

The Nile

sharing a scarce resource

**A historical and technical review
of water management and
of economic and legal issues**

Edited by

P. P. HOWELL

Wolfson College, Cambridge

J. A. ALLAN

School of Oriental and African Studies, University of London



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History of The Nile and Lake Victoria Basins through treaties

O. OKIDI

Introduction

This chapter is concerned with the history of the treaties for the consumptive utilization of one of the world's largest fresh water basins. Lake Victoria is the second largest fresh water lake in the world after Lake Superior (assuming the waters of the latter can still be considered fresh). The Nile is the longest river in the world. Both basins together are bordered in different degrees by nine states, namely: Kenya, Tanzania, Uganda, Ethiopia, the Sudan, Egypt, Zaire, Burundi and Rwanda. The status of the last two is unique in that they are brought into the basin by virtue of the Kagera River, which drains into Lake Victoria. The entire basin area has been estimated at 2.9 million square kilometres, which represents approximately one tenth of the continent.¹

Despite these superlatives, the water of the basins or drainage system, is a scarce resource in more than one sense. First, the Nile is a source of livelihood for the desert states of Egypt and the Sudan. A review of the treaties on the consumptive utilization of the Nile and Lake Victoria will show how Egypt has strenuously sought to ensure security of the water flowing down the Nile.

Second, the water is not evenly distributed upstream either over the year or geographically. For instance, Ethiopia contributes approximately 85 per cent of the volume of water which flows annually past Khartoum. Yet most of the Ethiopian heavy rain is confined to a few months of the year and falls only over a part of the country leaving Ethiopia a country of perennial droughts and famine. Similarly, in Kenya, another substantial contributor of water through the six major rivers flowing into Lake Victoria, two-thirds of the entire territory is classified as arid or semi-arid. Thus, in both Ethiopia and Kenya, the long-term agricultural strategy must entail irrigation and often inter-basin water transfers for major irrigation works. This long-term strategy must be considered for Tanzania too. In the Kagera basin, a source of approximately 25 per cent of the Lake Victoria waters, major irrigation programmes are being planned under the aegis of the Kagera Basin Organization discussed below.

In view of this broad array of issues and the possible claims on the water resources it might be expected that a correspondingly broad range of agreements would exist among these independent African states on the waters

of the drainage system. In actual fact, no agreements have been signed on the consumptive utilization of the waters since 1960. The years 1959 and 1960 saw one agreement and one protocol between Egypt and the Sudan for the utilization of the Nile waters.² Before 1959, there were about a dozen agreements focusing on the Nile and concerning almost exclusively Egyptian interests. Meanwhile, the range of issues on uses to which the water is put have increased and there may well be several other plans under consideration for still wider ranges of water usage. Given the scarcity of water resources as suggested above, there is an evident need for appraisal of the record and clear safeguards against international conflicts. As the pressures mount it must be clear, very quickly, that the pre-1960 agreements are, at best inadequate and, at worst irrelevant or even contrary to the present exigencies of development. These are the factors which necessitate the review of the existing treaties.

For the African countries it will be clear that the solution to the perennial problems of widespread famine and general development lies in the comprehensive planning, management and utilization of natural resources, principally water.³ These may be realized only within a mutually understood and non-conflictual international environment.

Geographical and technical perspectives

The total surface area of Lake Victoria⁴ (also described in chapter 7) is approximately 68,000 Km² of which the Kenyan portion is about 10 per cent, Ugandan 40 per cent and Tanzania 50 per cent⁵. Surface water contributed by rivers comes almost entirely from Kenya and Tanzania, the main Kenyan rivers being the Kuja, Awach or Kibuo, Mirifi, Nyando, Yala, Nzoia and Sio, and from Tanzania the Mara which crosses into Kenya. On the south-western side is the Kagera⁶, significant because it drains the territories of Rwanda and Burundi, extending the Nile Basin farther in that direction and important because of development plans for its utilization and the subject of special international arrangements which are described later⁷.

The only drainage outlet is at what is now the Owen Falls dam, commissioned in 1954⁸ to provide storage in Lake Victoria for Egypt and Hydro-electric power for Uganda.⁹ Water from this source¹⁰, net of evaporation losses in the Sudd region (See Chapter 4,), contributes on average between 20% and 25% of total Nile flow to Egypt which is dependent on Nile waters for survival. The contribution of the East African catchment is therefore small compared with that of Ethiopia, but is relatively steady and does not feature the marked seasonal and annual fluctuations in rivers coming from the latter region.¹¹

Below Jinja the Nile flows through Lake Kyoga to Lake Albert where it is supplemented by flows from the Semliki River deriving from Zaire, which thus also has an interest in the river and its usage. The course of the Nile below this point and its salient hydrological features are described in detail in other chapters, but for the purpose of international and legal policy perspectives there are certain features that need emphasis. In particular there is the imbalance, mentioned above, between the annual contribution of the Blue Nile from Ethiopia and its marked seasonal variation and the steadier much smaller

contribution of the White Nile deriving from East Africa.

The average volume of water each riparian contributes to the Nile Basin might be taken into account in deciding how much water a country might properly divert for national use. In the case of East Africa, Lake Victoria's contribution is easily determined from discharge records at the Owen Falls Dam, but for the purpose of policy the exact proportion of the annual outflow of each country separately needs to be established. This line of analysis should use percentage of volume rather than absolute quantity because when an upper riparian diverts water flowing through its territory from an international basin the fear of deprivation or injury expressed by a lower riparian is clearest when expressed in proportions.

Agreements on the Nile and Lake Victoria Waters

We shall limit ourselves to arguments dealing with consumptive uses only, omitting those purely on navigational uses, as well as demarcation of boundaries and spheres of influence.¹²

Certainly one of the foremost considerations of the treaties on the Nile waters is that Egypt, as a desert state and the lowest riparian of the Nile, would be a party to each of the treaties, especially those dealing with consumptive use of the waters, while all the upper basin states would be involved in the different stages. There are about ten agreements dealing with consumptive use of the waters of the Nile and Lake Victoria. Prior to World War 1, the treaties show Great Britain, for Egypt, as the contracting state. The United Kingdom, then the administering colonial power over the Sudan, signed an agreement with Italy (1891)¹³, Ethiopia (1902),¹⁴ the Independent State of Congo (1906),¹⁵ and with Italy and France (1906).¹⁶ There is further agreement with Italy, signed by Britain, in 1925.¹⁷ Since then, Britain and Egypt signed all agreements on the Nile waters beginning with the 1929 agreement dealing with Egyptian rights generally vis-à-vis those of Sudan¹⁸, and ending with the agreements for construction and maintenance of the Owen Falls Dam achieved by Exchange of Notes between 1949 and 1953.¹⁹

The year 1953 is historically significant as the time when Egypt was proclaimed a Republic, and Nasser emerged as the real power, bringing about a change in relations with Britain even though the *de facto* break did not come until the Suez crisis of 1956. The Sudan also became independent in 1956. It was after that time that the fourth and final set of agreements was signed in 1959 between Egypt and the Sudan on the utilization of the Nile waters,²⁰ and followed by a protocol establishing a Joint Technical Commission in 1960 (see also Chapters 4 and 5).²¹

Pre-World War I agreements

Italy and the United Kingdom (UK) signed a Protocol for the demarcation of their respective spheres of influence in eastern Africa at Rome on April 15th, 1891. Of interest is a provision in Article III which stipulated that 'The Government of Italy undertakes not to construct on the Atbara any irrigation or other works which might effectively modify its flow into the Nile'.²² The agreement, by its very nature, ceased effect with the end of Italian and British

colonial rule in the region.

Ethiopia and the UK signed a treaty at Addis Ababa on May 15th, 1902, regarding the frontiers between the Anglo-Egyptian Sudan, Ethiopia, and Eritrea. Article III provided:

His Majesty the Emperor Menelek II, King of Ethiopia, engages himself towards 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 and the Government of the Sudan.²³

The view of the present government in Ethiopia towards agreements signed by the imperial government is not clear, but it could be expected that their binding force cannot be taken for granted. Dante Caponera once observed that Ethiopia questioned the validity of the agreements for the following reasons:

1. The agreements.... between Ethiopia and the UK have never been ratified. Customary rights which might appear from the behaviour between lower riparians and Ethiopia would not be binding on the latter country if a purely positivistic approach toward interpretation of the sources of international law would be upheld.
2. Ethiopia's 'natural rights' in a certain share of the waters in its own territory are undeniable and unquestioned. However, no treaty has ever mentioned them. This fact would be sufficient for invalidating the binding force of those agreements, which have no counterpart in favour of Ethiopia. In Roman law such a pact would be null and void; it is likewise in international law. This is explainable by the international political conditions of Ethiopia in 1902.
3. The agreements were signed between Ethiopia and the UK (for Egypt and the Sudan). Since the latter question the validity of their own water agreements, Ethiopia, which had not one single benefit from them, had even greater reason for the claiming of their unfairness and invalidity. The research for new agreements by Egypt and Sudan demonstrates the non-viability of these agreements.
4. The UK in 1935 recognized the annexation of the Ethiopian Empire by Italy... UK's recognition of annexation is an act which invalidated all previous agreements between the two governments. Ethiopia has never asked for renewal of the Nile agreement after such recognition.²⁴

The points listed here are important because they underscore the fact that Ethiopia did not, in the 1950s, recognize the treaty as binding. Whether the arguments are persuasive is a different matter. For example, there is nothing in international law which prevents any state from entering into a treaty which benefits only one of the parties. An extension of this point would perhaps include treaties which extend rights to third parties.²⁵ On the other hand, the argument about British recognition of the Ethiopian connection might be the more forceful, although the legal consequences of war are not entirely clear-cut. It should be noted that since the 1902 treaty there has not been any agreement

between the lower riparians, the Sudan and Egypt, and Ethiopia. Egypt and the UK or the Sudan have signed other agreements since 1929, but in no instance was Ethiopia a party, even though more than 80 per cent of the Nile waters reaching Egypt originate in Ethiopia.

The UK and the Independent State of Congo signed an agreement in London on May 9th, 1908, to redefine their spheres of influence in Central Africa.²⁶ Article III provided:

'The government of the Independent State of Congo undertakes not to construct, or to allow to be constructed, any work on or near the Semliki or Isango Rivers, which would diminish the volume of water entering Lake Albert, except in agreement with the Sudanese Government.'

Again, we can assume that this agreement ceased with the end of the colonial era; it has significance only as an indicator of how far back the interests of the Sudan and Egypt in Nile Basin waters have been protected. Great Britain, France, and Italy signed one set consisting of a tripartite Agreement and Declaration in London on December 13th, 1906.²⁷ This agreement and declaration came after Italy had failed to establish control over Ethiopia, and was a reconfirmation of the terms of the Protocol of April 1901, and the Agreement of May 1902. In the tripartite agreement at the insistence of Great Britain, Article IV provided:

'In the event of the status quo being disturbed, France, Great Britain and Italy shall make every effort to preserve the integrity of Ethiopia. In any case, they shall concert together on the basis of the agreements enumerated (herein) in order to safeguard:

- (a) The interest of Great Britain and Egypt in the Nile Basin, more especially as regards the regulation of the waters of that river and its tributaries (due consideration being paid to the local interests...)' ²⁸

Post World War I agreements

The above principles were reiterated in the 1925 agreement between Great Britain and Italy, but neither agreement has validity beyond the colonial era.

In an agreement by Exchange of Notes, in December 1925, at Rome,²⁹ the imperialist powers were to agree on how they, as well as the Sudan and Egypt, would use their influence to benefit from the Ethiopian highlands. The gist of the pre-negotiation agreement is captured in the following paragraph of a Note dated December 14 from Britain:

'In the event of His Majesty's Government with the valued assistance of the Italian Government, obtaining from the Abyssinian Government the desired concession on Lakes Tsana, they are also prepared to recognize an exclusive economic influence in the West of Abyssinia and in the whole of the territory to be crossed by the above-mentioned railway. They would further promise to support with the Abyssinian Government all Italian requests for economic concessions in the above zone. But such recognition and undertaking are subject to the proviso that the Italian Government on their side, recognizing the prior hydraulic rights of Egypt and Sudan, will engage not to construct on the headwaters of the Blue or White Niles or their

tributaries or effluents any work which might sensibly modify their flow into the river....'³⁰

In a note dated December 20th, 1925,³¹ Italy accepted the foregoing stipulation as an accurate outline of what the two countries had agreed upon as their common position in the anticipated negotiations with Ethiopia. It is obvious that the 1925 Agreement could not have been intended to be binding on Ethiopia. Simply to list it with other instruments on the Nile without pointing out its proper background and substance³² might give the impression that the agreement had a legal effect on Ethiopia: it did not.

The first post-war agreement on the Nile waters was arranged in 1929 by Egypt and the UK (acting for the Sudan and the Eastern African dependencies), based on two Commission studies initiated by Egypt which formed a background for the agreements.³³ For the purposes of this analysis, it is sufficient to begin in 1920, when the Egyptian Minister of Public Works issued a report on the scheme for control and use of the Nile waters.³⁴ That report, which suggested five dams and a reservoir on the Nile and elaborated in later proposals (e.g. *The Nile Basin* Vol. VII (1946) *Future Conservation of the Nile*) which were finally abandoned by Egypt in favour of a single high dam at Aswan. The Egyptian government appointed a Nile Projects Commission that same year, to give its opinion on the projects 'with a view to further the regulation of the annual supply to the benefit of Egypt and the Sudan' and to report on the propriety of the manner in which the increased supply of available water would be allocated at each stage of development for Egypt and the Sudan.³⁵ These terms of reference indicate that Egypt was concerned about the interests of the Sudan, but did not seek any way of cooperating with Ethiopia or the Central African states within the upper basin, including the area around Lake Victoria.

The Commission's report stated that Egypt's rights were limited to a supply of water sufficient to irrigate an area equal to the largest area which had been irrigated in any single year since the Aswan Dam in its present form was completed, and that Egypt has an established claim to receive this water at the particular seasons when it is required.³⁶ They added further that the largest area which Egypt might thus claim would be five million feddans, which were under cultivation in 1916-17.³⁷ There was no agreement within the Egyptian government regarding the merit of the report, and the resolution was left tied to the political future of the Sudan. However, when the British Governor-General of the Sudan was assassinated in Cairo in 1924, the British government in the Sudan threatened to increase irrigation uses of water in that country.³⁸ As a result, Egypt sought a fresh study for which the new Nile Waters Commission was set up in January 1925.³⁹ The Commission consisted of a Dutch engineer as an independent chairman, one British and one Egyptian member. Their recommendations provided the basis of the 1929 Nile Waters Agreement and were, in fact, annexed to that agreement.⁴⁰

The 1929 Nile Waters Agreement was achieved by an Exchange of Notes between Mohammed Mahmoud Pasha, President of the Egyptian Council of Ministers, and Lord Lloyd, British High Commissioner in Cairo, on May 7th, 1929, and came into force the same day.⁴¹ The Egyptian government pointed

out that, while conceding and entering into an agreement with Britain on the utilization of Nile waters before political settlement was reached on the future of the Sudan, Egypt reserved the right to renegotiate the issue at the time of consideration of the future of the Sudan.⁴² In the first paragraph Egypt made it clear, as a matter of principle, that the 1929 agreement was to be temporary, and its terms viewed as conditional on future political developments. This point is restated emphatically in the last paragraph of the Pasha's Note where he wrote:

'The present agreement can in no way be considered as affecting the control of the river which is reserved for free discussion between the two Governments in the negotiations on the question of the Sudan!'⁴³

The statement is important as it is the only point in the agreement which indicates the duration that the agreement was to remain in force.

The Pasha admitted, secondly, that:

'It is realized that the development of the Sudan requires a quantity of water greater than that which has so far been utilized by the Sudan. As your Excellency is aware, the Egyptian Government has always been anxious to encourage such development and will therefore continue that policy and be willing to agree with His Majesty's Government upon such an increase of this quantity as does not infringe Egypt's natural and historical rights in the waters of the Nile and its requirements of agricultural extension.'⁴⁴

It is possible to read emphasis into the reference to Egypt's 'natural and historic rights'; this writer believes the significance of the paragraph is that Egypt recognized Sudanese rights to develop, and to use the Nile waters for that purpose. That is a significant departure from the position taken before the 1925 Commission, which had been rejected as a negation of the right of the Sudan to exist as a viable State. To the extent that Egypt accepted the right of the Sudan to an increasing quantity of water for its development, Egypt also had accepted that the rights to use varying quantities of water would depend on the needs of the moment of negotiation. This interpretation seems to be supported by the fact that when the 1920 Commission was faced with the question of how much water Egypt was entitled to, it simply suggested that Egypt must claim the quantity of water necessary to irrigate the five million feddans under cultivation in 1916-17.⁴⁵ There was no 'natural' figure discernible in history.

The principle of prior appropriation which one commentator has suggested⁴⁶ as an ideal interpretation of historic rights is not really helpful. Prior appropriation would refer only to the precise quantity that had been appropriated, and no more. Changing circumstances would be negotiated for separately and according to what was equitable and reasonable at the time. Similarly, if for any reason additional quantities of water were available, i.e. by draining the Sudd in the southern Sudan, then the division of that new quantity would be negotiated separately.

Egypt did not object to use of the Nile waters for construction of control works and subsequent irrigation in the Sudan, but did insist on prior consultation and explicit agreement on what such construction would entail. Thus, the Pasha added in paragraph 4 (ii) of his Note to Lloyd that:

'Save with the previous agreement of the Egyptian Government no irrigation or power works or measures are to be constructed or taken on the River Nile and its branches, or on the lakes from which it flows, so far as these are in the Sudan or in countries under British administration, which would, in such a manner as to entail any prejudice to the interests of Egypt either reduce the quantity of water arriving in Egypt, or modify the date of its arrival, or lower its level.'

It seems clear that the two countries, Egypt and the Sudan, would have to agree before the Sudan could abstract the water of the Nile to an extent that would change the quantity of the water flowing to Egypt. Sub-paragraph 4 (iii) of the Pasha's note stated that Egypt would carry out a complete study of the hydrology of the Nile in the Sudan, and that the Sudan should provide all necessary facilities and access. In this regard the Sudan permitted Egypt to construct and maintain, in Sudanese territory, any structure it might need for study of the hydrology of the river. In the event of any dispute arising on the interpretation and application of the agreement, the parties would in good faith seek a mutually acceptable solution. If that failed, the matter would be referred to 'an independent body with a view to arbitration', as stated in paragraph 4 (vi). The response from Lord Lloyd⁴⁷ confirmed the accuracy of the Pasha's letter as a reflection of the agreement they had reached, and assured that the agreement was directed toward regulation or irrigation arrangements of the Nile and had no bearing on the status quo in the Sudan.

In summary, Egypt enjoyed overwhelming rights in the utilization of the Nile waters; the quantity of water to which Egypt was entitled was not specified; and the agreement did not have a specific duration.

What is the current status of the 1929 agreement vis-à-vis the former British dependencies referred to in paragraph 4 (ii) of the Pasha's note? Because the occasion did not arise, the agreement was never invoked or applied in Kenya and Tanzania to restrain any irrigation or other consumptive uses of water (but see Chapter 5). In Uganda one could cite the Owen Falls Dam as the type of installation envisaged in 1929. With regard to East Africa the newly independent Tanganyika government took the view that an inherited agreement that purported to bind Tanganyika for all time to secure consent of the Egyptian government before it undertook irrigation, power works, or similar measures on Lake Victoria or its catchment area, was clearly incompatible with Tanganyika's status as an independent sovereign state.⁴⁸ On July 4th, 1962, its government addressed identical Notes to the governments of Britain, Egypt and the Sudan outlining the policy of Tanganyika on the use of the waters of the Nile, and the Note was also sent to the governments of Kenya and Uganda. That Note, consistent with the Nyerere Doctrine on States succession to treaties, read in full:

'The Government of Tanganyika, conscious of the vital importance of Lake Victoria and its catchment area to the future needs and interests of the people of Tanganyika, has given the most serious consideration to the situation that arises from the emergence of Tanganyika as an independent sovereign State in relation to the provision of the Nile Waters Agreement on the use of the

present arrangements whereby technical experts from the United Arab Republic, the Sudan and the Three East African countries of Tanganyika, Kenya and Uganda meet at intervals to discuss common technical problems connected with the use of the waters of the Nile.'⁴⁹

Tanzania maintained further that, since the 1929 Agreement applied to territories under British administration, the treaty lapsed, in relation to Tanganyika, on Independence Day. This became known as 'the Nyerere Doctrine' (see also Chapter 5).

On November 21st, 1963, Egypt, in a Note replying to Tanganyika, simply submitted that 'pending further agreement, the 1929 Nile Waters Agreement... remains valid and applicable.'⁵⁰

They added that they were in favour of the continuation of the unofficial talks between technical experts from Egypt and the Sudan on the one hand, and Tanganyika, Kenya and Uganda on the other.⁵¹ The Note was sent to the Sudan, which made no reply to either communication.

Tanganyika's Ministry of Foreign Affairs held the view that the 1929 Nile Waters Agreement was neither a real nor a dispositive agreement and, therefore, had no legal effect on an independent Tanganyika.⁵²

Kenya did not respond to the Note from Tanganyika or the response of Egypt, which was understandable as the British government had not yet left Kenya. They could have found it convenient to remain silent and leave it to an independent Kenya to sort matters out. Kenya did, upon independence, adopt a position similar to the Nyerere Doctrine of succession to treaties, submitting that the Government of Kenya was willing to grant two years grace period in which the treaties would apply on the basis of reciprocity, or be modified by mutual consent.⁵³ But those treaties which were not so modified or negotiated within the two years and 'which cannot be regarded as surviving according to the rules of customary international law will be regarded as having terminated.'⁵⁴ This would indicate that the treaty ceased to have effect with respect to Kenya as from December 12th, 1965.

The same fact applying to Kenya would apply to Uganda, particularly the position relative to succession to treaties as expressed in the Independence Declaration on Treaties wherein Uganda adopted the Nyerere Doctrine.⁵⁵

The position of the Sudan would have a bearing on that of Kenya, Tanzania and Uganda, since the Sudan was more directly involved in the treaty. At the time of Sudanese independence in 1956, the Sudan, according to Badr, declared that it 'was not bound to take over an Agreement to which it was not a party and which was, anyway, considered unfair'.⁵⁶ They stated outright that the 1929 Agreement was obsolete; and prepared to negotiate a new one.⁵⁷ There is no reason why the three East African countries only remotely referred to in the treaty should be expected to have remained bound either.

Finally as pointed out earlier, Egypt considered the 1929 Agreement temporary pending determination of the political future of the Sudan. If it was temporary for Egypt and the Sudan, there is no reason why it should have longer life for Kenya, Tanzania, or Uganda.

The Owen Falls Dam Agreements

Attempts by Great Britain to secure, on behalf of Egypt and the Sudan, an agreement with upper riparians, especially Ethiopia, to construct major storage has been described above. A focus on Ethiopia was probably due to the fact that over 80 per cent of the Nile waters reaching Egypt originate in that country. However, the upper reaches of the White Nile were not entirely ignored. In 1946 the Ministry of Public Works drew up a comprehensive plan where the main components were, a dam or dams at the Great Lakes of Equatorial Africa and construction of the Jonglei Canal in the Sudan (see also Chapter 5). The Lake Tana Reservoir; and a dam at Merowe near the fourth cataract on the Nile were also included.⁵⁸

It was necessary to find a suitable site for construction of what H. E. Hurst, Controller of the Physical Department of the Egyptian Ministry of Public Works, called 'Century Storage' of water.⁵⁹ In the first proposal, the dam in the Great Lakes was to be constructed at the outlet from Lake Albert with only a small dam on Lake Victoria. But for Lake Albert (5,300 square kilometres) to store the required capacity of 155 billion cubic metres of water, would flood a considerable area around it, most of which lay in the territory of Uganda and the then Belgian Congo. The governments in Uganda and the Belgian Congo objected very strongly because the flooding would displace the population and cause a loss of valuable land under cultivation in a large area along the Albert Nile.

So Egypt advanced an alternative proposal for a dam at the outlet of Lake Victoria. The advantages of this site over Lake Albert were considered to be enormous: more water would be stored than in the original plan, since Lake Victoria has a total area of 68,000 square kilometres. It was estimated that the average depth of the lake was 40 metres with a maximum of 70 metres.⁶⁰ Britain, the administering power over the three states around Lake Victoria, was not opposed to the level of the lake rising by a maximum of 1.3 metres, or about four feet above the then recorded maximum, within a range of 3 metres.⁶¹ The consequence of this rise was recounted by Hurst:

'The raising of the level of Lake Victoria will necessitate some changes in the lakeside ports, and will cause the removal of a certain number of huts and embanking of a few cultivated areas, for which compensation will be paid.'⁶²

Uganda was to benefit from the dam in that it would produce 200 metres of head capable of producing hydro-electric power up to 15,000 kilowatts.⁶³

With this background in mind, we will consider the agreements leading to the construction of the dam. Negotiated by Britain, acting for Uganda, and by Egypt through an Exchange of Notes between the two governments, it was carried out in three forms: first, an agreement regarding the construction of the dam,⁶⁴ pure and simple; second, an agreement on the granting of a contract for construction of the dam; and third, an agreement on financial arrangements for construction and maintenance of the dam.

The first of the three agreements is the core of the formal treaty. The first Note, written on May 30th, 1949, was from the British Ambassador in Cairo to

the Egyptian Minister for Foreign Affairs.⁶⁵ It reflected completed negotiations, and that the agreements were in accordance with the spirit of the Nile Waters Agreement of 1929. The purpose was twofold: to control the flow of the waters of the Nile and to produce hydro-electric power for Uganda. It stated further that even though the Uganda Electricity Board would invite tenders and place contracts for the construction, specifications for the work had been prepared in full consultation and with approval of both Egyptian and Uganda authorities.⁶⁶ The flow, which is a total of what goes through the turbines and what is allowed through the sluices, was to be supervised by Egyptian engineers resident at Jinja. Paragraph 4 of the British Note stipulated:

‘The two governments have also agreed that though the construction of the dam will be the responsibility of the Uganda Electricity Board, the interests of Egypt will, during the period of construction, be represented at the site by the Egyptian resident engineer of suitable rank and his staff stationed there for the purpose by the Royal Egyptian Government, to whom all facilities will be given for the accomplishment of their duties. Furthermore, the two governments have agreed that although the dam when constructed will be administered and maintained by the Uganda Electricity Board, the latter will regulate the discharges to be passed through the dam on the instructions of the Egyptian resident engineer to be stationed with his staff at the dam by the Royal Egyptian Government for this purpose’⁶⁷

Informal sources indicate there is still an Egyptian resident engineer at the Owen Falls Dam, so it would appear that the agreement continues in force according to these terms. The British Note provided that the Uganda Electricity Board could take any action it considered desirable before or after construction of the dam, provided such measures were taken only after consultation and agreement with the Egyptian government. Any dispute which could not be resolved by negotiation or conciliation would be referred to arbitration.⁶⁸

The reply from the Egyptian Minister for Foreign Affairs ⁶⁹ dated May 31st, 1949, confirmed the formal agreement and it came into force that day. The formal agreement provided for the Uganda authorities to grant the contract for construction of the dam, with the approval of the Egyptian Government, and that constituted the second agreement.⁷⁰

The final round of the Owen Falls Agreement concerned financial arrangements for the construction. The first Note, dated July 16th, 1952, was from the Egyptian Minister for Foreign Affairs to the British Chargé d’Affaires in Cairo.⁷¹ Laying emphasis on the value of Lake Victoria as storage of water for Egypt, the carefully worded Note read:

‘The Royal Egyptian Government

- (i) Will bear that part of the cost of the dam at Owen Falls which is necessitated by the raising of the level of Lake Victoria by the use of Lake Victoria for storage of water.⁷²

The ordinary meaning of this provision suggests that the engineers who designed the dam anticipated that as a result of construction, the level of Lake Victoria would rise because the very nature of the storage function of the dam

would cause backwater effect. The agreement took care of the effect of the rising level of the lake. Egypt undertook to compensate those around Lake Victoria who might be affected by the change in water level in the lake. The second paragraph of the Note said that the Royal Egyptian Government:

- (ii) Will bear the cost of compensation in respect of interests affected by the implementation of the scheme or, in the alternative, the cost of creating conditions which shall afford equivalent facilities and amenities to those at present enjoyed by the organizations and persons affected, and the cost of works of reinstatement as are necessary to ensure a continuance of the conditions obtaining before the scheme comes into operation, such costs to be calculated in accordance with the arrangements agreed between our two Governments.⁷³

The Note suggested further that the flow of water through the dam would be controlled for purposes other than hydro-electric power generation, noting that on occasions the flow control could be detrimental to electricity supply to Uganda. The Egyptian government agreed 'to pay to the Uganda Electricity Board the sum of £980,000 as compensation for the consequential loss of hydro-electric power, such payment to be made on the date when power for commercial sale is first generated at the Owen Falls Dam.'⁷⁴ Egypt went further and stipulated the conditions resulting from the rising level of the lake as its responsibility. Thus, the Egyptian government agreed that for purposes of calculation of compensation under the provision of sub-paragraph (ii), all flooding around Lake Victoria within the agreed range of three metres shall be deemed due to the implementation of the scheme.

In his response of January 5th, 1953,⁷⁵ the British Ambassador concurred in the obligation undertaken by Egypt, and the Owen Falls Dam was commissioned in 1954. The regime worked well if it provided Uganda with the hydro-electric power it needed and if the storage functions continued to Egypt's satisfaction. The agreement may be assumed to be binding upon Uganda whatever the change of government, so long as Uganda continues to enjoy the power supply, provided that there was no new agreement and neither party renounced this agreement.

Egypt assumed further obligations vis-à-vis the other two riparians of the lake, Kenya and Tanzania. In the event of any physical or environmental change suffered resulting from rising levels of the Lake, Egypt would pay compensation.⁷⁶ The binding force of that obligation seems to remain, even though Kenya and Tanzania have secured their independence. That Kenya and Tanzania after their independence may not have acceded to the Owen Falls Agreement is not of any legal consequence as regards the obligation Egypt undertook toward them. It seems, therefore, that under the Owen Falls Agreement, Egypt and Uganda might be under obligation to compensate Kenya and Tanzania if the latter states suffer environmental or physical injuries caused by operation of the Dam. The law of treaties requires, further, that should Egypt and Uganda decide to modify or revoke the stipulations relating to the third party rights, they are under obligation to seek the concurrence of Kenya and Tanzania.

During the negotiations for the agreement on the Owen Falls Dam, the

Egyptian government must have seen a need for research, observation, and recording of meteorological and hydrological data from the basin of the East African lakes, including Lake Victoria. This was the subject of another agreement, done by Exchange of Notes between the Egyptian Ministry of Foreign Affairs and the British Ambassador in Cairo (for Uganda), before the Owen Falls Dam agreement was completed.⁷⁷

The substance of this agreement was contained in the Egyptian Note to the British Ambassador on January 19, 1950⁷⁸ and it indicated the degree of cooperation which the Ugandan authorities had promised to Egypt because the data would help Egypt determine the amount of water it could receive from these upper reaches of the Nile. The Ugandan authorities agreed to establish data collection posts, marked on an enclosed map, which would not be varied without prior consultation. Further, the resident Egyptian engineer at Owen Falls Dam and his assistants would have access to all the posts situated in Uganda. The intention seemed to be that they would carry out periodic inspections of the posts 'to assure.... the posts are being satisfactorily maintained and the observations regularly collected.'⁷⁹ Egypt would contribute toward the expenses incurred in maintenance of the posts, within a certain monetary limit.⁸⁰ The project was a long range one; the British reply dated February 28, 1950,⁸¹ confirmed Uganda's undertakings as outlined, and the agreement entered into force on March 1st, 1950. This agreement provides Egypt with hydrological and meteorological data of the East African Lakes region and thus allows them effective long-term planning.

The 1959 Agreement for full utilization of the Nile Waters

This agreement, which ushered in a new era in the history of the Nile basin, was signed by Egypt and the Sudan at Cairo on November 8th, 1959.⁸²

The preamble stated that the 1929 Agreement had 'only regulated a partial use of the natural river and did not cover the future conditions of a fully controlled river supply.'⁸³ To utilize the Nile waters for the benefit of the two republics required the implementation of projects for full control of the river, an increase of its water supply, and the planning of new working arrangements 'on lines different from those followed under the present conditions.'⁸⁴

To refer to 'full utilization' and 'full control of the river' when there were only two states involved in the agreement rather than all of the basin states, especially the upper one, seems anomalous. There is no evidence that Ethiopia, which contributes so much of the gross annual flow at Khartoum, or the East African States, were invited to any of the negotiations (see also Chapter 4). Needless to say, the two parties to the agreement were both simply recipients and users, dependent on water from central Africa and Ethiopia. They needed the cooperation of those upper basin states if their goal was to be assured. In declaring that the new agreement was not only more comprehensive, but also different in spirit from preceding ones, especially the 1929 agreement, they were beginning nearly with *tabula rasa* as far as the utilization and control of Nile waters was concerned and with regard to treaties between the two states.

The point of departure between the two parties was their 'acquired rights' stemming from the Nile Waters Agreement of 1929. This assumed a total mean

flow of 84 km³, of which 48 km³ had been allocated to Egypt and only 4 km³ to the Sudan,⁸⁵ the balance of 32 km³ being uncontrolled and running to waste in the sea. The Sudan was pressing for a greatly increased quota and favoured the Nile Valley Plan, a refinement of Hurst's Century storage plans prepared by H.A.W. Morrice and W.N. Allan in 1958 (see Chapter 5). Egypt on the other hand was by then committed to the Aswan High Dam Project which would, at any rate for the foreseeable future, supercede plans for integrated control throughout the Nile valley. The Sudan agreed to this in return for a greatly increased share - the allocations being Egypt 55.5 km³ and the Sudan 18.5 km³, it being assumed that approximately 10 km³ would be lost by evaporation and seepage behind the High Dam. Badr⁸⁶ looked at the relative figures for Egypt and the Sudan and concluded that:

A state is at liberty to accept less than is due to it, should it so decide, for considerations of policy of which it is the judge. But the exercise of such a liberty in an international treaty... makes it inadvisable to draw legal conclusions from such an instrument or to consider it a precedent in international law.

Thus, he opined that there was really no historical or legal basis for the proportions set aside for Egypt and the Sudan in this agreement.⁸⁷

The control works under the Agreement were outlined in Section II of the document.⁸⁸ Perhaps the most important was the provision for the construction of the Sadd el 'Aali, or the High Dam, at Aswan, to store water for Egypt and to prevent the flow of excess volumes of water to the sea. At the same time, the dam would cause back water flooding of the territory of the Sudan, particularly of the town of Wadi Halfa. Under paragraph 6 of Section II, Egypt agreed to pay £E15 million to the Sudan as full compensation for damages to Sudanese property that might be caused by the storage of water at the Sadd el 'Aali Reservoir. Details of such compensation were outlined in Annex II to the Agreement. The Sudan also undertook to transfer its population whose property was to be affected by the storage effect of Aswan from Halfa and surrounding areas prior to July 1953.

The Agreement provided that the Sudan would construct the Roseires Reservoir on the Blue Nile and any other works deemed necessary to enable the Sudan to exploit its share of the water. This was a major concession to the Sudan because, during negotiations leading to the 1929 agreement, Egypt had strongly opposed such works in the Sudan. At that time Egypt had been concerned over possible Sudanese intentions because in 1924 Britain had threatened to increase irrigation consumption of water in the Sudan.⁸⁹ The political atmosphere in 1959 was different. It is noteworthy, however, that even though the two states could agree on construction of the Roseires Reservoir on the Blue Nile, they failed to involve Ethiopia as a party to the treaty in order to assure themselves of the volumes of water from Ethiopia.

The same disregard extended to the states of the Upper Nile Basin; this is seen clearly in Section III of the Agreement which emphasized the loss of water through evaporation in the Sudd in the Sudan.⁹⁰ The Sudan government agreed to increase the supply of water flowing down the Nile, and to drain the swamps.

Central to this pair of commitments was the Jonglei Canal Project which would at that stage run from the village of Jonglei in the south to the Sobat Mouth in the north. The two countries agreed to share the cost of the construction as well as the water released from the swamp (see Chapters 5 and 12).

Anticipated projects for the use of the Nile waters under the Agreement were to be backed by a system of technical cooperation between the two parties. Thus, the parties agreed in Section IV to constitute a Permanent Joint Technical Commission, composed of an equal number of members for each republic, to be responsible for the supervision of all working arrangements in the Agreement; carrying out necessary hydrological studies to facilitate adequate policies; and preparation of work implemented in territories outside the Sudan by agreement with their concerned authorities.⁹¹

Paragraph (i) of Section V commits the parties to a common front in any negotiations with third states. It reads:

'...in case any question connected with the Nile waters needs negotiations with the governments of any riparian territories outside the Republic of the Sudan and the United Arab Republic the two republics shall agree beforehand on a united view in accordance with the investigations of the problem by the Commission. This unified view shall then form the basis of instructions to be followed by the Commission in the negotiations with the governments concerned.'

At the time of this agreement, there was a nine year old agreement between Egypt and Britain (for the Sudan) for the hydrological study of the basins of the central African lakes. Therefore, in terms of basic hydrological data on the Nile and Lake Victoria basins, the two states were ahead of the other basin states. The advantages, in the event of any negotiations anticipated in this agreement, would be significant for Egypt and the Sudan relative to the upper basin states.

The protocol concerning the Permanent Joint Technical Commission

Section IV (3) of the 1959 Agreement required the parties to form a Technical Commission to fulfil the functions already analyzed above. Four members were appointed to each party. That purpose was met by a Protocol signed by the two states in Cairo in January, 1960⁹² which was to be an integral part of the 1959 Agreement. There was a stipulation in the Protocol that should there be a need to alter any aspect of it, then that would be done by Exchange of Letters between the two parties.⁹³

Agreement for the Hydrometeorological Survey of Lakes Victoria, Kyoga and Albert (Mobuto Sese Seko)

A plan of operation for hydrometeorological surveys of the above area was signed by five countries: Egypt, Kenya, the Sudan, Tanzania and Uganda, as well as the United Nations Development Programs (UNDP) and the World Meteorological Organization (WMO), and declared operational from 17th August, 1967.⁹⁴ Its purpose was to evaluate the water balance of the Lake Victoria catchment in regard to control and regulation of the lake level as well as the flow of the water down the Nile. Funding for the project was to come

from the UNDP, while WMO was the executive agency.

As background preceding the 1967 Agreement, Egypt and Britain had signed an Agreement for cooperation in meteorological and hydrological surveys of the Lake Victoria catchment by an Exchange of Notes in 1950.⁹⁵ Following that, Kenya, Tanganyika, and Uganda set up an East African Nile Waters Coordinating Committee to establish and maintain 'a common East African case and point of view on the Nile waters'⁹⁶ (see Chapter 4). Theoretically, the Committee was to consist of three Ministers concerned with water resources in the three East African states, but in fact the Ministers never met as a Committee. Instead, the participants were technical and administrative officers. On a few occasions, members of the committee, and members of the Permanent Joint Technical Committee of the Nile (of Egypt and the Sudan) held consultative meetings to discuss such matters as control of discharge at Owen Falls Dam, the future storage of waters in Lakes Victoria and Albert, and irrigation requirements of the East Africa countries in the lake drainage area (see Chapter 4)⁹⁷. By 1960, the Coordinating Committee had, after preliminary discussions, endorsed the need for a survey of the hydrometeorology of the catchment area of Lake Victoria⁹⁸. In 1961 the three East African governments requested the UN Expanded Programme of Technical Assistance (EPTA) for aid to conduct a preliminary hydrometeorological survey of that catchment⁹⁹. In response, a team of three consultants from WMO and FAO carried out a preliminary survey in early 1962, and submitted a report to the three governments in 1963.¹⁰⁰

A discussion of that report convinced the three governments that the survey should be extended to include Lakes Kyoga and Albert catchments, and that they should include Egypt and the Sudan as participants. A review of the proposal by the UN Special Fund in 1965 approved the project and Egypt and the Sudan were invited as participants in the hydrometeorological survey.¹⁰¹ At a meeting in Nairobi in August 1965, the representatives of the nine countries formulated a project proposal and submitted it to the Special Fund. It later was adopted by the UNDP for funding.

That is the background of the 1967 Agreement. As the project progressed, the five participants had consultations with Rwanda and Burundi to extend the project area to cover the Lake Victoria catchment in those countries as well.¹⁰²

The Agreement for the Establishment of the Organization for the Management and the Development of the Kagera River Basin (The Rusumo Treaty)¹⁰³

The Kagera basin drains four states, namely: Burundi, Rwanda, Tanzania and Uganda. But only the first three of them signed the agreement at Rusumo on 24th August, 1977. Uganda was to accede to the treaty in 1981.

The Background

The agreement has its origins in the diplomatic initiatives of the Presidents of Rwanda and Tanzania, when they exchanged a visit at the border village of Rusumo in 1976 to discuss matters of mutual interest. During their discussions the two agreed, *inter alia*, to cooperate in the construction of a bridge across the

Kagera River at Rusumo to facilitate transport and trade between their countries, and to initiate technical studies towards harnessing hydro-electric power at Rusumo Falls on the Kagera. But it was, in fact, the hydro-electric power project that necessitated the immediate involvement of Burundi, as an upper riparian and Uganda as the lower riparian of the river. The long-term security of the power would depend on an assured flow of the river, while a dam for the project would be downstream with possible effects on the lower riparian.

Consequently, the four countries agreed immediately to request UNDP funding for the planning and development of the Kagera basin and its waters. In July 1969 the UNDP sent a fact-finding mission to consult with the four governments, with the eventual concurrence that a UNDP-sponsored project be established to coordinate orderly regional planning; that a technical committee composed of representatives of the four governments be established for this purpose; and that such a project be coordinated with the on-going projects in the region, particularly, the Hydromet and the mineral research projects in Burundi and Rwanda.

Uganda opted to be an observer at these activities, even though she agreed, in principle, with the concept of regional and basin-wide planning. Burundi, Rwanda and Tanzania for their part, established a Technical Committee which submitted a joint request for project funding to the UNDP in July 1970. The request was approved by the UNDP Governing Council in January 1971, and the Kagera basin development studies were inaugurated in June 1971, with a project headquarters established at Bukoba, Tanzania, in August 1971. Active fieldwork commenced in September 1971 with the collection and analysis of the existing data, identification of gaps in the data, recommendations for essential additional studies and the preparation of the second phase. These activities, comprising Phase I, were completed in June 1973.

Phase II was required to prepare an Indicative Basin Plan based largely on data available to the three states, taking into account national priorities and, bearing in mind, the need for the harmonious development of the basin. The specific items covered in the study contracts were aerial photography, tourism, hydropower potential, fisheries, and institutional arrangements. The report was submitted at the end of 1976.

During that period there were two related developments agreed upon by the Technical Committee. First, the Committee decided in June 1976 that the project headquarters be transferred from Bukoba to Kigali. That was effected in November 1976. Second, it was decided to commission a specific study on the Rusumo hydro-electric project and a protocol was signed at Kigali, on 22nd October 1976, with the Belgian Government. The latter, in turn awarded a contract to a consortium of Tractionnel/Electorobel consultants requesting that they study the hydropower project and the implications of the dam for irrigated agriculture, settlement, environment, fisheries and tourism.

The tentative results of the studies and the range of possible activities were clear enough to warrant the signing of the treaty. Burundi, Rwanda and Tanzania Heads of State signed the Agreement to establish the Organization for the Management and Development of the Kagera River Basin (commonly

known as the Kagera Basin Organization or the KBO) at Rusumo on the 24th August 1984.

*The Agreement*¹⁰⁴

The Organization was established by Article I of the Agreement, with the territorial jurisdiction to cover the entire catchment of the Kagera river. Even though the parties were only three, the founding states anticipated the future participation of Uganda. Thus, they reserved Article 19 exclusively to the provision that: 'The present Agreement is open to accession by Uganda'

Of course one would have expected that; because of its status as the lowest riparian, Uganda would require participation in the treaty in order to control the security of the water, especially in view of possible irrigation programmes. But the situation is possibly explainable, in part, by the changes and chaos which followed the 1971 military coup d'etat against President Milton Obote. Thereafter, President Nyerere made no secret of the fact that he wanted no dealings with Idi Amin as President of Uganda.

As explained earlier, Uganda acceded to the Agreement on May 19th, 1981. The instrument of accession was in the form of an agreement between the three original contracting states and Uganda, and signed by all four at Bujumbra. Article 3 of that instrument notes that the amendments to the KBO agreement were mutually accepted by the original parties and by Uganda.¹⁰⁵

The application of the agreement, *ratione materiae*, was covered in Article 2 and this derived largely from the specific studies in the Indicative Development Plan. The article states that 'The objectives of the Organization is to deal with *all questions* relevant to the activities to be carried out in the Kagera Basin, (emphasis added), notably:

- a. Water and hydropower resources development.
- b. The furnishing of water and water-related activities for mining and industrial operations; potable water supplies for other needs.
- c. Agricultural and livestock development; forestry, and land reclamation.
- d. Mineral exploration and exploitation.
- e. Disease and pest control.
- f. Transport and communication.
- g. Trade.
- h. Tourism.
- i. Wildlife conservation and development.
- j. Fisheries and agricultural development.
- k. Industrial development, including fertilizer production, exploration and exploitation of peat
- l. Environment protection.

In the Final Reports produced by the KBO/UNDP studies the projects were articulated in four key sectors, namely: (1) water related projects, including hydropower production, irrigated agriculture, rainfed agriculture, forestry, livestock and fishing; (2) transport and communication; (3) industries; (4) training and manpower development.

Within the context of water resource scarcity one would be conscious of the main consumptive uses of water resources, namely irrigated agriculture and industries. It is to be noted, for instance, that Phase II studies had proposed a combination ranging from 90,000 hectares of irrigation plus improved rainfed agriculture to 200,000 hectares, irrigation of new land to be supplemented by irrigation/rainfed operation of small perimeters of privately farmed land. Land to be opened for agriculture in the region was expected to expand to 500,000 hectares with variable proportions for irrigation. But no estimate had yet been made for the planned water consumption by the industries. Ultimately, however, what such possible irrigation expansion would mean for the water storage in Lake Victoria is beyond the scope of this chapter.

The organs of the KBO are outlined in Chapter II of the agreements (Art. 4-11). As distinct from most other basin organizations, the KBO agreement does not specifically provide for the assembly of heads of state, even though there is an annual meeting. Article 4 provides that the principal organs of the organization are: the Commission and the Secretariat headed by the executive secretary. The Commission is composed of one representative from each of the contracting states and it is the main policy-making organ with the mandate to determine projects, to solicit funds and to control and manage the budget. The Secretariat is the permanent bureau and the executive arm of the organization.

The KBO has met with difficulties in mobilizing resources and implementing its wide array of projects. With the growing population and the pressure to increase consumable goods as well as to dissipate the weight of international economic problems, the KBO states may eventually mount their water consuming projects, as envisaged in the Rusumo Treaty and the studies.

Recapitulation

In retrospect, not until World War I were important agreements reached on utilization of the Nile. Even then, the 1925 Agreement was an unusual one, certainly void in relation to Ethiopia both then and now. The first full-scale agreement on the Nile came in 1929. Again, the background of that treaty was so riddled with political complications that it could be no more than a temporary agreement, even though it assured Egypt that its water needs would be met. A more stable treaty was signed in 1959, between Egypt and the Sudan, which remains in force between the two parties.

Remaining in force as well is the Owen Falls Agreement signed between Egypt and Britain (on behalf of Uganda). The obligation seems to have fallen on Uganda by virtue of its continued use of hydro-electric power from the dam, and because it has not renounced the treaty responsible for the generation of that power. Egypt is interested in the storage value of the dam and Lake Victoria. Because of that continued force of the treaty, it appears that Kenya and Tanzania retain the third state rights extended to them in the event of injuries resulting from the rising level of the lake. Under the treaties examined here, Ethiopia, Kenya and Tanzania are not under any obligation regarding the use of the waters flowing to Lake Victoria and the Nile Basin. At least there has been no agreement on the utilization of the waters of Lake Victoria directly involving all the riparian states. Tanzania clearly rejected the 1929 Agreement and

Kenya's position is similarly clear. Moreover, we have not seen a treaty imposing any obligations on Zaire, Rwanda or Burundi, although they are Kagera Basin states. However, all of these may be subject to limited obligations under general international law to negotiate with the lower riparian states for an equitable share of the water, the exact modalities being subject to fresh negotiation.

Post 1959 Agreement developments

Since the signing in 1959 of the last agreement on the Nile Basin with any relevance to the Victoria catchment area, and the supporting Protocol in 1960, several policy actions have been taken and implemented by the basin states. Some have involved consumptive uses of the waters to an extent that would affect the hydrological and meteorological regime of the Lake Victoria and Nile drainage basins. Such policy measures may necessitate consideration of a legal regime beyond that analyzed above. Some of those policy statements and measures are outlined briefly here, with no order or priority, and only by way of illustration of what more could occur in the basins.

Egypt

It may be assumed that the regular rise in population in Egypt would raise the country's needs for irrigation for food production beyond what was needed in 1959. Egypt has doubtless agreed with the Sudan on quantities of water for their respective uses. There are, however, two considerations that might dramatically increase Egypt's need for water.

Egypt has an ambitious land reclamation policy. The development of irrigated farming in Sinai is a particularly prominent project and in December 1975, Egypt announced that it would open pipelines to carry water across the Suez Canal to the Sinai desert for irrigation¹⁰⁶. The project was supposed to commence with irrigation of some 5000 feddans, to be increased later to provide 100,000 refugee families from the Gaza Strip with livelihood¹⁰⁷.

Additionally, Egypt has commissioned studies of the possibility of piping 'the Nile waters to Jerusalem for Jewish, Christian and Moslem pilgrims visiting the holy places.'¹⁰⁸ This extension would add 240 miles to the length of the Nile, and is further evidence of potential and controversial downstream uses of water. From the legal point of view, there may be a question of whether it requires consideration by the all basin states before inter-basin transfers are effected.

The Sudan

The Sudan has undertaken a major project in the Jonglei Canal which aims to drain the Sudd area of the Southern Sudan between Jonglei and Malakal. It is, therefore, entirely within Sudanese territory, but of major significance to Egypt because the net saving of water will be shared between the two countries under the 1959 Agreement. The hope is that this will reduce the loss of water through evaporation over the Sudd, open up a greater area in southern Sudan for agriculture, and release more water for irrigation in the northern Sudan and Egypt (see Chapter 12).

The idea is an old one, and has been a subject of engineering and ecological

studies¹⁰⁹. (see also Chapter 5) However, its merits have been subject to controversy,¹¹⁰ largely initiated by the hypotheses that the project would be an ecological catastrophe.¹¹¹

The present projected scheme, which in any case has been halted by the Civil War in the southern Sudan, has been the subject of range and swamp ecology surveys, (Mefit-Babtie, 1983) and the predicted effects are described in some detail in Howell *et al.* (1988)¹¹².

Ethiopia

Ethiopia is considering increased utilization of Blue Nile and Sobat waters to an extent which Egypt might find threatening to its interests¹¹³. Reports on the issue are sketchy. According to an Egyptian newspaper in 1978:

Egypt and the Sudan were studying with great interest feasibility studies being conducted by the USSR around Lake Tsana, where about 85 per cent of the Nile water originates. Egypt will not allow the exploitation of the Nile Waters for political goals, will not tolerate any pressure being brought to bear on it, or the fomenting of disputes between itself and its neighbours¹¹⁴.

The Ethiopian Ministry of Foreign Affairs issued a series of terse and nonconciliatory responses directed largely to Egypt and in part, to the Sudan¹¹⁵. Their position was that 'Ethiopia has all the rights to exploit her natural resources'. Purportedly the statements also remind Egypt that, even though it receives 85 per cent of its Nile waters from Ethiopia, it has never shown friendship nor sought cooperation from Ethiopia. The Ethiopian statement points out that Egypt went ahead and built the Aswan Dam which has to depend on the Blue Nile waters, 'without even consulting Ethiopia.'¹¹⁶ In the ultimate analysis, the situation illustrates a trend which will develop if basin states do not consult one another and develop a framework for cooperative utilization of the waters of an international river. This situation may have been mitigated by the discussions between the Ethiopian Head of State during his visit to Egypt in 1986 but the extent remains uncertain. However, a number of international conferences held between 1990 and 1992, among them the RGS/SOAS conference of May, 1990, have enabled representatives from upstream countries to project their particular points of view and there is now evidence of bi-lateral discussions between the various parties.

Tanzania

The Republic of Tanzania is understood to be planning two major development projects utilizing Lake Victoria Basin waters: one is to use the waters of the Kagera River as discussed above; and the other to abstract water from Lake Victoria itself for irrigation of the Vembere steppe in central Tanzania, which is outlined below.

Tanzania may have considered more than one approach to the utilization of waters of Lake Victoria, but one that stands out in history was narrated by H.E. Hurst from the Egyptian Ministry of Works, who went to Tanganyika in 1926 to ascertain if there was indeed such a plan for irrigation. He recounts the plan as follows:

I found out that the Germans had, before the 1914-1918 War, a project to take water from Smith Sound, a long inlet at the south end of Lake Victoria, over the low country which separates the lake from the land sloping down towards Lake Eyassai. The water would have been used to irrigate arid land on the Vembere Steppe for the growing of cotton. The Scheme, which was not a government one, was to start on a small scale with a dam at Manyonga River to store its flood waters and irrigate a small experimental area. From this pilot project data would be built on the Manyonga, and hydro-electric stations at the dam would supply power to pump water from Lake Victoria. After passing through the turbine the water would irrigate land lower down and finally drain into Lake Eyassai.¹¹⁷

The area planned for irrigation in this project was 230,000 hectares, or 550,000 feddans. The extent to which this project has been considered seriously in modern Tanzania is not known. In critical commentary, Professor Rene Dumont wrote:

The Smith Sound project, aiming to bring water at great cost from Lake Victoria to the south, will probably be worth studying towards the end of this century, to be finally carried out at the beginning of the next century. For the moment, the whole of small and medium-scale irrigation certainly has priority, especially in the spirit of the Arusha Declaration. I call attention to the Davidoff project from the era of Stalin, aiming to take into Central Asia water from the great Siberian rivers; it has been put off to a very distant date, very wisely¹¹⁸.

As desert states that depend on the Nile waters, Egypt and the Sudan could have problems with the Smith Sound project, depending on the quantity of water to be extracted. At the time of his visit, Hurst thought the estimates to be about 82 cubic metres of water per second¹¹⁹ and could make no appreciable difference to the Nile.¹²⁰

Kenya

The issue of first instance is that, although the level of Lake Victoria has had recorded variation in level over the years, an unusual trend began in 1961 and culminated in 1964 with a maximum rise of two and one half metres. This was an unprecedented rise¹²¹ and the consequences in Kenya have been significant. There is loss around the lake of large tracts of land which have been inundated. Most of that land had been used for small-scale agricultural activities. The breeding grounds of some species of fish were submerged and resulting impact has been viewed as a possible contributor to the disappearance of some of the species, namely the *Tilapia esculenta* and *Protopterus*¹²². The increased flooding and swamps around the lake have provided breeding grounds for mosquitoes, creating a special health problem¹²³. Finally, the raised level of the lake resulted in the submergence of pier facilities at Kisumu, Kendu Bay, Homa and Asembo Bays. Throughout the 1960s, temporary pierage facilities had to be deployed at each location until the East African Railways Corporation had the piers reconstructed in 1974. There may well be similar consequences felt in Tanzania and Uganda which remain unpublicized.

The theory that the control of outflow at Jinja is responsible for the increased lake level is strengthened by the background information on the construction of the dam which was to make the lake into a century storage head.¹²⁴ As evidenced in the background to the agreement discussed above, the dam was expected to produce an increase in the level of the lake to the margin projected. The agreement itself allowed for such a rise, and the conditions included provisions for compensation to injured parties. Therefore, arguments that the dam could not have caused the rise in the lake's level seem patently misleading.

The unprecedented rise in the level of Lake Victoria after 1961 was the result of the combined effects of the control works at Jinja and the heavy rains of the 1961-1964 period in the Lake Basin. A rise of up to 1.3 metres had been anticipated by those designing the Owen Falls dam; that the water level rose 2.5 metres reflects the impact of the unusually high precipitation in the early 1960s. Lake Victoria storage was increased to 170 km³ causing flooding of the Lake Victoria shores of Uganda, Kenya and Tanzania, the release of very much higher than average volumes of water especially in the early 1960s, and even sustained higher than average flows through the 1970s with the consequence that the area of the Sudd doubled (See Chapter 12). The releases at the Owen Falls dam were consistent with the flooding in the Sudd and went some way to reduce the impact of storing over 30 times the normal annual recharge of Lake Victoria; in the period 1961-1964 releases averaged twice the normal level but this was apparently not sufficient to ameliorate the impact of the unusual weather events of the early 1960s.

It seems that the last word on the problem has not been said. The Hydrometeorological Survey team could not give a more complete answer to the question. Then, should Kenya and Tanzania find that report unsatisfactory, they could seek an agreement on a balanced formula for assessing the cause(s) of the unusual rise in the Lake Victoria. Some general observers report that the level has been rising since early 1978 and that the change already is noticeable at such popular spots as Hippo Point at Kisumu. The Ministry of Water Development is understood to be conducting studies to verify this state of affairs, and they may have their own explanations or a better hypothesis.

The establishment of the Lake Victoria Basin Development Authority to spearhead comprehensive development in the catchment area of Lake Victoria is a unique step. Through the working programmes of the Authority, Kenya has the means to consult with the other two riparian states. Programme planning might be risky unless such problems as an erratic rise in Lake levels are eliminated. On the other hand, increased use of the water of the rivers before they reach the lake may have an effect on lake levels. By the same token, if such utilization of water can make a difference in the lake level, then it could also have impact on the water flowing down the Nile. In this case, Egypt might want to discuss with Kenya the seasonality and quantity of water to be used on the Kenya side. This might be the case more particularly if Tanzania also decided to carry out the Smith Sound Project, because the combined impact of use by the major sources of Lake Victoria waters could make a significant difference to the water storage which Egypt has always coveted.

There is also the question of fishery resources in the lake. Although the

popular view¹²⁵ is that there has been very little migration of fish in and out of Winam Gulf, conservation measures to maintain the proper resources balance might still be necessary. Absence of large-scale migratory patterns by the lake fish species does not mean that fish obey the territorial boundaries. Therefore, a basic consultative framework among the three littoral states will be needed if the Authority is to have effective long-term control of fish as an important resource.

It has been mooted in Kenya that, given adequate technology, Kenya should transfer Lake Victoria catchment water to the arid areas of the country for irrigation¹²⁶. Perhaps the most appropriate location for that kind of experiment would be the Kerio Valley, for which a special development Authority has been established by the Kenya Parliament. The question of feasibility of such projects is an engineering one which, some observers say, is possible. Such an undertaking would use significant quantities of water if it were to be executed¹²⁷. In large measure, the projects would be analogous to Tanzania's irrigation of the Vembere Steppes. It follows that Egypt would need to change its traditional position and opt for an agreement on a hydrological regime for the entire Nile Basin including Lake Victoria.

General

Some general developments in the international scene have had an impact on the use of internationally shared water resources. First, there are changes in the general political economy. No group of states demonstrated better that national natural resources are a powerful political weapon than the Arab States when they imposed an oil embargo against friends of Israel. This brings into question the new international economic order wherein states are called upon to cooperate in the management of resources to promote equitable development.

Secondly, the range of demands on water resources is increasing, and one of the most serious problems is that of pollution. As noted earlier, conservation of the resources of Lake Victoria must be approached on a lake-wide basis because pollution will not respect territorial boundaries. Municipal and industrial effluents discharged into one part of the lake in one of the three countries will have consequences for the other states. As shown by the experience of the North America's Great Lakes, Lake Victoria could become a cesspool.

Third, the applicable law on internationally shared water resources has been developing and is certainly more crystallized today than in 1960 when the last agreement on the Nile was signed. Therefore, it should be worthwhile for all of the basin states to take a fresh look at the local regime and begin working together on the formulation of a regional practice to meet local exigencies of the time.

Conclusion

Several conclusions have suggested themselves in this study. What seems clear throughout is the desirability of a framework for consultation and exchange of information on actual or intended projects involving utilization of the basin

waters. One project to be accomplished within the framework could be actual hydrological and meteorological studies to ascertain basic or secondary facts and consequences of the use of such waters (see Chapter 7).

What the countries decide to call that framework is immaterial, so long as it involves all of the basin states and embraces the kinds of issue that have been apparent in the above analysis. It is recommended urgently that an agreement on a treaty creating a regulatory framework be reached, involving all the states of the Lake Victoria and Nile system. Such a framework would provide for the creation of development authorities to deal with development work for various parts of the basin, the latter category to include the Kagera Commission, and the Kenyan Lake Victoria Basin Development Authority. The disarray noticeable in the present treaty situation should not be allowed to continue.

Kenya, Tanzania and Uganda need to remember that, pursuant to the 1959 Agreement already discussed here, the Sudan and Egypt have undertaken to adopt a joint position in the event of any negotiations with third states. These two countries are better equipped in terms of hydrological and meteorological data, because they have worked at it since the 1950 agreement. They have been favoured, also in terms of access to the basic facts in the hydrometeorological survey carried out under the auspices of the World Meteorological Organization. There is very little advantage for the three East African countries in terms of qualified personnel to interpret technical information, as compared with Egypt and the Sudan.

The question is not one of renegotiation of the legal regime, but one of 'clean-slate' negotiation, because for the majority of the states within the drainage system there is no previously negotiated agreement which binds them. It is better to agree on such a framework while there is a propitious atmosphere than after a conflict of use has arisen among all or some of the basin states.

As a prerequisite to such a negotiation each of the basin states, especially the upper riparians, should work out a basin wide comprehensive Water Master Plan projected and phased up to, perhaps, fifty years. Within the scheme a careful assessment of available water and the possible uses for it, particularly for irrigation and industrial purposes, should be projected. Various aspects of possible inter-basin transfers within the riparian states should be assessed. And a determination made of the possible reserves.

It is pointless for the negotiations to start in the absence of such a Master Plan. A new agreement on the Nile should be long-sighted and realistic. For, indeed water will be increasingly important in the quest for stable agriculture and its place in viable economies for the African states.

Notes

1. Caponera, D.A. (1959) 'The Nile : Legal and Technical Aspects'. Mimeo paper of August 1958, being an English translation of an Italian version *il Bachino Internazionale del Nilo Consideration Giurridishe in XIV La Communitè Internationale* 45-46 (Jan.)
2. That was three years after the Sudan became independent . The Agreement on the Full Utilization of the Nile Waters was signed by the Sudan and

- Egypt at Cairo on 8th November 1959. A most important feature was the Protocol Concerning the Establishment of the Permanent Joint Technical Commission for the implementation of that Agreement, which was signed by the two states at Cairo on 17th January 1960. See texts in United Nations Legislative Series, *Legislative Texts and Treaty Provisions Concerning the Utilization of International Rivers for Purposes Other than Navigation*, 143-49 UN Doc. ST/LEG/SER.B/12 (1962).
3. See comments in Okidi, C.O.(1988). 'The States and the Management of International Drainage Basins in Africa' in *Natural Resources Journal*, Vol. 28 pp. 645-669 (Fall.).
 4. Ongweny, G.S. (1979). 'Water Resources of Lake Victoria Drainage Basin in Kenya' in *Natural Resources and the Development of Lake Victoria Basin of Kenya* pp. 68-84, C.O. Okidi, (Ed). University of Nairobi. IDS/OP No. 34.
 5. Kongere, P.C. 'Production and Socio-economic Aspects of Fisheries in Lake Victoria Drainage Basin in Kenya' in Okidi (1988), pp 407,410.
 6. Ongweny, (1979).
 7. Okidi, C.O. (1986). *Development and the environment in the Kagera Basin under the Rusumo Treaty*. (University of Nairobi, Discussion Paper No.284 Sept. The item was also covered widely in the popular press. See, for instance, *The Standard* (Nairobi, October 17th, 1978) p.8.
 8. The Agreement for the construction of the Owen Falls Dam was reached through Exchange of Notes between Britain - the colonial administrator of Uganda - and Egypt. The construction started in May 1949.
 9. *Report of the Hydrometeorological Survey of the Catchment of Lakes Victoria , Kyoga and Albert* (1974). (Burundi, Egypt, Kenya, Rwanda, Sudan, United Republic of Tanzania and Uganda), Meteorology and Hydrology of the Basin. Part II UNDP and WMO RAL 66-0250 Tech. Report No.1.
 10. Garretson, A. (1967). 'The Nile Basin' in Garretson, A.H., Hayton, R.D., and Olmstead, C.J. (Eds). *The Law of International Drainage Basins*. 256-258. According to Garretson, of the 24 milliiards (km³) of water that flow downstream from Lake Albert (Mobutu Sese Seko) and the East African highlands, 12 milliiards (km³) are lost by evaporation in the Sudd area of southern Sudan (See also Chapter 12 p.).
 11. Badr, G.M. (1959). 'The Nile Waters Question : Background and Recent Developments ', 15 *Revue Egyptienne de Droit International* 2. Badr estimates that the average 85% of total Nile discharge comes from Ethiopia. This estimate coincides with the figure given by Ethiopia. See also *Ethiopian Herald* (Addis Ababa) May-21st, 1978. Garretson draws attention to the fact that the Blue Nile supplies 90% of water passing Khartoum between April and September, but only 20% between January and March.
 12. It seems that the first ever 'Agreement' on the Nile dealt with navigational uses of the river. It was expressed in the form of a unilateral declaration issued by the Viceroy of Egypt, under the Ottoman Empire on October 13th, 1841, granting foreigners the privilege of building ships for the

- navigation of the Nile. See FAO *Systematic Index of International Water Resources Treaties, Declarations, Acts and Cases by Basins*. 45, 129, 135, 137, 146-7, 157-61. (FAO Legislative Study No 15, 1978)
13. UN Doc. ST/LEG/SER.B/12 (1963) pp.127-28
 14. Hertslet, (1967). *The Map of Africa by Treaty*. Vol.II No.100, pp.432-42 (3rd Ed.)
 15. UN. Doc ST/LEG/SER.8/12 (1963), *supra* Note 2 p.99
 16. Hertslet,(1967). Vol. II No.165, pp.584-85.
 17. 50 L.N.T.S. 282 (1926).
 18. UN Doc. ST/LEG/SER.B/12 (1963), pp.100-107.
 19. *ibid.* pp.108 -115
 20. *ibid.* pp.143-48
 21. *ibid.* pp.148-49
 22. *ibid.* pp.127-28
 23. Hertslet, (1967), pp.432-42
 24. Caponera, *supra* Note 1, pp.13-14
 25. See Articles 31-33 of the Vienna Convention on Treaties (1969)
 26. See the relevant articles in UN Doc. ST/LEG/SER.B/12 (1963) *supra* Note 2, p.99
 27. Hertslet, *supra* Note 23, pp. 436, 442
 28. *ibid.*
 29. 50 L.N.T.S. 282 (1926). In the exchange, the first Note (Dec 14, 1925) from Britain stated, *inter alia* 'I have therefore, the honour, under the instruction from His Majesty's Principal Secretary of State for Foreign Affairs, to request your Excellency's support and the assistance at Addis Ababa with the Abyssinian Government in order to obtain from them a concession for His Majesty's Government to construct a Barrage at Lake Tsana, together with the right to construct and maintain a motor for the passage of stores, personnel, etc, from the frontier of the Sudan to the Barrage ', (p.284). The Note added a *quid pro quo*: ' His Majesty's Government in turn are prepared to support the Italian Government in obtaining from the Abyssinian Government a concession to construct and run a railway from the frontier of Eritrea to the frontier of Italian Somaliland'. (p.285).
 30. *ibid.* p.285
 31. *ibid.* p.291
 32. See discussions by Garretson , (1967). pp. 277-8
 33. *ibid.*, pp. 264 *et seq.*
 34. *ibid.*
 35. *ibid.*, p. 268
 36. *ibid.*
 37. *ibid.* There were three members of the Commission , a nominee of the Indian Government, as chairman. A nominee from Cambridge University and a nominee of the U.S. Government. The US nominee, H.T. Cory submitted a separate report.
 38. Batstone (1959), *The Utilisation of Nile Waters, 8 int. and Comp. LQ.*, p.540

39. Garretson (1967), 264 *et. seq.*
40. *ibid.*
41. UN Doc. ST/LEG.SER.B/12 (1963), pp.100-7
42. *ibid.*
43. *ibid.*
44. *ibid.*
45. Garretson (1967), pp. 268; Caponera (1959), pp.10-11
46. Batstone (1959).
47. Text of Lloyd's Note is in UN Doc. ST/LEG/SER.B/12 (1963), p.107
48. Seaton, E.E and S.T. Maliti, (1973). *Tanzania Treaty Practice*, pp.90-91. Oxford, OUP.
49. *ibid.*
50. *ibid.*
51. *ibid.*
52. *ibid.* p.91
53. *ibid.* pp.148 -149
54. *ibid.*
55. *ibid.*, Appendix V.
56. Badr, (1959).
57. Mutiti, M.A.B. *State Succession to Treaties in respect of Newly Independent African States* (East African Literature Bureau, 1976), p.23.
58. Hurst, H.E. (1952). *The Nile: A General Account of the River and the Utilization of its Waters* p.301. London, Constable.
59. *ibid.*
60. Hurst H.E.(1925, 1927). *Report on The Lake Plateau Basin of the Nile*, Cairo. Ministry of Public Works, Physical Department, Paper No 21.
61. Hurst (1952). *The Nile*. p.301.
62. *ibid.*, p.302
63. *ibid.*
64. UN Doc. ST/LEG/SER.B/12 (1963), pp.108-9
65. *ibid.*
66. *ibid.*, pp.111
67. *ibid.*
68. *ibid.*
69. *ibid.*, pp.114-115
70. *ibid.*, pp.108-109
71. *ibid.*, pp.110-111
72. *ibid.*, pp.114-115
73. *ibid.*, pp.108-109
74. *ibid.*
75. *ibid.*
76. *ibid.* para (ii) of the Note from the Royal Egyptian Government.
77. As noted above, the last stage in the exchange of Notes constituting the Agreement came on January 5th, 1953. See text of both notes in UN Doc ST/LEG/SER.B/12 (1963) *op. cit.* pp.108-109
78. *ibid.* pp.112-113
79. *ibid.*

80. *ibid.*
81. *ibid.*
82. *ibid.* pp.143-148
83. *ibid.*
84. *ibid.*
85. *ibid.*
86. Badr (1959). p.20
87. *ibid.*
88. UN Doc ST/LEG/SER 12 (1963), pp.143-148
89. Batstone (1959), p.540
90. UN Doc ST/LEG/SER 12 (1963).
91. Article V of the 1959 Agreement.
92. UN Doc ST/LEG/SER 12 (1963). pp.148-149
93. *ibid.*, pp.112-113
94. Hydromet Survey *supra*, Note, 9, Vol. 1 part 1, p.9
95. UN Doc ST/LEG/SER 12 (1963) *op. cit.* pp. 112-113
96. Seaton and Maliti (1973). p.91. Fahmy, (1977). *International Aspects of the River Nile*. (Conference paper) UN Doc E/CONF/TP 22, January 15, 1977, p.8
97. Seaton and Maliti (1977). p.92
98. *ibid.*
99. *ibid.*
100. Fahmy (1977).
101. *ibid.*
102. Hydromet Survey (1974).
103. Very little has so far been published on the Kagera Basin Organization. The information in this section is derived by the author's research published as *Development and the Environment in the Kagera Basin under the Rusōmā Treaty*. (University of Nairobi, IDS/Discussion Paper No. 284. September, 1986); and Lwchabura, D.K. 'Cooperation in Management and Development of the Kagera River Basin' (Kigali, May 1981)
104. At the time of writing the Agreement is pending registration by the UN Secretariat, for UNTS. A copy was obtained by the author from the KBO Secretariat.
105. Apart from the first preambular paragraphs of the original agreement, the other Articles affected by the amendments of 19th May 1981 were Articles 5, 6, 7, 9, 10, 13, 16, 18 and 20. Article 19 was repealed altogether. Thus, the last article was 21, followed by the testimonium.
106. See *The New York Times*, December 14th, 1975
107. *ibid*
108. *The New York Times* December 16th, 1979
109. See especially the five volume study *The Equatorial Nile Project and Its Effects in the Anglo-Egyptian Sudan: Being the Report of the Jonglei Investigation Team*. (Khartoum, 1954)
110. *The Weekly Review* (Nairobi), March 9th, 1979, pp. 26-27, May 5th, 1978 p. 2; May 12th, 1978, p.2; *African Business*. Nov. 1978, pp.14-16; *Earthscan Briefing*, Doc 8.

111. Mann, Oscar, (1977). *The Jonglei Canal: Environment and Social Aspects*. Nairobi: Environment Liaison Centre.
112. Howell, P., Lock, M. and Cobb, S. (1988) *The Jonglei Canal: Impact and Opportunity*. Cambridge University Press.
113. *Akhbar El Yom* (Cairo) May 13th, 1978
114. *ibid.*
115. *The Ethiopian Herald* (Addis Ababa) May 14th, 21st and June 2nd 1978.
116. *ibid.*
117. Hurst (1952). p.156 and Hurst, (1925/1927), pp.6-10
118. Dumont, R. (1969). *Tanzania Agriculture after the Arusha declaration* (Dar es Salaam: Ministry of Economic Affairs and Development Planning) p.48.
119. Hurst (1925/1927). p.9
120. Hurst (1952). p.156
121. *Hydromet Survey* op. cit. pp.744-753
122. Welcome, 'The effects of Rapidly Changing Water Levels in Victoria upon Commercial Catches of Tilapias', in Obeng, L. (Ed) *Man-made Lakes: The Accra Symposium 1969*; and Kongere op. cit. and Odero 'Fish Species Distribution and Abundance in Lake Victoria' in Okidi, *Natural Resources and the Development of Lake Victoria Basin*.
123. See strong contentions in the East African Legislative Assembly by Mr Orinda Sibuur and Mr Joseph Nyerere in June 1973, *The East African Standard* (NBI) June 23, 1973 p.5, and by Kenya's Minister for Health in *The East African Standard* (Nairobi) July 8th, 1976.
124. Edit. Comment: Dr. J.V. Sutcliffe writes: "The effect of the operation of the Owen Falls Dam on the rise in Lake Victoria during the exceptional rains of 1961-1964 has been examined by the WMO Hydrometeorological Survey. The dam has operated on an 'agreed curve' with the aim that outflows follow the natural relationship between lake level and river flow; this agreed curve was derived from discharge measurements and extended by hydraulic modelling of the historical outfall at Ripon Falls. Kite (1981) has tabulated the cumulative effects of the operation of the dam on Lake Victoria levels and has shown that the effect was negligible." [Reference: Kite, G.W. (1981). Recent Changes in the Level of Lake Victoria, *Hydrol. Bull.*, 26. 233-243].
125. Kongere (1988), pp. 407-413
126. The popular view has been expressed in the press. See *The Daily Nation*, (Nairobi) March 16th, 1979.
127. One expert opinion estimates that irrigable land in the Kenyan part of the Nile Basin is approximately 53,212 acres (22,000 ha) which would require 296.9 million cubic metres (0.29 cubic kilometres) of water annually, but that there may be additional areas that might require another 182 million cubic metres of water per year. There are other Kenyan estimates. See Dekke, 'A Note on the Nile' 8, *Water Resources Research*, No 4, pp.818, 827 (Aug 1972).