



# The Nile: Is it a curse or blessing?

## INTRODUCTION

There are increasingly frequent predictions that the next world war will be about water, not about oil or land. Falkenmark stated that 'water can be seen metaphorically as the very blood of the organic whole that constitutes the world' (Malin 1990:197). Good government should consider its development policy or strategy towards the water sector in terms of its use and availability for domestic, industrial, agricultural, and hydropower generation (Asit 1992:4).

The total amount of fresh water on the earth's surface is only 3 per cent; the rest – 97 per cent – is sea water. Of the 3 per cent fresh water, only 0.3 per cent is found in rivers and lakes, while the rest is locked in icecaps and glaciers. However, it is not so much the amount of fresh water on the surface of the earth that makes it scarce, but its uneven distribution. Had water been spread evenly, there would have been ample for all conceivable human needs. Tvedt argues that 'there is plenty of water in the world: the problem is that in many cases it is either in the wrong place or it is available at the wrong time' (Terje 1992:27).

Poor water resource management and lack of cooperation among the riparian states<sup>1</sup> are critical factors behind Africa's dismaying image of economic and social underdevelopment. These have paved the way for poor agricultural productivity and consequently famine and conflict. It is a blessing that Africa contains most of the 0.3 per cent fresh water in the world. It has a reticulation of 54 drainage basins, including rivers, which either traverse territorial boundaries or form part of such boundaries. These basins alone cover approximately half the total area of Africa. However, only about 2 per cent of the total water in Africa is utilised, leaving the remaining 98 per cent to replenish the ocean (Okidi 1994:1).

Ethiopia is the main source of the Nile, which contributes 86 per cent of the water to the Nile Basin states. Interestingly, Ethiopia utilises less than 1 per cent of the Nile's potential for irrigation and hydroelectric

power. As a consequence or because of poor water resource management, drought and famine have plagued the country for over three decades. In fact, many experts argue that sustainable water development in Ethiopia and sub-Saharan Africa in general is a crucial step toward food security and poverty alleviation. While this approach seems plausible, it has been extremely difficult to implement, and sustainable water development remains one of the most formidable challenges that the region is facing today. Sustainable management of a river system whose development potential has created different aspirations and expectations among so many peoples living within and beyond the basin is imperative. Indeed, at the heart of such a challenge is the necessity for poverty eradication. The sustainable development of the River Nile can help alleviate poverty by providing enhanced food, energy, and water security and associated employment creation. This challenge grows with ever-increasing populations, urbanisation and industrialisation.

The purpose of this paper is therefore to analyse the water policies of the Nile riparian states and their attendant consequences, including economic, environmental and social crises. To that end, the paper begins with a closer examination of historical, political, and economic conditions in these states, and compares the region's water resource management policies as they relate to poverty reduction, conflict prevention, and environmental sustainability. If the upper riparian states are to improve and expand their agricultural production, it seems realistic for them to formulate a development policy that takes into consideration efficient management of river flows and transfer of water for irrigation and hydroelectric power. Nevertheless, while this seems the way forward towards conflict prevention, poverty reduction, economic and environmental sustainability, downstream Egypt worries that there will be less water for its own growing economy and population.

Regrettably, many researchers had given little attention to or have no knowledge of the Nile as a source of conflict in the region, including the geopolitics and

hydropolitics of the river that have exacerbated the conflict. Confrontation between Ethiopia, Egypt and Sudan, in particular, has taken its toll in recent years. There are therefore problems to be solved. How do we ensure that water is distributed fairly across the Nile Basin and prevent more military confrontation among the Nile Basin countries? So far numerous roundtable negotiations between Nile Basin governments – especially between Egypt and Ethiopia – have led to no concrete workable agreements. This suggests not only the existence of tensions, but also the complexity of resolving conflicts over the use of Nile water. To be sure, it is not so much the amount of fresh water in the Nile Basin region that makes it scarce or a source of conflict, as the uneven distribution and utilisation of water among the riparian states that have intensified tensions among these countries. A country such as Ethiopia is faced with a double injustice. While Ethiopia is the main source of the Nile, it lacks the financial and technological know-how to develop its fragile and precious water resource to benefit its own people, and it suffers from severe drought and recurrent starvation.

This paper argues that unless basin-wide development planning is regarded as a viable solution to conflict resolution and poverty reduction, the growing scarcity of water in this region is likely to lead to inter-state conflict. Widespread poverty, recurrent drought, low agricultural productivity and degradation of natural resources are major problems in the Nile basin region. The drought that has affected millions of Ethiopians – caused by deforestation, water pollution, soil erosion and desertification – is currently affecting the ten Nile Basin riparian states more severely. The scope of environmental degradation, which may have originated in a few East African countries, is likely to spread far beyond the region. Intermittent and frequent droughts in Ethiopia are causing not only economic hardship for Ethiopians alone, but also significant depletion of the volume of Nile water.

This paper examines whether Egypt, allegedly a superordinate country, had a monopoly of Nile water, and analyses the extent to which Egypt was bent on protecting the interests of Sudan at the expense of subordinating the upper riparian states. From a holistic theoretical standpoint, the paper explores the distribution, redistribution and utilisation of Nile water by Egypt, Ethiopia and Sudan, and discusses their policies and strategies for further cooperation. Furthermore, historical, economic and political factors are converging to reduce the potential in the upper riparian states for water development. The paper also looks into the claim made by the Ethiopian government that ‘Egypt has been pursuing a policy of systematically preventing riparian states, especially Ethiopia, from utilising the waters of the Nile’ (MIP&AD, Addis Ababa, November 2002:120). In August 2004 Ethiopia’s minister

of trade and industry, Girma Birru, accused Egypt of using devious tactics to prevent Ethiopia from developing its water resources. ‘Egypt has been pressuring the international financial institutions to desist from assisting Ethiopia in carrying out development projects in the Nile Basin. Egypt has used its influence to persuade the Arab world not to provide Ethiopia with any loans or grants for Nile water development.’<sup>2</sup>

This paper also attempts to address the complexities of transboundary water management, the need for co-operation and equitable utilisation of Nile water among the riparian countries, current negotiations and their implications for future cooperation. The paper concludes with recommendations for policy reforms at national and regional level that will enhance effective cooperation and coordination.

## GEOGRAPHIC OVERVIEW

The Nile Basin’s extraordinary variety of geographical and ecological systems makes it difficult to easily characterise or subdivide. For some countries, such as Rwanda, Sudan, Uganda and Ethiopia, most of their area is situated within the Nile Basin. For most other countries, the Nile Basin forms only a very small part of their territory. All of the Nile water in Burundi and Rwanda and more than half the waters in Uganda originate from within these countries, while most of the water resources of Sudan and Egypt originate outside their borders – 77 per cent for Sudan and 97 per cent for Egypt. The Nile/



Lake Victoria basin covers less than 9 per cent of Kenya, but provides over half of the country's fresh water.

The basin includes two main river systems: the White Nile, with its sources on the Equatorial Lake Plateau, shared by Burundi, Democratic Republic of Congo (DRC), Kenya, Rwanda, Tanzania and Uganda; and the Blue Nile/Abay and Atbara/Tekeze, with their sources in the Ethiopian highlands of Lake Tana. The tributaries to the Blue Nile system in Ethiopia contribute more than 86 per cent of the Nile waters, while the White Nile contributes only about 14 per cent. Moreover, during the flood period, 95 per cent of the water originates from Ethiopia and only 5 per cent from East Africa (Swain 1997:293–308). This is because the White Nile loses a considerable amount of water to swamp areas near its source and then to evaporation during its course through arid terrain.

All of the Nile sources have an average rainfall exceeding 1 000 millimetres (mm) per year. The basin's highest rainfall, typically 2 000 mm or more, takes place in the mountains to the south and east, but is characterised by high seasonal as well as year-to-year variability. Moving northwards through Sudan, rainfall gradually declines to about 200 mm a year at the confluence of the Blue and White Niles in Khartoum. Semi-desert and desert conditions prevail further north, and rainfall drops to practically zero in northern Sudan and most of Egypt.

The Nile is generally regarded as the largest river in the world, both in its drainage area (6 825 km or about 4 240 miles) and in the quantity of water it carries in its watercourse. The Nile has more riparian states (ten) than any other international river basin in the world. While other countries may have alternative energy sources, a significant percentage of the peoples of the Nile riparian states depend directly on the river for their livelihood and as a source of energy for industrial and domestic needs.

**Table 1** Current population and the 2010 and 2020 population projections for Nile Basin states

Country	1996	2010	2020
Burundi	5.94	8.23	10.20
DRC	.....	.....	.....
Egypt	63.58	80.69	92.35
Eritrea	.....	.....	.....
Ethiopia	57.17	81.17	100.81
Kenya	28.18	33.92	35.24
Rwanda	6.85	10.08	11.04
Sudan	31.07	47.51	58.55
Tanzania	29.06	36.08	40.10
Uganda	20.16	26.36	30.87

*Source: Current population and projections for all countries: 1996, 2010, and 2020, produced by the Bureau of the Census, US Dept of Commerce*

As the data in table 1 indicates, the population of most of the riparian states is projected to double between 1996 and 2020. In addition to population growth, migration and over-grazing, which have contributed to deforestation and land degradation, the Nile Basin is experiencing serious environmental pollution as well as drought and desertification. This is especially true of Ethiopia. Recurring cycles of long droughts, sometimes followed by floods, accentuate water scarcity and imbalances across the Nile Basin.

## Riparian States

All ten riparian states have stated their need for the Nile waters as follows:

- Burundi
  - It wants to use the Kagera River for its development
  - Its consumptive water demand is relatively low
  - It does not expect water allocation from the Nile, but claims its 'riparian rights' on the Kagera River
  - It is important in the sub-basin of Lake Victoria, benefits from regional cooperation, and wants to build up its capacity
  - It is concerned about the environment, but, being at the tip of the upstream, it is affected relatively less
  - It is willing to change the status quo
  
- Egypt
  - It wants to maintain its 'prior appropriation' right and claims 55.5 billion m<sup>3</sup> of the Nile waters. It is very reluctant to accept allocation claims by upstream countries
  - It wants to reclaim additional land to be irrigated by economised water
  - It is negatively affected by siltation and deteriorating water quality
  - Its agricultural production depends entirely on the Nile; therefore it is most affected by environmental degradation of the Nile Basin
  - It expects to gain a great deal from basin-wide cooperation and joint projects in flood and silt control, over-year regulated flows, hydro-electric power generation, etc
  - It has a relatively strong economy, better knowledge of the basin, and better capacity for water resource management
  - It plays a crucial role in Nile Basin negotiations and has power over their success or failure

- Eritrea
  - It wants to use Mereb-Gash River for irrigation and hydropower
  - It claims its 'riparian rights' on the Atbara River, one of the tributaries of the Nile
  - It would benefit from basin-wide cooperation
  - Its deteriorating environment affects the water quality and siltation
  - It expects to gain from new Nile water agreements
  
- Ethiopia
  - It contributes about 86% of the combined Nile water flow at Aswan, and has a strong claim for Nile water entitlement
  - More than 95% of the silt in the main Nile comes from the Ethiopian highlands. It is interested in soil conservation and afforestation
  - It wants to develop about 2.4 million ha of irrigable land and 103 680 GWh/year of hydroelectric power potential in the Nile Basin
  - Deforestation, rapid population growth and drought pose threats to its environment
  - Much of the threat to the quantity and quality of Nile water comes from Ethiopia
  - To retain the status quo would have a grave impact on its development and on conservation of the environment
  - It is ready to cooperate once it ascertains its entitlement
  - It would benefit from basin-wide cooperation programmes
  - It strongly supports new Nile water agreement
  
- Kenya
  - It has an interest in developing its part of the Nile Basin
  - It expects its 'riparian rights' to be respected
  - It has no significant claim to Nile water allocation
  - It has an interest in protecting the environment
  - It is not affected seriously by the status quo
  - It expects to gain from basin-wide cooperation
  - It supports new Nile agreements
  
- Rwanda
  - The Kagera River inflow is important to the water balance of Lake Victoria
  - It has similar stakes/interests to Burundi
  - It is a key player in the sub-basin of Lake Victoria
  - It expects to gain from regional cooperation
  - It supports a new basin-wide agreement
  
- Sudan
  - It wants to maintain its 'prior appropriation' rights and claims 18.5 billion m<sup>3</sup> of the Nile water
  - It has not fully utilised the share allocated to it by the 1959 bilateral agreement, but wants to expand irrigation
  - It faces political and environmental opposition to completion of the Jonglei I and II canals, but if completed, these would increase yield at Aswan
  - It has interest in projects in upstream countries that would regulate and increase flow and decrease silt
  - It benefits from basin-wide water management programmes
  - It is reluctant to accept allocation of claims by upstream countries
  
- Tanzania
  - It wants to exercise its 'riparian rights' on Lake Victoria
  - It has a lot of interest in developing and conserving the resources of Lake Victoria sub-basin
  - It has interest in developing tourism, agriculture
  - It poses a relatively smaller threat to the quantity and quality of the Nile river
  - It benefits from basin-wide cooperation
  
- Uganda
  - The equatorial lakes chain ends in Uganda. The White Nile carries about 31.0 billion m<sup>3</sup> of water through Uganda to the Sudd wetlands (though only 14.0 billion m<sup>3</sup> comes out as the White Nile)
  - It is very important among the upstream White Nile riparian countries in terms of water contribution and the environment
  - It has a lot of interest in ensuring its entitlement
  - Owing to the abundance of rainfall, and the characteristics of the hydrology of the Sudd (in southern Sudan), its consumptive demands are not a serious threat to downstream users
  - It expects entitlement in future Nile water agreements
  - It expects to benefit from basin-wide cooperation programmes
  
- DRC
  - It contributes significantly to the sub-basin of Lake Victoria
  - It is less dependent on the White Nile for its development, but wants to ascertain its 'riparian rights'

- It has interest in conserving its part of the basin to promote tourism
- Its consumptive demands in the basin are relatively low
- It has interest in cooperating in mutually beneficial basin management programmes
- It supports future basin-wide agreement (Alem 1995).

The ten riparian countries have an estimated population of over 300 million, which accounts about 40 per cent of the African population with an average per capita income of \$282. It is estimated that by 2025 the number of people who depend on the Nile River will increase to 859 million. According to World Factbook, the population of Egypt (80 million) is the second highest in Africa and is 10 per cent higher than Ethiopia. However, by 2025, it is projected that Ethiopia will have 20 per cent more people than Egypt (Desta 1992:12).

## HISTORICAL BACKGROUND

The economic and social underdevelopment of Nile riparian states is mainly the result of their failure to develop their water resources for irrigation and hydroelectric power. In addition to financial and technological limitations that hamper development of the water for irrigation and hydroelectricity, external political and economic interests of the region have directly affected these countries. The beginning of modern external pressure can be traced to the British interest on the Nile after the occupation of Egypt and Sudan. Initially, the presence of British colonialism in Egypt and Sudan in the 19th and early 20th centuries dictated Nile River affairs in the region. British colonialism in North and East Africa sought to secure its interest on the Nile water to ensure the production and export of long-staple cotton from Egypt and Sudan for its industry at home. Later, Egypt's scarcity of water alarmed the British and led to an agreement with Sudan to regulate and use the water between them without consulting any of the upper riparian states. As a result of this agreement, Egypt and Sudan insist that the upper riparian states do not undertake works that directly or indirectly affect the volume of water without their consent, although 86% of Nile water reaching Sudan and Egypt originates in Ethiopia. Sudan's contribution to the Nile water is minimal, and Egypt contributes virtually nothing. This unequal distribution of the Nile water among the riparian states has been one of the ambiguities in the region.

The Nile has fascinated philosophers, geographers, historians, engineers and politicians for centuries. In 450 BC Herodotus, known in the West as 'the father of history', described Egypt as an acquired country, a 'gift

of the River Nile'. Historically, there have been frequent clashes between Egypt, Sudan and Ethiopia over sharing the Nile water. Since their arrival in the Red Sea port in the 13th century, the Turks have done their best to prevent Ethiopia from having a seaport of its own, and from controlling the Nile waters. At one point both Turks and Egyptians spread rumours around the Red Sea Muslim society, alleging that:

If the Christian Ethiopians were to succeed in taking the Sea-coast, the war would then turn into one of religion, as Mohammed prophesied in the Koran, that should the Ethiopians take the Sea-coast, that they will invade the Hedjaz, take Mecca, and destroy the Caaba or Holy Temple – this being one of the signs of the end of the world and the Mohammedan faith (British Foreign Office: 41:3, pt1).

This allegation was so strong that, to date, Ethiopia is considered an enemy state by surrounding Muslim countries of North and East Africa. Moreover, 'in modern times an ideology arose, inspired by the Egyptians, but eventually adopted by some Sudanese as their own, which claimed that "all the peoples of the Nile Valley (but not the Christian populations of the Ethiopian highlands) are one"' (Waterbury 1979:43). Only the nefarious designs of outside forces have kept them apart. The British were the most obvious of the spoilers. In general, the Egyptians incited sixteen major wars against Ethiopia in the period from the Battle of Gadarif in 1832 and the Battle of Gura in 1876.

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At present, there is no comprehensive agreement on the Nile that binds all the watercourse states, and no measure of integrated planning has been carried out to develop its basin. The few existing agreements were entered between some of the watercourse states, mainly with the aim of securing the interest of one riparian state (Egypt) or to some extent (Sudan). If Egypt and

Sudan did constitute an integrated economic and political unit, then all of the midstream and downstream sections of the Nile would be subject to the domestic planning of a single political authority. Moreover, other concerned states, especially Ethiopia with its sovereignty over the headwaters of the Blue Nile, would have to tread with great caution in any matters that might affect the interests of what would be one of the largest states in Africa in geographic terms and nearly the second largest in terms of population. But today Egypt and Sudan are not unified politically or economically, and the reasons for this say much about the difficulties both states encounter in attempting to exploit the Nile rationally. Unity of sorts has been achieved in the past, but always through the imposition of Egyptian – or at least Egypt-based rule – on Sudan. Egypt and Sudan are still not one.

The revival of European interest in the Nile water was not a unique phenomenon. It was part of the general European penetration of Africa in the nineteenth century. Thus, in Ethiopia, as elsewhere in Africa, the European officials who came into contact with Ethiopian emperors were above all ambassadors of commerce. This was true of the first European official to set foot on Ethiopian soil in 1804: Sir George Annesley, later Viscount Valetia, from Britain. The promotion of commerce was the dominant theme of the first treaties concluded between King/*Negus* Sahla-Sellase and the British Captain W Cornwallis Harris (1841) and the French Rochet D'Hericourt (1843), and between *Ras* Ali II and the British Walter Plowden (1849) (Zewde 1991:4).

From the time of the Italian settlements on the Red Sea coast in 1889, which influenced economic and political dynamics in the Horn of Africa, the British and the French have been persistently interested in this region (Abir 1980:19). The problem of Eritrea and Ethiopia dates back to 1889, when in a belated attempt to join the scramble for Africa, the Italians established a colony by that name on the Red Sea coast.<sup>3</sup> The territory of the new colony was the highlands, inhabited mainly by Tigrinya-speaking Christians, which had historically been part of the Ethiopian Empire (Ottaway & Ottaway 1978:152).

Europeans began to trickle into Egypt in 1815 when the end of the Napoleonic wars brought universal unemployment as armies dissolved and arsenals closed down. Egypt under Muhammad Ali Pasha offered a future for these European unemployed (Santi & Hill 1980:169). Foreign capital – particularly French – began to penetrate Egypt in the 1850s. The Khedive of Egypt granted the Suez Canal concession to De Lesseps, a French subject. The canal was completed in 1869, by which date British and French financial and industrial groups were opening up Egypt: port works at Suez and Alexandria; railway construction; irrigation canals;

roads; bridges; and sugar mills – and, behind all of these, loans to the Khedive of Egypt (Emile 1935:34–43). After the opening of the Suez Canal and the British occupation of Egypt in 1882, safeguarding the route to India became an important object of British government action and diplomacy. But the victory of the British in Egypt was bitterly resented by the French, and the struggle between them was transferred to the region south of Egypt – Sudan, Ethiopia, and the African coasts of the Red Sea and Indian Ocean.

British officials, then in charge of Egyptian affairs, were fully aware of the new development. Their traditional policy (after 1868) of minimising relations with Ethiopia had to be altered, and the newly adopted diplomacy sought Ethiopia's active cooperation to obtain a stable frontier and assistance. But the French government, embittered by the British occupation of Egypt and already in fairly close contact with Ethiopia, started to undermine the British Mission (Erlich 1982:43–44).

In 1881, the French government occupied a port on the Somali coast, and in subsequent years it extended its influence by the usual methods – a combination of force, fraud and purchase – until French Somaliland was established. This territory is at the southern end of the Red Sea, opposite the narrow strait joining the Red Sea to the Gulf of Aden. By the nature of its location French Somaliland commanded an important point on the route to India. But it was also the first European foothold on the coast between the Red Sea and Ethiopia. And apart from its strategic location for docking ocean-going ships and because French Somaliland was adjacent to Ethiopia, which is the chief source of the Nile, France's penetration of the Red Sea route was considered extremely dangerous to British interests in Egypt. Somaliland is part of the modern Somalia, though it claims to be independent.

## Colonial treaties and their implications

Realising the importance of the Nile, Britain insisted on a formal agreement with Ethiopia in order to ensure that the Nile would not be interfered with by contending forces in the region. Accordingly, the 1902 agreement – one of the earliest agreements on the Blue Nile waters – was signed between Ethiopia and Britain at Addis Ababa on 15 May 1902. Although this agreement basically regulated the frontiers between Ethiopia and Sudan, it contained a peculiar stipulation in Article III on the use of the Nile waters.

1902 agreement:

His Majesty the Emperor Menelik II, King of Kings of Ethiopia, engages himself toward the government

of His Britannic Majesty not to construct or allow to be constructed any work across the Blue Nile, Lake Tana or the Sobat which would arrest the flow of their waters into the Nile, except in agreement with His Britannic Majesty's Government of Sudan (UN Legislative Series 1963:112).<sup>4</sup>

According to the Amharic version (the official language of Ethiopia) the 1902 agreement, as long as Menelik did not 'stop' the flow of the waters, Article III did not restrict him from diverting water. However, Egypt and Sudan continue to insist that Ethiopia does not undertake any works without Egyptian and Sudanese consent, based on this agreement. Ethiopia, however, renounced the 1902 agreement, invoking the Egyptian and Sudanese practice of denouncing 'unequal' colonial-era treaties when they are not in Egypt's or Sudan's interest, respectively. Ethiopia has not considered the purported obligation to obtain Egyptian and Sudanese consent binding since the date of this agreement was proposed. After the restoration of Emperor Haile Selassie's government in 1941, Ethiopia repudiated the 1902 treaty, calling it illegitimate, and also condemned the British recognition of the Italian invasion of Ethiopia. Moreover, Ethiopia declined to recognise the 1929 agreement, which restricts all the upper riparian states from utilising the Nile water, arguing that it had never been a British colony.

After the quick realisation that the 1902 agreement did not serve his country's interests, Emperor Menelik II of Ethiopia never accepted it; nor was this agreement considered binding under international law. When Britain realised that it could not succeed in obtaining a concession directly from Ethiopia, it pursued its objectives indirectly through Italy. Accordingly, Anglo-Italian discussions resulted in an agreement in the form of an exchange of notes in 1925 between these two countries. The agreement recognised the prior hydraulic rights of Egypt and Sudan. It obliged Italy not to construct in the headwaters of the Blue Nile, the Sobat, and their tributaries and affluents any work which might sensibly modify their flow into the main river in return Ethiopia would be regarded by Britain as an Italian protectorate.

The next important historical event was the agreement of July 1906, between Britain, France and Italy. From 1889, Italy had played little part in Ethiopian affairs. But when Britain and France decided to settle their differences because of the menace of German expansion and because German interests were offering to build railways in Ethiopia, Italy was simply dragged in. The most important point in the 1906 agreement was Article I, which provided that 'France, Great Britain and Italy shall co-operate in maintaining the political and territorial status quo in Ethiopia'. But the article defines the status quo more closely, including a reference to the

Anglo-Italian agreements of 1891 and 1894. In other words, although the political and territorial status quo was formally guaranteed, the three governments in effect renewed their declarations of joint support in pressing forward their economic penetration of Ethiopia. And the later articles went into details, Article 4 undertaking joint action to safeguard as follows:

The interests of Great Britain and Egypt in the Nile Basin, more especially as regards the regulation of the waters of that river and its tributaries ... The interests of Italy in Ethiopia as regards Eritrea and Somaliland (including the Benadir) more especially with reference to the hinterland of her possessions and the territorial connection between them to the west of Addis Ababa. The interests of France as regards the French Protectorate, its hinterland and the Djibouti railway zone (Hertslet 1967:432).

Although the emperor had not been consulted in the allocation of Ethiopian territory, Britain, France and Italy had temporarily ended the period of active rivalry and agreed to act together in peaceful penetration of Ethiopia. However, the position in 1929 was that all three had agreed among themselves at various times to a division of Ethiopia into 'spheres of influence'. Each was trying at every opportunity to double-cross the others through separate approaches to the Ethiopian government, but Ethiopia's determination and skilful use of one power against another defeated every attempt at partition or large-scale economic penetration of Ethiopia, apart from the Djibouti railway.

The British signed various accords with the Nile states under their control with the aim of securing an unhampered flow of the Nile to Egypt. Britain created patterns of water utilisation which favoured a single state (Egypt) at the expense of the interests of the whole basin area. Accordingly, the British signed treaties, first with King Leopold II, in Brussels on 12 May 1894, and later with the French on Spheres of Influence in Central Africa, in London on 21 March 1899. The agreement between Britain and King Leopold II, on the sovereignty of the independent state of the Congo, concerning the spheres of influence of Britain and the Congo in East and Central Africa stated:

Article I(a) It is agreed that the sphere of influence of the Independent Congo State shall be limited to the north of the German sphere in East Africa by a frontier following the 30th meridian east of Greenwich up to its intersection by the watershed between the Nile and the Congo, and thence following this watershed in northerly and north-westerly direction (British Parliamentary Paper, Treaty Series No 15, 1894).

The agreement between Britain and France stated:

Number 2 of the agreement

‘The line of frontier shall start from the point where the boundary between the Congo Free State and French territory meets the water-parting between the water-shed of the Nile and that of the Congo and its affluents’. Number 4 of the agreement: ‘it is agreed that the provisions of Article IX of the convention of the 14th June, 1898, shall apply equally to the territories situated to the south of the 14 degree 20’ parallel of north latitude, and to the north of the 5th parallel of north latitude, between the 14 degree 20’ meridian of longitude east of Greenwich and the course of the Upper Nile (British Parliamentary Paper, Treaty Series No 2, 1899).

The situation with Ethiopia was different, however, because the British had never had control of Ethiopia’s portion of the Nile. They tried various schemes to achieve the same objectives indirectly through colonial horse-trading. Italy, which had long-lasting colonial motivations in Ethiopia, came handy in this scheme. To complete the delimitation of the spheres of influence of Great Britain and Italy in Eastern Africa, which formed the subject of the protocols signed in Rome on 24 March 1891 and 5 May 1894, they agreed as follows:

The agreement of 24 March 1891:

The line of demarcation in Eastern Africa between the spheres of influence respectively reserved to Great Britain and Italy shall follow from the sea the mid-channel (*thalweg*) of the River Juba up to latitude 6 degree north, Kismayu with its territory on the right bank of the river thus remaining to England. The line shall then follow the 6<sup>th</sup> parallel of north latitude up to the meridian 35 degree east of Greenwich, which it will follow up to the Blue Nile (British Parliamentary Paper, Treaty Series No 1, 1891).

The agreement of 5 May 1894:

The boundary of the spheres of influence of Great Britain and of Italy in the regions of the Gulf of Aden shall be constituted by a line which, starting from Gildessa and running towards the 8th degree of north latitude, skirts territories of the Girrhi, Bertir, and Rer Ali tribes, leaving to the right the villages of Gildessa, Darimi, Gig-giga, and Milmil. On reaching the 8th degree of north latitude the line follows that parallel as far as its intersection with the 48th degree of longitude east of Greenwich. It then runs to the intersection of the 9th degree of north latitude with

the 49th degree of longitude east of Greenwich, and follows that meridian of longitude to the sea (British Parliamentary Paper, Treaty Series No 1, 1894).

Britain and France, the European rivals of the nineteenth century, cared a great deal about the lands of the Nile. Egypt was vital to the British, not only because of its cotton industry, but also because the Suez Canal – in which Britain was the largest shareholder, and along which the British fleet sailed to India and the eastern extremities of its empire – crossed Egyptian territory. It was a short step to the conclusion that to protect Egypt and the canal, control of Sudan was inescapable. Until 1882 British and French influence in Cairo remained more or less equal, and both powers appeared content that neither should become paramount.

In 1929, Britain sponsored the Nile Water Agreement, which regulated the flow of the Nile and apportioned its use. After World War II, the British government commissioned a hydrological study of the Nile Basin. However, the study did not include the Ethiopian portions of the Nile. The study was finally released in 1958 as the Report on the Nile Valley Plan. The report suggested various ways of increasing the amount of water that reached Egypt. Its most important aspect was the recommendation for the construction of the Jonglei canal, which would divert the flow of the Nile in southern Sudan (in the Sudd) to avoid the enormous evaporation losses that occur there. The report treated the entire Nile Basin as a unity, which was unacceptable to the newly independent African states (Lief 1995:31–34).

## POST INDEPENDENCE NILE BASIN STATES

After independence in the 1960s, Egypt feared that the use of the waters of the Nile by other African countries would threaten its national security. Given Egypt’s 98 per cent reliance on the Nile for irrigation and its fast-growing population, securing these waters was its main objective. Consequently, in 1959 Egypt and Sudan signed an agreement on the ‘full utilisation of the Nile water’. In it, Sudan, as a junior partner, was allotted 18.5 billion m<sup>3</sup> of water, while Egypt retained 55.5 billion m<sup>3</sup>.<sup>5</sup> Sudan would be allowed to undertake a series of Nile development projects, such as the Rosieres Dam. Egypt would be allowed to build the High Aswan Dam, near the Sudanese border, which would regulate the flow of the river into Egypt, provide water during droughts, and harness the hydroelectric power of the river. The High Aswan Dam has performed several notable services. Above all, it has guaranteed Egyptian agriculture a steady and predictable water supply

year-in, year-out. The 1959 treaty also formed a joint committee to supervise and direct development projects related to the flow of the river.

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After independence in the 1960s, Egypt feared that the use of the waters of the Nile by other African countries would threaten its national security

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The 1959 agreement was bilateral and did not include any of the other riparian countries of the Nile, although it portioned out all of the Nile's water. The upper riparian states, once again, had not been consulted, and no water was allotted for future usage. All of the Nile's average water flow was divided between the two countries that lay furthest downstream. Construction of the dam at Aswan began in 1959 as soon as the agreement was signed with Sudan. Accordingly, the Soviet Union agreed to build the dam and finance the construction.

When the dam was finally completed in 1970, it stretched 4 km across the river's path, rose over 100 m from its base, and was almost 1 km wide at the base. Behind it, the waters formed Lake Nasser, which is 600 km long and 50 km wide in some places. This reservoir was the largest man-made lake in the world at that time.

In addition, in the 1970s Sudan and Egypt began joint construction of the Jonglei Canal, which would have increased the flow of the Nile waters by diverting the river. Unfortunately, in 1980 construction was stopped – 100 km short of completion – because of 'rebel action'. Over US\$100 million had been spent on the project. Meanwhile, the 1959 agreement forbade upstream nations to conduct any activity that threatened the water quotas of Egypt and Sudan and prohibited the use of even 1 litre of water by upstream riparian states.

The East African countries complained for years about the treaty. Ethiopia repeatedly rejected the 1959 agreement between Egypt and Sudan. In 2004, Tanzania unilaterally announced the establishment of a 170 km pipeline from Lake Victoria (where 14% of the Nile originates) to supply water to some dry areas in the country. According to the *Cairo Times*, the project was said to be a direct violation of the 1929 treaty. Egypt's minister for water and natural resources, Mahmoud Abou Zeid, wrote that the country had reasonable

grounds for worrying about threats to the use of the river. The same year (2004), the government of Kenya had asserted that it would 'not accept any restrictions on the use of Lake Victoria and River Nile', and would withdraw unilaterally from the 1929 treaty. Abou Zeid branded the move a breach of international law, and described it as an 'act of war'. Kenya, Tanzania, and Uganda claimed that the treaty was an outdated relic of colonial times because foreign rulers negotiated it without reference to their countries' best interests (Ze Ethiopia: March 2004).

Irrespective of the objections raised against the hitherto existing colonial and post-colonial treaties and agreements by other co-basin states, Egypt still considers them legally binding and non-amendable.<sup>6</sup> Tension among the Nile Basin countries arises whenever a new Nile project is proposed. The water needs of the upper riparian countries are barely being met. In addition, Egypt believes that it is most in danger of losing access to the Nile waters by development projects in the upper riparian states, and remains willing to intervene militarily to maintain the status quo (*Efoyta* July 1996:5). The biggest fear is that Ethiopia will develop its water resources. For a long time the Egyptians have laboured to prevent Ethiopia from using the water, particularly for irrigation. They believe that Egypt would be exposed to danger if Ethiopia started to use the waters of the Nile. The Egyptian scenario for the Nile is a classic example of the politics of 'I win if you lose', the zero-sum game.

The most complete agreement on the use of the Nile waters appears to be the 1959 agreement between Sudan and Egypt. But this agreement did not put an end to the conflict over the rights to the waters. In the absence of a serious challenge, Egypt continues to carry out a series of major water projects that not only appropriate large portions of the Nile waters, but also bring the flow within its sovereign jurisdiction. It has deployed human, material, and scientific resources to put in place the legal and institutional framework that could enable it to acquire a monopoly over the Nile River. Egypt has always believed that the capacity for autonomous economic growth lies within its borders. In this light, attempts at political union or economic integration with other Arab countries have been undertaken primarily to generate advantages along the margins of national development and support the process of undergirding the regime.

According to the Egyptian minister of electricity and energy, Hassan Younis, in 2004 Egypt was chosen by nine Arab countries<sup>7</sup> as a centre to control their electricity networks in a bid to set up the first bourse for the Arab countries that share an electricity linkage grid. An agreement was reached to provide Iraq with 100

megawatts (MW) and to increase the rate at non-rush hours to 300 MW. To achieve this goal, the Organisation of Petroleum Exporting Countries (OPEC) Fund for International Development offered an easy-term loan worth US\$20 million to finance the second stage of the North Cairo Electricity Network, whose total cost was estimated at US\$3.6 billion (*Economic*, 29 June 2004). The second stage of the project will add 750 MW to the station's total capacity. The North Cairo Electricity Grid has been chosen for re-commission. It possesses a number of advantages, such as its central location, which will reduce transmission losses, close proximity to fuel sources, plentiful water supply for cooling from the nearby Ismailia Canal, and easy connection with Egypt's National Unified Power Grid and sub-stations (*Economic*, June 2004.). Ironically, these Arab states do not contribute water to the Nile flow.

Yet, according to Girma Amara, Egypt has assumed the role of gate-keeper to raise objections whenever any of the upper riparian states carry out projects and plan to use their water resources (Amara 1997:13). This is not the usual outcome where transboundary rivers are shared. In fact, Egypt claims 'absolute territorial sovereignty', asserting the right to do whatever it chooses with the water, regardless of the effect on other riparian states.

Tesfaye Tafesse argues that besides perpetuating instability in the upper riparian countries, Egypt has long sought to ensure that Ethiopia does not secure aid and loans that would enable it to utilise the Nile. Owing to its influence in the Arab world, Egypt has prevented Ethiopia from receiving grants and credits from Arab nations and has laboured to perpetuate hostility and suspicion towards Ethiopia. Tafesse also asserts that:

Egypt's 'water security' policy is based on a Nile water obsession. Egypt attempts to block all venues that can lead to a fair and equitable distribution of the Nile waters. In some cases, where a co-basin country lays a plan to use the water in its own territory, the Egyptians have often reacted by making threats of war and conflict-laden statements (Tafesse 2001:83–91).

For example, in the past, the Egyptians blocked financing of the Fincha project in Ethiopia by the World Bank. Similarly, in the early 1990s, Egypt was reported to have prevented an African Development Bank loan to Ethiopia for a project that Cairo feared would reduce downstream water supplies.<sup>8</sup>

## **GEPOLITICS AND HYDROPOLITICS OF THE NILE**

Geopolitics examines the political, economic and strategic significance of geography, and how strategy

is induced by geographical factors, whereas hydro-politics refers to the study of conflict and cooperation among nations over shared water resources. Although contemporary Western geopolitics favours the Horn of Africa for its geographic and strategic importance in the fight against terrorism and transportation of commodities, especially oil, for more than half a century, Egypt – situated in one of the most unstable regions of the world – has been viewed as a critical ally of the West. As a consequence, the leading industrialised nations were unwilling to support anything upstream on the Nile that might disrupt the vital flow of water to Egypt and trigger instability there. Meanwhile, Ethiopia and the upper riparian states lacked funds to develop the badly needed broad irrigation and hydroelectric network. As the *Wall Street Journal* put it, 'the result is one of Africa's cruellest ironies: the land that feeds the Nile is unable to feed itself' (*Wall Street Journal*, 26 November 2003: section 1A).

Egypt, as one of the biggest recipients of US aid (US\$2 billion per year), and a good friend of the West – a friendship that was forged after the 1979 Camp David peace accords with Israel – seems to be sure that it has political clout and economic leverage over giant international financial institutions such as the World Bank and the International Monetary Fund (IMF) (Scott 1990:217–222). Furthermore, in 2001, the Bush administration announced a US\$400 million arms deal to provide Egypt with highly accurate surface-to-surface missiles and four patrol boats from which to fire these missiles. The Bush administration also notified lawmakers that it intended to provide Egypt with 53 Harpoon Block II missiles, a satellite-guided weapon described by manufacturer Boeing Corporation as 'the world's most successful anti-ship missile' (Lancaster, *Washington Post*, 27 November 2001:1A). The aid transformed the Egyptian military, which abandoned much of its Soviet weapons equipment in favour of F-16 fighter aircraft, M1A1 Abrams tanks, Patriot anti-missile systems and other state-of-the-art American weaponry.

In addition, a sizeable number of Egyptian professionals are engaged in key positions in environmental and international institutions as former vice president of the World Bank, secretary-general of the United Nations until 2001, former head of the UN Environmental Program and senior posts in a number of UN agencies. Such a situation undoubtedly helped defend Egyptian stakes, thereby enhancing its stubborn posture and position in water-sharing agreements with upstream countries.

To date, Egypt claims that it has natural, acquired and historical rights on the Nile, and will be governed by the hydro-political doctrines of 'prior use', 'primary

need' and 'acquired rights'. These principles have all been regarded by the Egyptians as the crux of any talks or negotiations with upstream states. Moreover, these water rights are often referred to as an Egyptian foreign policy benchmark which calls for the safeguarding of the uninterrupted flow of the Nile water.

Ethiopia has even more logically plausible and legally defensible claims to reserve the possibility of a massive unilateral water development programme for the Blue Nile Basin and other water resources. The development of irrigation schemes in Ethiopia has been minimal. The combination of land degradation and lack of adequate rainfall has often caused crop failures. To stabilise and boost agricultural production, it has become necessary to expand irrigated agriculture. The lowlands, with their extensive flat and fertile land, hold great potential for the development of large-scale irrigation-based agricultural production. The potential gross irrigable area is estimated to be 3.5 million hectares. To date, only 5 per cent of the total potential is utilised.

## INTERNATIONAL WATER RIGHTS

Article 5 of the International Law Commission (ILC) sets out a basic rule of utilisation of international watercourses. It requires that upstream and downstream states participate equitably in the use, development and protection of a watercourse. Article 6 establishes factors to be considered in assessing whether utilisation is equitable and reasonable. Article 7 (captioned 'Obligation not to cause significant harm') operates as a check on riparian activities. It requires that states exercise due diligence in utilising international watercourses so that they do not cause significant harm to other riparian states. If significant harm nevertheless results, Article 7 requires the state that caused the harm to consult with the affected states. This article creates a process aimed at avoiding significant harm as far as possible, while reaching an equitable result in each concrete case. In the commission's draft, the operation of these articles is backed up by compulsory recourse to nonbinding third-party fact-finding (Crook & Stephen 1997:374–378).

However, while the ILC draft attempted to bring some possible scenarios of equitable and reasonable utilisation of international water, it failed to address the importance of sustainability in assessing uses and options for watercourse development. In addition, the ILC did not give sufficient weight to the protection of ecosystems and environmental values.

Utilising water efficiently is crucial in order to provide adequate water for agriculture and livestock development and for human consumption. Unless a major step is taken to allow all riparian states to participate in water development, to reduce water pollution and

deforestation, and to decrease erosion and desertification, they could find themselves in a downward spiral of ecological and economic problems from which it would be difficult to emerge.

Today, the Fertile Crescent in the Middle East hardly appears fertile. Much of it has turned into a saline desert because of improper irrigation. While modern irrigation practices have somewhat reversed these losses, rapidly increasing populations are outstripping water supplies in most countries in the Middle East, placing immense pressure on their water resources and becoming the major cause of conflict in the region. The current unbalanced distribution of the Nile water and the consequent environmental degradation of the region cannot be ignored any longer.

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Despite the gravity of the problems, the Nile basin has been given little attention by the international community

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Were it not for the inequitable use of water in the region, the Nile carries enough fresh water to meet the existing and future needs of the riparian states, but this requires better cooperation and water management. The management of the Nile water is largely a question of redistribution of a natural resource, given certain physical, economic, environmental and social constraints.

Despite the gravity of the problems, the Nile basin has been given little attention by the international community. Although there are economic and political reasons behind this neglect, the riparian countries should be able to draw the world's attention to the river. Some of the civil wars in the region have ended. Under a new generation of leaders, more countries are committing themselves to transforming their economies in order to improve the lives of their citizens.

However, waiting for new international agreements allows Egypt's desert reclamation policy to continue without taking into consideration its implications for the rights of upstream riparian states. This policy will complicate future negotiations because it establishes a prior use of the water. Ethiopia has a strong interest in reaching agreements in the near to medium term so that international help can be secured.

The riparian states must provide the means to protect the quality of the water, guard the environment against degradation, and follow the regulation of

international water utilisation known as the Helsinki Rules.<sup>9</sup> (The Helsinki Rules state that transboundary waters have to be shared equitably and reasonably among riparian countries.) The economic and cultural destinies of millions of people are bound to the Nile River and its tributaries.

## THE MAINSTREAM SCHOOL: DEBATES FOR BASIN-WIDE COOPERATION

Most scholars in this school argue that water shortages in international river systems cause conflict and perhaps war. Helping to end water problems may help to reduce the conflict. Thomas and Naff believe that cooperation should begin at a low level, even before political settlements are in place. Thomas Homer-Dixon outlines the relationship between the environment and security. He argues that environmental degradation leads to social conflict, which in turn leads to violence. Decreases in the quality and quantity of renewable resources, population growth, and unequal access to resources lead to environmental insecurity. Increased environmental insecurity leads to migrations and expulsions of populations and declining economic productivity. The movement of populations and declining or erratic economic activity, in turn, lead to weakened states, national insecurity, ethnic conflict, deprivations conflicts, and coups d'état (Howell, Lock & Cobb 1988:9).

There is also a fair amount of argument about potential conflict as a result of scarce resources, mainly in river-basin waters. Carl Widstrand states that the first type of conflict is geographically based and includes the disagreements that are apt to develop during river-basin development in basins shared by several countries (Widstrand 1978:121). Joint interests in realising flood control and avoiding water pollution ought to create a spirit of cooperation among riparian states, but the opposite seems to be more common.

Many international organisations (including the World Bank) have expressed their concern over the risk associated with water shortage in Africa, as well as the potential conflict that would lead to disastrous outcomes. When access is at risk, water issues can bring out irrational behaviour. Water is rarely traded between nation states because although threats of food shortages can be buffered, water shortages cannot. In almost every country, water resource management is fraught with political implications, tension, and interference. Limitations of accountability, of rule of law, and of transparency, which are characteristic of some countries in the region, intensify the challenges. Across much of the Nile Basin region, water is at the top of the list of needs of poor communities, even though they may be deprived of infrastructure and other services.

Benvenisti argues that unequal use of water results in environmental stress in many parts of the world, and the Nile Basin is no exception. The management of water inevitably brings into play the competing priorities of different uses and users; and, since most water resources traverse political boundaries, these competing priorities often become regional conflicts between riparian states (Benvenisti 1996:382).

However, in Lowi's view, water shortages are not the cause of conflicts. For her, political solutions must precede hydrological cooperation. Lowi looks at the Middle East as a case study and outlines the water problems to suggest that they cannot be solved without a political settlement. Interestingly she suggests that water could indeed be an incentive for a political settlement (Lowi 1993:70–71). Her primary focus is on Israel. Unilateral programmes will not ensure Israel's wellbeing, and the solution of water disputes must take place after a political settlement has been found through negotiation. Furthermore, conflicts over international river basins can provide the world with an opportunity for peace, after a political settlement is in place. She is also concerned about water's relationship to power. Remarkably, Israel's attachment to water is nearly identical to Egypt's attachment to the Nile.

The US and its two continental neighbours, Canada and Mexico, have had many disputes over the Rio Grande River, the Colorado River and the Great Lakes, but these disputes have never been regarded as serious conflicts, mainly because they are settled in courts between armies of competing lawyers.

According to Cummings, people's interest in possible large-scale inter-basin water transfers (IBWT) has increased considerably in recent years and there are several manifestations of this interest in the US. For example, proposals have been prepared for a wide array of transfer schemes. The largest of these is the proposed North American Water and Power Alliance, which involves the annual transfer of between 122 m<sup>3</sup> and 278 m<sup>3</sup> of water for use in seven Canadian provinces, thirty-three states in the US, and three states in Mexico. The initial investment for this project is estimated to be US\$100 billion (Cummings 1974:2).

Interest in IBWTs has not been limited to the US, however. Considerable interest has been expressed in discussions with water planners in several South American countries. The feasibility of IBWTs solving water scarcity problems is being studied for the Rio Colorado in Argentina, as well as for several rivers in central Chile.

In addition, Miwa, Yamauchi and Morita, who studied Okinawa, Japan, where the water supplies are not as plentiful, argue that the problem of water policy and management is typical of other rapidly growing regional

communities in the world. 'The dynamics of population growth and economic expansion increase pressures to develop and reallocate the available natural water resources among competing uses and users' (Miwa, Yamauchi & Morita 1988:3)). Complex water economies evolve through physical and institutional structures whose integrated functioning and performances can only be understood from a comprehensive study of the overall system.

Rogers and Lydon note that because of population growth and improvements in living standards, water scarcity is becoming an important issue in many regions. 'Ongoing and possible future changes in climate, with both worldwide and regional dimensions, could greatly aggravate the problem of assuring adequate supplies of water and of water-based food' (Rogers & Lydon 1993:2–16).

Population growth in the Nile Basin is rapid, and there is strong evidence that human activities, especially overgrazing and deforestation, combined with shifting climatic conditions, are contributing to the rapid desertification in the Nile Basin region. The Nile is the birthplace of hydrology. No other river provides such a wealth of information. Records reach back to 3000 BC. The heavy dependence of the Egyptian civilisation on the size of Nile floods, leading to years of famine or plenty, and the ability of Egyptian dynastic society to record evidence for posterity provide a unique opportunity to investigate the historical Nile River flows.

However, information on water development in the upper riparian states, including Ethiopia, is limited because until recently, as a result of drought and famine and the demand for water development in the region, researchers did not pay attention to this region. A few writers, such as Okidi and Zewdie, contributed to the knowledge of water development in the region, the unequal utilisation of the Nile water among the riparian states, and to some extent its effect on the environment. However, most writers on transboundary water are overtly conservative. Their conclusions are based on the belief that the water usage of upper riparian states will affect the quality and the quantity of the water of lower riparian states.

Okidi has pointed out the importance of cooperation and coordinated water development as a means of conflict prevention. Accordingly, the only promising way of avoiding future conflicts in the utilisation of waters of international drainage basins in Africa is through collaboration among the basin states in the management of such waters. It is also the process by which the national governmental authorities construct and maintain productive mechanisms such as agriculture and industry so that the society can overcome the pressures and provide the necessities of the economic system (Okidi 1994:1–3).

If the vital question of equitable sharing were to be settled, it would pave the way for the development of the Nile Basin in a planned and managed manner. This would enable the basin states jointly to tackle flooding, soil erosion, poor and/or improper watershed management, deforestation and other problems that have aggravated the socio-economic problems of their populations.

## RIPARIAN STATES' WATER DEVELOPMENT POLICY

### Egypt

Of central importance to the development of Egyptian society is the Nile River. Egyptians perceived that the Nile River made possible the abundant food that is a major source of their well-being. The Egyptian people recognized its significance is apparent in this hymn to the Nile:

#### *Hymn to the Nile*

Hail to you, O Nile, that issues from the earth and comes to keep Egypt alive! ...

He that waters the meadows which he created, in order to keep every kid alive.

He that makes to drink and the place distant from water: that is his dew coming down from heaven ...

The lord of fishes, he who makes the marsh-birds to go upstream ...

He who makes barley and brings emmer into being, that he may make the temples festive.

If he is sluggish, then nostrils are stopped up, and everybody is poor ...

When he rises, then the land is in jubilation, then every belly is in joy, every backbone takes on laughter, and every tooth is exposed.

The bringer of good, rich in provisions, creator of all good, lord of majesty, sweet of fragrance ...

He who makes every beloved tree to grow, without lack of them.

Egypt uses the Nile River water more than any other country in the basin. It has developed extensive areas of land for irrigation in the last 100 years. Egypt claims to have developed a gross cultivable area of 7.21 million feddans (or about 3.03 million ha) in the Nile portion of the country, and uses more than 55.5 billion m<sup>3</sup> water annually from the Aswan High Dam. So far, Egypt has based its Nile-related policy on an international water law principle known as the law of

prior appropriation. The concepts of 'historical rights', 'acquired rights', and 'established rights' are derivatives and extensions of the law of prior appropriation. Egypt first based its claim to Nile waters on the concept of acquired rights in 1929, during negotiations with Anglo-Egyptian Sudan. Since then Egypt has consistently relied on this concept.

Egypt often stresses that it has no other water resources, and therefore it 'depends entirely' on Nile River waters for its requirements. Upstream riparian countries, however, have 'alternative water resources' at their disposal. In the negotiations (above) with Sudan, Egypt pointed out that Sudan had an alternative water resource of rainfall that allowed intensive, rain-fed agriculture. Egypt is still advancing similar positions.

In principle, Egypt recognises the riparian rights of upstream Nile Basin states. The 1959 agreement made provision for settling potential claims by other riparian states to Nile River waters. In the TECCONILE (Technical Cooperation for the Promotion of the Development and Environmental Protection of the Nile Basin, founded in 1993) ministerial meetings, Egypt accepts the riparian rights of basin states, but strongly suggests that regional cooperation has a higher priority than water allocation in the Nile Basin. Egypt, in emphasising the need for basin-wide cooperation in hydrological data collection, exchange, and analysis, made its position clear at the 1993 Aswan conference. No negotiations on international water rights are possible without an agreed data base, which must be formulated on the maximum scale. This is a far milder position than previous statements about the Nile by Egyptian officials at moments of heightened polemics. Recent Egyptian statements have generally been moderate.

## Sudan

Sudan makes the second heaviest use of the Nile River. Currently, it claims that it is using about 16.12 billion m<sup>3</sup> of Nile River waters and irrigates 2.95 million acres of net cultivable agricultural land annually. The concept of 'acquired rights', as the basis of Egypt's policy, excludes any share or entitlement other riparian countries might have. In both the 1929 and 1959 Nile Waters Agreements, Sudan accepted the concept of acquired rights, which it still regards as important in maintaining the share of Nile River waters allocated to it by the 1959 agreement. Unlike Egypt, however, Sudan currently acknowledges that this concept is not the sole basis for international agreement, but should be considered together with the legal principle of 'equitable and reasonable use' (Country Report of Sudan 1995).

During the negotiations with Egypt that preceded the 1959 agreement, Sudan argued against building the Aswan High Dam and for the less costly and greater hydropower potential of the Century Storage Scheme. Sudan also promoted Crory's proposal (Crory was a member of Egypt's Nile Projects Commission in the 1920s) that the criteria of 'availability of good land and potential growth' should be used in determining a formula for Nile water allocation. Based on these criteria, Sudan claimed 44 billion m<sup>3</sup> at the 1959 negotiations. Though Sudan compromised on the issue, it still believes that these should be among the primary criteria in determining equitable shares of Nile Waters.

Sudan's policy for water use by other riparian countries seems to be guided by the principles of acquired and equitable and reasonable use of shared water resources. Sudan expects Ethiopia to abide by the 1902 treaty and obtain Sudan's consent before it begins work on Lake Tana (the origin of the Nile) and its Nile River tributaries. At times Sudan's leaders have played the 'Nile water card' to intimidate Egypt. Sudan's policy on the issue of water use by other riparian countries is generally more cautious and accommodating than Egypt's.

However, negotiations between the Ethiopian Electric Power Corporation (EEPCo) and the National Electricity Corporation of Sudan (NEC) ended without resolution in September 2006. The Ethiopia-Sudan Power Systems Interconnection Project negotiations had three agendas: a feasibility study by consultancy company Hifab; the construction agreement; and a power purchase agreement. But neither an agreement nor a discussion took place (Mekuria, *Fortune*, 1 October 2006:10).

For Ethiopia to receive a €29.3 million loan from the World Bank to export electric power to Sudanese border, it needs to sign the Construction and Power Purchase Agreement. The deadline for signing and submitting the agreement to the World Bank is October 2008.

Sudan, on the other hand, needs €26.5 million for the project. EEPCo intends to install a double-circuit electric power transmission line that will carry 230 kV over 296 km from Bahir Dar to Sudanese border to Shehedi. Information from the project office shows that Ethiopia intends to export 200 MW of power to Sudan from the existing double-circuit power line in the northern part of the country. Because the meeting ended before addressing the controversial topic of the power purchase agreement, the following meeting will be an even tougher one, a professional from the sector said.

While negotiations between Ethiopia and Sudan were still under way, Ethiopian and Kenyan negotiations were taking place simultaneously in the same hotel. These talks ended with the signing of a memorandum of understanding, confirming the supply of electric power to Kenya by 2009. EEPCo intends to build a hydroelectric

power station that will supply 600 MW with a capacity of 400-kV double-circuit electric power to be transmitted to the Kenyan capital, Nairobi.

## Ethiopia

As a major riparian state with its tributaries contributing 86% of the Nile water, Ethiopia generally preferred to stay in the background in Nile-related regional undertakings, but recent developments show Ethiopia's readiness to play a proactive role in coming years. Ethiopia's current level of consumptive use is negligible. Ethiopia does not advocate the principle of acquired rights; instead, it consistently promotes the concept of equitable entitlement as the best way to settle water allocation issues. This concept has been the dominant feature of Ethiopia's policy in the last four decades, though at times it took a more monopolistic stance.

In a new and strategic move, in 2007, the Ministry of Water Resources (MoWR) presented a draft law to the Council of Ministers for the formation of a council that would allow it to take care of the major basins in the country. The ministry would then have control of all basins and would be headed by Deputy Prime Minister Adissu Legesse. The project would be directly supervised by Prime Minister Meles Zenawi. The minister of water resources, Ato Asfaw Dingamo, would act as deputy chairman of the council. This would give the council absolute control of the Rift Valley lakes, Wabi Shebelle River, Omo, Bibe, Abay, Tekeze, Aysha, Ogaden, Awash, Denakil, Baro, Akobo, Genalle and Mereb. In addition, with Ethiopia being a major player in the NBI, the body would be able to take part in such discussions, and would be the main provider of information on the Ethiopian water basin.

Ethiopia asserts that it has huge potential for irrigation and other consumptive uses and that, to achieve self-sufficiency in food, it has to use its rivers, including the Nile. So far it has not stated directly how much of the Nile waters it will need to satisfy its potential demand. A publication by the Ethiopian Ministry of Natural Resources and Environmental Protection claims 'at least a 50% share of all of Ethiopia's rivers that cross down its borders to neighbouring countries' (*Addis Zemen* 1994).

Ethiopia regards the 1902 treaty as obsolete and insists that it does not constrain it from using its share of the Nile tributaries. Ethiopia's main argument is that:

- The treaty was signed with a colonial power that no longer exists.
- Unlike the English version, the Amharic version of the treaty obligated Ethiopia only to Britain, not to Sudan.

- Even if the treaty were assumed to be applicable today, it obligates Ethiopia only 'not to arrest' the flow of the Nile tributaries.

## Uganda, Tanzania, and Kenya

Until the late 1950s and early 1960s, the upper White Nile River riparian countries were all under British or Belgian rule. After the East African states gained their independence, almost all of them repudiated treaties concluded on their behalf by the colonial powers. Despite such repudiations, Uganda abides by some of the colonial era accords, such as the Owen Falls Agreement, under which Egyptian technicians continue to control the flow of the White Nile at the Owen Falls Dam.

Egypt's attitude towards Ethiopia contrasts sharply with its earlier policy towards Ugandan water development programmes. In the short while, Hurst's integrationist outlook was official Egyptian policy in the late 1940s and early 1950s.<sup>10</sup> The British government, representing its dependencies in East Africa (Uganda, Tanganyika, and Kenya), reached an agreement with Egypt that allowed Uganda to build the Owen Falls Dam. Egypt agreed to compensate Uganda for a portion of the dam's cost, because it could be used for storing water in Lake Victoria to the benefit of Egypt. Negotiations for the agreement began in 1948 and were concluded in January 1953. The technical form of the agreement, called the 'Draft Heads Agreement', was reached in 1948. The Owen Falls Dam raises the water level of Lake Victoria by one metre. As a result, the lake holds an additional 68 km<sup>3</sup> of water. The purpose of the dam is hydroelectric power generation for Uganda. It can generate 1,150 MW of electricity a year (Kliot 1994:39).

The success of the Owen Falls Dam can be attributed to the fact that Britain controlled Egypt and managed to make Hurst's plan official Egyptian policy. As long as Egypt, Sudan, and the British East African colonies remained under British control, the 1929 Nile Waters Agreement remained law in East Africa. The exchange of notes between Britain and Egypt prohibited the upper riparian states from developing Nile resources. By the mid 1950s, however, the British governments in East Africa quietly moved towards exploring the issue of irrigation and potential market development. Sir Alexander Gibb and Partners conducted a survey of Uganda and the Nile regions of Tanganyika and Kenya, and recommended the use of 1.31 km<sup>3</sup> to irrigate areas in East Africa. Other irrigation projects and contingencies called for an additional 0.394 km<sup>3</sup> of water. The three rain-rich East African territories claimed 1.704 km<sup>3</sup> of water. After the Free Officers coup in Egypt in 1952, the Suez crisis in 1956, and the

political independence of Sudan in 1958, the prospects of Egyptian cooperation melted away. The British East African governments attempted to initiate dialogue with Egypt and Sudan at the time of the 1959 agreement, but these efforts did not materialise in any magnitude. Egypt and Sudan contended that, under the 1929 agreement, they had a right to excess water that was not used by the upstream states, and refused to recognise the right of the riparian states to utilise their water resources. Furthermore, Egyptian representatives and their new Sudanese allies argued that since no excess water existed, the East African countries were not entitled to any water (Howell & Allan 1999:88–89).

On independence in the early 1960s, the three former British East African states began to react to the positions taken by Egypt and Sudan. President Julius Nyerere of Tanganyika (renamed Tanzania after its union with Zanzibar) announced the Nyerere Doctrine, under which independent Tanganyika refused to recognise agreements signed by Britain on its behalf. Furthermore, Nyerere insisted that Tanganyika had a right to develop its water resources as it saw fit, without consulting other countries. Uganda and Kenya followed Tanganyika's lead shortly afterwards. By 1959, Britain itself was considering abrogating the 1929 Nile Waters Agreement when it learned that Egypt and Sudan were planning to divide the river without taking the needs of the British East African colonies into account.

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In 1991, Egypt warned that it was ready to use force to protect its access to the waters of the Nile, should Ethiopia and Sudan plan to build dams on the river

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Currently, the three former British East African colonies use the 1.7 km<sup>3</sup> of water. In addition, they may be using an unknown quantity (6–7 km<sup>3</sup>) of Lake Victoria's water for lake-side agriculture. Unfortunately, no data exists with regard to the proportion of water actually drawn from the lake for irrigation, and it may be that lake-side agriculture simply uses fertile shore soils and relies on rain for watering. Kliot (1994) estimates that Uganda, Kenya, and Tanzania will increase their use of Nile water to 2 km<sup>3</sup>. The primary water sources for these projects will be flood control waters and hydroelectric plants.

But these are not the only East African states that are planning to use Nile-related waters. The Kagera Basin Agreement envisions using the Kagera River, which originates in Burundi and flows into Lake Victoria, to irrigate 90 000 hectares (ha) and to increase the use of water in an additional 200 000 ha. Aside from irrigating various areas of land, the agreement includes a planned hydroelectric power station at Rusumo Falls. The agreement foresaw the use of 2 km<sup>3</sup> of water.<sup>11</sup>

Little can be said about the current official positions of upper White Nile riparian states. All of these countries, however, advocate basin-wide regional cooperation and uphold the concept of equitable entitlement to Nile River waters in principle. The Central African Great Lakes states have created organisations to develop their Nile resources and to equalise their negotiating position. Aside from the Kagera Basin Agreement, the Lake Basin Development Authority (LBDA) was created in 1979. The LBDA includes the three states of former British East Africa.

## CONFLICT OR COOPERATION: CONFRONTING TRUTH AND REALITY

Indeed, many view Egypt's policy of water development as one that perpetuates unequal utilisation of the Nile River, which negatively affects the interests of the upper riparian states. Okidi (1982), for instance, notes that 'for more than seven millennia Egypt has enjoyed the uninterrupted use of the Nile for irrigation'. He adds that Egypt seems to have taken the water from Ethiopia for granted, asserting that any measure to utilise the water for irrigation by any upper riparian state would be unacceptable to Egypt.

In 1991, Egypt warned that it was ready to use force to protect its access to the waters of the Nile, should Ethiopia and Sudan plan to build dams on the river. Ethiopian Foreign Minister Seyoum Mesfin regarded the continuous Egyptian threat as an 'irresponsible instance of jingoism that will not get us anywhere near the solution of the problem' (*Addis Tribune*, 30 January 1998) Indeed, some prominent Egyptian leaders, such as former United Nations Secretary-General Butros Butros Ghali, said that 'the next world war will be over water, not over oil or land'. President Anwar Sadat also signalled that '[t]he only matter that could take Egypt to war is water'. Moreover, Egyptian President Hosni Mubarak has already threatened to 'bomb Ethiopia' if they build any dam on the Blue Nile (Arsano 2007:224). Immediately after the Camp David Accord, Sadat publicly entertained the idea of supplying Nile water to Saudi Arabia and Israel by laying pipelines under the Suez Canal and across the Sinai desert in exchange for a Palestinian solution and the liberation of Jerusalem. To date, Egypt has not supplied water to any other country.

Egypt has been hostile towards the upper Nile Basin states since the beginning of the Islamic era. This hostility reached its height when Mohammed Ali ambitiously sought to control Lake Tana, the origin of the Blue Nile. However, the defeat of the Egyptian garrison by the Ethiopian army at Gundit and Guar in 1875 and 1876 forced Egypt to change its policy for the Nile valley, which was based on the use of force (Beyene 1986:1–2).

Unable to conquer and control the origin of the Nile, Egypt's policy was to systematically prevent riparian countries from utilising its waters. An important element in this policy has been the promotion of political instability in Ethiopia and the Horn of Africa. Although Egypt may not be the primary cause of instability in the region, it has fanned the flames and aggravated the conflicts. Because Egypt believes that such political instability in the region serves its interests, it assumes that when Ethiopia is wracked with war, it cannot focus its efforts on development (Ministry of Information Press, November 2002:120). Thus, 'for Egypt, when Ethiopia is weak and internally divided, Egypt can rest. But when Ethiopia is prosperous and self-confident, playing a leading role in the region, Egypt is worried' (*Addis Tribune*, 26 June 1998).

According to Kendie (2005), Egypt has a long and established involvement in the conflict between Somalia and Ethiopia. However, the official Egyptian position is that its role has been solely to promote cultural and educational exchanges and to work for peace. But closer analysis suggests a very different motivation. Egypt's policy was designed to prevent the use of the waters of the Blue Nile by engaging the government of Somalia in a war against Ethiopia. Essentially, Egypt has been using Somalia's irredentist aspirations to annex a significant portion of south-eastern Ethiopia as its territory to focus the attention of the government of Ethiopia on protecting the territorial integrity of the country. Thus, in the series of armed conflicts that raged between Ethiopia and Somalia in 1960, 1964, 1977–1979, and 2006, Egypt was involved in support of Somalia. For example, in May 1978, Egyptian planes, which were carrying weapons for the Somali army to continue the war efforts against Ethiopia, were forced to land at Nairobi International Airport by the Kenyan Air Force (Kendie 2005:194). In other words, Egypt's war is being fought by proxy.

The Eritrean Liberation Front (ELF), which inflicted economic hardship on the lives of ordinary Ethiopians (both Eritrean and mainland Ethiopian) – without making any progress towards achieving its rhetorical goals – was formed in Cairo in the 1960s. Initially, as a movement of the Muslim population of Eritrea, the ELF received financial support from Arab countries, notably Syria and Iraq (Ottaway & Ottaway 1978:101).

Consequently, the protracted war between the central government of Ethiopia and the ELF, which lasted over 30 years, laid the ground for political turmoil and economic regression. The cost of post-war recovery seems highly underestimated by various groups of civil society, governments, and multilateral agencies. However, in 2001 the World Bank Board of Directors approved a loan totalling US\$400.6 million to assist the government of Ethiopia with its post-war recovery programme, which included the emergency demobilisation and reintegration of 150 000 veterans of the conflict with Eritrea, 17 000 disabled veterans, emergency humanitarian needs, and rehabilitation and reconstruction of infrastructure, as well as the implementation of an economic stabilisation policy. The former country director for Ethiopia, Oey Astra Meesook of the World Bank, said that 'the emergency assistance will help [Ethiopia to restart the lives of the people] and also jump-start the economy' (World Bank, 6 December 2000). Like Ethiopia, the upper riparian countries are embroiled in endless conflicts and political instability that prevent them from giving full attention to the wellbeing of their citizens and the economic growth of their country.

## PAST AND CURRENT COOPERATION EFFORTS

Various groups have tried to find a cooperative approach to stimulating sustainable development and mitigating poverty in the Nile Basin. A project that is currently being undertaken concerning the Nile issue is the Nile Basin Initiative (NBI), which was launched in 1999. However, to date the Nile Basin riparian states have not reached an agreement that allows equitable use of the Nile.

### The ENDUGU group

The ENDUGU ('Brotherhood') group was formed as an extension of the Permanent Joint Technical Commission created by the 1959 Nile Waters Agreement (see section II.1.10). Initially the group consisted of Burundi, the Central African Republic (CAR), Egypt, Rwanda, Sudan, and Zaire. It was expected to include, in later stages, countries such as Ethiopia, Kenya, and Tanzania in forming a Nile Basin Economic Community. The ENDUGU group was initiated by Egypt to promote its interests on the Nile. But it could not overcome the financial, political and other problems it encountered and is no longer active.

### The TECCONILE initiative

While there have been several attempts among countries to cooperate on the use of the resources of the Nile,

the first to focus on a longer-term development agenda was created in 1993. This initiative was called the Technical Cooperation Committee for the Promotion of the Development and Environmental Protection of the Nile Basin (TECCONILE). Under the auspices of TECCONILE and with the support of the Canadian International Development Agency (CIDA), a series of ten Nile 2002 conferences was launched in 1993 to provide an informal mechanism for dialogue among the Nile Basin countries and with the international community. As a result, TECCONILE prepared a Nile River Basin action plan in 1995. TECCONILE is the direct successor of the Hydromet program.<sup>12</sup>

Egypt, Rwanda, Sudan, Tanzania, Uganda, and Zaire became members of TECCONILE, while Burundi, Ethiopia, and Kenya maintained observer status. Eritrea joined the observer group – after it had claimed its independence from Ethiopia – in 1993. At the 3rd TECCONILE Council of Ministers Conference in 1995 in Arusha, the ministers of water affairs adopted the Nile Basin Action Plan proposed by the TECCONILE Technical Committee. The plan outlined 21 projects with a total cost of US\$100 million. Ethiopia submitted its reservations about the Nile Basin Action Plan to the conference:

The priority undertaking in the prepared Action Plan should be the preparation of the Nile Basin Cooperative Framework (project D3) ... Ethiopia, therefore, is ready to participate in this project which should be undertaken by a multi-disciplinary panel of experts composed of all Nile co-basin countries.

The TECCONILE Council of Ministers accepted Ethiopia's proposal to form a panel of experts accountable to it, with the mandate for the development and recommendation of a permanent Nile Basin Cooperative Framework. The panel of experts was to be formed within six months of the Arusha conference. Today, the Nile Basin Cooperative Framework (Project D3) is the only project that enjoys the unanimous support of all riparian states.

In 1997, the Council of Ministers of Water Affairs of the Nile Basin States (Nil-COM) asked the World Bank to lead and coordinate donor support for their activities. Thus, the World Bank, the United Nations Development Programme (UNDP), and CIDA became partners to facilitate dialogue and cooperation among the basin countries and help establish a mechanism through which the countries could work for their mutual benefit and for the sustainable use of the river and its resources.

## The Nile Basin Initiative

Recognising that sustained cooperation on the Nile requires a permanent institution with a development focus

and agreement on core legal principles, the Nile Basin countries established a forum for a process of legal and institutional dialogue in 1997. In 1998, all Nile Basin countries except Eritrea joined in dialogue to create a regional partnership to facilitate the common pursuit of sustainable development and management of Nile resources. In a historic step, they jointly established an inclusive transitional mechanism for cooperation until a permanent cooperative framework should be established. The transitional mechanism was officially launched in February 1999 in Dares Salaam and by May 1999 the overall process was officially named the Nile Basin Initiative (NBI). For the first time in history, all Nile basin countries expressed a serious concern about the need for a joint discourse.

The NBI is a successor to TECCONILE. The NBI, supported by the UNDP, the World Bank, and other donors, includes the ten Nile riparian countries as equal members in a regional partnership to promote economic development and fight poverty throughout the basin. The vision of the NBI is 'to achieve sustainable socio-economic development through the equitable utilisation of, and benefit from, the common Nile Basin water resources' (NBI, Project Implementation Plan Working Document, December 2002:1).

Recognising the benefits that can be reaped from cooperation, while fully acknowledging the challenges ahead, the Nile countries began to translate their vision into action. In a move that could be described as a breakthrough, Egypt, Ethiopia and Sudan forged ahead to jointly develop their section of the water in the Nile Basin through the NBI. The 16th Nile Council of Ministers of Water Affairs of the NBI took place in July 2008 at the Grand Hotel, Kinshasa. Unlike previous initiatives, the envisaged project involves all the riparian countries.

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"For the first time in history, all the Nile basin countries expressed a serious concern about the need for a joint discourse."

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Nevertheless, the task ahead is difficult and complex when one looks at the mutual mistrust and suspicion that have characterised the riparian states over the development of the Nile waters. These countries must examine their water management policies very carefully, because only they can develop the basin.

In the last three decades the frequency of droughts in the Nile riparian countries has increased, and arid

and semi-arid lands have become deserts. Allocation of water resources to meet basic human needs, including social and economic development, while maintaining the integrity of aquatic ecosystems, should be their priority.

## WATER AND FOOD SECURITY

Water scarcity has attracted the attention not only of the Nile riparian states, but also of the international community, and is considered one of the major environmental issues of the twenty-first century. On 22 March 2001, the United Nations commemorated World Day for Water. Speakers concluded that demands for fresh water exceeded supplies by 17% and that over the next 25 years, two thirds of the world's population will experience severe water shortages. In addition, the World Resources Institute in Washington, DC, has warned that the world's fresh water systems are in peril. It predicts that by 2025 about a billion people or nearly 50 per cent of the world's population will face water scarcity.

Sixty per cent of the African continent is covered by transboundary river basins, and about 300 million people, a third of the continent's population, live with water scarcity. Six of the world's ten least developed countries are situated in the Nile Basin and it is projected that 50 per cent of African countries will suffer from water stress by 2025. There is therefore a need for urgent action to improve the socio-economic conditions of the peoples in the Nile Basin by efficiently and equitably utilising the Nile resources. Shared water utilisation plays a significant role in inter-state relations and enhances social and economic development. Moreover, population growth and the onslaught of recurrent droughts and famine in some parts of the African continent will intensify the demand for fresh water.

Unless basin-wide water development planning is considered a viable solution to conflict resolution and poverty reduction, such increasing water scarcity is likely to generate more regional conflicts in the Nile Basin. In addition, it is imperative to shift from reliance on emergency food aid to long-term environmentally and socially sustainable development, including irrigation and watershed management.<sup>14</sup>

The upper riparian states have not built major dams or water projects on the Nile, but population growth and the demands of modern economies are forcing Ethiopia and these states to consider developing the river. Although their hopes for economic and agricultural development can be seen as a threat by downstream states, Ethiopia's policy to utilise the waters of the Nile dates back to the 1930s. In 1927, King Teferi

Mekonen sent a special envoy, Workneh Martin, to the US. One of the objectives of this diplomatic mission was to obtain American engineers for the Lake Tana (the origin of the Blue Nile) development project. The total cost of the project was estimated at US\$8 878 000. The contract included the Lake Tana outlet and the construction of a highway from Addis Ababa to Lake Tana. However, the project failed, owing to opposition from the British government, which at the time controlled both Sudan and Egypt's Nile water resources for a large-scale irrigated cotton production in both countries, and because of the impending Italian invasion of Ethiopia (*Addis Tribune* 11 March 2005).

**Table 2** Contribution and consumption of Nile water by states (in m<sup>3</sup>)

Country or Region	Water contribution	Water use
Egypt	0	55.5 billion m <sup>3</sup>
Sudan	Minimal	18.5 billion m <sup>3</sup>
Ethiopian sources Blue Nile Sobat Atbara	59% 14% 13%	1.0 billion m <sup>3</sup>
Great Lakes States	14%	1.7 billion m <sup>3</sup>

Source: Country paper, VIth Nile 2002 Conference

An alternative water development project was initiated by Ethiopia and the US Bureau of Reclamation between 1958 and 1964. The bureau produced a very thorough and detailed study of the Ethiopian Blue Nile Region, encompassing 'its hydrology, water quality, geology, physiographic, mineral resources, sedimentation, land use, ground water, and local economy'. After completing its 17-volume study, *Land and water resources of the Blue Nile Basin: Ethiopia*, the bureau recommended that Ethiopia construct four dams on the Ethiopian Blue Nile. These dams were to have a combined storage capacity of 51 km<sup>3</sup> and a hydroelectric power generation capability of 25 billion kwh or roughly three times the electricity produced by the Aswan High Dam. From these reservoirs, Ethiopia was to use 6 km<sup>3</sup> a year to irrigate 434 000 hectares of land (Guariso 1987). However, the recommendation of the bureau was ignored by the US government and the project was left hanging. According to some Ethiopian scholars, the motive behind this project as far as US interest in the region was concerned was a counterpart action by the US to intimidate Egypt, which at the time was shifting its direction toward Soviet Union to finance its Aswan Dam project. This seems like more of the Cold War politics and Egypt successfully played the card to protect both its political and economic agenda.

**Table 3** Hydropower potential in the Nile  
Countries in megawatts (MW)

Country	Existing hydropower	Potential hydropower
Burundi	40 MW	120 MW
Congo	21 MW	2600 MW
Egypt	2845 MW	.....
Ethiopia	1000 MW	6000 MW
Eritrea	.....	.....
Kenya	2 MW	355 MW
Rwanda	34 MW	121 MW
Sudan	238 MW	1380 MW
Tanzania	377 MW	4500 MW
Uganda	180 MW	1532 MW

Source: Country paper VIIIth Nile Conference 2002 Addis Ababa, Ethiopia

**Table 4** Irrigation potentiality in the Nile basin countries:

Country	Irrigation potential (ha)	Area already under irrigation (ha)
Burundi	80.00	0
Egypt	4 420.000	3 078.000
Eritrea	150.000	15 124
Ethiopia	2 220.000	23 160
Kenya	180.000	6.000
Rwanda	150.000	2.000
Sudan	2 750.000	1 935 200
Tanzania	30.000	10.000
Uganda	202.000	9 120
Zaire	10.000	0
<b>Total</b>	<b>10 192.000</b>	<b>5 078 604</b>

Source: Irrigation potential in Africa, FAO 1997

The current water development policy of Ethiopia, which is designed to achieve the broader national development objectives of poverty alleviation and sustainable human development, is not new. Ethiopia has been unable to develop its water resources and feed its people, mainly because of the lack of the required financial resources. The policies of international financial institutions such as the World Bank and the International Monetary Fund (IMF) have made it difficult for upper riparian states

to secure funds for development projects without the consent of the downstream riparian states, particularly Egypt (Tafesse 2002:91).

## Water demand in the Nile

Allocation of water resources to meet basic human needs, food security, energy, and economic development, while maintaining the integrity of aquatic ecosystems, cannot be based strictly on efficiency criteria to reconcile private and societal interests. Furthermore, individuals, special interest groups, NGOs, the private sector, and government agencies respond differently to water-use imperatives. These stakeholders will increasingly influence choices between competing objectives.

The riparian states, particularly Egypt, Sudan, and Ethiopia, are entering a period of increasing water scarcity as a result of improper water resource management. Environmental degradation caused by deforestation and pollution is the main cause of conflict in this region. This is affecting not only the region, but also the globe in general. One should also realise that environmental degradation is a direct result of human activity.

For the Upper Nile riparian states, an energy transition would be characterised by a move from the current levels of subsistence energy usage, based on human and animal labour and fuel-wood resources, to a situation where household, services, and farming activities use a range of sustainable and diversified energy sources. According to the World Bank Energy Access Project: Environmental Assessment, the fuel supply in Ethiopia is mainly biomass based (94.7% of total energy supply).

Reducing fuel-wood consumption through the use of efficient energy and technology and increasing fuel-wood production by planting the right type of leguminous multi-purpose trees contributes to reducing the rate of deforestation. This would, at the same time, produce animal fodder, control erosion, improve the quality of the soil, and generally halt land degradation and secure long-term productivity.

## WIN-WIN SOLUTION

If the current situation is left to take its course, it will give rise to an acute conflict from which no side is expected to emerge as victor. The status quo, which does not provide equitable shares of the Nile, is largely to blame for the lack of regional cooperation. This undoubtedly exacerbates the alarming rate of environmental degradation of the upper Nile River Basin. Unless drastic measures are taken to reverse the trend, in the long term it may result in the complete deterioration of the basin's eco-system, with dire consequences for both the quantity and quality of the Nile waters.

With cooperation as the principal strategy, Ethiopia can help stop the silting that is causing considerable problems in Egypt and Sudan's dams by rehabilitating the natural environment of the Upper Nile Basin. The silt from the Blue Nile is building up in Egypt's Aswan Dam and in a couple of smaller dams in Sudan. If the run-off is not controlled, the silting will cripple the dams. The amount of the debris deposited by the Nile in Sudan and Egypt is estimated at 110 million tons annually, of which 40 per cent is silt, 30 per cent fine sand, and 30 per cent clay. In addition, the energy that would be available from building dams in Ethiopia would be so huge that Ethiopia alone does not have the absorptive capacity. These dams would not only produce enough energy for Ethiopia and Sudan, but also feed into Egypt's extensive power grid for sale to users all the way to the Middle East and Europe. If fluctuations in the flow of the Nile's waters are reduced, Sudan would be safe from the annual floods, and all the countries would be able to obtain less expensive energy. Most of Sudanese live on floodplain areas, where they are increasingly at risk from floods, one of the most frequent and destructive of natural disasters. In 2001 the United Nations Emergency Relief Coordinator, Kenzo Oshima, after a mission to Sudan, reported that the effects of massive flash floods and the River Nile's rising waters were emerging more clearly as the floodwaters in northern and eastern Sudan receded. Some 97 000 people were adversely affected by floods and were in urgent need of assistance.

Plans to maximise Egypt's water supply must entail upstream storage in Ethiopia. But Egypt is more concerned about controlling the Nile, because the Aswan High Dam wastes about 10–13 billion m<sup>3</sup> of water through evaporation every year. Egypt and Sudan could easily compensate for the Ethiopian use of the river through increasing efficiency, lowering the level of Lake Nasser, and encouraging peasants to water their plants at night. A recent study (Collins, Whittington and McClelland 1998) suggests that the water that could be saved by building dams in Ethiopia as well as the water that is inappropriately wasted in Egypt would be enough to satisfy Ethiopia's irrigation needs. In addition, from a hydrologist's point of view, it is better and cheaper to cooperate in the pursuit of water. Furthermore, water supplies can be generated or revitalised through recycling, reduced use, imports, desalinisation, and the creation of virtual water through trade with water-rich states such as Ethiopia.

Collins et al argue that the Ethiopian dams, if well managed, would increase the amount of water available to Egypt and Sudan. Storing water in areas of little evaporation would lead to substantial water savings from evaporation alone. When the Aswan High Dam reservoir is low, as happened in 1986, losses from seepage

and evaporation are very low. From a hydrological standpoint, the dam at Aswan constitutes immense and unjustifiable waste in terms of seepage and evaporation. Collins also contends that Egypt's motives in constructing the dam and its water-associated works were political, not hydrological.

Financial assistance from multilateral agencies such as the World Bank would have been most helpful. But because of US support, Egypt is using these agencies as its trump card in impeding Ethiopia's request for multilateral or bilateral loan. The upper riparian states cannot get the necessary financial support to build dams and shift into irrigation agriculture in order to become self-sufficient in food. Instead, the region continues to be a burden on the international community.

Whittington and McClelland (1992) and Waterbury (1979) brought some new thoughts on Nile water-allocation and regional cooperation issues. They suggest that a new Nile Waters Agreement should be drawn up, with several new dimensions to make it comprehensive and sustainable. Based on their previous findings, they stress that certain opportunities for mutual gain should be exploited. These are:

- The construction of the Blue Nile reservoirs, as proposed by the US Bureau of Reclamation, which would save 4–5 billion m<sup>3</sup> of water
- The elimination of the Jebel Aulia reservoir, which has outlived its initial purpose since the completion of the Aswan High Dam, which would save 2.8 billion m<sup>3</sup>

Whittington et al suggest that these should become a part of any new agreement on Nile water allocation. Together, they would increase supplies by at least 6.0 billion m<sup>3</sup>. Furthermore, their cumulative effects would raise the net annual water from 74 m<sup>3</sup> to 80 billion m<sup>3</sup>, as measured at Aswan (after deductions of about 10 BCM for evaporation and seepage losses from the Aswan reservoir).

In addressing the allocation issue, Whittington et al suggest a compromise solution between the two extreme positions of Egypt and Ethiopia. They did not specify, however, how the new entitlements of Egypt and Sudan would be affected under this arrangement. In another line of thought, assuming that Ethiopia's share should at least be equal to that of Sudan (since both have enough land to be irrigated and Ethiopia's population is twice that of Sudan), the authors reach the following allocations:

Egypt	52.0 BCM
Ethiopia	14.0 BCM
Sudan	14.0 BCM
<b>Total</b>	<b>80.0 BCM</b>

Splitting the difference between Ethiopia and Egypt, Whittington et al determined that Ethiopia should receive a water allocation of 12 BCM, as measured at Aswan, which would reduce Egypt's share to 52.5 BCM and Sudan's share to 15.5 BCM. In their calculations, the authors relied only on the 6.0 BCM water savings from the construction of the Blue Nile reservoirs and the elimination of the Jebel Aulia reservoir. Experts suggest that this allocation is the best of their proposed alternatives, since it provides sustainability of existing water uses in Egypt and Sudan, and facilitates Ethiopia's guarantee of Egypt's historic rights to most of the Nile waters. It also allows Sudan to control the Blue Nile floods, while enabling Ethiopia to develop its water and land resources in the Blue Nile Basin.

In terms of this suggestion, Egypt and Sudan may have to abandon 3 BCM of water each, amounting to a total of 6 BCM of water annually. This may seem very insignificant compared with 55.5 BCM and 18.5 BCM allocated to Egypt and Sudan, respectively, based on the 1959 agreement.

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## Plans to maximise Egypt's water supply must entail upstream storage in Ethiopia

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Whittington et al's recommendations imply that viable allocation agreements between Egypt, Sudan and Ethiopia are contingent only upon joint cooperation endeavours for launching upstream projects that would conserve Nile waters. Other researchers in this field, in considering the problems associated with allocations of international watercourses, recommend that some unique political, technical, and techno-political characters are extended. In the case of the Nile River, some suggest that future agreements should address:

- Environmental and water-quality issues
- The seasonal nature of Nile water quantities. For example, allocation quantities should be expressed in percentages of the quantity of water that is available in a given period, to allow flexibility during high-flow and low-flow seasons
- Joint management and operation of water shortages
- The possibility (or impossibility) of transferring Nile River water to other basins or countries
- Regional water markets and loans
- Incorporation of non-water issues such as economic, political, or even joint military/collective security

cooperation that could lead from single-good to multi-good agreements

None of these suggestions, unfortunately, has yet to be taken seriously, even at case study or experimental level. It is, therefore, very difficult to guess whether any allocation criterion would be acceptable to the Nile riparian countries.

An opportunity exists to promote the development of regional economies in this region. The upper Nile riparian states are among the least developed of the world. There is an opportunity to transform the Nile, through collaborative and visible actions on the ground, into a unifying force that builds regional and international interdependencies and promotes economic activities, which could enable co-basin states to participate as partners in emerging regional and global trade. Effective water management, including water harvesting and conservation, can bring benefits to all involved riparian states, which means that there is real win-win potential.

It is only when the riparian states develop a shared vision and common strategic goals that the possibility of meaningful and effective basin-wide cooperation can be established. Shared vision needs to be underpinned by a commitment to a mutually beneficial solution, based on fair and equitable shares of the Nile waters. The lack of genuine cooperation that has so far characterised the Nile countries serves no purpose other than to deepen the differences and aggravate the poverty of the basin.

### THE WAY FORWARD

The findings of this research suggest that Egypt relies on the Nile for 98 per cent of its irrigation water. Its population of over 80 million already use considerably more than its quota. For Egyptians, securing the Nile's waters is literally a matter of life and death. The first logical step is to openly discuss the issue with the desire to find a mutually beneficial solution. That discussion should begin by building mutual confidence and trust. To the degree that competing parties have internalised a sense of mutual annihilation or suspicion, impartial third-party actors may create the most important stages leading to formal dialogue, negotiation, and resolution of the conflict. In this effort, scholars and experts may provide insightful clues as to how the issues of equity and efficient utilisation of water should be addressed. Egypt must be made to understand the importance of sharing the water. Some of the general views mentioned in this paper, including the Helsinki rules, as ways of equitable utilisation of the Nile water would certainly prove useful by making more water available to those countries which

have been excluded from utilising water resources for satisfying basic human needs such as food.

With a few exceptions little attention has been paid to the development of legislative instruments and common vision for sharing water in Africa. However, water issues have been brought to the fore as one of Africa's development concerns. The New Partnership for Africa's Development (NEPAD), with its emphasis on regional cooperation and integration, seems to offer an opportunity to link national and sub-regional approaches to managing water resources.

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To ensure rapid development,  
the riparian states need to utilise  
appropriately but simultaneously  
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The need to move from analysis to action is recognised by most stakeholders in the Nile Basin under the aegis of the African Ministers Council on Water, the UN Water/Africa Group, in collaboration with other regional bodies such as the African Development Bank and the AU. It is also recognised that water resources shared by communities and countries must be jointly managed on an equitable and sustainable basis.

The Abay (Blue Nile) and Lake Victoria (White Nile) river basin have considerable irrigable land. In the face of the drought-induced famines that afflict Ethiopia constantly, it is necessary for the country to utilise the waters of the Blue Nile for irrigation and hydropower, and conserve the meagre foreign exchange that it spends on importing oil.

To ensure rapid development, the riparian states need to utilise appropriately but simultaneously conserve their natural resources. Above and beyond satisfying their own electric power needs, they must be able to sell power to the neighbouring countries. This would enable them to generate capital, which in return would support the poor by providing temporary subsidies of energy and agricultural products; rectify price inequalities; and encourage service expansion. The region's soil and water must be protected through conservation and improved water harvesting techniques because of rising domestic and industrial needs. Thus, the attainment of food security, safe drinking water, sanitation, and environmental sustainability would depend on the efficient management of the Nile waters and meaningful economic cooperation among the Nile Basin countries.

Ethiopia should coordinate its activities with its neighbours: Kenya, Tanzania, and Uganda. In a joint effort, these countries should obtain the support of the AU and bring pressure to bear on the USA with a view to restraining Egyptian belligerence. Moreover, Ethiopia should continue to cooperate with Sudan on power sharing, flood control and other projects on the Blue Nile and the Sobat River. In addition, Ethiopia could continue to cooperate with the countries of the NBI. At the same time, it should build a series of low-cost earth dams on the tributaries of the Blue Nile. Such dams are not difficult to design, and Ethiopians possess the technical tradition to construct them. They do not require foreign technology or huge financial capital.

The Nile Basin riparian states should no longer risk engaging in political bickering over their natural resources. The Nile water supply is being used at a rate that is outpacing population growth. How well the riparian states manage the water they have is becoming a matter of life and death more quickly than anyone prepared for. If food security is to take place, human capital and institutions have to be improved. This can be achieved only when human needs are the subject of the whole process and are approached with appropriate policy and strategy.

Although the international community and multilateral agencies promise development in Africa, the continent remains underdeveloped and impoverished, and disease related to poverty continues to spread. This may be because the policy that is implemented by international institutions is not working. The majority of Africans strive for access to employment, adequate food supplies, clean water, health and education.

Enlightened multilateral cooperation over the shared waters is not possible without strong political will and authority at the highest levels of national leadership, supported by an environment of domestic stability in all the riparian countries. However, these conditions cannot be fully achieved unless there is multilateral cooperation. Unresolved conflicts over water will continue to adversely affect interstate relations, domestic politics, and quality of life in the region.

To balance the needs of a sprawling civilisation with a vulnerable water supply, we ought to carefully examine every possible solution. The potential for acute inter-state conflict over the Nile water arises primarily because there is no comprehensive agreement among stakeholders. A framework that binds strong riparian cooperation and coordination, through transboundary activities, including new water allocation, capacity building, training, education, awareness raising, knowledge and information sharing, communications and environmental monitoring, is needed in order to reduce the current conflict over scarce water.

## CONCLUSION AND POLICY RECOMMENDATION

The existing model – based on the status quo of the early and mid twentieth century – is patently erroneous and misleading. The 1929 and the 1959 agreements were bilateral and did not include any of the other riparian countries, although they portioned out all of the Nile's water. All treaties concerning the Nile River limited, or prohibited, the use of its waters by the upper riparian states – the average flow of the Niles is divided between the two countries farthest downstream (Sudan and Egypt) – and they were essentially treaties about allocation. This has not been accepted by the rest of the riparian countries, which implies that the conflict over water resources may potentially intensify.

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Egypt and Sudan are both recipients of the Nile water and, therefore, cannot have the last word on its utilisation

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Faced with a hegemonic neighbour, and locked into vulnerable geographic locations, the smaller riparian states have tried to use the weak-nation strategies of collective action, power balancing, and internationalisation of the conflict in the basin's hydro-politics. The strategic advantages Egypt enjoys geopolitically, economically and militarily have enabled it to exploit the Nile water more effectively than any of the riparian states. All attempts by its neighbours to act collectively, cooperatively, and responsibly in order to internationalise the contentious regional issues have been a failure. Egypt has also used its dominating position in hydro-politics to selectively reward compliance and to punish noncompliance by other riparian states with its larger geopolitical agenda.

So far, Egypt has attempted to solve its economic problems by playing the game of hydro-politics and by employing the political device of subordinating its regional position to the US, in return for the means to obtain commodities to fill its food gap and maintain the status quo of the Nile water. But with the geopolitics of the Nile Basin currently changing, Washington may not have the economic strength or political will to take on additional burdens on the scale of Egypt. Egypt could also be outliving its usefulness to Washington in political and strategic terms.

Egypt and Sudan are both recipients of the Nile water and, therefore, cannot have the last word on its utilisation. The imbalance between water contribution and water use, and the accompanying demographic, economic and developmental needs, will have to be addressed realistically. To date, most interstate cooperation in the Nile Basin has been bilateral and mostly on a project-by-project basis. In addition, domestic instability in the rest of the Nile Basin riparian states, which impedes social and economic development, accompanied by water and energy scarcities and environmental degradation, inevitably threatens even Egypt's national security and territorial integrity. Egypt now pays an increasingly high price for non-cooperation, since the opportunity costs of delayed economic development and the unattended growing of environmental degradation within the upper riparian states are accumulating.

Utilising the water properly is crucial to developing the basic needs of food, health, education and shelter – as well as opportunities for employment and scientific and technological construction. Today, environmental degradation in the Nile Basin is becoming a serious challenge to national and regional authorities. This includes population growth, migration, settlement, deforestation, over-grazing, erosion, sedimentation, land degradation, desertification, persisting drought, climate change, global warming and zones with water scarcity. The Sahara desert is expanding southwards and forcing the farming community to migrate further south, abandoning what was once a fertile land.

The national authorities in the Nile Basin must construct and maintain productive mechanisms to develop their agriculture and industry, so that the society can overcome the pressures of food insecurity. The ten riparian states need to mobilise their natural resources, particularly water, and then move to systematic and sustainable development to benefit all. Water is the crucial factor in the significance of agriculture and agro-based industries, and is a natural resource which the Nile Basin countries inherently have. Irrigation can contribute to better harvests that are more diversified in the mix of crops and this improves incomes. This can make communities less dependent on rain and food aid. The stress on water resources creates a particularly acute problem, because water provides life to plants and animals, and is the basis of agriculture and food production.

No one doubts that the Nile Basin riparian states need to develop a framework that is acceptable to all countries for basin-wide cooperation. This will include the establishment of a basin-wide, multidisciplinary structure for legal and institutional arrangements. Efforts will also be directed towards the establishment of policies and legislation for regulating the Nile water. These regulations should include a process for the

identification, selection, construction, and operation of regional water resource development projects to promote basin-wide cooperation and to enhance the socio-economic wellbeing of citizens. In addition, the riparian countries must develop a framework for international cooperation, and equitable utilisation and allocation of the water.

At least now politicians, policymakers, academicians and experts in the water field are convinced that the disadvantages of non-cooperation on the Nile water outweigh by far those benefits, and the present lack of regional cooperation comes at considerable cost to upper and lower riparian states. Satisfying the demand for water that is required to create a productive farmer is the most decisive and difficult point for this region to fulfil. It is estimated that for every 1 billion m<sup>3</sup> water we utilise for agricultural production, we can feed five million people. That means if it is made possible to harvest 25 billion m<sup>3</sup> of water, about 125 million people can be fed easily.

One of the basic problems facing the utilisation of the Nile water is the lack of a clear and comprehensive agreement binding all riparian states. Not only is international funding of water development projects largely precluded, but delay in reaching new Nile Basin water agreements allows Egypt's desert reclamation policy to continue without taking into consideration its implications for the water of the upper riparian states. The ten states of the Nile have so far been unable to develop a basin-wide integrated cooperative framework. On the other hand, Egypt is determined to maximise the use of Nile waters, even outside its natural drainage basin, and stretching it beyond its limits. The problem of unilateral expansion of water use, including any attempt of transfer of water to places out of the natural basin by downstream states, can be taken as one cause of the unmitigated tension between upstream and downstream countries. So far Egypt has defied any form of cooperation and compromise with the other riparian states and has assumed the role of a gatekeeper to objections that are raised.

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Opportunities exist for regional cooperation that will benefit all parties

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Despite Egyptian opposition, sooner or later the upper riparian states of the Nile are bound to assert and engage in the utilisation of their water rights of the Nile, using standards that they deem legitimate

and appropriate. It is essential for Egypt to accept the demand of countries such as Kenya, Uganda, Ethiopia and Tanzania for equitable sharing of the waters of the Nile River. Thus, there is concern from various sources that, if the demand for equitable sharing of the Nile water is left unattended, the situation could degenerate into crisis. To reverse this trend and lay down the basis for cooperation and efficient utilisation of their shared resources, it is imperative that the countries of the Nile engage in negotiation and design a new water allocation, based on the universal principle of the Helsinki Rules that transboundary waters have to be shared equitably and reasonably among the riparian countries. There is no reason that the countries of the Nile cannot accept and negotiate their shared resources according to this principle. Scarcity of water and conflicts over water resources are likely without a basin-wide planning process. Opportunities exist for regional cooperation that will benefit all parties. It is up to the parties concerned not to miss these opportunities.

## NOTES

- 1 The ten riparian states are Burundi, Egypt, Ethiopia, Eritrea, Kenya, DRC, Rwanda, Sudan, Tanzania, and Uganda.
- 2 Cam McGrath and Sonny Inbaraj, 'The 75-year-old water sharing treaty that has kept Nile Basin countries from warring over the region's most precious resource is in jeopardy as East African signatories consider pulling out' (Cairo/Addis Ababa, 15 January 2004); available from <http://www.ipsnews.net/interna.asp?idnews=21932> [accessed October 2008].
- 3 See letter to Secretary of State, Washington DC, from Addison E Southard, Legation of the United States of America, Addis Ababa, Ethiopia, 1929.
- 4 See also Hertslet, Map of Africa by Treaty II, 585.
- 5 In 1925, a new water commission made recommendations based on the 1920 estimates which would ultimately lead to the Nile Waters Agreement between Egypt and Sudan on May 7 1929. Four BCM/yr was allocated to Sudan, but the entire timely flow (from 20 January to 15 July) and a total annual amount of 48 BCM/yr. was reserved for Egypt. Egypt, as the downstream state, had its interests guaranteed by:
  - Having a claim to the entire timely flow. This meant that any cotton cultivated in Sudan would have to be grown during the winter months.
  - Having rights to on-site inspectors at the Sennar dam, outside Egyptian territory.
  - Being guaranteed that no works would be developed along the river or on any of its territory, which would threaten Egyptian interests.
- 6 Tesfaye Tadesse, 26–29 June 2002, The hydropolitics perspective of the Nile question, paper presented at the VIIth Nile 2002 Conference, Addis Ababa, Ethiopia

- 7 Jordan, Syria, Lebanon, Iraq, Turkey, Libya, Tunisia, Algeria and Morocco (none from the Nile riparian countries)
- 8 Ibid.,
- 9 Available from [http://webworld.unesco.org/water/wwap/pccp/cd/pdf/educational\\_tools/course\\_modules/reference\\_documents/internationalregionconventions/helsinkirules](http://webworld.unesco.org/water/wwap/pccp/cd/pdf/educational_tools/course_modules/reference_documents/internationalregionconventions/helsinkirules) [accessed September 2008]
- 10 Hurstian Plans: dam construction plans based on developing the water resources of the entire basin in a coordinated way. Works associated with Hurst include Nile control, and Century storage. The only implemented part of Hurst's plans is the Owens Fall Dam in Uganda.
- 11 For more information on Rusumo Dam, see <http://irinnews.org/InDepthMain.aspx?InDepthID=13&ReportId=61077>
- 12 The Hydromet programme took shape as a broad-based effort to collect and analyse data on hydro-meteorological aspects of the upper White Nile drainage system. The original plan of operation was signed in May 1967.

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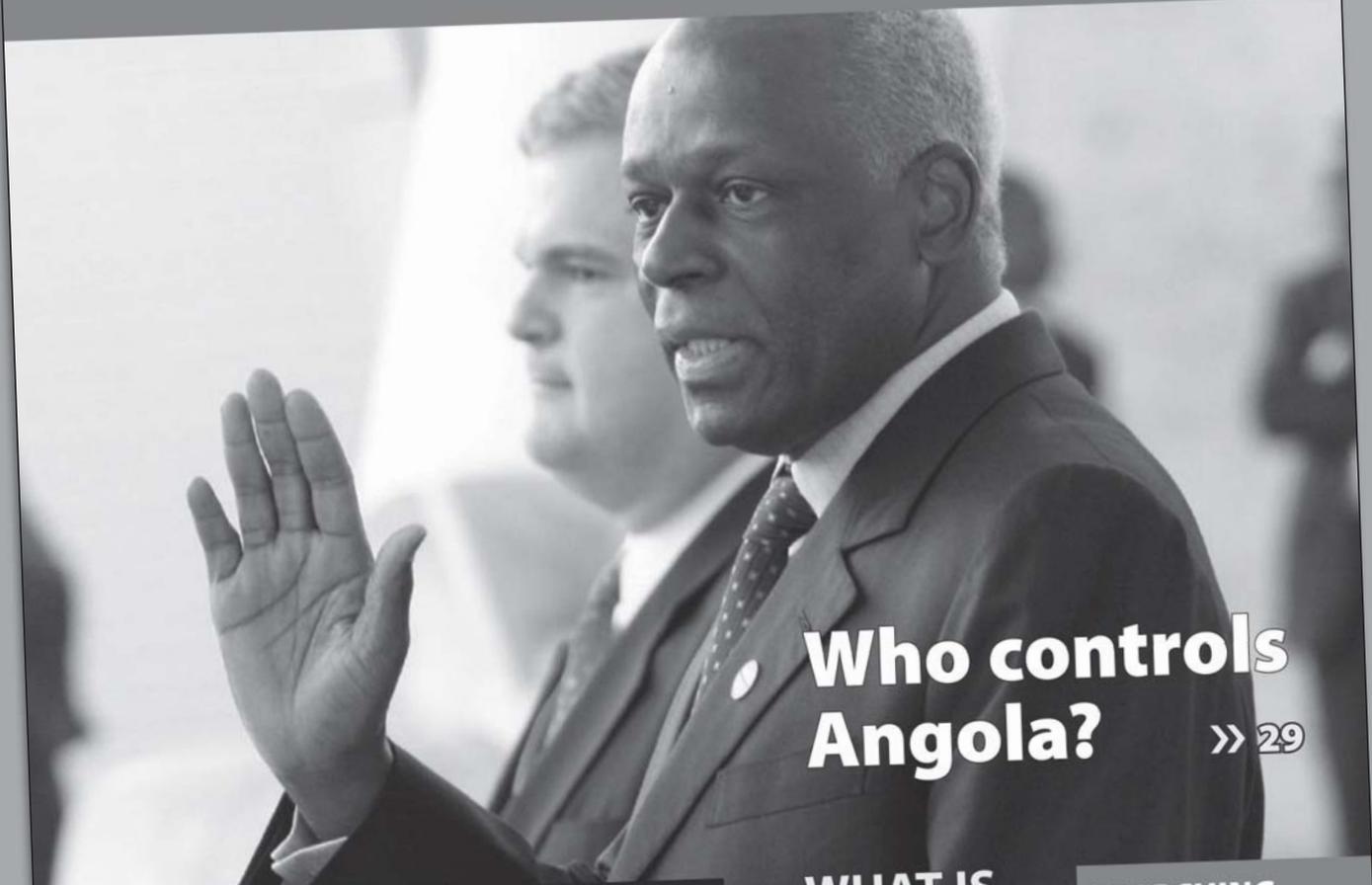
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## ABOUT THIS PAPER

Historical, economic and political factors are converging to reduce the potential for water development in the upper riparian states of the Nile. In short, unless basin-wide development planning is considered a viable solution to conflict resolution and poverty reduction, the growing scarcity of water is likely to lead to inter-state conflict. The purpose of this paper is therefore to analyse the water policies of the Nile riparian states and their attending consequences, including economic, environmental and social crises. To that end, the paper begins with a close examination of historical, political, and economic conditions in the Nile riparian states and compares the regions' water resources management policies as they relate to poverty reduction, conflict prevention and environmental sustainability.

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Dr Debay Tadesse received his BA degree in World History from Georgia State University, Atlanta, Georgia, and his MA degree in African History and PhD in African Studies, specialising in Public Policy and Development in Africa, from Howard University in Washington, DC. He is a senior researcher for the Direct Conflict Prevention Programme at the Institute for Security Studies (ISS) in Addis Ababa, Ethiopia. The author would like to thank the anonymous reviewer for the helpful comments and suggestions on the earlier draft.

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