imbalance, insufficient technical capability, unstable macro-economic conditions and sharp demographic growth, all of which put further pressure on the water resource”.

**Despite this handicap, the situation seems to be changing in the right direction. The three ENSAP countries (Egypt, Ethiopia and Sudan) in fact managed, at the latest meeting in March 2001 in Khartoum, to put aside their differences and come to an agreement on the development projects of each country, and to present them jointly at a meeting with financial backers, which took place in June 2001 in Geneva. Doubtless, this is the long awaited sign of passing from the planning to the action stage, as hoped for by those that support the Nile Basin Initiative.**

#### ▪ The case of the Tigris and the Euphrates

The basin of these two rivers, whose sources lie in Turkey, covers an area of 880 000 km<sup>2</sup>. In addition, it concerns Turkey, Syria, Iraq, to a lesser extent Iran for one of the tributaries of the Tigris, and Saudi Arabia for a tributary of the Euphrates. In total, it concerns more than 55 million people, including the whole population of Iraq, two thirds of the population of Syria, 20 % of the population of Turkey and only 15 % of the population of Iran.

The flow in these two rivers is very irregular. High water comes about in Spring (with a maximum in April for the Tigris and in May for the Euphrates), which is too late for winter crops and too early for summer crops. More than 50 % of the water in these two rivers flows within a period of three months (April to June). In addition to these inter-seasonal fluctuations, there is a very irregular annual flow (from 1 to 4.5). The flow can jump from 320 to 1 200 m<sup>3</sup>/s for the Euphrates in Hit (Iraq) and from 450 to 1750 m<sup>3</sup>/s in Baghdad for the Tigris.

Populations downstream in Syria and Iraq rely heavily on the water from these two rivers, as is the case with Egypt for the Nile. The major difference is that here the two upstream countries (Turkey and Iran) are richer and can impose their will, which is not the case for Ethiopia, the “header tank” for the Nile.

Turkey has implemented the “Development Programme for south east Anatolia”, the GAP (in Turkish : Geneydogu Anadolu Projesi). This project, the most important ever undertaken by Turkey and one of the most important of its kind in the world, provides for the construction of 22 dams, 19 hydroelectric plants and the irrigation of 1.7 million hectares over the coming years. It will provide a third of the water resources of the country and the production of 27 billion kWh.

This programme, thought up in the 1960s and designed in the 1970s, which is now fully underway, is estimated at 33 billion dollars, of which 15 billion have already been invested.

The original idea proposed developing 75 000 km<sup>2</sup> of this region in south east Turkey in order to allow it to attain the same level as the rest of the country. The difficulty arises from the fact that the population of this region of south east Anatolia is mainly Kurdish, most of whom are nomads, and part of whose territory has already been or will be flooded by the dammed lakes and who will, as a consequence, have to be displaced and re-installed elsewhere under better conditions.

An original feature of the project is that the GAP, which does not itself construct the works (they are constructed by the State Department for Hydraulic Works, part of the Ministry of Public Works and Housing - DSI -), but which is responsible for implementing associated development programmes, launched, at the same time, a large number of education, training and further training courses covering various fields: not only financial and economic management, agronomics and hydraulics but also the elimination of illiteracy, schooling, child welfare, etc. The target population includes all of the people concerned, and especially women and children.

#### The ties between countries dependent on the Tigris and the Euphrates

In 1946, Turkey and Iraq signed a protocol for the management of the Tigris, the Euphrates and their tributaries. This agreement recognised that it was logical to site works to regulate the flow of these rivers in Turkey, and supported the principle of subsequent adaptations in the interest of both countries as regards irrigation and electricity production.

In 1980, a protocol was signed between Turkey and Iraq, creating the “The Joint Technical Committee” (JTC) for regional water resources, which held its first meeting in 1982.

In 1983, Syria joined the JTC and, since then, regular tripartite meetings have taken place in Ankara, Baghdad and Damas. The JTC agreed on the theme of hydrological and meteorological studies covering the whole Tigris and Euphrates basins. In this way, co-operation between the three riparian countries has allowed data to be pooled and standardised so that the resources in the two basins can be managed in an efficient manner.

Unfortunately, the JTC has encountered a lot of problems, particularly after the Ataturk dam was filled in 1990, the first major project of the GAP, and the sixth largest in the world with 48 km<sup>3</sup> of water dammed up, which created so many problems that the JTC was disbanded.

Outside of the Committee, Turkey and Syria have maintained bilateral contacts on water from the Euphrates and, when the Turkish prime minister Turgut Ozal visited Syria, the two countries signed an agreement in which Turkey promised Syria 500m<sup>3</sup>/s from the Euphrates.

However, since then, Turkey has signed a military alliance with Israel, and as a result Syria and Iraq have improved their relations to present a common front against Turkey. Nevertheless, Turkey and Syria have maintained their bilateral relations.

As things stand, the situation is all the more difficult given the serious political tensions that exist within the Middle East. Shared water management could either help to increase or tone down

these tensions. The volumes of water that will be available, and which will be managed in accordance with a policy of sustainable development, the line Turkey is taking, could be a factor that contributes to quietening things down if advice were to be given in this sense by the United Nations, based on the exchange network proposed below between the inter-state Commissions.

### **3.5. Several conclusions that may be drawn from the 16 case studies**

#### **▪ Conditions that lead to dialogue :**

- response to crisis situations and natural catastrophes
- the realisation that non-concerted solutions are either very costly or impossible to attain
- end user pressure to increase the available resources
- compliance with international law and the 1997 rules set out by the United Nations
- the conditions and obligations imposed by the financial backers before providing funding
- the resolution of latent conflicts between parties that lead to a reduction or a deterioration in the shared water resources.

#### **▪ The implementation of a progressive approach between riparian countries.**

This approach should first of all be based on contacts and informal meeting between water specialists in order to build up mutual confidence through personal contacts. In the first instance, this may be achieved through the pooling of data and the exchange of information concerning the problems encountered and how they have been solved. This information may cover specific problems, such as the energy potential of the basin, water pollution levels and their causes, or even fish migration.

**These contacts and exchanges between specialists allow a technical consensus to be reached on the available data, the methods used to collect this data and the works already carried out. It is also useful if these experts study how the various populations concerned by the various projects under consideration can be included in a similar manner.**

The discussions can then include all of the parties involved and extend to an overall vision of the problems that have a bearing on the socio-economic, human and farming aspects, and also the preservation of the fauna and flora.

Following this initial phase where the technicians get to know each other, **official meetings may then be prepared**, involving the institutions concerned in each of the countries.

**In this second phase, it is useful to involve the financial backers as well as international or regional institutions.**

The discussions should seek to clarify the mechanisms and issues at stake and, in particular, consider:

- the impacts both upstream and downstream
- the cost of the co-operative actions that need to be undertaken, including the collection and exploitation of data and the apportionment of costs

- any possible restrictions to sovereignty, counterbalanced by the various benefits that may be gained
- any conditions imposed by the financial backers and their competitive bidding

These discussions should take account of the principles and rules recognised by the international community for the setting up of partnerships between riparian countries, especially the Helsinki Rules of March 1992 and New York Rules of August 1997.

However, they have to be adapted to the specific conditions and take account of the geographic, economic and political context. The measures taken must be sufficiently flexible to allow them to evolve over time and to keep in line with changes in the economic, social and even political conditions. It is also desirable that the notion of "equitable use" is clearly explained and discussed with end user representatives and not only with the official bodies and decision makers. Finally, the tie in between national laws, rules set by the basin commission that is created and international conventions, merits particular attention.

**Then, concrete objectives and the practical means pertaining to the partnership that need to be put forward should be tackled.**

In particular, the following questions should be answered:

- are the objectives specific? navigation, irrigation, pollution clean up, etc.
- are they general? Overall development
- if they are limited objectives, can they be extended?

Does the envisaged role only concern the preparation of joint actions or does it extend to the actual carrying out of the actions? Will the studies be carried out jointly or should the proposed commission only co-ordinate the various studies carried out by each of the partners involved?

**One question should not be glossed over: how to overcome the partial loss of sovereignty**

Firstly, the disadvantages of limitations in sovereignty should be dispassionately analysed and compared with regard to the advantages brought about by joint action. But this is not enough if a certain number of critical factors are not progressively brought together, a point highlighted by the Petersberg Forum (ref. 8), using the examples of the Nile, the Jordan, the Rhine, the Danube and the Mekong, namely :

- a shared outlook for efficiently managing resources, which requires a climate of confidence
- a political will, backed up by public support based on extensive co-operation
- a broad based partnership, which brings together international, regional or bilateral institutions, financial backers and NGOs.

▪ **Brief reminder of the origins of international law in the water sector**

As pointed out in Article 3.8. of the statutes of the International Court of Justice, which deals with all disputes in this area, including disputes involving water, the applicable rules are, in decreasing order of importance:

1. International, regional, multilateral or bilateral conventions, whether general or specific, recognised by the States involved
2. Well established working practices

3. Jurisprudence arising from judgements made by international or national tribunals, as well as any arbitration decisions
4. Academic work (studies, propositions, opinions) produced by organisations and internationally recognised specialists.

International law pertaining to water has, up till now, remained relatively embryonic.

Now, however, several general rules for joint management and concerted development for shared water have progressively been recognised by numerous States. Whatever the case, their practical implementation requires close co-operation between the countries involved, which means that several simple principles must be met:

- mutual understanding
- equality and justice
- reciprocity

in other words, good neighbourly relations and a sufficiently high level of confidence between the partners involved.

▪ **Rules stemming from international right and various directives**

The new theories include the concepts of "the community of interests" between the riparian States and "the limited territorial sovereignty" on shared water resources, in order to provide to every riparian State a reasonable and equitable share of water.

They stress the following points :

- ◆ The use of water by one State must not damage the interests of another country.
- ◆ There should be no abuse of Rights.
- ◆ States sharing the same basin must promote good neighbourly relations.
- ◆ The "Internal water laws" of every State shall be formulated and applied in such a way as to avoid generating conflict.

**The Helsinki and New York Conventions** (cf. I chapter) clarified and developed these principles. They also detailed the means to apply them, notably the principle of "polluter-payer" and of "the Rights to preserve for the future generations" which both promote sustainable development. They also took into account the "hydrographic basin" as management territory, with authorisation of effluent discharge based on the most advanced technologies, as well as pollution prevention at source.

Finally, **the recent European Water Guidelines**, just like the conventions arising from the SADEC Protocol, provide tools and a very useful framework as well as guarantees for financial backers, thus effectively complementing the rules of international law. This is also the case for international joint commissions between two riparian states, based on the model of the **American – Canadian IJC** (cf. 2.4).

▪ **Support from financial backers**

**This is essential, as has been demonstrated by the cases of the Danube, the Ganges and the Nile.**

The example of the World bank, analysed by two of its members, Messrs. LE MOIGNE and KIRMANI (ref. 9) may be cited; this shows the importance of this type of support found in other bodies.

S. KIRMANI and G. LE MOIGNE [ref. 11], who have analysed the role played by the World Bank in the Indus, Mekong and Aral Sea basins have established some principles that can be applied today to this organisation. It is all the more interesting because its role in each of the three basins was very different: to help resolve a serious dispute involving the Indus, to contribute to the implementation of a program of action for the Mekong, to participate in the choice of the best option to re-supply the Aral Sea. Among the principles that enable the World Bank to act efficiently, the following can be cited :

- Its objective is always to help development.
- It is neutral and objective in its role as a third partner.
- It uses the diplomacy of persuasion, and plays a role in helping to create dialogue with financial backers. It also tends to establish long-term teams even if the final success is not certain, because it considers that this investment contributes to peace and contains important possibilities for the future.
- It does not intervene unless the riparian countries want it to and when the disagreement between them is so serious that it could lead to conflict.
- Finally, once it steps in, it always analyses the risks of what failure may do to its image, particularly verifying that its action is not counter-productive.

### **3.6. What has been learnt by looking at existing commissions**

The 16 case studies that were analysed in the preparation of the present document, are very instructive in so far as they are examples that operate in a constructive manner, and they involve very dissimilar situations:

- Eight commissions<sup>(1)</sup> have set a final objective of joint management of their shared water resources, and have decided to progress by stages and by tackling, one after another, the various areas open to them (navigation, hydroelectricity, irrigation, water quality, sustainable development, etc.).
- Three commissions<sup>(2)</sup> that are limited in the first instance to studies covering first the scheduling and then the actual carrying out of joint actions.
- Three bodies for searching a consensus<sup>(3)</sup> firstly concerning studies, then joint actions.
- One consensus body<sup>(4)</sup> that no longer operates since it has not, at least as yet, managed to obtain a consensus.

Obviously, there are many other examples where the experience has been less satisfactory.

To summarise, it may be appropriate to make the following observations:

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<sup>(1)</sup> Rhine, Lake Geneva, Escaut, Iberian rivers, Oder, Danube, Senegal, Saint-Laurent

<sup>(2)</sup> Mekong, Chad, Zambezi

<sup>(3)</sup> Aral, Ganges, Nile

<sup>(4)</sup> Tigris and Euphrates

- All of the existing commissions or preparatory structures already in place allow a healthy dialogue to take place between the countries concerned; they are also able to make propositions and issue recommendations but, in general, do not have responsibility for operational matters.
- These organisations are generally created for a long or unspecified period. This means that they have to be able to adapt to changing situations as and when the need arises.
- Most are able to carry out studies and research, and plan, schedule and promote projects, either on their own initiative, or following directives. Thus, they can have an important influence on future developments, which they sometimes have to carry out and manage themselves.
- They generally have a permanent secretariat that deals with technical and administrative matters, set up and financed jointly by the member states.
- They are composed of personnel who, for the most part, come from the member states with, if appropriate, several external consultants, and they often have diplomatic privileges and immunity.

Since the emergence of the “Helsinki Rules”, certain commissions sometimes have been granted supra-national regulatory and control powers.

Some commissions may even have an important role to play in settling present conflicts or helping to prevent future conflicts. They may then have mediation and arbitration powers as regards the allocation of water resources and the share out of costs and benefits from hydraulic development projects.

### **3.7. Possible roles of a shared water commission**

A shared water commission may have widely varying powers and these should be clearly analysed:

Responsibilities of a mainly technical nature such as:

- normalisation, collection, processing, interpretation and pooling of hydraulic data
- studies and co-ordination of scheduling, prioritising and planning projects
- construction, exploitation and maintenance of hydraulic works
- monitoring and control of water use or water quality.

Responsibilities of a mainly economic and financial nature, such as finding, building up, sharing out and managing finance from national or international (bilateral, regional and multilateral) bodies.

Administrative responsibilities – elaboration and implementation of harmonised procedures concerning shared water management, in close collaboration with the various national institutions of the member states.

### **3.8. Main points that need to be determined**

It is worth highlighting the very wide diversity of situations encountered as regards the geographic, economic, social, environmental and political conditions in each particular case.

What is more, the problems that need to be solved are particularly complex and sensitive: in addition to the habitual difficulties that are encountered at a national level in each of the countries concerned, there are also international diplomatic and political considerations. These aspects interfere with and give an additional dimension to the discussions: questions of sovereignty, patriotic sentiments and national sensitivities that can make discussions very passionate and emotional and, as a result, irrational and difficult to calm down.

If the final objective of a shared water commission is to propose, to the States concerned, the procedures for jointly and efficiently managing water, and if the objectives sought have general repercussions, the very wide diversity of situations encountered means that appropriate ways and methods that have to be used to attain these objectives while, at the same time, paying careful attention to the context and the type of issues that need to be looked at.

Careful observation of how existing commissions or structures operate, the experience acquired as regards water management at a national level and the putting into practice of international relations allow the following comments to be formulated:

#### Powers devolved to the commission

These may be:

- Of a consultative nature, in other words formulating opinions and providing advice and suggestions and, if appropriate, recommendations.
- A role of consensus building and technical co-ordination concerning data, studies and projects
- Operational responsibilities relating to works
- Normative powers for technical, administrative or economic regulation
- Powers to prevent and settle conflicts, in the form of mediation, arbitration, or even jurisdiction vis-à-vis the parties.

#### Territorial authority

Territorial authority may extend over all or part of a shared hydrographic basin or aquifer.

It may also cover a complete area comprising all or part of several catchment areas or aquifers, along demarcation lines that are defined conventionally by the countries concerned.

Whatever the case, it is indispensable that the upstream area of the hydrographic basin in question falls within the scope of the commission's authority.

#### Type of institution

The legal status of the organism that is set up must be formally defined both from the point of view of international law, and vis-à-vis the internal legal systems and institutions of each of the countries concerned.

It is important to properly clarify the structure of the commission, in particular the place, the form and the level of involvement of the member States and governments, the possibility of involvement by other important public or quasi-public organisations such as multilateral, regional



or national institutions or financial backers, and also the possibility of intervention open to the private sector: professional bodies, NGOs, etc.

The internal constitution and the composition of the national (and international) representations within the chosen body are thus likely to vary considerably.

#### Operating rules and procedures

These must be clearly established from the outset; this involves defining how decisions are prepared, the methods of consultation, the procedures and the required technical, financial or political decision levels.

In addition to internal procedures, the relations the body has with its main external discussion partners must also be clearly set out: international bodies, financial backers, non-member states that could become members in the future, etc.

### **3.9. The progress that still needs to be made**

#### **The necessary broadening of existing international rules**

In spite of this very large extension of management principles, one has to mention some very important gaps in these texts. Dante Caponera (ref. ) proposes developing the following points :

- the necessity of safe water supply for all and notably for the poor ;
- an integrated water resource management with sophisticated planning to adjust Demand and Supply ;
- the interest to act on demand more than supply, which means the participation of users and the general public in the management structure. This requires programming adequate resources for training means as well as the implementation of a coherent measurement system throughout the whole basin.

Finally, one must note the absence of a financial strategy to mobilise the indispensable funds to implement an efficient policy.

Philippe El FADL [ref. 4] has highlighted these gaps, as can be seen in the following excerpt from his paper at the Conference of Kaslik.

*"The fact that rivers, lakes, and groundwater, due to their physical relation, constitute a unified entity, is not really taken into account. Thus, the existing international conventions implement a sector-based approach to water management to the detriment of an integrated approach for the management of the water cycle. In the same way, practically no effort has been made as regards increasing our knowledge of water resources.*

*However, sustainable water management is impossible without improvements to our understanding of the water resource. Knowledge of the resource and a clear understanding and appraisal of the demand are indeed indispensable preliminary steps to global and balanced water management. This supposes the implementation, maintenance and exploitation of measurement networks, and of data banks. Such implementation is not yet, generally speaking , promoted by the existing conventions.*

*The progressive implementation of these networks with adequate international financing would allow every country to better organise, and in a lasting way, plan water management. In the same*

*way, knowledge of water resources cannot not be considered seriously without a genuine training programme. Again, the international conventions concerning water do not focus on training issues. However, investment in the water sectors, either in rural areas or in urban areas, could not be coherent without the development of training programmes for water resource managers, vocational training in appropriate techniques applied to the different countries.*

*In the same way, the international conventions have not promoted, until now, the development of actions for educating users and the public. Yet, without such training and information programmes, which could be implemented by the international conventions, it is almost impossible to carry out water saving actions. However, once again, the conventions do not, clearly focus on the importance of saving water. Yet, undertaking concrete measures in order to control water consumption to avoid all types of waste is becoming urgent.*

*It should not be forgotten that water resources are decreasing and that water is a shared natural resource. In the same way, among the omissions in international conventions concerning water, it is necessary to mention the absence of financial measures. Indeed, there is no real international strategy for fund mobilisation that could permit the realisation of work investments concerning water ".*

▪ **The creation of an “International Court of water”**

Currently, disputes between riparian States are judged by the "International Court of Justice", by certain courts of litigation or judicial courts, either set up by associated countries or by the federal countries, as for example the judicial court of the European Union in Luxembourg.

Thus, as indicated by SIRONNEAU [ref. 19], about thirty case-law decisions were taken in the 19<sup>th</sup> century, for resolving disputes. And probably three or four times more in the 20<sup>th</sup> century, if the disputes solved by the European Union and by the federal authorities in countries as USA, Brazil and Germany, etc. are taken into account.

The creation of a specialised water court, following a UN resolution, possibly placed under the aegis of the International Court of Justice, would complete the arsenal of Rules concerning water in general and, more particularly, those of shared water, thanks to case-law decisions drawn from its judgements.

Such a Court would be competent to instruct, to judge and to solve:

- ◆ all litigation concerning national or federal hydrographic basins,
- ◆ all litigation concerning international basins.

The submission of a case to the Court could come from any of the three authorities:

- ◆ all national or federal State authorities
- ◆ all representatives of a Basin having moral personality,
- ◆ all international Commissions,

as well as from a petition signed by more than 1,000 citizens (?), provided that the petition is transmitted by one of the three above mentioned claimants.

▪ **Creation of an exchange network between existing Commissions**

Following the example of “national basin organisations”, which are grouped together within a Network called the RIOB, the networking of international river commissions is also very desirable, both for exchanging information and for helping new commissions to get set up and become fully operational. This type of entente, the IBCE (International Basin Commission Entente), could either find a place within the RIOB or remain independent of the RIOB. The first solution would have the advantage of promoting management on a hydrographic basin (or district) scale, which is not always the case with every International Commission.

**3.10. All of the means available should ideally be linked up together**

As has been highlighted in the case studies, the creation of an “International Commission” firstly requires the willingness of the States concerned and their national representatives grouped together, if appropriate, in committees, as proposed below, in order to be able to co-operate. It must also be able to rely on the support of the United Nations and financial backers, backed up by the use of international rules, through advice from existing Commissions, and through the support provided by the support bodies with, in the case of serious disputes, the possibility of being able to put the matter before an International Water Tribunal.

Obviously, these various means must be interconnected and be under the aegis of the United Nations, as outlined in Figure 4 below.

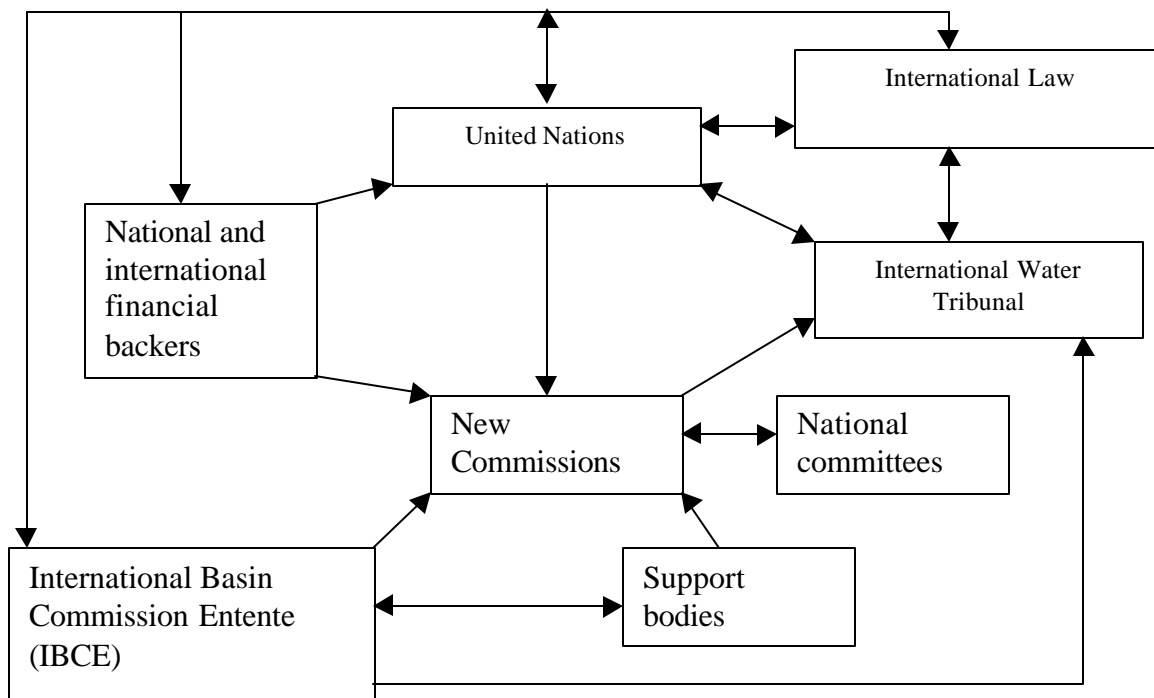


Figure 4 – Link ups between the available means

#### **4. A STRATEGIC GUIDE FOR THE CONSTITUTION OF AN INTERNATIONAL INTER-STATE COMMISSION FOR SHARED WATER: SUGGESTIONS ARISING FROM THE ACADEMIE'S STUDIES**

Given that water is an economic, social and environmental asset that plays a vital role in satisfying basic human needs, in health, in security of supply, in the reduction in poverty and the protection of ecosystems and that fresh water is a fragile resource whose renewal by natural cycle is easily disrupted by humans and human activities, it appears that managing the water cycle requires an integrated approach rather than a sector-based approach, which takes account not only of immediate issues but also long terms concerns.

The management and development of water resources must therefore involve decision makers, technicians, end users and planners at all levels.

The complete water cycle, fed by rainfall that supplies the surface and ground water, should be considered, within which withdrawals and rejects made by all users interact on the resources, in terms of quantity and quality, depending on their location within the territory.

The close links between water and the environment should also be taken into account.

**These facts mean that the hydrographic basin is the best level at which to establish a water programme. This must therefore be done in liaison with that of the Territory and also preserve the environment and all of the natural resources within the scope of a sustainable development policy.**

As a result, it is a good idea for countries that share water resources in a basin to exchange information in order to ensure that this precious asset is correctly managed, to confer and, when the time comes, to work together within the framework of an "International Basin Commission".

In order to cement these relations and commit themselves to an efficient management of their water resources, these States can make use of the articles proposed below, which outline the means and resources that need to be implemented.

#### **4.1. PRELIMINARY ACTIONS THAT DEPEND ON EACH OF THE COUNTRIES**

##### **4.1.1. Measuring networks**

Each state must carry out an exhaustive inventory of the water resources and aquiferous systems in its own part of the basin, by setting up adequate measurement networks. These must cover rainwater, surface water (flow rates, levels, quality) and ground water (level, quality), and must be both shrewdly sited and of sufficient number.

It must also establish a list of withdrawals and discharges comprising, at least for the most important, both quantitative and qualitative measurements.

As regards the measurement methods, it would do well to use methods that are recognised as pertinent at an international level, especially via the existing programmes of the OMM, the PHI, UNESCO, the PNUE or the European Environment Agency.

The data obtained in this way should be presented in a form that is easy to exploit and understand, whether it be by specialists, end users or the general public.

#### **4.1.2. Economising water and water pricing**

Economising the water that is used in various ways is a necessary objective, particularly when the resource is limited in relation to the demand. It is then better to take action on the demand side rather than the supply side or, at least, act on both alternatives, rather than only on the supply side

This demand based management can be based on specific technology, such as:

- sprinkling or “drop by drop” irrigation, a major consumer of water
- recycling within industry
- combating wastage, including leaks from the distribution networks

In parallel with these technical means, thrifty management can also be based on the user-payer principle and by using appropriate pricing structures, such as the progressive pricing of water, which reduces water consumption by the largest users and also brings in income that makes it possible to supply cheap water to the most underprivileged. In the same way, tax incentives could be used, such as the user-payer principle (see 1-5).

#### **4.1.3. Controlling pollution**

Natural self-purification can only be efficient for limited amounts of discharges. Therefore it is necessary to clean up surplus discharges beforehand, wherever the density of occupation or the activities on the ground exceed a very low limiting threshold in order to preserve aquatic life in rivers and allow the water in these rivers to be used for various end uses, accompanied, if necessary, by water treatment. The ground water table and collection points must also be protected.

As with economising water, it is recommended that the principle of polluter-payer is used along with tax incentives or taxes on the use of fertilisers and pesticides, which create diffuse pollution. These taxes encourage people to employ clean up measures or limit the use of pesticides and fertilisers in an abusive manner.

#### **4.1.4. Withdrawal and discharge authorisations**

These authorisations should be issued after due investigation by the authority responsible for “policing” the water, in order to verify that any actions of this type do not have a harmful effect on surface or ground water. Limited to those that overrun a threshold that has to be defined, they concern the flow rates and the quantities withdrawn (which may vary according to the season) and on the flow rates, volumes and levels of pollutants in the discharges. They also set the clean up levels relating to the different parameters of the discharged substances.

#### **4.1.5. The means of financing**

The means of financing may come from:

- Income from the price of water and sanitation and water rates based on the principle "water pays for water", via self-financing and loans.
- Fees earmarked for projects by applying the principles of "polluter-payer" or "user-payer". This has a double impact; it provides indispensable financial resources in a very capitalistic sector and it encourages polluters to provide adequate clean up measures and water consumers to reduce their requirements by cutting down losses and wastage.
- Subsidies (or loans at reduced rates) from the State (or local authorities), from income arising from taxes and levies on pollution and water wastage. This has the same dual effect as the measures described in the previous paragraph.
- Financial assistance from outside the countries concerned (public aid for development and multilateral or other financial backers), donations and loans at reduced rates and favoured pay back periods from International or Regional Authorities or partner countries.

The use of one or another of these will affect the economic management of water and whenever possible, resources coming from water itself, which encourage economising water and clean up measures, should be favoured.

#### **4.1.6. Involving citizens in the work and providing them with preliminary training in the problems associated with water**

Modern water management principles cannot be imposed but instead require the participation of end users. Therefore any project or programme involving water should include training and information that targets the people concerned in order to prepare them for consensus building and allow their desires and their real needs to be known.

In this respect, certain principles stand out:

- ensure that local water managers and technicians receive training in consensus building and listening to the needs of end users.
- include, in this training, not only technical aspects, but also training in health and safety and provide a better understanding of the natural water cycle and the various means that allow water to be used in an appropriate manner.
- undertake to provide the various populations (in the south as well as in the north), with a better awareness of the general interest of water as a public asset as well as the importance of preserving water quality and the environment and how these issues link up to health considerations.
- adopt a participatory approach in the training, and place special emphasis on local skills and capabilities in all training and education programmes.

The means put in place should mainly be based on the existing education systems in each country, which should as a result be reinforced.

## 4.2. PRELIMINARY DIALOGUE

It is desirable that countries sharing a common basin establish unofficial contacts to exchange information on water and its management. Initial contacts should be at a technical level and established through their respective water administrations.

**When the States are considering specific co-operation between each other, these preliminary contacts are indispensable.**

They can take the form of invitations by one administration to another for some technical meetings in order to compare the data available on the basin, the management method and the technical work carried out. They should be held alternately in each country of the basin.

**It is useful if some experts from regional or international organisms are invited to these meetings.**

The topics that could be analysed are as follows :

- ◆ Measurement networks for the quantity and quality of surface and ground water, for precipitation, with a description of the measurement techniques and station density. The corresponding studies could result in systematic data exchanges and an assessment of water resources in the basin.
- ◆ Analysis of data on water abstractions for different uses and discharges, in quantity and quality, as well as the treatment facilities and techniques used.
- ◆ Presentation of data on works completed for flow control, such as dams, and for protection against flooding (works on the river bed, embankments, etc.), as well as for navigation. Analogous exchanges on the protection of aquifers and wells.
- ◆ Exchange of knowledge on wetland areas and their conservation and on the measures that have been taken for environmental protection.
- ◆ Analysis of the works planned for the management of the resource : appropriateness of supply and demand, and demand management (water saving, reuse, etc.).
- ◆ Comparison of means dedicated to the training of technicians, users and the general public.
- ◆ Finally, presentation of the management methods employed in the countries concerned. Administrations in charge of water and sanitation, of planning, as well as of irrigation, of flood control, water legislation (policing of water, abstraction permit and discharge authorisations) and of actual arrangements for the financing of works, etc.

***Finally, analysing the difficulties encountered and distinguishing those that can be solved in each part of the national basins or sub-basins, and those problems that can only be solved outside of these basins.***

These exchanges could lead to the preparation of a monograph on the Basin, which describes the water cycle in relation to the requirements of its inhabitants and their activities, showing local problems in each part of the basin and those, either existing or susceptible to appear between the areas of the basin belonging to each of the riparian countries.

### 4.3. THE COMMISSION CONSTITUTION PHASE

**This indispensable preliminary dialogue phase** is in no sense a waste of time. Quite the contrary, it allows the different national bodies to get to know each other better and, at the same time, to understand the problems affecting the basin as a whole. This highlights the necessity of organising a forum for permanent dialogue between the States, resulting in the constitution of a Commission :

- ◆ either because studies mentioned in the previous paragraph showed that some problems which disrupt (or could disrupt) its water resources can only be solved jointly,
- ◆ or because it notes that disruptions such as pollution, shortage of water at certain times, etc. are caused by activities from another State which is not respecting International Law, meaning a declared or potential litigation.

Obviously, it is easier to reach agreement when feelings are calm, rather than in heated discussions. Indeed, experience has shown **that blocked situations are very often due to insufficient or late contact between the parties involved**, and to very different socio-economic levels between riparian countries, preventing poorer countries acting against richer countries, or to upstream countries acting with hegemony. The cases of the Nile, the Tiger and the Euphrates or the Jordan are some good examples.

**In these cases, the requested and accepted intervention of international or regional organisms, such as the World Bank or the Commission of Brussels can help to ease the situation.**

Therefore, it seems wiser to organise contacts at the diplomatic level as soon any malfunction resulting from the actions of a riparian country that does not comply with International Law arises, or even when there is any risk of such a situation arising, as revealed by the technical exchanges between the administrations.

Taking the initiative of an "intended Conference to organise the Co-operation between riparian Countries" is more efficient than issuing a complaint. It is advisable to invite to the conference, in a first stage, representatives of international or regional organisms or financial backers, as observers.

#### 4.3.1. The organisation of a preparatory conference and its agenda

A conference of this type should bring together representatives from all of the States concerned at the invitation of at least one of these countries, in the presence of delegates from the United Nations, friendly countries, international or regional institutions and any financial backers that could provide useful support.

**The agenda of such a conference, which should be prepared with the technical services, could be as follows:**

- ◆ Presentation of the inter-state problems disrupting the water cycle in the Basin;



- ◆ Propositions to deal with these problems, showing the necessity of and benefits from a close co-operation between the riparian countries;
- ◆ Proposed framework for such a co-operation concerning the objectives of actions, the studies that need to be carried out, the technical information exchanges, the share out of tasks between those earmarked for joint action (or that need to be co-ordinated closely) and those under the responsibility of each State ;
- ◆ Draft Convention or Protocol setting up the international basin or river Commission, as a working, meeting and exchange instrument.

**In the most difficult cases**, as demonstrated by the example of the Nile, this preparatory conference may be held in successive years in the capitals of the countries concerned in order to finally reach a consensus agreement on the work that has to be done and how the costs and resulting benefits provided can be shared out in an equitable manner. Another solution is to set up an “**Inter-State Study Commission**”, as was the case for the Mekong. This can then be transformed definitively into an International Basin Commission.

**Whatever the case, the conference, once it has enabled a solution to be found that is acceptable to everyone in the preparatory Commission should stress the necessity for each country that shares the water from a single basin to take action, while keeping to the principles set out in International Law, namely :**

- The use of water by one country must not adversely affect the interests of the other countries
- Rights must not be abused
- States sharing a single basin must favour “good neighbour” solutions
- The internal “water laws” of each State must be formulated and implemented in a manner that does not lead to conflicts

These rules, which were, in particular, set out by the Helsinki and New York Conventions, are valid for all water uses, whether withdrawals or discharges, and thus concern both the quantitative and qualitative aspects of the resource. They reflect, from one country to another, the principles that are valid between upstream and downstream areas within a single country as well as the principles of reasonable and moderate use of water.

#### **4.3.2. Objectives of the proposed International Basin Commission**

As pointed out above, these objectives may be limited in the first instance to studies whose purpose is to clarify what needs to be done first.

They can only involve specific problems, for example navigation, electricity generation, dealing with low water levels and evening out flow rates, combating floods, controlling pollution, fishing, etc. Obviously, these limited objectives can always be extended at a later stage.

In fact, it is a good idea to set progressive objectives, beginning with the easiest and then moving on to more ambitious objectives and aim for overall management of the water resources in the basin, in other words the preparation of a water use plan.

#### **4.3.3. The means that must be put in place in order to attain the chosen objectives**

◆ **The attainment of these objectives depends on multiple actions in the field :**

- studies and exchanges of information;
- construction works (dams, embankments, treatment plants, etc.) ;
- the management of these works, which all have some impact on the water cycle, in terms of quantity and quality;
- training of operators, users, associations, etc.
- informing the public.

◆ **The attainment of the objectives also depends on fiscal or financial arrangements**

They have a strong impact on the objectives. This is the case of :

- the policy of polluter-payer or user-payer;
- the withdrawal and consumption tariffs that influence demand;
- or any possible taxes on non-point pollution sources such as fertilisers or pesticides.

**This must be evoked even though, in the almost all cases, the arrangements concern the administrative organisation of each State and must remain under its responsibility.**

#### **4.4. THE ORGANISATION OF THE COMMISSION**

The organisation of the Commission must be clearly set out in the founding Convention, which is signed by the representatives of the Riparian States and, if appropriate, a representative of an associated international authority.

**It must comprise, as a minimum requirement, the following bodies:**

- an **Assembly**, composed of members appointed by the States and associated authorities, which elects its President (who may, if appropriate, alternate between the members of each State),
- a **Board of Trustees**
- an **Authority responsible for settling any disputes that may arise**
- various **Working Groups**, which meet periodically in places chosen by the Assembly (or set out in the Convention),
- **A permanent secretariat.**

The Convention sets out the role of each component of the structure and the arrangements for decision making or passing recommendations (unanimity, qualified majority, etc.), the schedule of meetings of the non-permanent organisms (Council, workshop and litigation authority) and places of meetings, as well as the seat of the permanent Secretariat.

Associated bodies may also be set up, such as “**National Committees**” that assist the working groups, and a “**Council Group**” that groups together delegates from other friendly commissions.

#### **4.4.1. The participation of end users in discussions and decision making**

This involvement is desirable, since not only is it necessary to ensure that there is a consensus between all of the States involved, but also to ensure that the works carried out correspond to the desires of the end users in each country who, in the final analysis, will have to bear the cost directly (through the price of water and services) and indirectly through taxes.

Although these end users cannot themselves be signatories to the Convention or indeed vote at Assemblies, it is a good idea to provide for their participation at these assemblies and in working groups.

These end users could be nominated by Associations presented by each State, as a function of the posts provided for in the make up of these various bodies.

#### **4.4.2. The financing required for running the Commission**

The apportionment of running costs between the signatory parties should be set out in the Convention, with the total costs coming under the jurisdiction of the Assembly, on the Permanent Secretariat’s recommendation.

The Assembly thus sets the budget for joint works and how costs should be apportioned between the parties concerned, both in terms of investment costs and in terms of the running and maintenance costs for the installations.

#### **4.4.3. Membership of the IBCE**

It is proposed that the Commission thus constituted should join the International Basin Commission Entente (I.B.C.E.), possibly affiliated to the R.I.O.B. (International Network of Basin Organisations).

### **4.5. LEGAL STATUS OF THE COMMISSION**

The legal status provided for the Commission must give it the moral personality *vis-a-vis* of the majority States and the one of the seat of its permanent Secretariat. It must have the capacity to stand in justice and to seize all specialised jurisdictions. Similarly, the legal statute of eventual works realised must be specified.

Joint works are individually declared as the shared and indivisible property of the member states, In the case of works jointly owned by the Parties, the State in which the all or part of the structure is located must not put any obstacle in the way of their construction, nor obstruct in any way the rights of use, legal enjoyment, and administration of the other States that are joint owners of the works.

#### **4.6. SETTLEMENT OF DISPUTES THAT MAY ARISE BETWEEN SIGNATORY STATES**

Each state has the right to put any dispute concerning it before the Commission or to put before it any disputes presented by more than 10 000 of its inhabitants.

These disputes may be put, in the first instance, before the authority created for this very purpose by the Commission before being put, if necessary and if they cannot be settled otherwise, before a Tribunal that is stipulated in the Convention (either a regional Court, or the International Court of Justice).

#### **4.7. AMENDMENTS TO THE CONVENTION**

Any party may propose amendments to the Convention, which will be examined when the parties meet.

The text of any proposed amendment is communicated, in writing, to all of the parties concerned ninety days before the meeting at which the amendment will be proposed to be carried.

Any amendment must be passed by the representatives of the parties at the Convention.

It will come into force on the 90<sup>th</sup> day after the amendment is passed.

#### **4.8. RATIFICATION**

The proposed Convention must be ratified by the States concerned and by the international or regional organisations that are signatories to this convention.

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