Proceedings of the Conference
Management of Water Resources
Ethiopia


WCD, 2000, Dam & Development: a new frame work for decision making, Earthscan Publications Ltd, London and Sterling, VA.


WEC, 2003, the potential for regionally integrated energy development in Africa, a discussion document, UK.


Yacob Arsano: Four Approaches to Cooperation in the Nile Basin

FOUR APPROACHES TO COOPERATION IN THE NILE BASIN

Yacob Arsano

INTRODUCTION

The Nile water system consists of numerous tributaries and headwater lakes. Lake Victoria in the equatorial region and Lake Tana in Ethiopia are the most significant natural reservoirs in the upstreams of the Nile. Of the four major tributaries, the Abbay/Blue Nile, Tekeze/Atbara and Baro-Akobo/Sobat originate in the Ethiopian highlands, while the White Nile originates in the Equatorial Lakes region. The Ethiopian headwaters provide 86 per cent of the annual volume of the Nile. The remaining 14 percent comes through the White Nile system of the Equatorial Lakes region. Egypt and the Sudan are not only the most downstream riparian nations but also net recipients of the waters that come down from the two-headwater systems.

In view of the on-going Nile Basin Initiative (NBI), the basin is regrouped into two sub-basins, namely Eastern Nile Basin and Equatorial Nile Basin. The two sub-basins do provide two contextual realms for strategic action programs as well as for sub-basin diplomatic initiatives. The on-going and strategically conceived subsidiary action programs are clustered into the two sub-basins,
namely the Eastern Nile Subsidiary Action Program (ENSAP) and the Nile Equatorial Lakes Subsidiary Action Program (NELSAP). The former comprises Ethiopia, Eritrea, Sudan and Egypt, while the latter Burundi, DRC, Kenya, Rwanda, Tanzania and Uganda. In the context of the Eastern Nile Basin, Ethiopia is the most upstream country, which provides almost the entirety of the water resources, while Egypt is the most downstream country that receives almost the entirety of the water resources.

It will be interesting to note that unlike the Danube, Rhine, Senegal or Niger River basins, there are neither regulatory mechanisms nor institutional setup nor mutually acceptable practices in place to guide the amicable utilization and management of the water resources of the Nile Basin. The absence of legal/institutional framework and the prevailing ‘anarchic’ approach to the utilization and management of the Nile waters have given rise not only to the unregulated competition but also to the interstate rivalry between upstream and downstream nations. The present paper focuses on security, environmental, economic and institutional approaches in view of overcoming the prevailing predicaments and in enhancing future cooperation in the Nile basin. In what follows, the four approaches will be discussed at length.

Yacob Arsano: Four Approaches to Cooperation in the Nile Basin

1. SECURITY APPROACH

Fresh water is taken as the most important natural resource, and nations have increasingly vied for greater control on it. Many scholars conclude that there is a positive relationship between resource scarcity and conflict. This is mainly attributed to the growth of population, structural dependence on agriculture, and the expansion of agricultural activities as a leading sector, especially in economically less developed countries, such as those in the Eastern Nile basin. There are two schools of thought with regard to the increasing conflict over the shared water resources. One school perceives that the increased competition over fresh water resources inevitably entails conflict between riparian nations. One of the exponents of this school, Buthros Buthros Ghali, the former Secretary General of the United Nations, predicted in the early 1980s’ by stating that “water would be a source of international conflict” (cited by Waterbury 2002: 9). In 1991, Joyce Starr wrote a book further accentuating the possibilities of water wars. Thomas Homer-Dixon (1994b) underlined his expectation that conflict over the earth’s natural assets will grow, owing to the increasing population growth and economic development. Arthur Westling (1986: v) argued, “human history is an account of resource wars”. Along the same line, and some years later, Falkenmark and Wildstrand (1994: 4) argued that “world history is replete with wars and conflicts over access to fresh water resources”. Falkenmark takes the scenario even further and sees water as a factor of international dispute and conflict formation in the future. Gleick (1993a: 79) contended, “fresh water resources are objects of military campaign and conquests as long as they provide economic and
Management of Water Resources in Ethiopia

political strength to nation states”. A decade or so earlier some military analysts, such as Thompson (1978: 62-71), claimed that fresh water resources were becoming increasingly scarce, and that they would increasingly become a source of future conflict.

Following her own findings in the Horn of Africa, Eva Ludi (2002: 23) concludes that “regional issues have an imminent potential for conflict and are linked in one way or another to land and/or water scarcity”. With regard to positive relationship between conflict and lack of capacity, the same author wrote as follows: “In principle, conflicts might escalate due to the incapacity of local and traditional authorities to regulate growing tensions; [or] due to lack of policies to deal with such issues on a national level; or due to a low level of regional cooperation” (Ibid.).

The other school of thought views water resources as an arena for future cooperation and the formation of common security. Elise Boulding (1993, 202), for instance, explains, at a rather simplified level, that water flows like everything in nature. No state boundary, no barbed wire, no wall can stop water from flowing along its natural course, from source to its final destiny. The significance of this dauntingly simple explanation by Boulding underscores the common fact that actors, such as political decision makers, tend to forget about or choose to ignore as not so important. The author wants us not to forget that water does not know state boundaries; it only knows its natural course.

Yacob Arzano: Four Approaches to Cooperation in the Nile Basin

Because water knows no boundaries numerous states are bound to share the same watercourse at the upper or lower or middle course. That is why numerous river basins become the shared property of two or several sovereign states. There are some 240 river basins that are shared by two or more countries throughout the world. About 40 per cent of the world’s population and 50 per cent of its land resources are found in these shared river basins (Dolatyar and Gray, 2000: 7). Other authors vary on these figures. Scott Barret (1994: 2), for instance, claims that there are 200 river basins shared worldwide. Elhance (1999: 4-5), on the other hand, asserts that there are 215 shared river basins around the world, and these are distributed as follows: 57 in Africa, 35 each in North and South America, 40 in Asia, and 48 in Europe. The same author further explained that shared water basins cover 65 per cent of continental Asia, 60 percent of Africa, and 60 per cent of South America. Some countries like Uganda and Paraguay lie entirely within shared water basins. According to the same author, three hundred treaties have been signed with regard to shared waters across the world between riparian countries, and more than three thousand treaties bare provisions relating to water questions (Elhance, 1999: 5). The table overleaf shows a sample overview of such an effort by John Waterbury who has provided a distribution pattern of international water agreements across the continents. Obviously the table, while indicating the pattern of accords, does not include all of them.

In contrast to the second school of thought, owing to the fact that in numerous cases explicit implementation procedures and institutional
mechanisms are not in place, integrated management of water resources in shared water basins has not been an easy matter. It is for this reason that Dolatyar and Gary (2000: 7) argue that “water security is already one of the most crucial elements in the foreign policy considerations of many countries”. In response to this concern, and realizing the importance of cooperation on shared water resources, riparian states and multilateral agencies have elevated the issue of shared water resource management to a new level of diplomatic engagement. There is ample evidence of riparian states that have already made successful efforts in reaching agreement of some form and on some level, as can be observed in the table provided overleaf. Inter-riparian disputes about ‘who gets what’ will, however, keep riparian nations wrangling.

Basing his thoughts on the environmental context, Baechler (2002: 539) reminds us of the existence of many intricacies, including: multiplicity of parties, asymmetry of power between the contending parties, and the existence of other factors external to environmental issues. He prefers to consider environmental conflict resolution at a different but higher level of handling. First of all, he believes that ‘conflict resolution’ or ‘conflict management’ is not enough. Rather, he suggested on the necessity of a step further or higher. By so doing, he introduced the concept of ‘conflict transformation’. Although he agrees that an organizational approach to conflict management is useful, he believed that proper institutionalization will be necessary for its fruition. According to him, “conflict resolution has to deal adequately with so called process and structures”, the notion of which “stems
### Table 2: International Agreements on River Basins

<table>
<thead>
<tr>
<th>River basin</th>
<th>Location</th>
<th>Countries sharing</th>
<th>Status of cooperation</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Indus</td>
<td>Asia</td>
<td>India, Pakistan</td>
<td>Bilateral accord</td>
</tr>
<tr>
<td>Ganges-Brahmapu.</td>
<td>Asia</td>
<td>India, Bangladesh, Nepal</td>
<td>India-Bangladesh bilateral accord</td>
</tr>
<tr>
<td>The Tigris-Euphrates</td>
<td>Asia</td>
<td>Turkey, Syria, Iraq</td>
<td>Turkey-Syria &amp; Syria-Iraq bilateral accords</td>
</tr>
<tr>
<td>The Jordan</td>
<td>Asia</td>
<td>Israel, Jordan, Syria, Palestine</td>
<td>Israel-Jordan bilateral accord</td>
</tr>
<tr>
<td>The Nile</td>
<td>Africa</td>
<td>Egypt, Sudan, Ethiopia, Eritrea, Kenya, Tanzania, Burundi, Rwanda, Uganda, DRC</td>
<td>Egypt-Sudan bilateral accord</td>
</tr>
<tr>
<td>The Niger</td>
<td>Africa</td>
<td>Mali, Nigeria, Niger, Algeria, Guinea, Camerun, Borkina Fasso, Benin, Cote d’Ivoire, Chad</td>
<td>Multilateral accord</td>
</tr>
<tr>
<td>The Senegal</td>
<td>Africa</td>
<td>Senegal, Mali, Mauritania</td>
<td>Trilateral accord</td>
</tr>
<tr>
<td>The Zambezi</td>
<td>Africa</td>
<td>Zambia, Angola, Zimbabwe, Malawi, Mozambique, Botswana, Tanzania, Namibia</td>
<td>Zambia-Zimbabwe bilateral accord</td>
</tr>
<tr>
<td>The Colorado and The Rio Grande</td>
<td>North America</td>
<td>USA, Mexico</td>
<td>Two bilateral accords</td>
</tr>
<tr>
<td>The Mekong</td>
<td>Asia</td>
<td>China, Cambodia, Laos, Viet Nam, Thailand</td>
<td>Multilateral accord (without China)</td>
</tr>
<tr>
<td>La Plata</td>
<td>South America</td>
<td>Brazil, Argentina, Paraguay, Uruguay, Bolivta</td>
<td>Multilateral accord</td>
</tr>
<tr>
<td>The Danube</td>
<td>Europe</td>
<td>Romania, Yugoslavia, Hungary, Austria, Czech Rep. Germany, Slovakia, Bulgaria, Russia, Switzerland, Italy, Poland, Albania</td>
<td>Several bilateral and multilateral accords</td>
</tr>
<tr>
<td>The Rhine</td>
<td>Europe</td>
<td>Switzerland, Germany, France, The Netherlands, Austria, Luxembourg, Belgium, Liechtenstein</td>
<td>Several bilateral and multilateral accords</td>
</tr>
<tr>
<td>The Columbia</td>
<td>North America</td>
<td>USA, Canada</td>
<td>Bilateral accord</td>
</tr>
<tr>
<td>The Great Lakes</td>
<td>North America</td>
<td>USA, Canada</td>
<td>Bilateral accord</td>
</tr>
</tbody>
</table>


Jacob Arsano: Four Approaches to Cooperation in the Nile Basin

phenomena, challenges are embraced in order to change the undesirable status quo to a desirable result. There is a strong support for this view in what Jerome Delli Priscoli (1990: 10) suggests, when he said: “help parties to own both the problem and the solution”. In the same vein, Oran R. Young, a prominent theorist on international organizations, noted, “Institutional design emerges as a process of steering complex bargaining toward coherent and socially desirable outcomes” (Cited in Delli-Priscoli, 1996: 30).

The increasing need for cooperation on transboundary waters is viewed as inducing a shift from the ‘traditional’ national security perception to a “common security” perception. Boulding (1992: 202) argued: “traditional definitions of security are bound up with concepts of the state as defender of boundaries within which its citizenry is safe from threats to survival, whether those threats are military, economic or involve environmental resource deprivation”. He went on to assert that security is collaborative if it is to be effective. He further suggested that common security is concerned with linking peace and environment, developing global regulatory systems through treaties and making a shift from military to diplomatic preparedness.

It is quite understandable that bilateral and multilateral agreements have not yet been achieved in many shared river basins. Examples of shared river basins that currently have no riparian accords in place are: the Amazon River in South America, shared by Peru, Ecuador, Colombia and Brazil; The Congo River in Africa, shared by DRC, Central African Republic, Angola, Zambia,
Management of Water Resources in Ethiopia

Tanzania, Cameroon, Burundi and Rwanda; The Syr Darya and the Amu Darya rivers in Central Asia, shared by Kyrgyzstan, Kazakhstan, Turkmenistan, Tajikistan and Uzbekistan.

In other major river basins, the existing accords do not encompass all riparian states. The 1959 ‘full utilization’ accord in the Nile basin, for example, only refers to the two most downstream nations, Sudan and Egypt. The other seven nations, at the time of signing, have not been parties to the accord. The long negotiated Mekong River Agreement of 1997 did not include China, the upstream and most powerful state in that particular sub-region. Such partially inclusive or selectively inclusive riparian agreements may not or do not achieve collective security across the basin. The exclusion of some countries may even create a future security threat.

If one looks at the Nile Basin, the existing status quo hangs on a delicate balance with no equilibrium. Historically, Egypt could get an unimpeded amount of water. Sudan’s share is determined by the terms of the 1959 agreement. The amount set for Sudan in the agreement was 18.5 billion cubic meters (bcm) [Waterbury 1979]. Sudan has indicated, time and again, that the agreed amount did not and does not indicate the water resource needs of the country. This can be clearly observed in the latter’s government statements during the negotiation of the agreement in the 1950s and in the later day Sudanese Government statements (Collins 1990). Ethiopia, on the other hand, has so far been able to utilize 0.6 bcm of the planned 6 bcm in

Yacob Arsano: Four Approaches to Cooperation in the Nile Basin

1964 (several interviews in 2001). As Ethiopia is not a party to the 1959 agreement, the amount she has been able to utilize is determined by the country’s economic, technical and security capacities. As can be seen from various water planning documents, Ethiopia’s stated needs for water utilization are much greater than what the country has been able to put into any gainful use. Inter-state conflict over water resources in the Eastern Nile basin has been averted due to low-level engagement in the utilization of the water resources in the upstream countries.

There is a growing realization that increased utilization of water resources is indispensable for the immediate remedial of food shortage, agricultural and agro-industrial development, and for hydroelectric power generation. It goes without saying that water resource utilization in each of the Eastern Nile basin countries, especially in the upstream countries, will likely increase. This has already been indicated in the respective national strategic development plan documents. In the interest of preventing any eventual water conflict, the riparian states will have to address transboundary water development and interstate security concern as inseparable issues. Wenger and Mockil explain that, “security and development find common ground” (2003: 25). Interstate security has a relaxing effect on riparian states and encourages them to opt for mutual cooperation on shared water resources. Future conflict prevention can be sought through more active engagement in adopting alternative and mutually beneficial ways and means of water utilization and management, both at the national and interstate levels. In this regard, the
Management of Water Resources in Ethiopia

above-stated authors explain that conflict prevention will have to be approached as a long-term process, involving the goals of providing systemic interaction, establishing the structure and addressing the immediate issues at stake (Ibid.: 41).

Learning from the two schools of thought and the concept of collective security, the following hypotheses can be formulated: (a) successful negotiation and establishment of a treaty regime in the Nile Basin will likely relieve the protagonist riparian states from mutual insecurity, (b) a legal agreement becomes the basis for the long-term creation of a common security zone in the direction of mutual national interest through cooperative mechanisms. On the basis of historical observation, and also from a practical point of view, the national level capacity of the riparian states will likely determine how soon and on what terms cooperative mechanisms will be achieved.

2. ENVIRONMENTAL APPROACH

The international community has been alarmed by the ever-increasing scarcity of fresh water resources, which call for a serious mitigation task sooner rather than later (FAO, 1995: 4). It is no surprise, therefore, that the concern and debate has focused on water issues during the past decade or so. The UN system sponsored the International Conference on Water and Environment - ICOWE in Dublin, from 26 to 31 January 1992. The ICOWE appealed for an innovative approach for the assessment, development and management of fresh water resources. The Dublin Conference further provided policy guidelines for the Rio Conference on Environment and Development, which was subsequently held in June 1992. The Rio Conference, in turn, recommended a reform of fresh water policy throughout the world. The World Bank's comprehensive water policy of 1993 defined new objectives. FAO recently established an International Action Program on Water and Sustainable Agricultural Development (IAP-WASAD). In the same way, UN specialized agencies, international and local non-governmental organizations, and bilateral assistance agencies have all been busy, actively taking part in programs related to water resources.

The dictum 'water is life' is commonplace nowadays. Water is an immediate and essential part of our environment. The need to reckon with environmental aspects is becoming a criterion in development planning of water development activities. This was clearly emphasized during the Global Summit in 1992 in Rio, and the summit’s document was incorporated in chapter 18 of Agenda 21 (UNCED, 1992). Thomas and Howlett (1993: 19) view the Rio perception about the place of water in our environment optimistically by suggesting that international consensus has been reached on the urgent need for integrating management of water resources as a prerequisite for socioeconomic development and conflict mitigation in the future.
Management of Water Resources in Ethiopia

A nationally confined and fragmentary approach to shared water resources is and will remain an intractable problem. The solution to this, however, rests on a holistic environmental approach at a basin-wide scale. Environmentalists rightly argue that grave consequences of environmental degradation and resource scarcity are not confined to national borders, and will inevitably affect all parties in one way or another. There is an increasing need for environmental security awareness, which can only be safeguarded through collaborative efforts of states in developing shared regimes pertaining to fresh water basins. For instance, uncontrolled erosion in the upper course will result in silt accumulation in the reservoirs constructed in a downstream country. In this respect, the large quantity of sediment carried by Blue Nile/Abbaj and Atbara/Tekeze rivers has already created serious problems both in upstream Ethiopia and downstream Sudan. El Monshid et al (1998: 400) suggested a solution to this problem not only through a programmatic approach but also at transboundary level. In reference to the Nile basin, El-Swaify and Hurn (1996: 19) argue that, "conservation actions can benefit all co-basin countries with a high likelihood of attaining unified positions of cooperation if degradation concerns encompass, as they should, both water-induced erosion and sedimentation". The authors aptly note that political will and funding commitment on the part of the basin states is a requisite for a basin-wide cooperation.

There is a growing realization that environmental security will not be achieved through military action. One important reason for this is that national territorial and natural resources boundaries may not be the same. Historically, the former evolved in political processes that might have included military means. But natural resources such as, for instance, rivers or fresh water lakes cross political boundaries. Thus, any one state cannot and should not claim authority over such an international resource. Understandably, fresh water is a fundamental source for life and requires more special attention. Lest the environmental security of all parties be in jeopardy, states in an eco-geographical region will have to create a sustainable form of environmental security. The key issue here is to understand the limits to the carrying capacity of a particular environmental asset and to know how to manage and use it sustainably now and in the future.

The concept of sustainable development was first mentioned by the World Commission for Development and Environment (WCED). In its report "Our Common Future" (1987), the Commission viewed environment and development in a unified manner, and suggested the establishment of a new approach to economic growth, one in which the criterion would be 'meeting the needs of the present generation without compromising the needs of future generations'. This concept was widely accepted. Hence, according to the World Bank report (1992a: 8), meeting the needs of the present generation implies an essential aspect of meeting the needs of subsequent generations on a sustainable basis. This is a new approach to economic development. Equitably sharing limited resources, using the available resources efficiently and applying environmentally sound technology to them, is the essence of this
new concept. This suggests that our economic goals must be adjusted in view of ecological possibilities and goals and the priorities modified thereof.

The basic tenets of sustainable water use rest on equity, efficiency and ecological integrity. All these prepare the ground for the establishment of a cooperative international system, which will serve as a mechanism for national and interstate security. Efficient utilization of water resources should be a guiding criterion that decreases the rate of evaporation, prevents erosion, and minimizes flood occurrences, silt accumulation and salinization.

Given the ecological characteristics of the Eastern Nile Basin, one can plausibly suggest that construction of dams in upstream Ethiopia, where the climate is temperate, can provide a more sustainable alternative to constructing a dam in the desert climate of the downstream locations. Further benefits to be derived from having a water reservoir in the upstream area include possibilities such as: irrigation, generation of hydroelectric power and prevention of soil erosion in Ethiopia; eliminating the hazards of seasonal floods and silt accumulation in the Sudan. Mason (2003, 149) found out that “most people interviewed in Sudan felt that Sudan can only gain by Ethiopia having dams on the Blue Nile, i.e., a series of dams like Rosaries and Sennar... would then be regulated”. His findings further confirm that dams in the Ethiopian side would reduce the dangers of flood and silt accumulation in the Sudanese reservoirs. Constructing reservoirs in Ethiopia would greatly help

Yacob Arsano: Four Approaches to Cooperation in the Nile Basin
to avoid excessive evaporation rate, contrary to what is happening in the case of Lake Nassir in downstream Egypt.

Hence, construction of dams on the Ethiopian side of the Nile Basin will result in net increase of fresh water in downstream Egypt as well as in midstream Sudan. Such strategy of constructing dams and/or check-dams in Ethiopia would offer opportunities for a conservation of more fresh water for irrigation purposes in all riparian countries, hydroelectric power generation, rejuvenation of the basin ecology, rehabilitation of land cover, restoring the natural sanctuaries of wildlife, and maintaining scenic attraction in the upstream reaches of the basin, especially in Ethiopia. This would further increase the total availability of fresh water in all the riparian countries of the Eastern Nile, including the most downstream Egypt. This goes with Mason’s (2003: 146) conclusion that “Safeguarding water for Egypt and Sudan for irrigation depends on the water development upstream”.

3. ECONOMIC APPROACH

The essence of an economic approach to fresh water management is the efficient use of the available water resources at a given time and under given environmental circumstances. The economic management of transboundary water resources can best take place at basin-wide, sub-basin or regional levels. This, however, presupposes peaceful interaction between the riparian countries. Some three decades ago, Hirshelfer, et al (1969: 2), underscored
that water is a commodity and, just like other goods, societies want it in order to satisfy the needs of their members. The basis for the economic argument is to treat water the same way as any other commodity. As the slogan goes, "Water! Water! Everywhere! But, at a price!". The proponents of water economics explain that water scarcity could easily be solved with economic instruments because it is a renewable and reusable resource. In aggregate, so they explain, there is more than enough water worldwide. According to them, the challenge is a question of spatial and temporal distribution. Overcoming this challenge depends largely on the willingness of the people (especially the political actors) to use water resources economically. The following table by Baumgartner and Rechel (1975) indicates that the proportion of fresh water resources is but a small fraction (a mere 2.6 per cent) of the total available water resources worldwide. This small proportion, however, demonstrates the availability and abundance (36,020 cubic km) of fresh water resources, although the way to obtain them may be at a cost.

<table>
<thead>
<tr>
<th>Source of water</th>
<th>Volume, million cubic km</th>
<th>Per cent of total available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oceans</td>
<td>1,348,000,000</td>
<td>97.39</td>
</tr>
<tr>
<td>Polar icecaps, Icebergs, glaciers</td>
<td>27,820,000</td>
<td>2.01</td>
</tr>
<tr>
<td>Ground water / soil moisture</td>
<td>8,062,000</td>
<td>0.58</td>
</tr>
<tr>
<td>Lakes / rivers</td>
<td>225,000</td>
<td>0.02</td>
</tr>
<tr>
<td>Atmosphere</td>
<td>13,000</td>
<td>0.001</td>
</tr>
<tr>
<td>Total</td>
<td>1,384,120,000</td>
<td>100</td>
</tr>
<tr>
<td>Fresh water</td>
<td>36,020,000</td>
<td>2.6</td>
</tr>
</tbody>
</table>

Source: Baumgartner and Rechel (1975: 14).

As can be observed in Table 4 overleaf, the available fresh water resources are found in different forms and places. By far, the biggest proportion is outside the easy reach of human society. The bulk, i.e. 77.23 percent, exists in the form of polar icebergs, icebergs and glaciers. The next biggest amount, i.e. 22.81 percent, exists in the form of ground water resources at various depths of the earth. The proportion of fresh water resources contained in rivers and lakes, transboundary or otherwise, is relatively small, i.e. 0.353 per cent. It is interesting to note that the total amount of fresh water carried in rivers is a mere 0.003 per cent of the total fresh water resources available worldwide. Most state or non-state actors vie over the use of river water resources mainly because the access to it is much less costly compared to other fresh water resources.
Management of Water Resources in Ethiopia

Table 4: Type and Amount of Fresh Water Globally Available

<table>
<thead>
<tr>
<th>Type and form of fresh water</th>
<th>Per cent of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polar icecaps, icebergs, glaciers</td>
<td>77.23</td>
</tr>
<tr>
<td>Ground water to 800 m. depth</td>
<td>9.86</td>
</tr>
<tr>
<td>Ground water from 800 m. to 4000 m. depth</td>
<td>12.35</td>
</tr>
<tr>
<td>Soil moisture</td>
<td>0.17</td>
</tr>
<tr>
<td>Fresh water lakes</td>
<td>0.35</td>
</tr>
<tr>
<td>Rivers</td>
<td>0.003</td>
</tr>
<tr>
<td>Hydrated earth minerals</td>
<td>0.001</td>
</tr>
<tr>
<td>Plants, animals, humans</td>
<td>0.003</td>
</tr>
<tr>
<td>Atmosphere</td>
<td>0.04</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Baumgartner and Relchel (1975: 14).

It is important to observe that in almost all cases of transboundary water resources, planning is done nationally with little or no regard to the overall water resource balance along the watercourse. National planners seldom, if at all, take into account the need for water and the water use patterns in upstream or downstream countries of the same river course. In national planning, the integrity of water cycle is often disturbed to such an extent that the law of supply and demand for water is disrupted. National planners are generally guided by the water requirements of their own country, and do not necessarily take into account the total supply of water in the watercourse or the water needs and requirements of the other co-riparian countries. This problem is attributable to the technocratic and elitist handling of the planning in water resource development that takes place exclusively at the national level. It is for this reason that Dolatyar and Gairy (2000: 6) advise that: “when water resource management is properly handled, it can provide the basis for economic growth, improvement in living standards, and socio-political stability”.

Another study on the economics of water by Winpenny (1994: 9) contends that water has been mishandled for too long as if it were limitless and freely available. The above author wonders that both consumers and suppliers do not recognize its economic value. According to Winpenny, water scarcity can be explained with three factors: a) water is under-priced compared to its real cost of delivery; b) water is under-priced compared to its environmental costs, and c) water is often a public good, and for this reason it becomes difficult to extract an economic price from users.

The economic management of water is possible both at national and cross-national levels. Two ways of cross-national water management can be suggested: 1) recycling or quality renewal, and 2) ‘virtual’ water transfer. With regard to the first one, the quality of water lost during its use upstream must be restored. An example of this would be the desalination of the Colorado River by the United States of America in Mexico. Due to the extensive irrigation use of the waters of the Colorado within the United States, the river loses its natural quality by the time it reaches Mexico. The second type of transfer relates to virtual water in a form of quantity transfer.
Management of Water Resources in Ethiopia

In keeping with the economic value of water, countries may opt to buy food grains at economically advantageous prices if water resource development is too costly, or if it is politically or otherwise impossible to develop in one’s own national territory. This scheme in fact can be planned at a cross-national level through collaborative planning and by using the comparative advantages of different countries. In summary, economists point out that water resources are best put to efficient and sustainable use where the economic application is most advantageous, irrespective of national boundaries.

Up until now, water utilization and management in the Nile Basin has been far from basin-wide approach. Water development strategies that are confined to a national level seem to be elitist-driven and very technically oriented. The obvious flaw of this prevailing approach, although politically maintained, is a contributing factor to slow down national water development. This approach is not something the national planners or their respective governments can claim as an achievement in water resources management. Soil erosion and land cover loss in Ethiopia, silt accumulation and decreasing water quality in Sudan, and land salinity and excessive evaporation in Egypt can be understood as a consequence of national water development strategies that have ignored a transboundary or basin-wide approach. This approach has to change, and it will have to give way to transboundary as well as basin wide planning exercise.

Using water resources in one country without considering the supply and demand patterns in other co-basin countries will likely lead to uneconomic

Yacob Arsano: Four Approaches to Cooperation in the Nile Basin

utilization. A basin-wide approach to water resource development in Eastern Africa or elsewhere in the Nile Basin will result in a more efficient use and increased economic benefits for all the riparian countries.

4. LEGAL/INSTITUTIONAL APPROACH

The ownership question and the issue of right of use of water resources that border or flow through a country’s territory are the basis of the legal discourse. The basic assumption is that riparian nations have juridical rights to shares of the water resources. Dolatyar and Gary (2000: 39), for instance, explain that law is a major determinant in finding and maintaining legitimate and sustainable solutions should conflicting claims of equity or other issues on shared water resources arise. They further contend (2000: 39) that: “...without appropriate legal channels and adequate rules, the potential for conflict over water increases both at local and international levels”.

The search for establishing legal rules for managing water utilization is not new. Upstream and downstream users must agree on mechanisms to allot the water resources from the shared water basin. Especially in Third World countries, riparian agreements are often inherited from the colonial past or are induced by external institutions, like the World Bank. The latter, for instance, has established Regulation 7.50 of 1995, which requires that riparian nations must agree amongst themselves as a prerequisite for providing
Investment support for their cross-border water resource development (World Bank, 2001).

Establishing legal mechanisms in the first place, and integrating cross-border cooperation between riparian nations, greatly depends on the ingenuity and wisdom of the political actors and diplomatic negotiators. In other words, establishing and maintaining legitimate and sustainable solutions for shared water resources requires short-term sacrifices for long-term benefits. The reason behind this assumption is that without clearly laid down rules, the utilization and management of shared water resources and their proper development will severely be constrained.

In many areas of the world, international agreements have created amenable conditions for upstream-downstream cooperation. International treaties on shared water resources date back centuries ago, although the pace of their development is rather slow. At present, well over 2000 international agreements exist as regulating instruments in over 240 shared river basins (Blake et al., 1995: xiv). Over 286 agreements deal with fresh water issues (Vlachos, 1990: 186; Frey, 1993b: 58; Naff, 1994b: 272). Such treaties attest the possibility of peace on water use. If conditions for a global water law are ripe, the answer as to whether peace prevails or not will still be a matter of opinion. Bob Bailey (1996), for instance, advocates a global water authority. The idea can be said to be promising. One must, however, take into careful consideration that there are many technical, legal, political and geopolitical complexities to be reckoned with. Delicate factors that need to be considered include: whether a country is situated in the upstream or downstream; or whether it shares a river as border or cross-border; and whether there is significant asymmetry of economic or military strength among riparian countries.

As a result of this, several water law doctrines have emerged in an effort of searching for plausible criteria for defining the water rights of riparian nations. These comprise: 1) The doctrine of absolute territorial sovereignty; 2) The doctrine of absolute territorial integrity; 3) The doctrine of community of property in the shared waters; 4) The doctrine of limited territorial sovereignty; 5) The doctrine of optimal development of the river basin. Trolldalen (1992: 79) presented a more detailed description of the doctrines in the following paragraphs:

The 'doctrine of absolute territorial sovereignty' refers to the principle that a state's sovereign rights are reserved to make full utilization of all water resources flowing within its territory, irrespective of the effects beyond its territorial jurisdiction. This doctrine is associated with the so-called Harmon Doctrine, named after US Attorney General Harmon, who upheld/developed the doctrine with regard to the 1895 dispute between the United States of America and Mexico over the use of the Rio Grande River (Thomas and Howlett, 1993: 16).
The 'doctrine of absolute territorial integrity', in contrast, advocates that no riparian state can change the natural flow of a river. One of the proponents of the doctrine, Oppenheim (1948: 430), wrote as follows:

It is the rule of International Law that no state is allowed to alter the natural condition of its own territory to the disadvantage of the natural conditions of the territory of a neighboring state. For this reason, a state is not only forbidden to stop or to divert the flow of a river which runs from its own to a neighboring state, but likewise to make such use of the water of the river as either causes damage to the neighboring state or prevents it from making proper use of the flow of the river.

The 'doctrine of community of property' in the waters argues for a reasonable share or equitable use by all riparian states, not causing unreasonable harm to any other riparian state. Henry Farnham was the chief exponent of this doctrine. He argued that international watercourses are the common property of all the states through which the waters flow. He further argued that no state shall intervene to diminish the resource for others sharing it (cited in Thomas and Howlett, 1993: 16).

The 'doctrine of limited territorial sovereignty' restricts state sovereignty and binds riparian states to share water resources according to such criteria as prior appropriation, arable land, and population (Frey, 1993b: 58). This doctrine further holds that each riparian state, regardless of whether an international watercourse originates in or traverses its territory, has a vote in deciding what measures are adapted within the watercourse as a whole. The state, however, which has been using the water the longest, has some priority (Wolf and Dinar, 1994: 81; Thomas and Howlett, 1993b: 17).

The 'doctrine of optimal development of the river basin' advocates the development of a river basin without regard to national boundaries (Falkenmark, 1986a: 108; Frey, 1993b: 58; Wolf and Dinar, 1994: 70). This theory incarnates the contestable notions such as "optimal", "reasonable", and "equitable" allocation criteria. Moreover, the doctrine presupposes the existence of basin-wide institutions. This doctrine comes closest to the economic theories discussed earlier. It aims at the most efficient use of water in a basin.

The real situation of a watercourse dispute may not hold to one or another water use doctrine. In the first place, the watercourse related doctrines exist as theoretical schema, only potentially usable in a body of a future water law, and only when this is supported by bilateral and multilateral accords. In the meantime, therefore, in case of contestation between riparian states over the question of shared water resources, the riparian states would rarely opt to go to the International Court of Justice, preferring to hold to the particular legal theory which best justifies their demands, and using it as a bargaining chip. Hence, it can be construed that downstream riparian states reject the doctrine of absolute sovereignty, while upstream states reject the doctrine of absolute territorial integrity. This situation emanates from the basic problem of the absence of binding treaties to govern the general and specific terms of shared
waters, and the lack of essential inter-riparian institutions to assure compliance among the users of a given watercourse (Naff, 1994b: 272).

Specific basin-focused treaties are traditionally exercised as a practical arrangement by which the riparian countries can bring together a set of effective legal instruments for mitigating and solving disputes that might arise over shared water resources. Such agreements often provide for the establishment of joint river commissions. In some cases, the commissions merely have advisory functions. But in other cases, they may have decision-making authority. The achievements of joint river commissions may vary greatly in different river basins. The well-functioning river Commission of the Rhine with its decision-making control is elaborated by Schulte-Leidiz (1992); the river commission of the Senegal by Haddad and Mizyad; (1996), and the river commission of Indus by Alam (1998) and Mehta (1986).

Supra-national institutions have been evolving, but as can be expected, quite slowly. They may generally be envisaged as efficacious in addressing the interests of communities in member countries. The first of these attempts is the Helsinki Rules-HL- of 1966, on the uses of the waters of international rivers (International Law Association, 1967). The International Law Association produced the Helsinki Rules. Some provisions by the ILA, however, caused controversy as to their meaning and interpretation. The provisions, for example, that embody the notions: “reasonable” and “equitable” sharing of the water resources and “international drainage basins” have been contested. Hence, undivided support for Helsinki Rules could not be obtained. Some states support the concept of ‘international watercourse’ to ‘international drainage basin’ (Thomas and Howlett, 1993:7), obviously in view of their perceived national strategy of dealing with other co-riparian countries.

The second attempt on the codification of international water resources law is the Convention on the Law of the Non-navigational Use of International Water Course-LNUIWC. It was adopted by the UNGA-Resolution of 21 May 1997, with a vote of 103 in favor, three against and 27 abstentions (Press release 1997, Convention 1997). The great significance of the Convention is that it has aimed at shifting international water disputes from contests of power to fair rights and mutual obligations. The responsibility of each state is inherent in the provisions: to use water resources efficiently and to avoid depriving or damaging the interests of co-riparian states. The International Law Commission is an autonomous body, which was entrusted by the UNGA resolution to promote international water law. Actually, the commission had been working on this task since 1970. It is noteworthy that the two principles in the convention, the one of ‘equitable use’ and the other of not causing ‘appreciable harm’ are in a way similar to the other two doctrines, namely, the doctrine of ‘absolute territorial sovereignty’ and the doctrine of ‘absolute territorial integrity’. The upstream countries maintain the doctrine of ‘absolute territorial sovereignty’ and the principle of ‘equitable use’, while the doctrine
Management of Water Resources in Ethiopia

of ‘absolute territorial integrity’ and the principle of ‘no appreciable harm’ are upheld by the downstream countries.

Doctrines are extensions of traditional national security interests and manifest sovereign rights. Conventions are an attempt to create supra-national legal frameworks within which riparian countries relate to one another with regards to the utilization of shared water resources. Even if conventions exist, their efficacy depends on the willingness of riparian states to accept and be bound by them. Doctrines and conventions exist, but riparian states have yet to negotiate with one another on the best terms that enable them to have a mutually acceptable legal and institutional framework.

It can be surmised from the foregoing that legal and institutional frameworks are sine qua non for guiding and regulating inter-riparian cooperation over the utilization of shared water resources. Furthermore, existing doctrines and conventions do not yield cooperative behavior among co-riparian states without negotiated and mediated agreements. A negotiated legal/institutional framework can be suggested as a reference and guiding principle when riparian states relate to one another in their activities of water resource development within individual countries or between one another.

Yacob Arsano: Four Approaches to Cooperation in the Nile Basin

CONCLUSIONS

In the context of current discussions, mutual security can be seen as a function of mutual satisfaction of respective national interest. Successful negotiations and establishing common interest regimes will help the heretofore protagonist riparian states to make a shift away from mutual insecurity. Instruments imbedded in formal agreements and institutional mechanisms will serve as the basis for the long-term creation of a common security zone. The national level capacity of the riparian states will likely determine how soon and on what terms cooperative mechanisms will be achieved.

The mutual satisfaction envisioned in the NBI process will likely enhance the interests of the Nile Basin countries to establish cooperation on the grounds of common security. A breakthrough, however, has yet to be achieved. The NBI is still a transitional mechanism that is characterized by a slow process. The main challenges of the present process are: a) low level economic development and inadequate consolidation of institutional capacity to provide credible influence on co-riparian states, and b) the use of contested legal doctrines as position articulation, in defense of the perceived national interests.

There is a growing realization that environmental security will not be achieved through military action. One important reason for this is that national territorial and natural resources boundaries may not be the same. Environmental security can only be safeguarded through collaborative efforts.
Management of Water Resources in Ethiopia

of states through developing shared regimes. Efficient utilization of water resources should be a guiding criterion that decreases the rate of evaporation, prevents erosion, and minimizes flood occurrences, silt accumulation and soil salinization.

Construction of dams in an upstream country where the climate is temperate can provide a more sustainable alternative to constructing a dam in the desert climate of a downstream country. Taking an example of Eastern Nile Basin, irrigation, generation of hydroelectric power and prevention of soil erosion in Ethiopia can be integrated with eliminating the hazards of seasonal floods and silt accumulation in Sudan, and avoiding excessive evaporation of fresh water in downstream Egypt.

At the regional level, in the interest of preventing water conflict, riparian states will have to address the issue of efficient water development and interstate security inseparably. An economic use of water at the national level would be beneficial both on the national and regional levels, as increased efficiency means less water consumed per economic output. There is little evidence in the region, that an economic oriented approach is being implemented. A sub-basin approach to water resource development in the Eastern Nile, for instance, will result in a more efficient use and increased economic benefits for all the three riparian countries, namely Ethiopia, Sudan, and Egypt.

Yacob Arsano: Four Approaches to Cooperation in the Nile Basin

The legal and institutional frameworks are ‘sine quo non’ for guiding and regulating inter-riparian cooperation over the utilization of shared water resources. Existing doctrines and conventions do not yield cooperative behavior among co-riparian states without negotiated and mediated agreements. The contention with regard to legal/institutional issues has been reviewed. The principal question that remains open is the non-existence of an acceptable legal framework that would be a binding principle for all the Nile basin countries. The project-by-project approach adopted in the ENSAP does not have an authoritative reference as to which legal principle should prevail. In proceeding with projects, especially those to be implemented in the upstream countries. There is open acknowledgement of the need for such an instrument. Hence, a new legal framework has been suggested by the UNDP, and the riparian states have been negotiating a deal since 1999, trying to reach agreement from their upstream and downstream perspectives. This is taking a long time.
REFERENCES


Yacob Arsano: Four Approaches to Cooperation in the Nile Basin

Delli-Priscoll, Jerome, 1990, Public Involvement; Conflict Management and Dispute Resolution in Water Resources and Environmental Decision Making; US Army Corps of Engineers; Working Paper No. 2; Alternative Dispute Resolution Series; October 1990.


Elhance, Arun, 1999, Hydropolitics in the 3rd World, United States Institute of Peace Press, USA.


Naff, Thomas, 1994, Conflict and Water Use in the Middle East, in Rogers, P. and Lydon, P. eds., Water in the Arab World: Perspectives and Progress, Harvard University Press, National Geographic, Washington DC.


Yacob Arsano: Four Approaches to Cooperation in the Nile Basin


Starr, Joyce, 1991, Water Wars, in Foreign Policy (18) 17-38.


Waterbury, John, 1979, Hydropolitics of the Nile Valley, Syracuse University Press, Syracuse.


