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Managing Trans-boundary Waters for Human Development

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MANAGING TRANS-BOUNDARY WATERS FOR HUMAN DEVELOPMENT

INTRODUCTION

Finding sustainable solutions to the world's many severe water-related problems is vital for improving human welfare and the environment in the 21st century. Water is a resource that is used to energise *all* sectors of society, ranging from basic food production to advanced industrial technologies. It is also a fugitive resource, varying in volume over both time and space in complex fashions which are unpredictable, at least in part.

For the purposes of the present report, trans-boundary waters may be considered to be identical to "international watercourses", which have been defined recently in Article 2 of the Convention on the Law of the Non-navigational Uses of International Watercourses[1] as follows:

> *"Watercourse" means a system of surface waters and groundwaters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus.*
>
> *"International watercourse" means a watercourse, parts of which are situated in different States.*

In all trans-boundary basins, a number of States (or riparians) share the water resources, and this has given rise to the development of several important international principles.[1-5] The three key principles in customary international law relating to trans-boundary waters involve a requirement for their 'equitable and reasonable' utilization; the need to avoid significant harm to other co-riparians; and the demand for prior notification of works which may affect the water resources of others.[1-2]

To provide an indication of water availability to distinct populations, 'water scarcity' benchmarks have been developed. In volumetric terms, 1,000 m^3 *per capita*/year is taken as the threshold for water scarcity, and 500 m^3 *per capita*/year is taken as the threshold for 'absolute water scarcity'.[6-8] These benchmarks are useful as indicators of the comparative availability of water resources, both between and within different States.

The term 'hydrological interdependence' has been coined to describe States which share trans-boundary waters.[9] Many rivers, lakes and underground aquifers cross the national boundaries of States. This generates three areas of concern among the riparians: those relating to sovereignty; to territorial integrity; and to their national security. A trans-boundary water resource links riparian States together in a complex system of interdependence covering the spheres of economics, environmental policies, politics, and security. The dynamics of any such relationship between riparians become especially fragile in a situation of a growing water scarcity, where the threshold values quoted above are approached. Hydrological interdependence in a water-scarce river basin creates both the potential for conflicts between the riparian States, and incentives for inter-State cooperation. Trans-boundary waters also require close management at the

national scale, with management regimes in each basin State needing to interface coherently across national boundaries. It is becoming increasingly recognized that effective water governance is a key to addressing the fundamental challenges that are encountered in trans-boundary basins, in particular.

If trans-boundary waters are cooperatively managed, this process could make a significant contribution to global peace and stability, as well as to poverty reduction. Indeed, cooperation on such waters is imperative to economic development and poverty reduction, and it is notable that many of the internationally agreed Millennium Development Goals (MDGs) are dependent on the availability of adequate water resources in one manner or another. If the utilization of trans-boundary waters is not addressed in a coherent and responsible manner by the international community – including the riparians themselves and the broader funding and donor organizations – this will constitute a major impediment to progress towards achieving the MDGs. However, the promotion of trans-boundary water cooperation is currently under-financed within the international system. Most bilateral donors, the United Nations agencies and development banks are insufficiently programmed to finance *processes* without a clear outcome and time-line. Generating cooperation in trans-boundary basins largely consists of promoting a process of building collaborative structures and institutions, commonly at both national and regional levels. For a donor or other funding organization to engage in building such cooperative structures in a shared river basin demands courage and a vision that must transcend the lifetime of a single project. *Process financing* is often what is needed to secure, deepen and improve water-related collaboration in trans-boundary basins where the parties have a low degree of other forms of cooperation.[10-11]

While some internationally shared watercourses are managed in a cooperative manner, there are nevertheless a number of problems inherent in this management. From an equity perspective, the existence of power asymmetries between riparians (in terms of economic strength, military capability, or sheer size, for example) may detract from the possibilities for a just and sustainable agreement relating to their shared waters. Attaining a fair agreement is of the utmost importance, since quite apart from mitigating risks of conflict, this would have the potential to affect the process of economic and social equalization between (as well as within) the countries sharing a water body.

The politics to which water management within a basin is subordinate, provides the lens through which trans-boundary water management needs to be analysed.[a] Thus, efforts to de-link water from the overall political situation are futile. Rather, one could (and indeed should) make use of the potential unifying power that a trans-boundary water resource provides to increase the sharing of benefits, deepen dialogue, and thereby assist in economic development. If this is to materialize, an unrelenting effort by the international community is needed.

The following sections discuss the importance of trans-boundary waters in general terms; systems of allocating flows and/or the sharing of benefits arising from such waters

[a] Annex 1 provides a discussion of how water is related to politics in Israel and the Palestinian areas.

(including two Case Studies); the management of trans-boundary waters; and issues relating to international finance in this area.

THE IMPORTANCE OF TRANS-BOUNDARY WATERS

Extensive analysis of the surface waters of the world has concluded that at least 263 international river basins exist, covering almost half of the surface of the earth. Some 145 countries are classified as riparians to these trans-boundary basins, which are home to approximately 40% of the global population and provide about 60% of the total freshwater resources available to humankind. Some 33 countries have 95% of more of their surface water resources located in trans-boundary basins.[12-13] Compared to these surface waters, trans-boundary groundwater in aquifers has been much less adequately characterized, but this underground water resource is known to be important also, especially in particularly water-scarce regions such as Sub-Saharan Africa.[14]

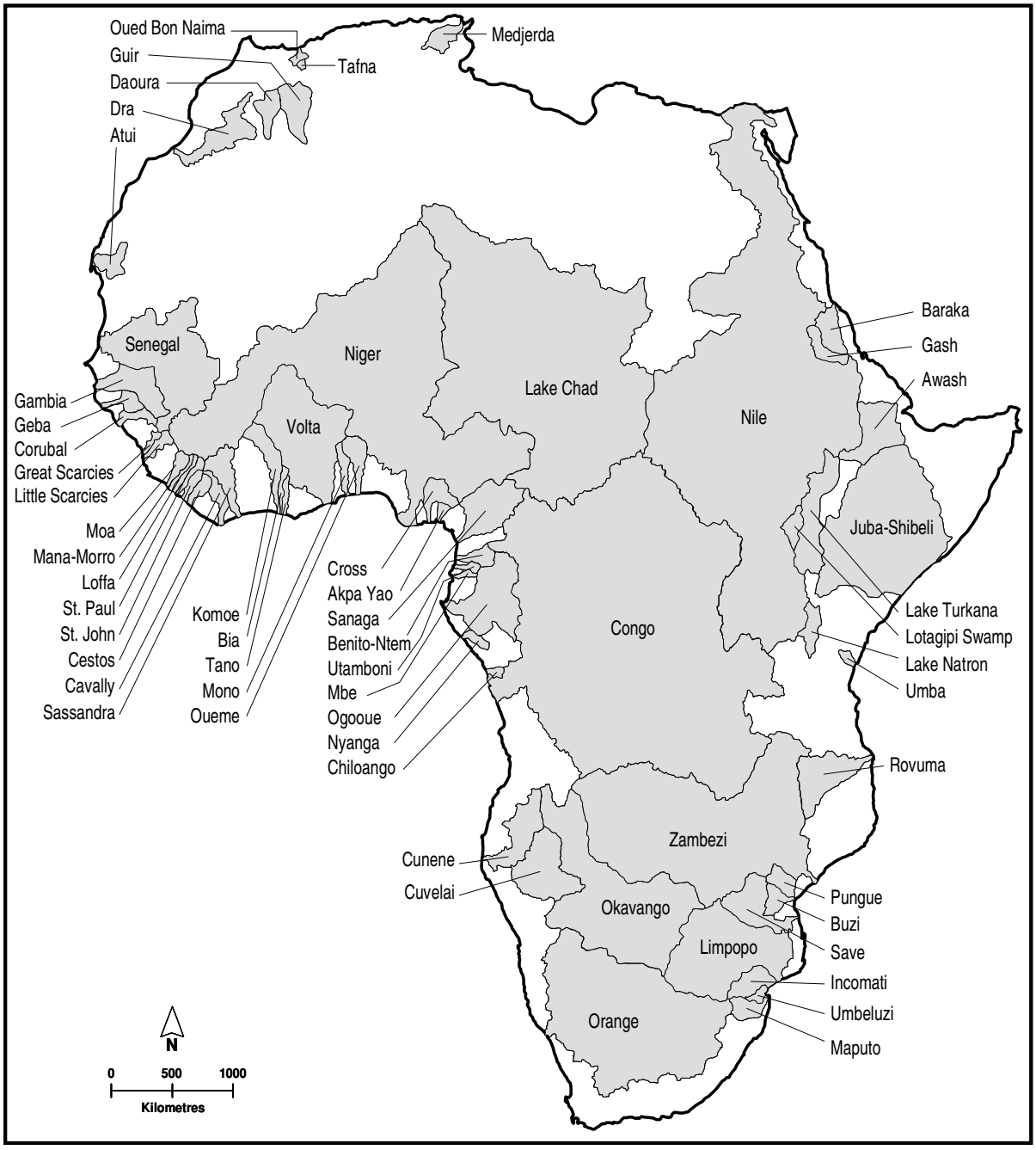
It is therefore clear that trans-boundary waters constitute a vital human resource. It is particularly notable that the attainment of many of the Millennium Development Goals (MDGs) is strongly linked to the appropriate and sustainable use of water resources, which are not only important in their own right but also underpin the production of primary and secondary food resources. Trans-boundary waters are especially important to poor sections of societies in the developing nations, in part because these mostly rely on 'thirsty' agricultural activities for their survival and trade. While most or all such developing nations could generate higher income levels (and reduce poverty more effectively) by using water in industrial applications, their level of technological development commonly does not permit this, and a reliance persists on the 'thirsty' agricultural sector in many cases.

To take the African continent as an example, trans-boundary river basins account for 61% of the total area of the continent (see Figure 1) harbouring 77% of the population, and including an astonishing 93% of the total available surface water in Africa.[15] This pattern is repeated elsewhere. In the Middle East, the five riparians of the Jordan River basin are all water-stressed in one fashion or another, although this becomes extreme amongst the two downstream populations (Palestine[b] and Jordan), in particular. The *per capita* availability of water to Palestinians is one of the lowest in the world at 70 cubic metres/ year, and the Jordanian population has access to only about 160 cubic metres *per capita*/year, which is also well below the 'absolute scarcity' threshold.[16] The Palestinian population is almost totally reliant on trans-boundary water resources, most of these being shared with Israel.

In some circumstances, historical agreements constrain the present capabilities of certain of the riparians to attain equitable and reasonable shares of trans-boundary waters, and this may severely affect the prospects for economic development in the countries so affected. The Nile River basin offers an example of this pattern, and is also of interest because the downstream State (Egypt) is the generally dominant party (see Text Box 1).

[b] The term 'Palestine' is used here to refer to the land area designated by the 1949 Armistice Line, including both the West Bank and Gaza Strip.

Figure 1. Map of Africa showing the locations and names of the continent's 61 international river basins.[14, 15, 17]



Text Box 1: The Nile River basin

The Nile River is about 6,800km in length, and its basin covers 3.1 million km^2 - approximately 10% of the land mass of Africa.[18] In total, 10 co-riparians share the two main branches of the system (the Blue Nile and the White Nile), with a combined population representing 40% of that in all of Africa (300 million, about half of whom live within the Nile basin). Four of these co-riparians are amongst the ten poorest countries in the world (Burundi, Eritrea, Ethiopia and Tanzania), and all of these are located in upstream positions.

Agreements on the waters of the Nile River are numerous and extend back to 1891, but the most important of these involve the 1929 agreement between Egypt and the United Kingdom (representing the Sudan and other former colonies, at the time), and the 1959 agreement between Egypt (the 'United Arab Republic', at that time) and the Sudan.[19] The first of these is considered by Egypt to bind upstream co-riparians which were colonies of the United Kingdom in 1929.

Ethiopia and Eritrea occupy the upstream reaches of the Blue Nile, whereas the source of the White Nile lies in the Kagera River sub-basin which includes parts of Burundi, Rwanda, Uganda and Tanzania. The Blue Nile provides the majority of the flow to the downstream reaches, and Egypt has resisted attempts by Ethiopia in particular to develop the water resources upstream. Even in the Kagera sub-basin which provides only about 2% of the overall flow to the Nile system as a whole, Egypt maintains that additional water cannot be taken by the riparians due to the terms of the 1929 agreement (and also other agreements in certain instances, such as that of 1949 relating to the Owen Falls Dam in Uganda). However, the Nyerere Doctrine on State Succession challenges the validity of the agreements from the colonial era of Government in the basin, and several of the upstream States have recently re-emphasized their view that they do not intend to be bound by the historical agreements.[19-20] This problem has not yet been resolved, notwithstanding the provision of international assistance extending over almost 40 years, to date.

The Nile Basin Initiative is the most recent of the international assistance programmes, having commenced in 1999. Rather than attempting to reallocate flows, the approach taken at present is to consider the sharing of benefits. This is typified by the type of approach shown in Table TB1 below, relating to the Kagera River sub-basin.

Table TB1. Suggested benefits from the multi-purpose Kagera River basin development.[21]

To the region	➢ Stability, and the "peace dividend" ➢ Economic integration (EAC, Burundi, Rwanda and the DRC) ➢ Regional infrastructure assets	
To the riparian countries	○ Sediment control ○ Watershed management ○ Energy supply and rural electrification ○ Irrigation and agribusiness	▪ River regulation ▪ Biodiversity conservation ▪ Commercial development ▪ Private sector development
To the downstream riparians	• Water quality control • Water hyacinth control • Sediment reduction	♦ Regional stability ♦ Growing trade markets

It is clear that further effort is needed to attain equitable distributions of either flows or benefits within the Nile River basin. Whether the ongoing initiatives bear fruit in this respect remains to be seen, especially given the heavily entrenched positions of the downstream co-riparians.

Text Box 2: The Mekong River basin

The Mekong River is one of the world's greatest river systems, and sustains very large populations living at subsistence levels in each of its six co-riparians (China, Myanmar, Laos, Thailand, Cambodia and Vietnam). International assistance has again been important in attempting to forge agreements on its utilization, with the United Nations Economic Commission for Asia being instrumental in work leading up to the first agreement in 1957. It may certainly be argued that the long-term cooperation on these shared waters has generated closer political ties between the four downstream co-riparians, i.e. has generated so-called 'spill-over' from collaboration on trans-boundary waters into the broader political arena.[20] However, the 1957 accord and all subsequent agreements have involved only these four countries, with China and Myanmar failing to participate fully in the process to date. The present agreement dates from 1995, and seeks to provide a coherent base for the economic development of the river system as a whole (generally on a platform of Integrated Water Resource Management) – but once again, without the active involvement of the two upstream co-riparians.

The contributions of each of the riparians to flows within the Mekong River basin vary widely (see Table TB2). Laos and Cambodia are largely within the basin, and both contribute significant flows to the system. The two upper riparians contribute about 18% of the flow, on average.

Table TB2. *Physical data for the Mekong River Basin.[22] NA: not applicable.*

	China	Myanmar	Lao PDR	Thailand	Cambodia	Vietnam	Total Basin
Area in the basin (km^2)	165,000	24,000	202,000	184,000	155,000	65,000	**795,000**
% of country area	38	4	97	36	86	20	**NA**
% of basin area	21	3	25	23	20	8	**100**
Average flow (m^3/sec)	2,410	300	5,270	2,560	2,860	1,660	**15,060**

The maintenance of the flow regime is believed to be of critical importance in the Mekong system, as this provides the so-called seasonal 'flood pulse', inundating the downstream areas in Cambodia and Vietnam in particular, and generating huge biological diversity and productivity.[22-23] An example of the productivity is provided by the fact that Cambodia has the fourth largest inland fishery in the world, and the yield of aquatic species in the overall system is believed to exceed two million tonnes *per annum*. While specific flow regimes are important in certain other river systems also (e.g. the Amazon, the Okavango and the Nile), the Mekong River basin is unusual in the degree to which the flood pulse is required to guarantee the biodiversity and productivity.

This has considerable implications for the possible future development of the basin, including the realization of its hydropower potential through the construction of dams.[20, 22-23] China in particular has a keen interest in constructing large dams upstream, and several of the other riparians are also eager to develop the hydropower potential of the river system. Several dams have already been completed, and more are under construction at present. The cumulative effects of these dams on the 'flood pulse' in the downstream reaches of the river are difficult to quantify, and the possibility remains that the huge productivity and diversity of the system in Cambodia and Vietnam (especially) will be adversely affected if the dam construction programme continues unchecked. The continuing absence of China and Myanmar from the Mekong River Commission is therefore a cause for concern, notwithstanding the fact that the absolute flows available to the riparians are massive, compared to those in basins such as the Jordan River or even the Nile River system. It is therefore clear that the sustainable utilization of the Mekong River resource has not yet been attained.[20]

Even in trans-boundary river basins where water is abundant, the riparians often compete for the resource. This is the case in the Mekong River basin, for example, which is the eighth largest river in the world in terms of flow (see Text Box 2).

The global demand for fresh water is growing inexorably. This is driven by a number of factors, including in particular increasing population sizes and demands for food. Thus, the average water availability *per capita* has decreased in global terms by some 80% in the last century.[24] As this process continues, more and more river basins are 'closing', i.e. their available water resources become completely utilized and the different sectors requiring water begin to directly compete with each other. At the same time, the protection of ecosystems through the maintenance of 'environmental flows' becomes yet more challenging, and unsustainable utilization become ever more probable.[25]

In many trans-boundary river basins, political power is asymmetrically distributed. This has given rise recently to the concept of 'hydro-hegemony', where a particular riparian maintains a dominating position within a basin, often receiving more than an equitable share of the available water resources.[26] It is interesting to note that geographical position within a river basin has very little effect on hydro-hegemony. Thus, for example, Turkey maintains a hegemonic stance in relation to the Tigris and Euphrates Rivers, and China has a similar role in the Mekong River system (see Text Box 2), both from upstream positions.[20, 27] However, Israel has taken a dominant position in relation to the waters of the Jordan River basin from a mid-stream vantage point[16], whilst Egypt (as the extreme downstream State; see Text Box 1) is clearly the basin hegemon in the Nile River basin.[18, 20]

COOPERATION, TRANS-BOUNDARY WATER ALLOCATIONS, AND BENEFIT-SHARING

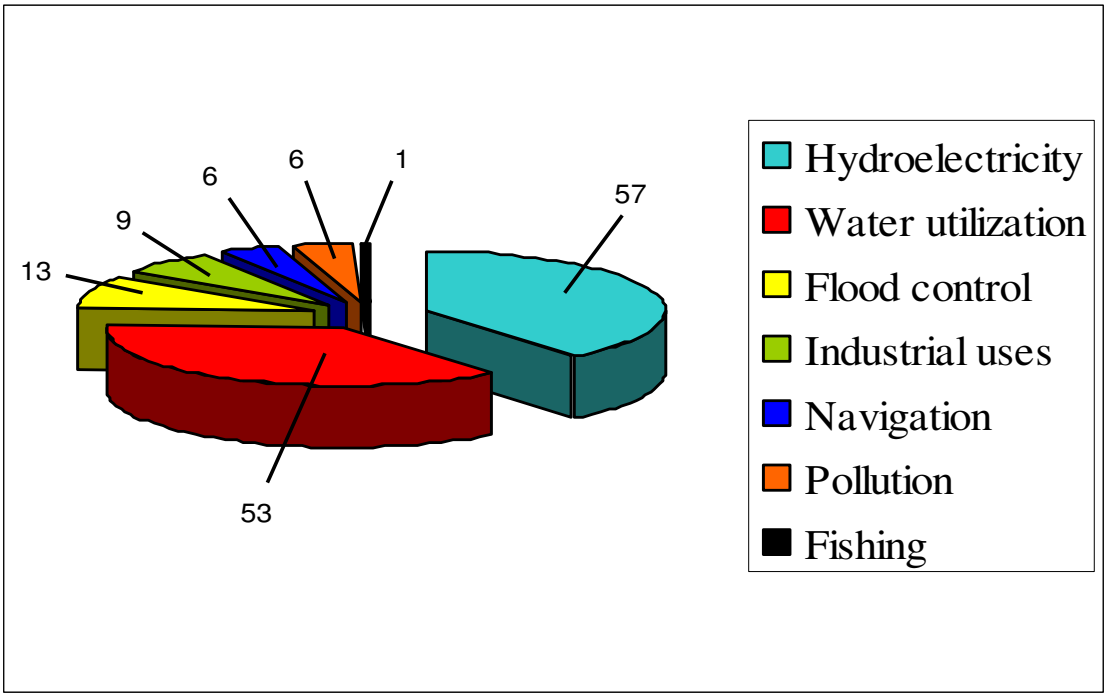
In a cooperative situation, riparians sharing trans-boundary waters have two basic options in relation to the division of the resources. The first is to agree on their respective volumetric allocations of the resource, preferably taking account of variations in flows with season and in different years. The second option is to enter in a broader arrangement involving the sharing of benefits arising from the water resources, which may be of various types. These two options are not mutually exclusive, although riparians usually elect to utilize either one or the other approach, perhaps because agreements become complex if both are addressed in concert.

Extensive analysis has shown that surprisingly few international agreements on trans-boundary waters include specific volumetric allocations of the available resources. Of 145 international treaties analyzed, only 53 (37%) cited volumetric allocations to the riparians. The agreements covered a wide range of issues as shown in Figure 2, with hydroelectricity in fact being rather more common as a focus than the allocation of water in a volumetric fashion.[28]

No general rules of practice exist in cases where States include volumetric allocations in their agreements concerning trans-boundary waters. The factors to be considered have been laid down in two instruments of customary international law[1-2], as shown in Table 1.

Some parties have claimed that these principles of international law were utilized as the basis for their agreements, while others have simply entered into negotiations and eventually settled on a division of the resources. The results of such negotiations are often controversial, and transparency is commonly poor in relation to the main drivers used by the negotiating parties.[29-30] In at least some cases, such as the 1994 Peace Treaty between Israel and Jordan, one of the parties (Jordan) considers in retrospect that the agreement is not equitable, either in relation to water volumes allocated to the parties or (especially) in respect of water quality issues. However, few agreements of this type are revisited by the parties and amended at later times – in part, because all parties involved must agree to this, and an advantaged riparian commonly prefers to rely on the earlier agreement. Where water allocations are addressed as only one facet of such treaties, trade-offs may occur, and this also reduces the chances of later amendments. In addition, very few such agreements include arrangements for dealing with temporal changes in flow (either with season or often more importantly between years), and this commonly leads to conflicts between the signatories during later droughts (see Annex 1).[16, 30]

Figure 2. Areas of principle focus of 145 international agreements on trans-boundary water resources.[27]



International agreements which are focused on issues other than the allocation of volumetric flows all concern the sharing of benefits of one type or another, as shown in Figure 2 above. In recent times, benefit-sharing has been given increasing emphasis amongst riparians in trans-boundary watersheds, perhaps in part because the factors involved in agreeing volumetric allocations are so challenging. Thus, for example, the

Nile Basin Initiative facilitated the World Bank and the UNDP since 1999 has moved towards the sharing of benefits (see Text Box 1) as a central theme[18, 20], and this trend has been repeated elsewhere also. However, benefit-sharing should not be considered a panacea, and some believe that volumetric allocations and the sharing of benefits simply constitute 'inverse faces of the same coin', in that riparians in any event seek equitable solutions, whether they are negotiating specific water volumes or the benefits arising from the utilization of these.[31] It is clear in any event that riparians will seek an equitable and reasonable division of benefits arising from the utilization of shared watercourses, just as they would strive for such a fair apportionment of flows. From the standpoint of human development, this is altogether appropriate, as the alternative is for certain riparians to remain mired in poverty due to a paucity of water – one of the most basic resources for economic well-being and health.

Interestingly, the analysis of the 145 treaties mentioned above also showed that the overwhelming majority of these were of a bilateral nature (124 of the total, or 86%).[28] This highlights the difficulties involved in drafting and concluding multilateral agreements, which is a particular issue of concern in relation to those trans-boundary basins with a significant number of co-riparians (e.g. the Congo, Danube, Nile, or Zambezi Rivers). Certain States (notably Egypt, India and Israel) have a well-recognized preference for dealing bilaterally with their neighbours, presumably because they believe that this favours their own outcome.

It has also been argued recently that the classical approach to watercourse utilization involving Integrated Water Resources Management (IWRM) is in fact too narrow a focus. Some parties have suggested a need for integrated natural resource management[32], while others seek to broaden the debate yet further through the consideration of a 'basket of options' available for benefit-sharing arising from the utilization of trans-boundary water resources.[20] The latter approach potentially includes a wide range of factors arising from the utilization of the base water resource (see the example in Text Box 1 above), with the trade in foodstuffs being of particular importance in certain instances due to its content of 'virtual water' (see below). It is certainly evident that 'one size does not fit all', and that the preferred solutions vary greatly, according to the specific circumstances addressed in each basin.[20]

One over-riding element affecting this is the degree to which water-related issues are 'securitized' amongst the riparians[33-34]. The process of securitization occurs when a paucity of water is perceived as a national threat. High Politics intervene as a result[35-36], the matters being taken out of the hands of technical personnel and transported into the security agenda of a State. This often leads to zero-sum attitudes and to potential conflict, with both the Nile and the Jordan Rivers being fine examples of such a process.[16, 18, 37] Elsewhere, the water-related debate is less heavily securitized, and riparians may be willing to consider benefit-sharing in a much more widely encompassing manner.

Table 1. The factors to be considered when allocating international watercourses, as included in the Helsinki Rules[2] and the 1997 United Nations Convention[1].

The Helsinki Rules	*The 1997 UN Convention*
CHAPTER 2. EQUITABLE UTILIZATION OF THE WATERS OF AN INTERNATIONAL DRAINAGE BASIN.	***Article 6 - Factors relevant to equitable and reasonable utilization.***
Article V. *I. What is a reasonable and equitable share within the meaning of article IV to be determined in the light of all the relevant factors in each particular case.*	*1. Utilization of an international watercourse in an equitable and reasonable manner within the meaning of article 5 requires taking into account all relevant factors and circumstances, including:*
II. Relevant factors which are to be considered include, but are not limited to:	
1. The geography of the basin, including in particular the extent of the drainage area in the territory of each basin State;	*(a) Geographic, hydrographic, hydrological, climatic, ecological and other factors of a natural character;*
2. The hydrology of the basin, including in particular the contribution of water by each basin State;	*(b) The social and economic needs of the watercourse States concerned;*
3. The climate affecting the basin;	*(c) The population dependent on the watercourse in each watercourse State;*
4. The past utilization of the waters of the basin, including in particular existing utilization;	*(d) The effects of the use or uses of the watercourses in one watercourse State on other watercourse States;*
5. The economic and social needs of each basin State;	*(e) Existing and potential uses of the watercourse;*
6. The population dependent on the waters of the basin in each basin State;	*(f) Conservation, protection, development and economy of use of the water resources of the watercourse and the costs of measures taken to that effect;*
7. The comparative costs of alternative means of satisfying the economic and social needs of each basin State;	*(g) The availability of alternatives, of comparable value, to a particular planned or existing use.*
8. The availability of other resources;	
9. The avoidance of unnecessary waste in the utilization of waters of the basin;	
10. The practicability of compensation to one or more of the co-basin States as a means of adjusting conflicts among uses; and	
11. The degree to which the needs of a basin State may be satisfied, without causing substantial injury to a co-basin State.	
	2. In the application of article 5 or paragraph 1 of this article, watercourse States concerned shall, when the need arises, enter into consultations in a spirit of cooperation.
III. The weight to be given to each factor is to be determined by its importance in comparison with that of other relevant factors. In determining what is reasonable and equitable share, all relevant factors are to be considered together and a conclusion reached on the basis of the whole.	*3. The weight to be given to each factor is to be determined by its importance in comparison with that of other relevant factors. In determining what is a reasonable and equitable use, all relevant factors are to be considered together and a conclusion reached on the basis of the whole.*

In these circumstances, much greater flexibility exists for generating potential (and innovative) solutions. A recent analysis[20] has provided a theoretical tool known as the Inter-SEDE™ model, for use in 'unpacking' elements of the main drivers of the riparians within trans-boundary basins, and providing insights into the preferred approaches to generate cooperation and avoid conflicts. This employs indicators describing three main categories of drivers (security, economic development, and the environment), and builds on earlier work on attempts to engender cooperation on shared watercourses.[38] Analysis using the Inter-SEDE™ model reveals the key drivers for each of the basins considered, hence clarifying the most appropriate approach(es) to be taken in seeking cooperation between the co-riparians involved. For example, in the Jordan River basin, the model reveals the predominant securitization dynamic, which drowns out all other issues of consequence to the five co-riparians and must be addressed as the key issue, if progress is to be made (see also below). By contrast, in the Mekong system, the output from the Inter-SEDE™ model highlights the key importance of issues relating to biodiversity and biological productivity driven by the flood pulse (see Text Box 2), amidst a generally more desecuritized scenario. This tool appears likely to be of utility both for riparians and donors, due to its capacity to identify the key attributes of distinct trans-boundary basins and hence suggest approaches of relevance to greater cooperation.

The literature is rich on conflict and cooperation concerning trans-boundary watercourses, and different parties have offered all facets of the possible arguments. Alarmist calls from several political figures that wars over water resources are imminent have largely been discredited[12, 39], although there can be no doubt that many States treat water resources as of key importance for their survival, this being a major factor driving the securitization process as a whole. One of the difficulties faced in this debate is that conflicts vary greatly in intensity, as shown in Table 2.[40] Thus, many forms of 'cold conflict' or perhaps 'warm conflict' can exist prior to outright armed hostilities, and the same spectrum of relationships exists in mirror image, in relation to forms of cooperation. The use of this expanded scale of conflict and cooperation assists in generating deeper insights into inter-State relationships, and the drivers for these – one of these being access to shared watercourses.

While conflicts over trans-boundary water resources are common, there is effectively no known case where these have constituted the primary motivation for full-scale war. Nevertheless, conflicts relating to water resources have been responsible for much political rhetoric, some of this being of an aggressive nature. An analysis based on a total of 1,831 events connected to trans-boundary 'basins at risk' has shown that co- riparians more often prefer to cooperate, rather than entering into conflicts (Figure 3).[12, 41] This conclusion has also been reached by a number of other authors[20, 39], and has been responsible for the concept that such cooperative behaviour may give rise to 'spill-over', with positive effects on international relationships as a whole (see Text Box 2).

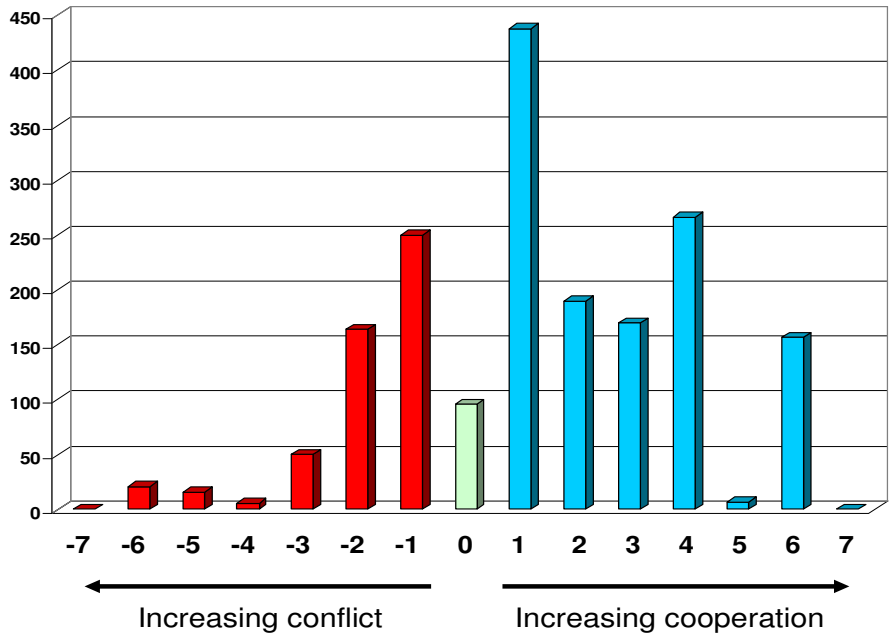
Table 2. The scale of conflict intensity.[40]

	Scale	*Example of Event*
Conflict ↑	-7	Formal declaration of war.
	-6	Extensive war-like acts causing deaths, dislocation or high strategic costs.
	-5	Small-scale military hostilities.
	-4	Political-military hostile actions.
	-3	Diplomatic-economic hostile actions.
	-2	Strong verbal expressions displaying hostility in interaction,
	-1	Mild verbal expressions displaying discord in interaction.
	0	Neutral or non-significant acts for the inter-nation situation.
Cooperation ↓	1	Minor official exchanges, talks or policy expressions; mild verbal support.
	2	Official verbal support of goals, values, or regime.
	3	Officially sanctioned cultural or scientific support (non-strategic).
	4	Non-military economic, technological or industrial agreements.
	5	Military, economic or strategic support.
	6	Major strategic alliances (e.g. an International Agreement).
	7	Voluntary unification into one nation.

The concept of securitization (and the opposite process, termed desecuritization) is key to an understanding of this dynamic.[20, 33-34, 42] As noted previously, the process of securitization occurs when trans-boundary waters are sufficiently critical to a State's survival that their allocation and/or modes of utilization become a matter of national concern and focus.[33-34] In other basins, desecuritization has been largely predominant, and many of the trans-boundary rivers of Southern Africa provide examples of this process.[43-44] The so-called 'picnic table talks' between Israeli and Jordanian representatives are widely believed to have contributed to events leading up to the signature of the 1994 Peace Treaty between those parties, and can also be considered as a process of desecuritization.[30] Similarly, the four downstream riparians on the Mekong River (see Text Box 2) continued to cooperate over the utilization of their shared water resources throughout the Vietnam War[22], and the Permanent Indus Commission survived two wars between India and Pakistan.[45]

Joint institutions are a common feature of such descuritized basins (see below), and sometimes over-arching regional agreements exist also, such as the *Protocol on Shared Watercourse Systems* of the Southern African Development Community. Several commentators have suggested that such institutions and regional agreements are of particular importance in laying a platform for coherent trans-boundary water management.[46-47] However, joint institutions must be designed appropriately if they are to work well, as evidenced by the difficulties encountered by Israel and Palestine in their Joint Water Committee established by the Interim Agreement of 1995. That forum has been heavily criticized as 'domination dressed up as cooperation', and this view is largely justified, given the continuing inequality in the allocation and utilization of water between the two parties (see Figure 4).[48-52]

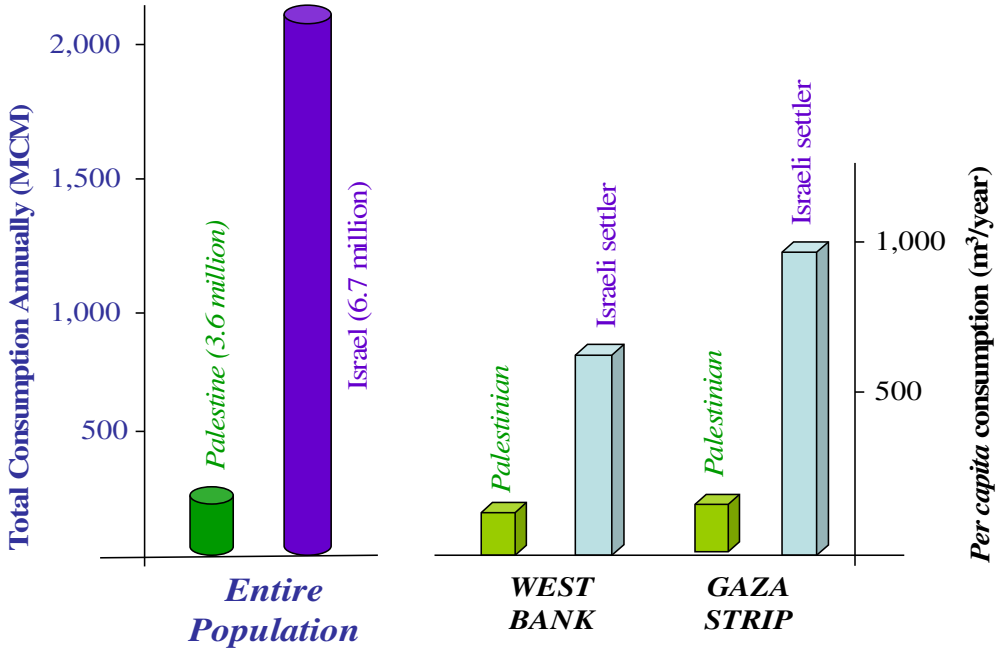
Figure 3. The numbers of recorded events relating to conflict or cooperation on trans-boundary water resources.[12, 41]



In recent years, several authors have revisited the possibility that 'spill-over' may be possible from cooperation on trans-boundary waters, with positive effects in the broader political arena.[20, 53] No general conclusion can be drawn in this respect, as each basin offers a unique mix of co-riparians, securitization dynamics, water scarcity, and other features of relevance. However, there is evidently scope for interplay between the management of trans-boundary waters and broader political relationships, and international funding organizations should be cognisant of this, as discussed in greater detail in the following sections.

It is also notable that conflict may exist not simply between States but also within States, and some authors have contended that this may in fact be even more important as a driver of instability in the future.[20] Conflicts between communities due to competition over water resources is surprisingly common, and may occur even when water resources are reasonably abundant. This reflects the critical nature of water resources, especially for poorer communities which rely on subsistence-level activities such as fishing and farming.[20, 54] It is clear, therefore, that States should have a specific interest in the equitable allocation of water resources, not only with neighbouring countries, but also within their own areas of jurisdiction.

Figure 4. Differences between Israel and Palestine in total water consumption (million cubic metres [MCM]/year) and *per capita* levels of water utilization (cubic metres/ person/year), as at the commencement of 2005.[52] Israeli settlements in the Gaza Strip were evacuated in August/September 2005.



MANAGING TRANS-BOUNDARY WATERS

One of the most important facets of the management of trans-boundary waters relates to the issue of State sovereignty. The Harmon Doctrine of 1895 proposed that in the absence of contrary legislation, States should be free to utilize the water resources within their jurisdiction, without regard to any effects outside their national boundaries. The essentially competing principle of 'absolute territorial integrity' suggests that downstream riparians have a right to receive the natural flow of a river from upper riparians. Neither of these proposals has widespread support at present, and both have given way to the concept of the equitable and reasonable utilization of shared watercourses[1-3], which has been a key principle of customary international water law for some 40 years or more to date. Nevertheless, States remain concerned over their sovereign rights, and the management of trans-boundary watercourses needs to address and mitigate such concerns.

Institutional arrangements are an important facet of the mitigation of the concerns of riparians as to their sovereign rights. At first sight, it would appear logical to assume that the higher degree of water scarcity in a river basin, the more likely that States would engage in conflictual behaviour. However, an analysis of various case studies has shown

that such an assumption is not correct. In fact, arid zones are no more prone to water-related conflicts than are areas of high rainfall, and international cooperation was observed to *increase* in times of drought in some basins.[13] The most important factor involved in such events concerns institutional capacity. Where problems exist involving water stress, States tend to develop strategies to cope with the stress, and this involves the establishment of institutions to specifically address the issues of concern. Water resource management institutions (both national and international) need to be resilient to contain the competing interests of the riparians, as well as to manage water scarcity.

Mirroring the international situation, it is generally not water scarcity that is the main issue of concern on a national or local level. Problems at these levels of geographical scale are again more commonly due to a lack of institutional capacity – this usually relating to human resources, technical arrangements, or financial capacity. Two sources of scarcity – *first order scarcity* and *second order scarcity* have been highlighted.[55] First order scarcity relates to scarcity of the resource itself (water, in this case). Second order scarcity is concerned with the capacity to ameliorate the first order scarcity. It is argued that the capacity of a society to mitigate the physical water scarcity (often through means other than simply finding more water) is more important than the physical scarcity itself.[55] An economy that is rich in such 'social adaptive capacity' can survive in conditions of physical water scarcity, while an economy without these features is not resilient to the severe impacts of water scarcity. This approach suggests convincingly that optimal socio-economic development can only take place when appropriate institutional support exists, as this is a key element of 'social adaptive capacity'.

The risk of conflict increases in situations where the capability to manage water scarcity is low at a national level. In many countries the authority for water management is dispersed among many Government departments and agencies, which implies that different agendas and aims (which are often contradictory) affect the management process. At the national level, there may also be differences between formal and customary systems. This was the case in 1999 when violent clashes exploded in Cochabamba in Bolivia when the city's water utility was privatised, and the formal provisions from the newly-drafted Bolivian water law collided with the customary use of groundwater by farmer's associations.[56] Institutions at national level may also distribute water both inefficiently and inequitably. During South Africa's apartheid era, water was allocated to favour the white minority. The 'ecological marginalization' of the black population generated social unrest and instability, which eventually contributed to the demise of the regime as a whole.[57]

In the study of international relations, a particular strand of analysis deals with the various cooperative entities that exist either formally or informally within the international system. The particular concern in regime analysis is the normative institution, dealing with a specified issue which States create and subscribe to voluntarily, as a means of self-regulation in the international arena.[58] One author has noted the following: "International regimes are useful to governments. Far from being threats to governments (in which case it would be hard to understand why they exist at all), they permit governments to attain objectives that would otherwise be unattainable. They do so

in part by facilitating intergovernmental agreements. Regimes facilitate agreements by raising the anticipated costs of violating others' property rights, by altering transaction costs through the clustering of issues, and by providing reliable information to members. Regimes are relatively efficient institutions, compared with the alternative of having a myriad of unrelated agreements, since their principles, rules, and institutions create linkages among issues that give actors incentives to reach mutually beneficial agreements. They thrive in situations where states have common as well as conflicting interests".[59]

Within the literature that deals with international waters, the concept of *water regimes* is receiving increasing attention. Its has been argued that "the process of regime formation itself—legislating, data gathering, formal institution-building and negotiating—can provide momentum, the creation of new institutional interests and expertise, and, occasionally, "tipping" moments that lead to formal co-operation".[60] Water regimes have been identified to exist "when the affected states to a conflict observe a set of rules designed to reduce conflict caused by use, pollution or division of a water resource or the reduction of the standing costs and the observance over time of these rules."[61] Water regimes can function as an arena for joint discussions; as a means to build and improve relationships and trust; and as a decision-making forum.

The Rhine regime, which originally stemmed from an agreement on chemicals and chlorine, provides a good example. That regime has been beneficial, in that it has brought problematic issues to the fore, and facilitated the settlement of disputes.[61] A further example of a general water regime is the Southern African Development Community (SADC) *Protocol on Shared Watercourse Systems*, mentioned previously as a useful over-arching mechanism for generating cooperation amongst riparians. There are also examples of more specific regimes in Southern Africa, including the Orange/Senqu River Basin Commission (ORASECOM). There is much evidence that the States in Southern Africa have chosen to reach agreements on their shared water resources, rather than engage in conflictual behaviour. This has given rise to the development of a 'Southern African Hydropolitical Complex', which can be seen as a type of informal water regime acting as a driver of regional integration.[14]

It might also be argued that the Peace Treaty of 1994 between Israel and Jordan represents an example of a water regime that has greatly reduced the tension between the two former adversaries. When a convergence of values has occurred within a regime and cooperation has been institutionalized, it becomes difficult to reverse this cooperation. Since the Peace Treaty (in which water allocations are a key element) was signed, there have been disagreements between the parties over allocations in times of drought, in particular. This is due to the ambiguity in the Treaty, which does not include provisions for drought periods. However, even though the political rhetoric reached high-pitched levels during the drought of the late 1990s (when Israel did not wish to supply Jordan with the full amount of water stipulated in the Treaty), the political crisis that erupted was solved by their Joint Water Committee which was established through the Treaty. While Israel initially argued that the parties should 'share the deficit'; Jordan maintained that

Israel was obliged to supply the agreed volumes in full, under the terms of the agreement. The crisis was resolved when Israel supplied the water.[62]

One particular element of interest relating to the management of trans-boundary waters concerns so-called 'virtual water'. This comprises the water used to produce a primary crop or secondary food, or even the water utilized in industrial manufacturing processes.[63-67] Patterns of international trade can be analysed to investigate the 'hidden flows' of water through such items, and this is of importance in relation to policies and strategies for managing national and international water resources, especially those in trans-boundary basins.[20] An example of the trade in virtual water is shown in Table 3, this relating to the ten riparians of the Nile River basin.[20, 67] It is evident that Egypt is a major importer (mainly of water 'embedded' in primary food crops). Such analyses refute the political rhetoric concerning 'food security' in countries such as Egypt and Israel (which is also a major net importer of virtual water[20]). In addition, it is notable that several of the States shown in Table 3 are significant exporters of virtual water, whilst claiming that they receive unfair treatment from one or more co-riparians in relation to access to shared water resources. This is not an isolated example, and similar patterns are found elsewhere (e.g. for Syria and Palestine in the Jordan River basin).[20] Under such circumstances, it is clear that unless the exported products are of fundamental importance to the economy of the State involved, its trade practices are flawed and need to be re-examined.[20]

TRANS-BOUNDARY WATERS AS AN INTERNATIONAL PUBLIC GOOD; FINANCING ISSUES

Increasing attention has been given recently to the Global Public Goods discussion. In an inter-dependent world, certain goods will not be provided in the international system through national development activities. In order to compensate for that deficiency, such goods should be provided through a multilateral approach. The International Task Force on Global Public Goods set up by Sweden and France to address this challenge describes public goods as issues that: (a) are deemed to be important to the international community, including both developed and developing countries; (b) typically cannot (or will not) be adequately addressed by individual countries or entities acting alone; and (c) are best addressed collectively on a multilateral basis.[68]

Table 3. Virtual water flows by country for the ten riparians of the Nile River basin. All data as million cubic metres/year. ND: No data available.[20, 67]

Country	Gross Virtual Water Flows								Net Virtual Water Import			
	Related to the Trade of Crop Products		Related to the Trade of Livestock Products		Related to the Trade of Industrial Products		Total Trade		Related to the Trade of Crop Products	Related to the Trade of Livestock Products	Related to the Trade of Industrial Products	Total Trade
	Export	Import	Export	Import	Export	Import	Export	Import				
Burundi	329	130	0	2	0	8	330	140	-199	1	8	-190
DR Congo	259	396	0	107	ND	59	259	561	136	107	59	302
Egypt	1,755	11,445	221	1,466	729	711	2,705	13,622	9,690	1,245	-18	10,915
Eritrea	14	238	18	7	ND	27	31	272	225	-11	27	241
Ethiopia	2,143	346	90	2	5	89	2,238	437	-1,797	-88	83	-1,801
Kenya	4,638	2,361	161	13	28	182	4,828	2,555	-2,277	-149	154	-2,272
Rwanda	219	255	4	7	0	13	224	275	36	2	13	51
Sudan	7,251	520	273	10	56	89	7,580	619	-6,730	-263	33	-6,960
Tanzania	3,173	970	52	11	2	85	3,227	1,066	-2,203	-41	83	-2,161
Uganda	4,432	1,201	77	3	1	88	4,511	1,293	-3,231	-74	87	-3,218

Trans-boundary waters (and their coherent management) represent a regional public good. If this public good is not provided with secure financing, a transition may occur from a potential 'good' to a public 'bad'. The increasing strength of environmental considerations internationally has resulted in a predominant paradigm for water management. At least until recently, Integrated Water Resources Management (IWRM) has been considered to be the guiding principle, which implies that a river basin should be managed as one single unit, and that aspects affected by the utilization of water should also be addressed. This concept has been accepted within the donor community, as well as at national levels. In a trans-boundary setting, this implies that States should manage their shared water resources jointly, considering the basin as a whole. Any replacement of IWRM by a broader instrument (as suggested previously) will not alter the required cooperative dynamic within trans-boundary basins, but would in fact strengthen this.

There is, however, a 'State-centric approach' that dominates the activities of specific nations in these circumstances.[69] For example, it has been argued that many of the negative environmental externalities in the Mekong River basin and the Zambezi River basin are a result of a general failure in addressing two main factors. Firstly, the needed cooperation is not sufficiently developed among the riparians to prevent exploitation of the water resource by individual States. Secondly, there is a lack of an integrated and cross-sectoral approach to water management. The donor community may be considered to have partly created this situation, since they have encouraged a development of the Nation-State agenda, which has effectively stalled efforts to move towards IWRM (or extended versions of this) coupled to an increased cross-border cooperation on water. A holistic approach is much-needed for the sustainable management of the world's river basins, but the implementation of such an approach is often problematic, given the fact the natural predisposition among States is to focus on their national interests.[69] Such interests are often contrary to the sustainable utilization of trans-boundary water resources, as noted previously.

Nevertheless, some positive examples exist of donor involvement in the provision of regional public goods through the promotion of trans-boundary water cooperation. For example, in the development of cooperative structures between India and Pakistan on the Indus River, the World Bank invested both monetary and human resources to facilitate the attainment of agreement on the Indus Treaty.[45] While the investment was comparatively very low, the sustained cooperation through even violent conflicts is arguably a major regional public goods benefit. While such positive historical examples exist, a recent report concluded that neither the donor community nor the private sector propvides sufficient finance for regional public goods such as trans-boundary water cooperation.[11] This statement is slightly modified by a very recent study on security and development that concludes as follows: "[t]ypically, donor countries have financed global and regional public goods programmes through trust funds arrangements controlled by them rather than as core activities of international agencies. The reluctance of rich countries to let go of control of such programmes explains the *ad hoc* nature of individual schemes. All too often, the end result has been a weak results orientation, high transaction costs, and a lack of voice of developing countries in management." [70]

It is estimated that about US$70-80 billion is spent annually on water management, water infrastructure and water supply and sanitation. The majority of this amount is derived from the domestic and private sectors, with perhaps 10-15% of the finance being from the donor community. Within this donor disbursement, the funding of public goods increased from a meagre 4% in 1980, to about 10% in the year 2000, and little of this is spent on regional public goods. The pattern of spending on both national and international public goods varies widely among different donors. The Nordic countries, Switzerland and Australia allocate the largest share to international public goods.[11] However, the international funds available for trans-boundary water management remain scarce, and account for a tiny fraction of donor disbursements as a whole. It has been noted that "[m]ajor international donors like the World Bank recognise the importance of transboundary management, but still devote relatively few resources to this type of public good…. [t]he picture that emerges is that international financial support to transboundary water management is rather piecemeal and scattered."[11] This is of course not satisfactory, since financing institutional development at a basin level remains reasonably inexpensive, especially when compared to the scale and importance of the issues at stake (and in particular when dealing with large rivers such as the Nile, the Zambezi or the Mekong – or with especially inflammatory geopolitical situations, as in the Jordan River basin). Ideally, a substantial part of the financial burden for managing trans-boundary institutions and approaches should derive from the riparians, but many of those are developing countries and therefore have limited financial capacity to cover these costs, at least initially. A greater degree of long-term involvement from the donor community is therefore needed.[11] The international community has through the Global Environmental Facility (GEF) tried to address the issue of financing of transboundary resources. From its inception in 1992 the GEF has allocated close to half a billion dollars in grants for transboundary waters. GEF always work with other implementing partners, who are the UNDP, UNEP and the World Bank, and the total amount for the 54 international water projects it is part of is close to one billion dollar.[3] While the GEF funding has had a positive effect there is still a need for an even more coherent and long-term financing approach to transboundary waters.

CONCLUSIONS

A number of conclusions may be drawn concerning the management of trans-boundary waters and the role of this in human development.

[1] Access to adequate supplies of clean water is not only a basic human right, but underpins economic development in general. Poorer communities tend to rely more heavily on natural resources, including water. Trans-boundary waters are therefore critical to human development, simply because more than half of the available global water resource is located in shared basins. Developing countries in particular tend to be heavily reliant on trans-boundary waters, and this implies an intimate link between such

[3] For more information about GEF programmes and support see: http://www.gefweb.org/. Up until 2002 the largest share of GEF funding to international waters had been allocated to Africa (USD 104.5 million) followed by Asia (USD 90.8 million), Eastern Europe (56.6 million), and small island states (USD 12.3 million). Another USD 20.9 million had been allocated to global projects.

resources and poverty reduction (plus, the attainment of the Millennium Development Goals, many of which are directly or indirectly linked to secure water supply).

[2] Trans-boundary waters are also growing in importance over time, as the global demand for fresh water increases inexorably, driven largely by the expanding human population. The population increases are generally most rapid in developing countries, and many of these rely fundamentally on trans-boundary water resources.

[3] Most of the historical agreements concerning the utilization of trans-boundary waters are flawed, and are inappropriate as a basis for future human development (or for social/economic equalization). The tendency of particularly powerful States to act as basin hegemons and to seek to reserve trans-boundary waters for their own use should be resisted, and reversed. To counteract the dominance of basin hegemons, donors could usefully engage in building professional capacity of the weaker parties, in order to help them engage with the basin hegemon on more equal terms. Donors also need to recognise that there is no 'one size fits all' solution to promote trans-boundary water cooperation, as each basin is unique and must be addressed on its own merits.

[4] International agreements concerning trans-boundary waters are needed, and these can be based on volumetric allocations or the sharing of benefits (or both). The well-established principles of customary international water law should form the basis for such agreements, if they are to be robust and fair. Basin-wide agreements are to be preferred over bilateral treaties.

[5] While States generally tend to cooperate over shared water resources, these may nevertheless constitute a source of conflict at particular times (both between and within countries). Such conflicts vary greatly in intensity, but all reflect the fact that water is a critical resource for human development.

[6] Concerns relating to trans-boundary waters and their management cannot be divorced from politics as a whole, and this implies the existence of a highly complex process influenced by both domestic and international considerations. There is a need for a more detailed understanding of how water-related issues contribute to the political arena as a whole, and for much greater attention to the role of joint institutions for the management of trans-boundary waters.

[7] The tendencies of donor agencies and international funding organizations to address water-related issues in isolation should be avoided, and a much more holistic approach is required in the future. International financing for trans-boundary water management is presently insufficient, and should be increased significantly if this most important issue is to be addressed adequately in the future. In particular, this should include long-term *process financing* aimed at establishing and supporting national and regional institutions charged with addressing trans-boundary waters and their equitable utilization. This reflects the fact that trans-boundary waters and their coherent management constitute a global public good.

ANNEX 1

Sanctioned discourse features in the Jordan River Basin[71]

A key to understanding why nations choose the policies they pursue in the international arena is provided by an analysis of the domestic context in which the decisions are taken. For water professionals as well as development practitioners, an increased understanding of this seems imperative. In general, the domestic situation in a country affects the policies that are pursued in the international arena. Analysis of the water discourse in riparians provides a method of unmasking the various domestic political considerations.

Some discourses become accepted or 'sanctioned' within a society. The discourse is sanctioned by those actors in the society that enjoy a certain social, economic and political capital. The sanctioned discourse sets limits within which policies have to be pursued, i.e. it indicates what avenues may be politically feasible.[72] The discourse represents what may be said, who may say it, and also how it is to be interpreted. It is also helpful in explaining why people who are confronted with the same scenarios or events nevertheless describe their experience in quite different ways. The rationale for explaining events in distinct fashions often relates to the surrounding social context and the particular discourse that has been sanctioned. In a related line of thinking, it has been argued that the dominant knowledge or view in a society is dominant not because it represents a 'higher level' of knowledge but because it is formulated from a position of greater power in the social hierarchy.[73]

The sanctioned discourse on water in Israel was largely determined by ideology from the 1940s until the 1970s, which accorded a strong emphasis for water allocations to agriculture since this represents a central feature in Zionism. Even though there has been a shift in the discourse since the 1970s towards more economics-based reasoning, the ideological preference for farming is still reflected in the disproportionate political power the agricultural sector enjoys in Israel, as the agricultural sector possesses the cultural capital needed to deploy that political power.[74] Furthermore, the retention of agricultural settlements in remote parts of the country was seen as a strategic tool in the defence capacity of the State. This strategic argument is closely connected to the perception that giving up farming in the remote areas of Israel would constitute a strategic risk, and that keeping agricultural settlements in the remote areas is important since they are seen as a 'buffer zone' against potential enemies. This argument persists in Israel even to the present, as evidenced by the ongoing debate over Israeli settlements in the lower Jordan River valley (within the West Bank).

However, there are arguments implying that the policy of using agricultural settlements as a tool in the strategic defence of the State has proven to be counter-productive. This was exemplified in the 1973 war, when many Israeli soldiers were occupied with evacuating agricultural settlers in the Golan Heights, rather than fighting the Syrians. The inadequacy of in-country buffer zones was also effectively shown during the Gulf War in 1991, when Iraq sent missiles directly into the heart of Israel. Hence, the policy of retaining agricultural settlements in strategic areas of Israel seems to be based on a

misguided perception of their strategic importance and is perhaps better explained by other political reasoning. The logic is as follows: [1] Israel's (misguided) policy of retaining agricultural settlements in strategic areas has to be explained by reasons other than their true strategic importance. [2] Israel's policy suits the argument of the farming community and a farming-military discourse coalition appears to exist. This discourse coalition represents the dominant discourse on water in Israel. [3] Israel's main interest in negotiations with neighbouring States, from a water perspective, is to maintain the high levels of Israeli allocation. [4] It is also possible to trace the root of the arguments of the farming community and the strategic establishment in the domestic structures of the State and Zionism. [5] This perspective does not exclude cooperation on water issues in the region, but it limits the room for compromise solutions.

This discourse is, however, challenged in the present Israeli society, and the various experts and water professionals in Israel hold distinct views. Besides the military–farming coalition, there is also a strong group of Israelis (and Palestinians) who argue for joint management of the shared aquifers. This group emphasizes the risk aspect, when they argue that joint management is the only way to counter the risk of an irreversible decline in the water quality of the shared aquifers. The current Water Commissioner of Israel, Shimon Tal, argues for cuts in allocations to agriculture as a means of countering the water crisis. However, because of the influence of the dominant discourse, requests for cutbacks on agricultural water are often refused.[75-76] Israel is currently establishing a number of desalination plants along its Mediterranean coast and is discussing water imports from Turkey, which will together increase its water budget by about 25 percent. This may alter the discourse on water in Israel, and make it more susceptible to argument about allocating more water to sectors other than agriculture.

On the Palestinian side, a strong emphasis exists in support of the opinion that any negotiations should commence with the consideration of their water rights. The Palestinians have long been denied self-rule and the right to develop and manage their natural resources. The history of the conflict (in which the Palestinians have been subject to inequality and repression) and the strong tradition of farming among the Palestinians are integral parts of the domestic structure in Palestine. For this reason, the idea that water rights ought to be the starting point in any negotiation is deeply rooted in the history of the conflict. This very strong paradigm effectively sets the boundaries for what is feasible. Within the Palestinian society, there are also challenges to the dominant discourse. The Negotiations Support Unit (NSU) is a donor-funded entity providing support to the Palestinians in the development of their case for the impending bilateral Permanent Status negotiations with Israel. The NSU has introduced the concept of a win-win game between Israel and the Palestinians, in which they argue that the available water volume can be increased over time - mainly through the exploitation of new ways to access water (such as desalination, the increased re-use of wastewater, and the importation of water), but also through accessing unexploited areas of the aquifers beneath the West Bank. Through this approach, they open a process in which water rights are a part (but not the only point of departure) for discussions with Israel.[16, 34]

As discussed above, there are challenges to the existing discourse coming from within the Israeli and the Palestinian society, as well as from professionals engaged in the water sector. The region contains fairly strong NGOs such as the Israel/Palestine Centre for Research and Information (IPCRI) as well as Friends of the Earth Middle East (FoEME), which are jointly governed by Israelis and Palestinians.[4] FoEME are engaged in a project called "Good Water Neighbours" (which also involves Jordan). That project aims to develop cross-border community partnerships to overcome conflict and advance human security, and has continued to function despite the last several years of violence between Israel and Palestine. The IPCRI Environment and Water Program was established in 1994, and has functioned since that time, with the aim of promoting cooperation between Israelis and Palestinians on water-related issues. It has implemented small-scale water projects involving both Israelis and Palestinians, and has worked to promote dialogue on the joint management of the shared waters of the parties. Besides these two joint NGOs, there are also other NGOs both on the Israeli and the Palestinian side addressing the water issue, which often work in cooperation. The civil society discourse on the water-related issues is somewhat different from the dominant discourse in society at large. However, the more appropriate approach to the shared water problems of Israel and Palestine (adopted by most NGOs) seldom affects the dominant discourse in a manner that drastically alters the ways in which the joint water problems are addressed, at least within a short time-frame. This is because the civil society lacks the political and economical capital needed to alter the dominant discourse.

These NGOs are mostly financed by donor organizations or by foundations, and while they may not appear to affect the way in which water is managed in the short term, it is suggested that they exert positive influence in the longer term, educating the political elite as well as broader segments of society in the need for joint water management. Thus, the support to these organizations seems well placed despite their apparent somewhat limited direct effect on policy.

The domestic structures outlined above to a great extent set the boundaries within which policy decisions are taken. In Israel, a form of farming–military coalition exists, which dominates the water policy discourse. This coalition holds the view that continued high allocations of fresh water to agriculture are important for both cultural and strategic reasons. In Palestine, the dominant discourse tends to blame many of its water problems on Israel (which to some degree seems reasonable) but subsequently fails to address the Palestinians' own management problems in a robust fashion.[77]

The analysis of water politics through the discourse perspective, and indeed by identifying the 'sanctioned discourse', is crucial to any understanding of decisions on water policy. This approach will help water practitioners and development professionals to be better equipped to understand the background and context in which decisions are taken. If the explanatory power of this line of thinking is ignored, the risk of reaching oversimplified conclusions is increased (such as 'the policy-makers do not understand water issues'), and there will be no acknowledgement that the power of the discourse may limit the available policy options.

[4] For more information on these, see: http://www.ipcri.org/ and http://www.foeme.org/.

Connecting the water issue to the overall Peace Process between Israel and the Palestinians, it is argued here that even if joint water-related problems have been somewhat coherently addressed by the parties and basic low-level cooperation exists even in times of violent political conflict, this does not mean that the cooperation that is taking place within the water sector 'trickles up' and positively affects the higher political agenda. It is arguably so that that water is linked, and perhaps subordinate, to other issues in the peace negotiations. Indeed, trade-offs have been made between water and other issues in the peace process, but that link is seldom recognized in the water-related literature.

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