

# THE NILE BASIN: EVOLVING APPROACHES TO NILE WATERS MANAGEMENT

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## **Abstract**

The paper will review briefly the hydraulic engineering history and the hydropolitical contexts of such development. After a century of activity inspired by an ambitious hydraulic mission the numerous stakeholders in the Nile system are currently influenced by a new water resources mission inspired by environmental and economic principles. The decade of the 1990s, in the post-Cold War era, has witnessed considerable positive progress towards a co-operative international relations regime over Nile waters. This progress has been made despite the numerous armed conflicts in the Horn of Africa, in the south of Sudan and in Rwanda and neighbouring territories. None of these conflicts has been water related; nor has there been any attempt to date to link Nile waters to other conflictual issues as is usual in other MENA (Middle East and North Africa) river basins. The analysis will be informed by international relations theory and illustrated by observation of the contribution of the upstream and downstream riparians to the very important discourse on an as yet very partially developed river basin.

## **Introduction**

At the end of the twentieth century the Nile hydrological system is of major economic significance to two of its riparians, Egypt and the Sudan; its waters could be of economic significance to at least four of its other riparians. A number of forces external to the Nile Basin have shaped the history of water resource development in the Basin in the past century. During the first half of the twentieth century the Basin, and especially its waters was influenced by the interests of the United Kingdom (Lyons 1906, MacDonald 1921, Morrice and Allan 1958, Collins 1990) which directly and indirectly controlled the political economies of most of the Basin except Ethiopia. Ethiopia and Eritrea were also under the control of a colonial power, Italy, from the first decade of the twentieth century until the World War of 1939-1945 Italy had no impact on the management of Nile water resources. Britain was very influential in that it was so pre-occupied with the economy of Egypt that it used its considerable power to ensure that there was no diminution of flows of water to Egypt through the development of works in its upper riparian colonies in the Lakes Basin of East Africa – Uganda, Kenya and Tanganyika [now Tanzania]. Evidence of this commitment were the terms of the 1929 Nile Waters Agreement which stated that there should be no such works in Uganda and the other Lake Basin colonies. (Collins 1990) Further the share of the flow

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between The Sudan and Egypt should be four per cent to The Sudan and Egypt should be four per cent to The Sudan and ninety six per cent to Egypt. These were the shares and terms accepted by the colonial administrations of the United Kingdom. (Collins 1990) The end of European colonialism was confirmed by the fall of the compliant Egyptian regime of Farouk in 1953 and subsequently by the independence of the rest of the Nile Basin during the 1960s. The fully independent Egyptian Government of 1952 led by President Nasser immediately addressed the issue of water security by initiating the High Dam project at Aswan. The approach was contentious as by then many engineers and hydrologists felt that a more economical and environmentally considerate way (Hurst, Black and Simalka 1946) of dealing with the control of the annual flood of the Eastern Nile tributaries coming out of Ethiopia would be to store the water in the mountains of Ethiopia where storage could be achieved with much less evaporation. (Hurst 1952, 1965, Hurst and Phillips 1933, Hurst et al 1966)

In order to commence construction of the High Dam Egypt had first to agree a water treaty with the Sudan. The 1959 Nile Waters Agreement was based on very different assumptions from those of for the 1929 treaty. Egypt would achieve total control of the Ethiopian flood by creating storage at its southern border with the Sudan of about three times the annual flow at that point. Past records used by the negotiators showed that the average flow of the waters to be shared by Egypt and the Sudan was 84 billion cubic metres per year. (Waterbury 1979) The two riparians agreed to share the water in the proportions 75 per cent and 25 per cent for Egypt and the Sudan respectively. Other riparians were invited to participate in the discussions. None did; nor did they agree to recognise the terms of the agreement at any time since. Kenya and Ethiopia have been consistently and trenchantly critical of the 1959 agreement (Godana 1985, Abate 1995)

### **Controlling Nature - the hydraulic mission in the twentieth century**

By the end of the nineteenth century the industrialised countries of Europe that had colonised or were still colonising Asia and Africa had achieved levels of economic and technical competence which led them to believe that they could control Nature. The second half of the nineteenth century was a period when local communities led by colonial engineers transformed millions of hectares of the north-west Indian sub-continent from single season cropping to double season cropping with irrigation systems. Engineers with this Indian experience arrived in Egypt in the last two decades of the nineteenth century (Willcocks and Craig 1913) bent on controlling the Nile waters available to Egypt and later those of the Sudan. The 'hydraulic mission' (Swynegedouw 1999) inspired engineers and the governments which employed them from the late nineteenth century during what sociologists have termed 'industrial modernity'. (Beck 1992, 1995, 1996, 1999) By the mid-1970s the governments of the North, including those with influence on the policies of multi-lateral- and bi-lateral donor agencies, had begun to shift the emphasis other policies to be considerate to the environment and to the poor and politically weak communities that would be impacted by 'emblematic' (Hajer 1996) civil works on major river systems.

Egypt was especially subject to European colonial engineering influence in the later years of the nineteenth century and the first half of the twentieth century during a period when the 'hydraulic mission' was commonplace amongst colonising powers. Both the major political entities of the twentieth centuries, the capitalist United States and the communist former

Soviet Union (Brezhnev 1978) were the leading exponents of 'hydraulic mission'. The impact of the colonial presence was to intensify irrigation and production of commercial crops. Egyptian initiatives to extend the irrigated area had been marked in the early nineteenth century during the government of Muhammed Ali. Land reclamation did take place during the period of colonial supervision, about which Willcocks and Craig (1913) provide a graphic account of its difficulties.

'We little realised how difficult it was to reclaim land. It was like Sodom and Gomorrah after the Fall.' (Willcocks and Craig 1913 see also Allan 1983)

Not until the leadership of Egypt was in the hands of Egyptian nationalists from 1952 did the goal of land reclamation re-emerge. (Allan 1983) The Soviet support of the Egypt during the 1957-1973 period included the support of the reclamation of new land. When the US and European donor agencies returned to Egypt in the mid-1970s they did not support the horizontal expansion of irrigation. They directed their investments in agriculture to remedying the impact on rising groundwater levels consequent on the higher applications of irrigation water following the commissioning of the High Dam and on rehabilitating poorly performing 1960s reclamation schemes.

The donors were also influenced by the mid-1970s by the green movement in the United States and Europe, which transformed environmental politics. President Carter had confronted the interests in the US that had driven the economic and technical processes of controlling the 'wild rivers' of the United States along a trajectory that was both economically and environmentally damaging. He encountered severe opposition from beneficiaries of the old order, senators, professional interests in the US Bureau of Reclamation and the Corps of Engineers (Carter 1982: 78-80) and was not successful in introducing his water policies within his term as President. His contention had been such that the successor regime did reverse the project of controlling Nature. The changes in the 1970s in environmental and economic policies are seen by analysts to be part of a reflexive response to the new perceptions of the risk to the industrialised economies of continuing to handle the environment as if it was controllable. This reflexive mode of the last quarter of the twentieth century has come to be called the phase of 'reflexive modernity'. (Giddens 1984, Beck 1999)

The management of major surface water resources in the economies of the North have changed significantly since the mid-1970s. Economic efficiency and environmental soundness have become much more important criteria in ex-ante evaluation of water project proposals. The international agencies such as the World Bank have also been 'greened'. The World Bank's increasing caution with respect to its involvement in developing water resources shared by many riparians in major river basins is founded on its Operating Directive, OD 6.50 as well as the sharper river basin hydropolitics which result from the tightening water resource availability in all arid and semi-arid regions. This OD 6.50 directive required the Bank to support schemes which had the agreement of all the water sharing political entities when investment in water control works was being contemplated. Egyptian interests are well represented in the World Bank. During much of the 1980s and the 1990s Egyptian professionals led crucial departments concerned with environment and international law. The other riparians have had no equivalent presence.

## **Perceptions of the Nile Basin riparians on what should inspire current and future development**

The perceptions of the Northern industrialised governments and the international donor agencies which they support are important because they play a pivotal role in constructing the knowledge on what is appropriate, efficient and economically feasible in managing international river systems and the Nile in particular.

Upstream and downstream riparians have predictably different perspectives on their water interests. Downstream states usually develop the water resource first because downstream tracts tend to have level alluvial soils and it is much easier to combine labour and capital inputs to good effect, especially in agriculture. Egypt and the Sudan are good examples of the genre. Upstream states tend to be mountainous and the challenge of developing economic ventures is almost always much greater. The eight upstream states of the Nile Basin have not been able to mobilise resources to develop their water resources, neither from internal resources nor from international community. They were impeded by the counter interests of imperial powers up to the 1960s and since then by the international regime of the Cold War era reinforced by the principles embedded in the World Bank's Operating Directive, OD 6.50. With the end of the Cold War the upstream riparians are deeply aware of the economic and international impediments to their investing in storage and water control structures. (Abate 1995a and 1995b, Godana 1995, Alemu 1995a and 1995b) The upstream riparians have water but they do not have either the economic, the technical, institutional or the social adaptive capacity to utilise their Nile waters.

Egypt is relatively economically, technically and institutionally competent compared the upstream riparians. There is strong evidence that it intends to retain access to the annual 55.5 billion cubic metres of water, which it negotiated with the Sudan in 1959. In addition to asserting its entitlement whenever the subject needs clarification, the Egyptian Government has been extremely vigilant in ensuring that all waters are currently used. More important it has embarked on a suite of land reclamation schemes - to the west of the Delta, across the Suez Canal in Sinai and most recently in the south. The project to reclaim land in the New Valley with water saved from ending the raising of water intensive sugar cane and rice. By more than fully utilising the Nile waters available to it, Egypt will have to be negotiated out of its Nile waters utilisation. The Egyptian announcement of the southern New Valley project in 1997 was a strong signal to Ethiopia that any savings that Egypt might achieve by adopting water use efficiency measures would not be shared with upstream riparians. (Whittington 1997)

## **Factors affecting the saliency of river basin hydropolitics and reaching agreements over water in the MENA region**

The only agreements reached to date in the long history of the Nile were signed when one entity was very keen indeed to address some imperative. The 1929 Egypt-Sudan Nile Waters Agreement scarcely counts as it was arranged under particular and unrepeatable circumstances. The 1959 Nile Water Agreement was an put in place by an Egyptian Government in a very great hurry to achieve a major and unique prize - the total control of the Nile with huge economic benefits and the bonus of hydro-power. The international relations regime of the time was unusual being both different from that of the preceding

century and very different from that of the present. The agreement between Uganda and other Nile riparians was not difficult because the impact on the hydrological regime was negligible and the concessions to Egypt in terms of monitoring were extremely transparent and recognised stakeholders interests. In the light of the above cursory review of significant Nile water agreements it is possible to identify the following framework of analysis.

### **Factors which impinge on the reaching of agreements**

#### ***International relations regimes***

It is not necessary to understand the finer points of IR regime theory to recognise that regions and the national entities within regions operate in different ways during periods which can be defined as Imperial, Cold War and Post Cold War. The current regime is that of the post-1990 period where the knee-jerk reaction of the Super-Powers to events in the Middle East meant that the forces brought to bear by the divided international community tended to amplify regional differences rather than calm them. The 1990s have seen remarkable rapprochements between entities involved in apparently intractable hot and cold conflicts; viz. South Africa, Palestine-Israel and Northern Ireland. The Nile Basin is also witnessing unprecedented constructive initiatives at the level of inter-riparian relations - viz the correspondence of May-June 1997 between Egypt and Ethiopia.

The international relations regime, that is the regime beyond the Nile Basin, is ripe for initiatives to develop the foundations, which must precede water agreements. They are also ripe for the evaluation of water resource development activities which will improve the efficiency of water use including the generation of hydropower.

#### ***Economic and political development of political economies***

The approach taken by those managing a political economy to the allocation and management of its water resources change with the strength and diversity of that economy. Just as international and regional relations regimes change during a century so does the economic competence and the effectiveness of state and private sector institutions. A weak state (see Migdal 1988) is a state which cannot deliver entitlements, for example to food, and in arid countries to water. A strong state is not an authoritarian state but one which can deliver these entitlements because of the strength and diversity of its economy and the capacity of its political systems to deliver and implement sound economic and environmental policies.]

The Nile riparians are not equal with respect to their economic and political competence. This lack of symmetry has always caused awkwardness in inter-state relations and there has been much evidence that the downstream states have enjoyed the decades of water security brought about by the incapacity of the upstream states to control and dam their tributaries.

These decades have also been important in demonstrating that Egypt's downstream economy can survive despite crossing into the uncharted economic circumstances of being in water deficit. The coming decades will reinforce the private conviction, albeit publicly contradicted, that Egypt's future economic self-sufficiency will involve using its water according to economic and environmental principles. The transition during which the subordination of economic and environmental principles to political feasibility yields to the

incorporation of these principles into the national politics of water will take a number of decades; probably two to three decades.

During this transition it will be possible to achieve agreements over water. It is unlikely that the early agreements which incorporate economic principles. Since the realisation that water is an economic resource will increase in the coming decade it is important that agreements are reached which can accommodate such principles in future.

In summary, the key economy Egypt has reached a sufficiently strong position with respect to economic and political development that its Government, if not its people, can begin to view its dependence on water in a balanced fashion. The Egyptian officials dealing with water in there national and the international contexts can be expected to operate with the same insight and effectiveness exemplified by the way Egyptians have reached pivotal positions in the international agencies. These agencies alone have the capacity to mobilise the necessary priming resources sufficient to enable the Nile's upstream riparians to increase their consumptive use of water.

### **Assymmetric control of the Nile system**

The surface waters of the MENA region were not much engineered until the early nineteenth century. The lower Nile was only significantly controlled by the new works at Aswan in 1906. These structures were augmented in the first two decades of the twentieth century. These works allowed secure access to a minimum of about 30 cubic kilometres (30 billion cubic metres) by the 1930s, enabling about 80 per cent of Egypt's irrigated area to be double cropped. Works in the Sudan at Sennar in 1925 on the Blue Nile commanded water sufficient to irrigate the Gezira Scheme just south of Khartoum – initially one million feddans (400 000 hectares) extend in the 1960s to 800 000 hectares. Not until 1970, with the building of the Aswan High Dam, was the utilisation of the surface flow of the Nile in agriculture boosted to an average 40 cubic kilometres per year – plus the unaccounted re-use in irrigation. The additional water from the new storage at Aswan was sufficient to enable double cropping throughout the six million feddans (2.5 million hectares) of Egypt by the early 1970s.

The anticipation of the new water from lake Nasser/Nubia also stimulated the most ambitious land reclamation programme in Egypt since the reign of Muhammed Ali at the beginning of the nineteenth century. (Allan 1983: 472) In the 1960s 1.2 million feddans (500 000 hectares) were subject to land reclamation activity, but only 300 000 feddans (125 000 hectares) of the reclaimed land was operating beyond a break even economic performance by the late 1970s. (Hunting technical Services 1979) Two million feddans (800 000 hectares) have been a perpetual land reclamation target since the early 1980s.

The flows of the Nile system are amongst the best understood and monitored in the world; The records are certainly the longest for any river. (Said 1993, Evans 1995:42-43) The records are for the most part reassuring in that they indicate that although there have been periods of low and high flow these have no been livelihood or economy destroying for the levels of population being supported in previous centuries. And for the optimists of today, who base their optimism on the demonstrated capacity of economies to respond to environmental events, even the threat of lower flows through climate change would be disturbing but not economically determining. Meanwhile the climate change models as frequently predict higher flows as they do lower ones for the Nile (Conway and Hulme 1996:290) because rainfall futures are much harder to model than temperature futures.

### **Limited water agreements and the issue of weak international water law**

In the field of international water the position is one of anarchy. There are no institutions which uphold a widely recognised and formally agreed codes of practice. Realist international relations theory prevails in international water affairs in the Middle East and North Africa. (Mori 1994) The challenge of developing an international convention on non-navigable uses of international waters has been responsibly and fully addressed by the United Nations International Law Commission (ILC). In May 1997 the Commission produced a Convention to which the UN members have been invited to sign up. (McCaffrey 1995 and 1998, McCaffrey and Sinjela 1998)

The ILC Convention has attempted to de-emphasise the two contentious principles of 'sovereignty' over water within the boundaries of a state and that of 'no harm' which is closely related to that of 'prior use'. Upstream states tend to assert sovereignty; downstream states tend to assert that no harm should be suffered by them as the result of upstream developments put in place after the downstream has asserted prior use. The 1997 Convention reflects the monumental struggle which the participants in the three decades of ILC meetings had to endure in order to bring forward the concept of equitable utilisation. This concept embraces a wide range of other contexts which it is argued should be taken into account when attempting to derive inter-state water entitlements.

Upstream countries such as Turkey mid-way through ambitious water projects are very cool towards the 1997 Convention. downstream Egypt is also cool as the concept of equitable utilisation can only be interpreted as being a basis for ceding water to upstream riparians. The upstream Nile riparians on the other hand, which have scarcely begun to develop their Nile waters regard the ILC Convention as a useful basis for discussion. In the absence of a softening of the Egyptian position they will continue to assume that Turkey provides the best model for an economy which has not yet enjoyed the benefits of advanced socio-economic development.

### **Current options and current institution building**

The last decade of the century has witnessed some very significant shifts in the level and intensity of international discourse on the management of Nile waters. The decade started with strong evidence that Egypt's position was entrenched in a single-minded commitment to the shares nominated in the 1959 Agreement. (1990:225-6) Even by 1997 there were Egyptian interventions at international conferences which indicated that 'no harm' and 'prior use' were the only criteria of concern to Egypt.

One of the fruits of the end of the Cold War has been the establishment of numerous institutions to enable the nine, and after the independence of Eritrea, ten riparians to meet at ministerial, professional and scientific levels. The Nile 2002 initiative in February 1992 brought together in Aswan representatives of the riparian countries and members of the science community world-wide. Subsequent Nile 2002 meetings took place in Kampala, Khartoum, Arusha, Addis Abeba, Kigale and Cairo. Kenya and Ethiopia were always the least committed participants and attended only as observers. The convening of the meeting in Addis Abeba in 1987 was significant. By 1999 Ethiopia joined the 2002 process as a full member at the Cairo meeting. More important than the Nile 2002 process which has been

very much an awareness raising confidence building activity, was the parallel TECCONILE process which brought together technical professionals from the riparian countries . They usually met on to occasions each year. In 1996 the TECCONILE group brought authored a Nile River Basin Action Plan which was submitted to the donor community. The plan recommended a US\$ 100 million investment in a range of projects to improve the informational infrastructure, awareness of environmental factors and build confidence in co-operative activity. Many of the upstream riparians regarded the Action Plan as more of the same - namely that the plan proposed non-radical projects that would have no impact on the upstream economies but would leave in place the status-quo which advantaged Egypt.

The World Bank's response to the 1996 action plan has come at a time when new approaches have become possible. The Cold War polarisations, especially of the clients of the two Cold War super-powers, no longer obtained. Egypt's economic position was improving and it was free of the exhausting Arab-Israeli confrontation. The Bank's response was delivered in early 1998 to sessions in Cairo. An important innovation was the suggestion that the Nile Basin always treated as a whole at the insistence of Egypt could be considered as two entities, the Eastern Nile and the Southern Nile. The Eastern Nile conveys 85 per cent of waters that reach Khartoum and is the key resource for the downstream riparians. Eastern Nile waters flow in Ethiopia, the Sudan and Egypt. Minor and very fluctuating flows occur in Eritrea. At the same time, throughout 1998 and 1999 there have been high level meetings between ministers of Egypt and Ethiopia on Nile waters issues.

There are some areas of mutual concern that could bring about initial co-operative activity between these two key riparians. The protection of the environment of the upper catchment is such an issue. If progress can be made in uncontroversial aspects of integrated river basin management it will in due course be possible to discuss the difficult areas of water utilisation in Ethiopia.

## **Conclusion**

The past management of the Nile over the past half-century suggests that the behaviour of individual riparians explains levels of water use and approaches to cooperation. Bi-lateral arrangements between the two riparians that have an agreement, the 1959 Nile Waters Agreement and a Permanent Joint Technical Committee – Egypt and the Sudan – suggest that bi-lateral arrangements do endure despite stress from other factors affecting the inter-state relations. (Wolf 1995 and 1997:271) The decade of the 1990s has been one where substantial effort has been invested by the riparians themselves and by the donor agencies to develop confidence and a vision for the future which is based on cooperation, consideration for the environment and the efficient use of water. The post Cold War global regime, the increasing pace of economic development in the basin's major economy, Egypt , and especially the growing awareness that the future should include consideration of the sub-basin option all contribute to a regime where at least a partial integration of concept and management practice could accelerate.

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## Asymmetries and complementarities in the political economies of the Nile Basin riparians: identifying appropriate investments

Economic asymmetries	Egypt	The Sudan	Ethiopia
<b>Natural capital</b>			
Surface water	Deficit	Surplus	Surplus
Soil moisture	Deficit	Surplus	Surplus
Land for agriculture	Deficit	Surplus	Surplus
etc	etc		
<b>Produced assets</b>			
Water infrastructure	Highly developed	Partial	Scarcely developed
Transport infrastructure	Developed	Very poor	Very poor
Market infrastructure-national	Developed	Very poor	Very poor
Market infrastructure-inter'al	Patchy	Very poor	Very poor
Power generation capacity	Developed	Very poor	Very poor
<b>Produced assets</b>			
Educated workforce	Improving rapidly	Inadequate	Inadequate
Professional cadres	Good	Poor	Inadequate
Government institutions	Improving	Inadequate	Inadequate

The above categories are derived from Dixon, J. and Hamilton, K. in a recent edition of *Finance and Development*.