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THE ROLE OF THE STATE IN THE MANAGEMENT  
OF INTERNATIONAL RIVER AND LAKE  
BASINS IN AFRICA\*

by

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## I. INTRODUCTION

Rivers or lakes are considered to be international if their surface settings traverse the territories of two or more states. In the case of a river it may form whole or part of the boundary of two or more states; alternatively, it may flow successively, through two or more states, or a combination of both; in the case of a lake, it may actually be shared by two or more states. Thus, rivers or lakes as such are distinguishable from the concept of drainage basin, where the latter is broader, constituting the entire catchment area which contributes both, the surface and ground water towards a common terminus.

There are about fifty-four international rivers and lakes in Africa. Out of that total, eleven drain the territories of four or more states, with the largest number of states drained by any one river being ten. Nineteen basins drain areas more than 100,000 square kilometres, and in all, the area drained by these international rivers and lakes is about half of the total areas of the continent<sup>1</sup>. And that, certainly, is considerable reticulation of water systems in this vast continent.

Attempts to organize the basin states towards the management of the water systems have been done only in the following instances: Niger Basin Authority (NBA); Organization for the Management of Senegal Basin (OMVS); Organization for the Management of Gambia Basin (OMVG); Kagera Basin Organization (KBO); Chad Basin Commission (CBO); and the Permanent Joint Technical Committee (PJTC), between Egypt and Sudan on the Nile Waters. Currently, the United Nations Environment Programme (UNEP), under its programme for environmentally sound management of inland waters (EMINWA) is initiating an integrated regional development programme for the Zambezi river, later to be followed by Lake Tanganyika.

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1. These data have been gleaned from the records at the United Nations Economic Commission for Africa. For a summary see UNECA, Problems of Water Resources in Africa, Doc. No. E/CN.14/NRD/WR/1/Rev.2 October 21, 1976 (Addis Ababa, 1976) p.49.

The purpose of the present paper is not to review the management regimes of these organizations. Rather, it will examine some of the macro-policy questions of the state involvement in actual management and utilization of the waters of any basin in Africa. No attempt will be made to draw on the precise and detailed experience and example from the existing drainage basin organizations as far as the role of the state is concerned. Instead, the paper will take up selected issues and concepts and point to experiences with the utilization of river waters for the promotion of socio-economic goals at national or regional levels. In other words, the paper takes the position that whether the management and utilization of the water is done within the national or regional framework, the role of the state will evince certain common conditions and the net results are similar when <sup>looked</sup> at from the perspective of promotion of socio-economic well-being of the human population.

To set the stage for the discussion, the paper will begin with a brief outline of the significance or justification of the management of water resources on a basin-wide basis. Secondly, it will outline some of the justifications for state involvement in the management of such basin waters. In the process, we should see some of the salient activities which the state is to be expected to perform. Thirdly, despite the imperatives of state involvement, there are a number of draw-backs in the state performing the roles; the next part of the paper is intended to outline some of such caveats, posed as criticisms. It is expected that the discussion should automatically suggest the limitations of state involvement in the management, or, simply, it will raise some caution as to where some reforms ought to be thought out to rectify the pitfalls of the conventional role of the state.

## II. THE SIGNIFICANCE OF BASIN-WIDE MANAGEMENT

The area of Africa which is covered by the reticulation of rivers and lake basins, as mentioned above, is about one half of the total area of the continent. But in discussing the rivers and lakes, implicitly, the factor of interest is actually water which they carry, consequently, what could actually be done with the available volumes of water. And that point, in turn, leads us to some of the most critical socio-economic policy questions which Africa has faced in recent times, particularly since early 1970's, which might be alleviated by proper management of water resources.

Ordinarily, community water supply for the safeguard of public health is considered the most pervasive socio-economic use of water. Some might mention also use of water in industries and even water transport; all these can benefit from availability of bodies of water in Africa.

But in actual fact two of the most critical uses of water that have relevance for the problems of the 1970's and 80's is in agriculture for food production and hydro-electric power generation; two most dreaded problems of Africa in the last decade and a half. Drought (defined as absence of rain water) is considered in general officialdom as having led to devastating famines and loss of human and animal lives. No single problem has ever mobilized equal amount of international attention towards Africa, since colonization, as the emergency operation to deal with famine. And the underlying supposition is that Africa has not had enough water for agricultural food production.<sup>2</sup>

The second critical problem for the majority of African countries during that period is production of energy where most of them have relied heavily on hydro-carbons. The second villain in the poor performance of African economies has been the prices of the hydro-carbons which were increased by members of the Organization of Petroleum Exporting Countries (OPEC), since the so-called oil embargo which commenced in 1973. The basic argument in that context is that the countries relied principally on hydro-carbons to fuel their industries, transportation, and domestic/urban operations.

Surely, the two problems could impede operation of the economies of African countries, if there were, indeed, no alternatives to evenly distributed rainfall, and sources of energy other than hydro-carbons. But is that firmly the case?

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2. This is eloquently expressed by Professor Adebayo Adedeji, the Executive Secretary of UN Economic Commission for Africa and Special Representative of the United Nations Secretary-General on the African Economic Crisis in his "End-of-the Year Conference on Africa's Current Economic Crisis and the Prospects for 1985" issued at his Addis Ababa Office on 28 December 1984 where he singled out "Drought and Emergency Situation" as the dominant problem in a list which also included unfavourable global economic environment and the dramatic increase in Africa's external debt.

The volume surface water available is readily suggested by the reticulation of rivers and lakes as discussed above. The estimates of the actual volumes cannot be precise. However, K. V. Krishnamurthy, who worked for U.N. Economic Commission for Africa in the water resources matters has offered the following suggestive data:

"Estimates of Africa's total water resources vary from 3,400 billion m<sup>3</sup> of water to 4,600 billion m<sup>3</sup>. An analysis of the measured streamflow in African rivers indicates that the total quantity of surface water in Africa's rivers and lakes is in order of 2,480 billion m<sup>3</sup>, the difference between this and the aforementioned estimates being a measure of ground water resources. More than 50% of the total water resources of the continent are in one single river basin, Congo/Zaire basin (1,325 billion) and another 25% in seven other river basins such as Niger (200 billion), the Ogooue (149 billion in Gabon), the Zambezi (104 at C. Ana), the Nile (84 billion), the Sanage (Cameroon, 165 billion), the Chari-Logone (Chad, 43 billion) and the Volta (40 billion)"<sup>3</sup>

The study adds in the same page that the actual total water utilization in Africa was about 90 billion m<sup>3</sup>, which represents about two percent of the surface and ground water resources in the continent. That is to say, about 95 to 98 per cent of the African water resources is at present flowing only to replenish the ocean waters, but not put to any productive use by Africa. Non-hydrologists might not clearly imagine the magnitude involved, but Krishnamurthy, as a hydrologist, concludes that this is a colossal under-utilization of Africa's water resources and calls for immediate redress.<sup>4</sup>

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3. See K. V. Krishnamurthy, "The Challenge of Africa's Water Development" in Natural Resources Forum 1 (1977) pp.369, 371.
  4. Note, however, that more than three quarters of the total rainfall in Africa is immediately lost through evaporation, a fact which might be significant in designing water conservation projects. See Doc.No.E./Doc.No.E./CN.14/NRD/WR/1/Rev.2 (1976) op.cit. p.6. Note further that the knowledge of Africa's groundwater reserves is not complete, as directed by some recent discoveries. Perhaps the most dramatic discovery is that of the lake under the Sahara Desert, which Libya is planning to exploit at the rate of 6 million m<sup>3</sup> per day. See a feature story in The Sunday Times (Nairobi) December,22, 1985. At the same time, Egypt, under the late President Sadat already embarked on plans to expand desert agriculture by 500,000 acres using waters of the underground lake. See "Egypt's Desert of Promise" in National Geographic Vol.161 No.2 February 1982 pp.190 et seq. If there are any connections between the two aquifers then the two states might one day want to talk about jointly planned utilization of the water from the reservoir.

How about hydro-electric power as a source of energy in Africa? Again Krishnamurthy<sup>5</sup> reports that in relative terms, one third of the world's potential hydro-power is in Africa and that the per capita potential in Africa is more than three times the world average. He adds that despite that high potential, the installed capacity of hydro-electric power in Africa is only 5.6% of the total, and that the ratio of energy generation to the exploitable potential is only 2%. The relative figures are indicated in the table below:

Item	Africa	World	Africa's share world total(%)
1. Potential hydro capacity (MW)	200,600	565,000	35.4
Installed capacity (MW) 1974	9,050	340,000	2.7
(MW) 1975	11,250	-	-
2. Percentage of installed to potential hydro capacity (1975)	5.6	-	-
3. Hydro-potential (billion of kWh (Theoretical))	2,690	6,540	41
(Exploitable)	1,630	5,000	33
4. Hydro-power generation in 1974 (billion of kWh)	34	1,433	2.4
5. Percentage of generation to the exploitable potential	2	30	7

Source: UNECA Problems of Water Resources Development in Africa  
E/CN.14/NRD/WR/2/Rev.2 (1976) p.28.

5. Supra note 3 p.370.

Even though the above data are only subject to detailed appreciation by an engineer, the point is made that while Africa has a large share of the world total hydro-electric power it is using very little of it, having installed only 5.6 percent. And this power, which is indigenous to the continent, might in fact be less costly than the energy from hydro-carbons. The task for Africa may be to consider hydro-electric power generation as an integral part, if not, in fact, the incentive for multipurpose water resources development in Africa. And it is conceivable that the hydro-power might enhance the use of the water resources in agriculture in order to get Africa towards socio-economic normalcy.

But back to water and agricultural productivity: It should be clarified that apart from water, land is indispensable for agricultural productivity. The question might be asked if Africa perhaps does not have sufficient cultivable land, even if it has the water. Not so: Professor Odera-Ogwell,<sup>6</sup> then Secretary to the United Nations World Food Council, wrote in 1982 that Africa's agricultural land potential is immense and that land was certainly not a constraint. That Africa's potential compares favourably with other regions, he says, is suggested by the following table:<sup>7</sup>

Region	Potentially cultivable (m ha)	Presently cultivated arable area (m ha)	Present cultivated (%)	Average Period(yrs)
Africa	803.7	193.7	24	3
Southwest Asia	46.0	50.9	110	2
Southeast Asia	324.8	270.5	83	3
South America	814.9	85.2	10	4

6. Odera-Ogwell, L.A. "The African Food Problem and the Challenge to the international Community" (1982) mimeo.

7. *ibid* Table 3 page 7. Explanatory notes offered say that the average fallow periods are a very general estimate for fallow period required for one year cultivation (low inputs).. The figures for South America were only provisional. The percentage for the presently cultivated period is higher than 100 implying that land which is not suitable for cultivation has already been encroached on.



If both water and land are actually available within the continent then the constraint to agricultural productivity, (leading in large measure to the crisis) must lie elsewhere. In the paper under reference, Professor Odero-Ogwell points to the failure to adopt technological packages in agriculture as one of the bottlenecks. One instance which he raises is that in Africa in 1977, only 1.8 per cent of the cultivated land was irrigated, compared to 28 per cent in Asia and 6.1 per cent in Latin America<sup>8</sup>.

This in fact, may point to one of Africa's critical problems in agricultural productivity: There is plenty of water and land but it is all unevenly distributed and not managed, controlled and placed on land for agricultural productivity. Although other factors such as trained manpower, implements and fertilizers may also be lacking in the African agriculture, as is discussed later in this paper, failure to manage and control water already demonstrated to be available in large quantities, is clearly a central constraint. Therefore, the necessity for the management and control of water resources in the lakes and rivers in Africa seems well demonstrated.

Both, use of water for irrigation and hydro-electric power generation require control of the river water through damming; they require change in the flow regime. But while harnessing the river water for hydropower changes only the flow regime of the river, abstraction of the river or lake water for purposes of irrigation reduces the quantities. Indeed, irrigation takes the largest of all quantitative uses of water resources.

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8. ibid p.6.

Change of the flow regime alone may mean that the water does not reach the lower riparians in the same quantities and at the same time as under the natural flow regime, but that the same volume of water finally gets there. Thus, this may offer only a limited basis for complaint by a lower riparian against an upper one provided that it can be demonstrated that the natural flow regime is restored by the point where the river enters the territory of the lower one<sup>9</sup>. Thus, a complaint or a claim may be legitimate if the flow is disrupted to the detriment of existing use of water in the lower riparian.

On the other hand irrigation will of necessity diminish the quantity of water reaching the lower riparian. For ongoing projects in the lower riparian states, the consequences of a sudden interruption in the quantity of water could be disastrous. But it may also be fatal for any planned projects.

In any case, damming of a river usually have consequences even for the upper riparian states. The most notorious problem is the backwater effect resulting in the displacement and resettlement of population resident within certain reaches of the river. Examples of this problem are legion, but one of the better known instances was the construction of the High Aswan Dam which, with a height of 100 metres, was to extend to nearly 700 kilometers southwards, with 250 kilometres out of that being in Sudan territory and affecting the settlement at Wadi Halfa. Fortunately, there was a longstanding consultation framework available between the two countries, within which they could resolve the issue.

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9. In Lake Lanoux Arbitration, the Tribunal rejected the claim by Spain that the French's mere diversion of the Carol River water and restoring it without consumption, constituted a breach of the Spanish interests. See Lake Lanoux Arbitration in 12 UNRIAA 218 also reprinted in 53 American Journal of Int'l Law 156 (1959) and Lauterpacht, International Law Reports (London: Butterwoth, 1961) p. 101 et seq.

More recently the backwater effect of the proposed Rusumo Dam on the Kagera River, led to tough negotiations among the members of Kagera Basin Organization (KBO) because of its anticipated impact on the settled areas. The elevation of the dam would be in direct proportion to possible hydro-power production at other sites such as Kakono and Kishanda, apart from the high power production at Rusumo itself. But the point is illustrated by showing the various proposed elevations at Rusumo and the possible power production there as juxtaposed against the areas of the territories to be submerged by the dam and the population to be displaced, as in Tables 2 to 4 below:<sup>10</sup>

Table 2: Variants of Power Linked to Water Surface Elevation at Rusumo Dam

	Installed Power MW	Guaranteed Output GWh/year	Interannual Output GWh/year
1. Rusumo 1345 metres	129	535	597
Kishanda	214	1,026	1,125
Kakono	57	259	301
Total	400	1,820	2,023
2. Rusumo 1335 metres	105	410	480
Kishanda	210	820	1,102
Kakono	54	207	286
Total	369	1,437	1,868
3. Rusumo 1325	80	270	374
Kishanda	207	500	1,082
Kakono	53	126	277
Total	340	896	1,733

10. Data are derived from Hydropower Development of Rusumo Falls: G-Economic Summary and Conclusions (Tractionel-Electrobel Studies June 1979, pp.6-8) and Development Programme of the Kagera Basin: Final Report Volume 3: Energy (Kagera Basin Organization and UNDP, February 1982) p. 38.

Table 3: Land Areas Likely to be Submerged by the Dam at Different Levels<sup>1</sup>

Water level	Total surface area submerged (2)			Usable surface area submerged		
	Rwanda	Burundi	Total(3)	Rwanda	Burundi	Total
1345	52,000 ha	11,000 ha	63,000 ha	17,240 ha	5,600 ha	22,840 ha
1335	33,000 ha	9,000 ha	42,000 ha	8,180 ha	3,210 ha	11,390 ha
1325	20,500 ha	6,000 ha	26,500 ha	2,510 ha	1,220 ha	3,730 ha

- 1) These areas correspond to the normal water levels plus an additional 3m
- 2) Not including permanent areas of water (lakes, ponds, ..) already existing.
- 3) The area to be submerged is not included in these figures.

Table 4: The Number of People to be Moved and Resettled as a Consequence of Backwater at Different Elevations

Water Level	Number of Inhabitants Affected		
	Rwanda	Burundi	Total
1345	22,975	2,975	25,950
1335	10,445	1,610	12,055
1325	2,220	535	2,755

A number of points are illustrated by the foregoing data: They show that the power output is highest at the highest elevation at Rusumo, which is 1345 metres, for all the proposed installations. The converse is true at the lowest elevation which is 1325 metres. Correspondingly, the higher the level of the dam, the larger the backwater effect and therefore, the submerged area of land in Rwanda and Burundi. And the additional consequence is the number of people to be displaced and settled where the total is 25,950 and 2,755 for 1345 metres and 1325 metres respectively. That is the balance of opportunity costs for the hydropower to be produced, plus use of the waters of the dam for irrigation.

Given the high population density in the two countries the vehement objection to the higher levels of the dam was understandable. In fact, the controversy threatened the very continuity of the Kagera Basin Joint programmes. Fortunately, there was already the framework of consultation set up in KBO for the basin-wide management. On the 9th May 1981, the Heads of State of the KBO member states resolved the controversy and opted for the minimum dam which will create a reservoir at a normal operating water level of 1325 meters.

The Rusumo issue also illustrates the fact that one dam can alter the flow regime and have considerable impact on the power potentials of other possible dams within the river basin, and at significant distances. Thus, the reasons for a basin-wide management are clearly numerous and compelling.

### III. JUSTIFICATION FOR STATE INVOLVEMENT

The discussion of the significance of basin-wide management of rivers and lakes will have suggested some aspects of the justification for state involvement in the operations. In this section, the justification will be discussed in terms of the functional rationale, thereby, analysing some of the problems which necessitate state involvement. The role of the state will therefore become apparent.

The breakdown of the items justifying state involvement shows considerable analytic overlaps; at the same time, the items are susceptible to different levels of specificity and inter-relationship. Here, six broad items are found distinguishable.

#### 1. Treaty Requirements in International Waters

It has been argued above that the regulation of flow regimes within a river, out of a lake or abstraction of waters for consumptive uses are likely to have substantial physical and socio-economic consequences for both the upper and lower riparians. Yet, the data on the unused water resources and their potentials in Africa are enormous. In fact, it is manifestly wasteful that African states have not taken measures towards complete utilization of the waters for, inter alia, agriculture, hydropower and navigation through flow regulation and management.

Therefore, it is clear that the African States should undertake regulations and management of the waters of national and international rivers and lakes. It is also evident that the management should be done on a basin-wide basis.

The foregoing two attributes require regional collaboration, coinciding with the scope of the basin, as a prerequisite. And in that context, a regional agreement setting out the precise framework of reciprocal expectations and the protocol for implementation as accepted among the basin states, is a prerequisite. It is only the states that would adopt such a treaty in accordance with the national constitutions, and as a function of the sovereign<sup>11</sup>.

There are instances where the appropriateness of a formal treaty becomes an acute problem even if international co-operation is unquestionably necessary. Say, for instance, if the Gaborone dam, which feeds the capital of Botswana, was to carry so much water that it causes back-water effect flooding the territory of South Africa. And if the latter was to argue that the flooded territory is actually part of Bophuthatswana, a bantustan. The City of Gaborone, as a legal personality might find it appropriate to discuss the matter with anyone. But the Government of Botswana might find that discourse to be politically embarrassing and unacceptable considering that the so-called independent homeland concept is unacceptable to the UN and OAU. Yet for reasons of viability of the city, its inhabitants and industries, a solution would have to be found. Clearly, only the state can resolve the problem, as a fundamental national issue.

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11. Note that some national constitutions permit constituent provinces/states, of the sovereign state, to enter into treaties in the specified subject areas. An example in point is the Convention on the Protection of Lake Constance against Pollution, signed by the Land of Baden-Wurttemberg, the Free State of Bavaria, the Republic of Austria and the Swiss Confederation on October 27 1960, where the first two are constituent states of the Federal Republic of Germany. The text is reproduced in the United Nations Legislative Series, ST/LEG/SER.B/12 (1963) p.438. The Convention entered into force in November 10 1961.

The treaty framework is easier to create before there is a dispute, and disputes are likely to arise once utilization of the waters begin. Once a dispute arises over water uses it is possible for it to end on a war footing, as was suggested by the late President Sadat with respect to the proposed use of waters of the Blue Nile by Ethiopia. In May 1978, the late President was reported to have said that Egypt would not accept any interference with the flow of the water of the Blue Nile, particularly if in its view Ethiopia took such a measure for political reasons<sup>11 bis</sup>. Yet, it is very difficult to ascertain that the motives for any Ethiopian construction is political and not based on vital socio-economic necessity.

Then obviously the situation remains volatile and shrouded in mistrust, especially since there exists no framework for peaceful consultation between the two countries on such specific issues. Creating such a treaty framework is, therefore, a central role of the state and, given the necessity for water management one which should probably be done for every international river or lake in Africa today.

2. The Nature of Water Laws in Different States

As pointed out already, the central factor in the rivers and lakes management is water. Whether the river or lake is national or international in character, the issue is utilization of the waters by public or private entities within the nation states and such would necessarily be governed by the national laws, which laws may be prescribed and enforced only by the national authorities, according to their respective constitutions.

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<sup>11 bis</sup>. For further discussions see Okidi "Legal and Policy Regime of Lake Victoria and Nile Basins". Indian Journal of International Law Vol. 20 July-September 1980, pp.394, 440.

There is considerable diversity in the water laws of various African countries, as determined by their juridico-political histories<sup>12</sup>. Countries in Africa include those following civil law or common law and associated jurisprudence. But there are also those countries whose laws are influenced by Islamic jurisprudence. Yet a further category is where the original tribal laws existing prior to colonization, have co-existed with the European-derived legal systems. And these legal systems exist in Africa today; at times more than one variant in the same country.

It is sufficient to point out here, without substantive discussions, that the various legal systems make distinction in matters of ownership and right to use water. For instance<sup>13</sup>, the common law doctrines arising from the English tradition, acknowledge only usufructuary right in running water and they adhere to the rule of prior appropriation as the governing principle among users. Ownership of riparian lands only permits a right to use public water and to allow it to flow continuously, but not ownership of the water which actually rests in the state. Under civil law traditions, water which comes under the public domain, belong to the public and may not be privately appropriated. But the governing principle is the doctrine of riparian rights which requires interests of all riparians to be protected. Thus, while the doctrine of prior appropriation vests priority in terms of first in time, first in right, the riparian rights principle requires equitable consideration of the rights of all the riparians.

12. D. A. Caponera (Ed.) Water Law in Selected African Countries (Rome, FAO, 1979); Caponera, Water Law in Moslem Countries (Rome, FAO, 1973).

13. See discussion of these instances in Caponera, Water Law in Selected African Countries op.cit. pp.20-24.



In any event, it seems evident that because of the differences which might arise from the basic doctrines on water ownership or user rights, the state would have a role in the harmonization of the intensified consumptive usage such as for irrigation or flow regulation such as to facilitate hydropower production, navigation and use in industries. It seems, moreover, that in each of these legal systems the state has a central role in the regulation and control of use of water as a public resource. Only the state through its laws would properly provide the framework for regulation and apportionment of water among the various contending public and private users.

3. Regulation Necessitated by Broad Base of Water Projects

Water by its very nature is a pervasive substance; projects involving its utilization such as community consumption, irrigation, navigation, and hydropower production tend to have multiple socio-economic implications. Very often, those affected might not individually have enough political or economic power to alter the course of events affecting them. For instance, damming for hydropower production or to facilitate gravitational transfer of water for irrigation or to facilitate navigation may each present an opportunity for the other socio-economic activities. Concurrently, as seen in the case of Rusumo Dam, it may lead to loss of agricultural land and the displacement of population, sometimes in high population density countries as in Rwanda.

These become socially or economically sensitive affairs which must require the intervention of the political arm of the state. But even where no detrimental effect is created, the very decision to dam a river, for instance, creates opportunities for other positive socio-economic purposes which an individual might not cherish but which a state might not want to waste. For instance, a decision by a private individual (actual or juridical) to dam a river and use the water for irrigation may create an opportunity for hydropower generation which only the national energy planners may appreciate and only the state can be in a position to coordinate the opportunities.

The same arguments, about the role of the state area are particularly salient where the subject is an international river.

4. The Magnitude of Resource Involved

The necessity for a comprehensive and basin-wide management of the waters of a basin seems evident from the foregoing analysis. At the very least, the management should be planned on a basin-wide basis even if the actual implementation is taken in stages. That entails meeting the cost of the studies, and eventually for the projects. These can be enormous and considering the nature of the river or lake basin plans, such costs must fall on the state.

The magnitude of the resources may be illustrated by a couple of instances. The member states of KBO have attempted the ideal comprehensive planning to include studies and implementation of projects in energy, agriculture, transportation, afforestation and health. The total cost is summarized in Table 5.

Table 5: Summary of the Total Costs of the KBO Programmes

<u>STUDIES</u>		
Energy		\$19,107,000
Railway		8,586,000
Roads: Primary		28,525,200
Secondary		12,979,200
Industries		180,000
* Sub-total		<u>\$69,377,400</u>
<u>PROJECTS</u>		
Agriculture: Rainfed		\$21,200,000
Irrigated		53,361,000
Energy: Dams		575,200,000
Transmission lines		93,240,000
Railway: Construction of network		1,395,663,000
Rolling stock:		556,704,000
Roads: Primary		327,792,000
Secondary		81,120,000
Afforestation		17,207,700
Tse-tse fly		2,511,735
* Sub total for projects:		<u>\$3,120,999,435</u>
* TOTAL COST OF THE PROGRAMME		<u>\$3,190,376,835</u>

Source: Development Programme of the Kagera Basin: Final Report.  
Executive Summary, (Kagera Basin Organization and United Nations Development Programme, February, 1982) p.73.

The total amount, nearly US\$ 0.6 billion, is evidently an enormous amount; even though one might suggest that it could be reduced by less involvement of the state in the implementation of some of the sectors such as agriculture, particularly the rainfed variation under the drainage basin programme.

Never-the-less the amount is bound to remain large even in instances where the primary focus is in the construction of the dams but before the infrastructure for hydro-electric power or irrigation are included. In the case of OMVS, the primary plans are for the construction of the Diama and Manantali Dams. By mid-1982, the OMVS was able to raise a total of US\$ 821,816,000, of which US\$ 156,362,000 was for Diama and US\$ 572,319,000 for Manantali while US\$ 93,135,000 was ear-marked as reserve.

The above total amount actually represented only 99% of the cost of the two dams and the immediately related works. Clearly, then, the total amount is just over one billion dollars; add to that, the interest on the loans and the total amount in 1986 could be considerably higher.

The point is that the investment requirements can be enormous if integrated and basin-wide management is to be undertaken. And since most of the investment includes studies and basic infrastructure on which subsequent diverse investments would rely, only the state is able to undertake them. That applies to international and, basically, national management programmes.

##### 5. Establishment and Development of Basin Institutions

Management of water resources as described above requires institutional bases far in excess of what a nation's private sector or non-governmental organizations can provide. It requires high level and diversified management capabilities backed by research and institutional infrastructure - to ensure adoption and diffusion of appropriate technology and improved husbandry. A keen observer of the African scene, Professor Oder-Ogwell, has submitted that of all the regions of the world, Africa has the lowest rate of adoption of technological packages in agriculture<sup>14</sup>.

14. see supra note 6 p.6. There are only a few exceptions to this tendency and an example is the diffusion of hybrid maize seeds in Kenya which moved with amazing speed.

At the very foundation of institutional development is training of manpower, defined as the cadre of human beings capable of performing certain productive functions. This is a costly and long undertaking which is to be seen as promotion of the productive value of human resources whether they are later to be deployed in the governmental or non-governmental capacities. Very often, attempts to enhance the performance of a river or lake basin development is hampered by lack of qualified manpower, including agronomic researchers, engineers, managers or extensionists, however, one looks at the issue. In a study done by USAID and OMVS for Integrated Development Project, it was observed from the outset that the institutional and implementation problems which must be resolved first, before positive results can be achieved are:

1. The lack of resources and qualified personnel to carry out extension activities;
2. The lack of logistical support for field agents;
3. A government directed approach to agricultural production encouraging the cultivation of specific crops (i.e. rice) at the expense of diversification;
4. The absence of monitoring systems for training and production activities;
5. A lack of understanding of farmers' needs and their participatory role in decision-making;
6. A lack of integration for farming activities, such as cattle-breeding or herding"<sup>15</sup>.

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15. USAID/OMVS Integrated Development Project, Volume III Analysis of the IDP Training Component (Project No.685-0621, October 1982) p.4.

These could arguably be called basic institutional questions which can be properly dealt with by concerted role of the state, individually or within a joint framework as was, indeed, discussed with OMVS in 1983<sup>16</sup>. But in fact, that is one of the basic problems for the Niger Basin Authority or Kagera Basin Organization, as has been ascertained in the direct interviews with senior officials of those organizations. And we can submit here that however vast the financial resources may be available, there will be no success with the development programme unless a competent and stable institutional frame work is established in place.

6. Meeting the Requirements for Basic Infrastructure

Basic infrastructure to support the management of river or lake basins include roads, railways, telecommunication facilities, laboratories, navigational support equipments, among others. They are generally akin to the institutional requirements and their construction and establishment is a proper domain of the state.

The state may in fact plan to establish the basic infrastructure and later, to use various devices of rent and taxation to recover part of its investments from non-governmental or public entities which may enjoy the use of the infrastructure. In fact, the state should consider that as a serious option, exempting only the essential social service institutions, such as hospitals and community water supply points.

IV SOME CRITICISMS OF STATE PERFORMANCE

This section's principal purpose is to raise a number of caveats to state involvement in the management of river or lake basins. In the process, it may in fact point other roles of the state not discussed above. Moreover, most of the points raised below are inter-related; the breakdown is designed for emphasis and analytic purpose.

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16. See, for instance, an outline in OMVS, High Commission, Training and Human Promotion Directorate (Dakar, October, 1983).

Five illustrative points are raised as follows:

1. Over-politicization of Institutions and Programmes

Involvement of the state in any matter is, ipso facto, a political matter; therefore, by actually accepting state role in the management of river or lake basins, the political role is automatically implied. In fact the political element will be present in most of the points that can be raised in this section.

The problem, however, arises when political considerations supercede all else, in institutional and programme matters. Very particularly, the over-politicization of the institutions commences with the determination of personnel to be employed on the basis of political patronage to the exclusion of merits and expertise. It is also possible that those who have the expertise in the relevant areas may be made to understand that it is not the professional qualifications that have earned them the jobs but that they are proper clients of the patronizing politicians, or in the alternative, plain nepotism\*

The critical question here is one of a politicized appointment which is subsequently backed by staunch political protection of the employees. Its consequence is that the appointee is aware that it is the political, consanguineous or affinal loyalties and protection, and not excellence in professional performance that will insure the job. And such are the persons who courageously resort to misuse of office, unfair enrichment, misappropriation of resources, and negligence of the assigned responsibilities. Very often, the resources of the institution are squandered on unnecessary or unofficial travels, including maintaining tight contact, or even performing political duties for the patron politicians at home to the neglect of the assigned headquarter duties. It may not be a surprise that in such cases, executives of this kind will ignore or frustrate any assigned deputy, knowing only too well that an informed deputy might reveal the irregular practices if he has access to the official correspondence. This leads to collapse of morale and apathy in the professional and support staff, with fatal implications for the organization.

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\* In this case, the employee would be required to belong to FBI = Friends, Brothers or In-Laws.

These characteristics often emerge in regional organizations, whether they be river/lake basin organizations or simply trade and service organizations where states are parties. Similarly, they are found in parastatals at national level. And the executive officers act with impunity because they understand it that even if pressure had to result in their removal, they often suffer no penalties for their offences against the community. To this, the exceptions are extremely rare.

In the case of the Niger Basin Authority (ABN) a great deal seems to be concealed behind the reported criticism of its Executive Secretary by the Council of Ministers meeting held at Niamey on 10-11 August 1984<sup>17</sup>. The eloquent understatement reported that the meeting decided to create an ad hoc commission to evaluate the performance of "the Executive Secretary not having fulfilled the expectations of the member countries". It was nearly unanimously agreed that the poor performance of the Executive Secretariat had undermined credibility of ABN vis-a-vis the member states and the international financial institutions. As a consequence, financial contributions and donations were not forthcoming. Perhaps a decisive and instructive action will be taken at the end of the review, but again, this depends on the role which the states, particularly that of the nationality of the Executive Secretary, decide to play in the matter. It may in fact, vindicate the thesis of this paper by protecting the official concerned.

The member governments of the Preferential Trade Area for Eastern and Southern African States (PTA) seemed to have evinced firmness and prudent action, in one respect, on what may be called the "Kiingi Affair". The man who was appointed first Secretary-General of the organization worked for only eleven weeks by which time a meeting of the Council of Ministers was able to conclude that he "lacked the highest standards of integrity, efficiency and technical competence expected of him ..."<sup>18</sup>. Audit reports of the finances were also ordered,

17. International Rivers and Lakes (A Newsletter by the DTCD, United Nations, New York, No.5 June 1985 p.12 has only a brief report on a Meeting of the Council of Ministers held at Niamey, Niger, 10-11 August, 1984. But these problems were evident for more than a year.
18. Report of the First Extraordinary Meeting of the PTA Council of Ministers, PTA/CM/EXT.2 Nov. 1983.

because part of the accusations raised were that the Secretary-General had conducted himself contrary to the required standards of frugality, thriftiness and prudence. But the action that might be taken in event of confirmed impropriety were not stated; he was summarily dismissed. But the pertinent question must be, how was a person who evinces these characteristics appointed to the job, in the first place?

A more interesting and rare course of action seem to have been taken by the states, members of the West African Economic Community (CEAO) where three former officials have been reportedly taken to court on trial on charges of embezzlement of funds while they were in office<sup>19</sup>. They were no political dwarfs: the main accused, Mohammed Diawara, a former Ivorian Planning Minister, is supposed to have stolen the equivalent of US\$ 14 million belonging to CEAO, and shared with the Senegalese who was the organization's Secretary General, and a Malian. The three were arrested in an exceptional event during the October 1984 summit at Bamako and kept in custody at the Burkinabe capital, which houses CEAO headquarters, until the trials were to begin on March 25, 1986.

It is often expected that embezzlement of that magnitude was actually encouraged by the kind of political patronage the officials enjoyed. And lessons from the CEAO experience can be elucidated only by the knowledge of what happened to the old patronage, in each case.

One national level instance of a decidedly disastrous programme in river basin management is the Bura Irrigation Scheme in Kenya. The small programme conceived in early 1970's to settle 60,000 people (5,000 families) over an area of 6,700ha was to be implemented with a consortium loan of US\$91.7 million from the World Bank, Dutch and the EEC<sup>20</sup>.

19. The matter is attracting wide international publicity. See The Kenya Times March 17, 1986 p.8 and March 25, 1986 p.8.

20. See some overview by Barbara Gunnell, "The Great Bura Irrigation Disaster", in African Business April 1986 pp.18-20. For the specific views of the President see coverage in The Kenya Times January 22, 1986 p.1 and 28, January 28, 1986 p.9; February 18, 1986 p.4.



On a surprise visit to the scheme on January 21, 1986 the President of Kenya was riled by the scheme which he called a disgrace. He found eroded irrigation canals, abandoned plots, poor crops, tumbled down and insanitary housing, zebras grazing on irrigated land, and a general air of desolation and decay. Some of the problems seem to have originated from the inception of the programme. And the President ordered for the dismissal of the General Manager, who is a political appointee, but it took nearly fifteen years before that could be done and perhaps it is to be expected that some punitive action will be taken against the top executives concerned. In any case, if some of the problems were recognizable at the inception of the programme, what happened to the purportedly rigorous World Bank pre-investment appraisal machinery? Why did the Bank ride along with the disaster for so long? Is it conceivable that a commercial or other form of non-governmental institution could have continued to pump money in a venture of that kind for nearly fifteen years.

2. Tendency Toward Proliferation of Institutions

State activities tend to encourage proliferation of institutions, even where such institutions are parasitic on resources of others. One functional line which could be accomplished by an existing institution would often be, to have another institution set up for it, and this happens at national and international levels alike.

On the question of irrigation, for instance, Kenya has about eight public agencies involved. In many provinces there are National Irrigation Boards, a development Authority, and Provincial Irrigation Unit, all at work. Eventually, considerable resources are dissipated in administrative overhead costs rather than operational activities.

This is a general syndrome which is manifested with different intensities in different regions. In eastern, central and southern Africa, there is the PTA, which perhaps coincides, in part, with Lusaka-MULPOC, SADCC, Gisenyi-MULPOC, Kagera Basin Organization, The Great Lakes Community, and the East African Development Bank. Then lately, there have been arrangements to create a PTA "bank".

In West Africa, a 1982 study mandated by the United Nations Economic Commission for Africa found that the major obstacle to integration in the ECOWAS region is the existence and varying objectives of a multiplicity of intergovernmental organizations in the area<sup>21</sup>. The study found that there were more than thirty such organizations with some of the countries belonging to more than twenty: Senegal - 20; Burkina Faso (Upper Volta at that time) - 22; Niger - 25. And there were 16 organizations on the subject of natural resources management alone.

The effect is that the large share of the available resources goes to servicing the permanent secretariats of organizations which have no resources left for developmental programmes. Very soon, the states are unable to justify continued use of taxpayers' money to service institutions which have no development work to justify their existence.

Only states with taxation powers and limited accountability can proceed with international institutions to that extent, especially if some of the institutions are used only to regard political proteges, friends and relatives of those in power, with lucrative salaries and benefits.

3. Mix-up of Economic Exigencies with Political Prestige in Projects

All governments would wish to be powerful and carry some prestige and ostentation around them and within the state. It has been argued that in a number of aid programmes, the goal has been for showy projects which are conspicuous to the public, even if they are not the most economically logical ventures. The United States posed such an argument at the time of the construction of Aswan Dam in Egypt and Tanzania-Zambia railroad. The precise line is difficult to draw and the argument is often dismissed as blatant prejudice. But perhaps in some cases the argument may be verifiable and only caution should be raised here.

In the case of OMVS some commentators have argued that it was not necessary to construct two dams:<sup>22</sup> The Manantali could have

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21. UN ECA, Proposals for Strengthening Economic Integration in West Africa (Addis Ababa, 1984).

22. See "Dangers of haste on River Senegal Projects", West Africa 23 October, 1978, pp. 2083-2084.

regulated the flow of the water permitting navigation, irrigation, hydropower production as well as to prevent salt water intrusion upstream. They conclude that it was perhaps for the prestige of the Senegal, vis-a-vis Mali, that the Diama was to be constructed.

It is also argued that in its haste to construct the showy projects, the states tend to overlook such socially vital matters as rigorous environmental impact assessment and the human aspects of the projects with the clear consequence that the projects fail<sup>23</sup>.

An economic exigency which is often overlooked in the haste to construct the project is the cost of the <sup>capital</sup> borrowed for the project and how it can be repaid. The Bura Irrigation Scheme is classical in this regard. The total loan was US\$ 91.7 million. But the President officially declared the project "a disgrace, a failure and the height of mismanagement". He then concluded that the real losers are "the future generation of Kenyans who will go on paying the World Bank interest on the loan". The haste is partly verified by the fact that even the soil quality is not what was assumed at the beginning.

The financial requirements for the OMVS and KBO are clear from Section III (4) above. And if some aspects of the projects be for political images, rather than meeting economic requirements (with the investment in social services being clerally distinguished), the implications can be far reaching and perhaps only a state could proceed so recklessly.

#### 4. Over-centralization of Institutions

This seems to be the one folly of state involvement in river or lake basins development with the most serious and far reaching implications. Horror stories seem to recur in most of the instances that have been surveyed in Africa. The KBO, as a recent beginner, still awaits the stage of implementation and reviews to show if it departs from the existing trends<sup>24</sup>.

23. See comments by Sophie Bessis, "Recalculating river development costs: the case of the Senegal" in Ceres Sept.-Oct., 1982 pp.21-26, and Adrian Adams, "The Senegal River Valley: What Kind of Change?" in Review of African Political Economy No.10 Sept-Dec. 1977, pp.33-59.

24. Egypt and Sudan have not been covered in this study. They have the most extensive experience in irrigation in Africa. On the other hand, Sub-Saharan Africa is simply beginning.

THE OMVS as a development authority is going through the latest attempts at implementation. But the earlier record of management of the Senegal Basin underscores the folly with distinction. Accounts have been given of the work of SAED, the parastatal authority in Senegal responsible for organizing farmers and irrigation programmes in the Senegal Valley. As recently as April 1975, there were meetings held with the villagers' association for collective agriculture and visitors from the SAED accompanied by French agricultural technicians<sup>25</sup>.

The evidence from the account is that the "experts" from SAED and the villagers were strangers to one another; they were not effectively communicating and evidently the villagers did not fully understand what SAED officials wanted nor were they interested in joining SAED because the role of SAED had not been clearly explained to them.

The management was totally inefficient, to say the least. While the original estimated cost was about US\$13-14,000 per irrigated hectare, the eventual cost averaged between US\$40,000 and US\$50,000 per irrigated hectare<sup>25 bis</sup>. This is in stark contrast to the reported cost in Mali, where a World Bank project costs around US\$26,000, per hectare, under Sahelian conditions.

Yet, the condition in Bura was permitted to continue for about a decade. And the pertinent question is whether it had to take a surprise helicopter visit by the Head of State to change the trend. A summary of one of the findings of the President was that:

"The project managerial control was over centralized in Nairobi which resulted in major weaknesses in the procurement of materials, delayed reaction to the crises on site, poor financial and budgetary controls, and misapplication of project funds<sup>26</sup>.

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25 bis. These are figures given by Barbara Gunnell, *Supra* note 20; they might be on the higher side but they do, nevertheless, underscore the point. Estimates given in interviews with some NIB officials put the figure between \$33,000 and \$40,000.

26. The Kenya Times February 18, 1986.

And the President ordered that the project will, henceforth, be managed from Bura.

This is important because the record of the National Irrigation Board (NIB) suggested that very often the management were totally insensitive to the woes of the farmers. Accounts from their West Kano project evinces perils and helplessness, as a settler at the scheme wrote to the press<sup>27</sup> complaining against the NIB which increases the costs to the farmers, paying less for the farmer's output and charging inflated prices for farm inputs. In one paragraph he submits as follows:

"Productivity has dropped. Morale is killed. The families affected cannot dress. No education. The farmer no longer believes the scheme was intended for his good. The NIB has become a reject, and it is suspected to be more of a marketing agency for farm inputs and equipment than a development agency. The NIB has impressed us with its devotion to negligence and the skill to frustrate and demoralize farmers".

That is a farmer's description of the performance of a parastatal agency involved in a river basin development scheme at national level.

As Sub-Saharan Africa goes into river and lake basin development schemes, there is need for close assessment of what is happening with the schemes at national level. Nigeria is one of the countries which should offer lessons because it has several river basin authorities. One indication seems clear though, that the record of the Nigeria's National Electric Power Authority (NEPA) which gets its power from, among others, Kainji Dam, is not actually glamorous. Although Kainji has a capacity of 760 megawatts, the production level is less than half of that. Besides, indecisiveness kept the 700 megawatt gas-fired station at Sapele from commissioning for over one year<sup>28</sup>. In the end, NEPA became associated with rather unflattering full titles as "Never Expect Power Always" or "Not Even Properly Administered".

27. See Sunday Nation (Nairobi) November 28, 1982. For additional comments on the Fiasco in the West Kano Scheme of the National Irrigation Board, see Sunday Nation November 14, 1982 Editorial.

28. See the letter from Lagos by Eddie Iroh in the African Business June 1984.

It seems difficult to find a river or lake basin authority which has effectively decentralized and devolved authority to local levels of their regions in order to ensure effective implementation of projects through an involvement of the supervisors in the actual work, sensitivity and responsiveness to the needs of the farmers. The lake Basin Development Authority (LBDA) in Kenya accepts, in principle, that it should decentralize its project supervision and administration but in actual fact, the practice is far from realization. By now, the LBDA has had just over two years of actual and serious project implementation. It is expected that its decentralization programme should commence in practice during the third year.

Apart from the follies of over-centralization outlined above the practice also tends to assume that the local farmers are ignorant, irresponsible and passive entities who should simply be directed by the "experts", like machines. Very little attempt is placed on the encouragement of local initiatives and inventiveness by the local farmers. Nor do the over-centralized systems bother to mobilize local farmer organizations such as co-operatives as the actual agents of development. These points came out particularly in the 1975 SAED encounter discussed above. The specific Senegal situation on the matter is elaborated by Thayer Scudder who says that devolution to local levels is often correlated with higher yields and that it increases the effectiveness of the responsible agencies<sup>29</sup>.

But devolution to the local levels and mobilization of producer organizations must, of necessity, be accompanied by rigorous government role in institution building (including training of experts and farmers) and the provision of basic infrastructure. Granted, experience with co-operative organizations in Africa does not have many success stories to offer. However, its history is short and so long as specific follies of state involvement such as politicization and low level of accountability can be remedied, there is some determination in Africa and examples from abroad which suggest positive prospects<sup>30</sup>.

29. Scudder, African River Basins, (Binghamton, N.Y. Institute for Development Anthropology, July 1981) p.37-38.

30. See a brief account by Francois Huot, "Co-operatives in Burkina Faso: A spirit of Self-Development" and David Creighton, "Lessons from India: Success, the Co-operative Way" in The IBRC Reports Volume 15 No.1, January 1986, pp.22-24.

V FINAL REMARKS

The functional justification for state involvement in the management of river and lake basins development in Africa inhere from the socio-economic reasons for that very focus on development. It is further underscored by the established necessity for comprehensive and integrated approach to the management of the utilization of the water of the basin for, inter alia, irrigated agriculture, hydro-electric power generation, navigation, community and industrial uses of water. It is also a component of integrated development planning that the state should ensure measures to prevent negative environmental impact of the activities within individual basin states or in terms of trans-territorial environment injuries.

Section IV has discussed some negative practices associated with state involvement in river and lake basin development. It is possible to indicate factors that are most forcefully inimical to possible development: Politicization of the institutions and failure by the government to ensure accountability by those who are in responsible positions. People who know of their political protection tend to retain that as the focus of commitment and to ignore pursuit of excellence in their work. Consequently, they resort to abuse of office, misappropriation, neglect of duties and plain pursuit of comfort. In Africa where a head of the judiciary has been honest enough to accept that corruption in his department "threatens to reach a point of disgrace and uncontrollable destruction to the system"<sup>31</sup>, political clientelism and lack of accountability in the management of the national and international river or lake basins can prove fatal to the organizations. The capacity of tax payers to keep subsidizing the inefficient, wasteful, negligent and corrupt system is obviously finite.

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31 Comments by Acting Chief Justice Madan of Kenya on Tuesday, January 21, 1986 in an address to the Coast Province Branch of the Law Society of Kenya. See report in Daily Nation (Nairobi) January 23, 1986, p.4.

In fact, every river/lake basin development authority should work on the basis of achievement targets set by their governing boards. Thereafter, individual executives should retain jobs only on proof of achievement. This rigorous ethic could be an effective part of accountability, and examples exist elsewhere, even though not in basin authorities. On Monday, April 7, 1986 Wei Yung-Wing, the chairman of the state-run China Ship Building Corporation resigned following his company's failure to complete on schedule two container ships ordered by a local firm. Financial resources which African states often seek from donor agencies will hardly insure development unless there is also impeccable commitment to achieve public goals, honesty and integrity in the management of public resources, and generally, a community-oriented entrepreneurship.

The point is that in order to succeed, African states must act firmly and ensure accountability from their highest levels before they can expect performance at the farmers' level. In the end most of the productive work should be done at the local level by the small-scale farmers, collaborating through their organizations or through the local commercial enterprises.

There is no substitute for institutional building. If the development programmes are to succeed, but as a requirement, the organization must be able to train, attract and retain the managerial staff. It is not sufficient simply to train under the aegis of the Niger Basin Authority (NBA); six persons had been sent for training with assistance from USAID, four of them had received master of science degrees by mid-1984 but none of them was employed by NBA, but that was also the authority where the head of one of the four operational departments expressed frustration at the fact that since his appointment in July 1981, the chief executive had not assigned him even a single project by mid-1984. In fact, he indicated, the chief executive had frustrated every initiative he had taken to build up and execute a project.

The 1980 act by which the Contracting States established the Niger Basin Authority established four departments: Water Resources; Navigation, Transportation and Telecommunications; Agriculture, Fisheries and Livestock; Administration, Economy and Research; plus the Documentation Centre.



Over-centralization of institutions and management tends to lead to inefficiency; neglect and insensitivity to the farmers; destruction of the morale and initiative of the actual producers; failure to stimulate the participation of the producers and their organizations in procedural and substantive ways; and eventually, the collapse of the programmes in situations where accountability was already scanty.

The state operations may also devolve to the local level in the form of autonomous but associated enterprises working as subsidiaries of the parent institutions. The autonomy of the subsidiaries would cushion the subsidiaries from the financial failures of the parent or sister enterprises and, at the same time, permit the weak enterprises to collapse alone.

The decentralization and devolution of management to the local levels should be accompanied by a systematic institution building to include high level training of experts; training of extensionists; mobilization and education of the farmers as individuals and within their organizations; and the provision as well as maintenance of the basic infrastructure.

There is no substitute to institution building, if the development programmes are to succeed. But as a requirement, the organization must be able to train, attract and retain the managerial staff. It is not sufficient simply to train: under the aegis of the Niger Basin Authority (NBA) six persons had been sent for training with assistance from USAID; four of them had received master of science degrees by mid-1984 but none of them was employed by NBA. But that was also the Authority where the head of one of the four operational departments<sup>32</sup> expressed frustration at the fact that since his appointment in July 1981, the chief executive had not assigned him even a single project by mid-1984. In fact, he submitted, the chief executive had frustrated every initiative he had taken to build up and execute a project.

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32. The 1980 Act by which the contracting States established the Niger Basin Authority established from Departments: Water Resources; Navigation; Transportation and Telecommunication; Agriculture; Fisheries and Livestock; Administration; Economy and Personnel; plus the Documentation Centre.