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July, 1974

Mr. E. M. Adegbulu
Executive Secretary
River Niger Commission
B. P. 729
Niamey, Niger

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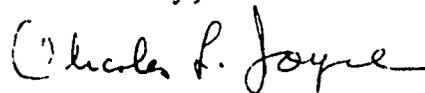
Dear Mr. Adegbulu:

I am pleased to submit five copies of Final Report - Technical Support to the River Niger Commission. The Report was prepared under the terms of my personal services contract (AID/afr 847) with the River Niger Commission from 17 May, 1972 to 16 May, 1974 and under the United States Agency for International Development's project, Support to Regional Organizations (Project No. 625-11-755-506).

The Report is my work and treats of the accomplishments of the Commission during the period of my services. The opportunity to work with you and those associated with the Commission has been a very important and personally satisfying experience for me.

It is impossible to acknowledge individually the many persons from whom I have received assistance during the course of my work. I would, however, like to express my appreciation to you, Mr. Adegbulu, for your understanding and support in the performance of my work and to your predecessor. Please extend my acknowledgement also to our co-workers at the Secretariat, including the Documentation Centre, for their friendship and cooperation in the performance of the tasks for the Commission and to the delegates from and officials in the Member States of the Commission for their assistance during the Commission's meetings and during my missions to their respective countries.

Sincerely,



Charles L. Joyce
Economist/Civil Engineer
Boston, Massachusetts
U.S.A.

CLJ:amj

July, 1974

Mr. David Shear
Director, AFR/CWR
Agency for International Development
Washington, D. C. 20523

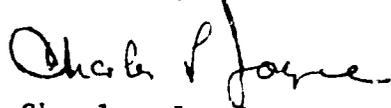
Dear Mr. Shear:

I am pleased to submit ten copies of Final Report - Technical Support to the River Niger Commission. The Report was prepared under the terms of my personal services contract (AID/afr 847) with the River Niger Commission from 17 May, 1972 to 16 May, 1974 and under the United States Agency for International Development's project, Support to Regional Organizations (Project No. 625-11-755-506).

The Report is my work and treats of the accomplishments of the Commission during the period of my services. It has been a personally satisfying experience for me to provide these important services under this Grant Agreement of technical support to the River Niger Commission.

Please accept my appreciation to you and your staff, Mr. Shear, for your support of this project.

Sincerely,



Charles L. Joyce
Economist/Civil Engineer
Boston, Massachusetts
U. S. A.

CLJ:amj

July, 1974

Mr. Albert R. Baron
Regional Development Officer
Agency for International Development
Area Development Office for the Entente States
American Embassy
Niamey, Niger
Department of State
Washington, D. C. 20520

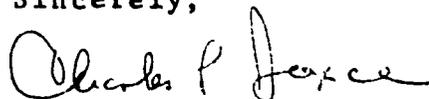
Dear Mr. Baron:

I am pleased to submit five copies of Final Report - Technical Support to the River Niger Commission. The Report was prepared under the terms of my personal services contract (AID/afr 847) with the River Niger Commission from 17 May, 1972 to 16 May, 1974 and under the United States Agency for International Development's project, Support to Regional Organizations (Project No. 625-11-755-506).

The Report is my work and treats of the accomplishments of the Commission during the period of my services. It has been a personally satisfying experience for me to provide these important services under this Grant Agreement of technical support to the River Niger Commission.

Mr. Baron, I appreciate your personal interest in the River Niger Commission and in your support in the execution of this project. Please extend my acknowledgement to your staff for their agreeable assistance to me during the course of the project.

Sincerely,



Charles L. Joyce
Economist/Civil Engineer
Boston, Massachusetts
U. S. A.

CLJ:amj

FINAL REPORT
TECHNICAL SUPPORT TO THE RIVER NIGER COMMISSION

Prepared for
The River Niger Commission, Niamey, Niger
(Personal Services Contract No. AID/afr 847 of 17 May, 1972)
Under
Grant Agreement - U.S. Agency for International Development
Support to Regional Organizations (Project No. 625-11-755-506)

Charles L. Joyce
Economist/Civil Engineer
Boston, Massachusetts
U.S.A.

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GLOSSARY
OF ABBREVIATIONS USED IN THIS REPORT

USAID	United States Agency for International Development
FAC	Fonds D'Aide et de Cooperation
ICHS	Inter-African Committee for Hydraulic Studies
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Social and Cultural Organization
WMO	World Meteorological Organization

PART I
SUMMARY AND INTRODUCTION

CHAPTER I

SUMMARY

Introduction

This report constitutes the final report of Charles L. Joyce who served as a technical advisor to the River Niger Commission under a two year contract (AID/afr 847) from 17 May, 1972 to 16 May, 1974 with the Commission. A Grant Agreement to the Commission from the United States Agency for International Development under Support to Regional Organizations (Project No. 625 11-755-506) financed my services. According to both the contract and the Grant Agreement, I was to advise the Commission on transportation programs of interest to, and affecting the Commission's Member States.

According to the statutes of the Commission in the Act and Agreement of Niamey, the River Niger Commission is entrusted with the task of encouraging, promoting and coordinating studies and programs concerning the exploitation and the development of the resources of the Niger Basin for the purpose of ensuring the most effective use of the resources, including water, of the Basin.

At the commencement of my work at the Commission, the organization was nearly nine years old but much younger in terms of accomplishments. The Commission required broadly based technical assistance to aid it in defining

its immediate goals relative to its mandate from the Member States of the Commission concerning the exploitation and the development of the resources of the Niger Basin. I am a trained and experienced economist and civil engineer and had been the first technical advisor working with the Commission in its history. My background therefore was appropriate to the kinds of things the Commission was to do under its mandate. My duties were broadened from transportation to include also the full range of technical issues considered and proposed by the Commission. My main task was that of conceptualizing and elaborating ideas and projects for submission to the Commission's Member States.

The broad objective of the USAID project, Support to Regional Organizations, is the fostering of a regional approach to economic planning, development and implementation among the countries of West Africa, and more specifically, to provide regional development organizations and their personnel with the technical knowledge and assistance in the elaboration of projects and programs directed at development objectives, which can be achieved by the joint action of several states.

I believe that my work as an important part of the activities of the Commission for the two year period from May, 1972 to May, 1974 could favorably be assessed

against the Commission's performance criteria or equally against the objectives of the USAID project, Support to Regional Organizations, through which my services have been funded.

Accomplishments of the Commission

Under the direction of the Executive (formerly Administrative) Secretary, the Commission's staff worked together to perform the tasks leading to the recent accomplishments of the Commission. I worked as an integral part of the staff.

The revision of the statutes of the Commission on 15 June, 1973 thus creating the Council of Ministers as the organ of orientation and decision of the Commission, and the creation of the Executive Secretariat as the organ of execution of the Commission, as well as the assumption of duties of the Executive Secretary in July, 1973, provided a new and favorable climate, structure and administration for the Commission to fulfill and, indeed reinforce its role in fulfilling its mandate from its Member States for the development of the Basin.

Up to October, 1972, the ninth anniversary of the creation of the Commission, the following were its concrete accomplishments to date.

1. The sponsoring of a study entitled, "Navigability Study of the River Niger between Tossaye and Yelwa" by the Netherlands Engineering Consultants (NEDECO).

2. The signing of an agreement with the United States Government for the preparation of a study entitled, "Niger River Commission Study" by Holmes and Narver of California.

3. A UNDP/FAO sponsored interdisciplinary study for the integrated development of the Niger Basin which was summarized in a report entitled, "Le Rapport de Synthese de la Mission Interdisciplinaire."

4. The installation of the Documentation and Analysis Centre of the River Niger Commission with the financial assistance of UNDP (UNESCO) and the counterpart contributions of the Commission's Member States, is perhaps the most worthwhile accomplishment of this period. UNDP (UNESCO) financial support will terminate with the completion of Phase III in 1975, at which time local staff self sufficiency for the operation of the Center will be developed.

The following are some recent accomplishments of the Commission. References are to the First Meeting of the Council of Ministers at Niamey on 21 and 22 February, 1974. Where relevant, the Council made the necessary budgetary provisions and/or donors have assured financing for the projects.

1. In Resolution No. 2 the Council of Ministers adopted the principle of an Indicative Plan for Water Resource Development in the Niger Basin and entrusted the Executive Secretary with the undertaking of necessary steps for the preparation of the Indicative Plan.

What this amounts to is to provide the Commission with a conceptual framework and criteria for charting future

courses of action for the conservation, use and development of the water and complementary resources of the Basin. Given the objective and the elements as suggested in the working paper on this topic, the Commission can move ahead in developing and proposing a strategy of action for the approval of the Member States. Periodic updating of the Indicative Plan would be necessary as short term objectives are accomplished and as the need arises to revise and extend the course of action into the future.

The acceptance of the principle of an Indicative Plan, and the directive to the Executive Secretary for accomplishing this task, give him a "Carte Blanche" to move ahead with projects relating to the implementation of the Plan. It also gives potential sources of technical and financial assistance to the Commission, a framework in which they could also consider their future assistance to the Commission. They could thus invest in new projects knowing that these have the approval of all states in the Basin.

Since the principle of the Indicative Plan was adopted, the Council of Ministers saw no need to adopt a separate resolution on the development of fisheries in the Basin. Fisheries would be inherent in the Indicative Plan.

2. In Resolution No. 3, the Stream-flow Simulation Model for the River Niger was adopted. Finance has been assured by the Government of Canada. The Model falls within the framework of the Indicative Plan.

The output resulting from the submission of proposed project characteristics to the Model will allow the Commission to advise Member States on the consequences of projects on the streamflow of the River Niger in their territories. The ease with which project possibilities can be submitted to the Model will encourage more experimentation on project and project combinations in the Basin. The information derived from such exercises and the acceptance and rejection of project combinations will be the beginning of overall planning in the Basin.

Potential investors in projects could therefore know that the effects of project proposals on the regime of the Niger would not be harmful to other states. This would in itself give rise to more financial support for project proposals, which, on the balance, bring benefits to several or all Basin states.

3. In Resolution No. 4, the Council approved and UNDP expressed its willingness to finance the downstream extension of the Flood Forecasting

and Warning System which UNDP and WMO have assisted in establishing on the Guinean and Malian parts of the River as far downstream as Mopti, Mali.

Such a project would include a communications system throughout the Niger Basin for the transmission of hydrological information. Such a system would allow downstream Member States to anticipate hydrological phenomena from several weeks up to several months in advance of their occurrence. Flood damage could thus be better controlled, navigation seasons better planned, reservoirs operated more efficiently, etc. Administratively, the Commission could benefit from such a system since communications are now very poor between the Commission and the Member States. Poor communication compromises, to a significant degree, the operational efficiency of the Commission.

4. On the initiative of the Government of Niger and with the assistance of the Economic Commission for Africa and the River Niger Commission, the Council of Ministers adopted Resolution No. 7, the "Agreement on the Regulation of Navigation on the River Niger." The Agreement contains regulations for navigation of the Niger.

5. In adopting the 1974 budget, the Council of Ministers has approved the construction of an office for the Commission. The Secretariat, including the Documentation Centre, which are now at separate locations, will be under one roof thereby enhancing operational efficiency, eliminating high rents and providing permanent quarters for the Commission. Also, a budgetary provision has been made for the financing of part time English language study for staff in Niamey.

Apart from the Resolutions of the First Meeting of the Council of Ministers, FAC has agreed to finance "A Study Programme to Determine the Causes of the Anomalies in the Flood Regime of the Niger." Such a program is but the initial phase in a substantial strategy to learn more about the regime and changes in the regime of the River Niger, particularly in the highly complex Interior Delta.

Prospects for the Future

In summary, the following are the most important conclusions from my report to the Commission's Executive Secretary on missions to Nigeria, Cameroon, Chad, Ivory Coast, Mali, Upper Volta and Dahomey during my final two months at the Commission and relative to the implementation of the resolutions of the First Meeting of the Council of Ministers in February, 1974, the preliminary work on the Indicative Plan for the Development of Water Resources in the Niger Basin and the identification of new project possibilities involving two or more Member States of the Commission.

1. The Commission's Member States are interested in a basinwide project for conducting studies and investigations for damsites in the Niger Basin. Such a project is an early requirement of the Indicative Plan since dams are an important element in the determination of the technical possibilities of water resource use and therefore of the development potential of the Niger Basin. The project would provide

a flow of inputs to the Indicative Plan. Some states have already initiated their own programs and would provide lists of initial sites which require investigation. The project could be entitled, "Operation Dams in the River Niger Basin."

2. The three countries sharing the Bani sub-basin of the Niger system are each programming development projects in the parts of the sub-basin within their territories. Ivory Coast is planning a study of the integrated development of the North including the Baoulé and Bagoé River Basins which are tributaries of the Bani, where an estimated 8,000 to 20,000 hectares could be brought into agricultural production. Upper Volta is planning a project, "Hydro-Agricultural Development of the Niena" in the Bani Basin. Mali is further along with the preliminary work on its part of the Basin having already signed an agreement with the Government of Italy for an inventory of all damsites in the Bani Basin within the Republic of Mali. Perhaps a project could be drafted entitled, "Integrated Development of the Bani Basin - Joint Project-Ivory Coast, Mali and Upper Volta" (Mr. Lamine Keita's project title. He is the Director of Hydraulics in the Republic of Mali). Such a project would be related to the dams project above. Phase I could be the Malian investigations and Phase II, those for Ivory Coast and Upper Volta.

3. Two other possible regional development ideas exist but these remain only ideas at this time. Little preliminary work

has been done on them to determine whether sufficient interest and justification exist. A joint Cameroon-Nigeria Regional Development Project in the Benue Basin within the Province of North Cameroon and in the North-eastern State in Nigeria had been proposed by Cameroonian officials during my visit. Also, Mr. Adegbulu and I have on several occasions discussed the possibility of linking the "Dallol Maouri Project" and "Operation for the Integrated Development of Borgou" now underway in Niger and Dahomey respectively with a joint Dahomean-Nigerien project in which an important element would be fisheries development, on the part of the main River Niger shared by Niger and Dahomey.

4. Several project possibilities in cooperation with the Inter-African Committee for Hydraulic Studies (ICHS) exist. One is the sponsoring of the completion of the "Monograph of the Niger" to include those parts of the Niger Basin within Cameroon, Chad and Nigeria, the updating of the Monograph and the translation of the Monograph into English. Water legislation could be another issue of common interest to the Commission as well as ICHS.

5. Perhaps the Commission could select one or more priority sectors in which to concentrate its energies at this time. Most of the Basin's population gain their livelihood through agriculture and there is a need to improve agricultural methods for increased food production, particularly now during these years of drought. Agriculture and fisheries could be two priority sectors.

6. In addition, responsables in the Republic of Mali presented the following project ideas for the Commission:

- A basinwide project for the development of pilot irrigation schemes in different parts of the Basin under differing conditions, could be developed for the purpose of increasing crop production and experimenting with and demonstrating improved methods of agriculture. A crop such as rice could be selected and work coordinated with existing rice schemes in the Basin States and with the West African Rice Development Association.

- A project for agricultural research and application.

- A regional training project based on the need of Member States' Nationals to receive training in priority areas to be decided by them.

- A basinwide study on navigation.

Conclusion

The Commission's Member States are more actively supporting the Commission. The creation of a Council of Ministers has raised the level of Member State participation in the orientation and decision making at the Commission to that of one Minister from each State. The establishment of the Executive Secretariat assigns a more dynamic role for the Secretariat. Not unimportant, is the appointment of an able and effective executive to the Executive Secretariat. The Council of Ministers has

also made the necessary budgetary provision from Member State subscriptions for the construction of a Secretariat, including a Documentation Centre, for the Commission in Niamey, Niger.

The Commission is entering a new phase in its growth. Heretofore, the Commission has been running to keep up with its Member States. The initiatives have come from the States in terms of project development and the Commission has tried to keep itself informed on the projects in the Niger Basin. These initiatives will, of course, to some degree continue. However, the Commission is beginning to fulfill the task assigned to it by the riparian states of encouraging, promoting and coordinating studies and programs concerning the exploitation and the development of the resources of the Niger Basin.

The recent project output (projects with assured finance) of the Commission and areas of possible future project development have been described above. The major area of activity is water resources. These projects will serve the interests of the Commission's Member States and also impose additional responsibilities on the Secretariat to develop the capabilities to staff these new projects. The Indicative Plan will serve as a framework for coordinating all of

the development projects in the Basin. The project, "A Study Programme to Determine the Causes of the Anomalies in the Flood Regime of the Niger" is the beginning of basinwide cooperation on increasing the knowledge of the River Niger Basin and the regime of the River Niger and is therefore an important element of the Indicative Plan. The installation of the "Streamflow Simulation Model" will allow the Commission to advise the Member States on the consequences of projects on the regime of the River Niger. The submission of projects and programs to the Model is the beginning of overall planning in the Basin. The extension of the existing "Flood Forecasting and Warning System" on the River Niger in Guinea and as far downstream as Mopti, Mali, will allow Member States to anticipate the Niger's hydrological phenomena up to several months prior to its occurrence thus allowing more efficient water resource management and use. In addition, the completion of a system of communications throughout the Basin as part of the forecasting system would benefit the Commission administratively. The adoption of the "Agreement on the Regulation of Navigation on the River Niger" contains the beginning of fundamental legislation for facilitating passenger and cargo transportation on the River Niger.

This text also indicates some areas of possible future project development in the Basin.

There is little question that the River Niger Commission is on its way to becoming an effective regional organization for actively promoting and initiating courses of action for the conservation, use and development of the resources, and particularly the water resources, of the Niger Basin for the mutual benefit of the inhabitants of the nine Member States of the River Niger Commission.

CHAPTER II

INTRODUCTION

Objectives of the Project

The broad objective of the USAID Project No. 625-11-755-506, Support to Regional Organizations, is the fostering of a regional approach to economic planning, development and implementation among the countries of West Africa. More specifically, the project has been designed to provide regional development organizations and their personnel with technical knowledge and assistance in the elaboration of projects and programs directed at development objectives, which can be achieved by the joint action of several States.

The River Niger Commission

The River Niger, over 4,000 kilometers long, is one of the world's great rivers. The River Niger is the most important surface water resource in West Africa including the Senegal and Lake Chad Basins. The Niger's active basin includes the territories of nine West African countries and therefore has an international character.

On 26 October, 1963, all of the riparian states of the River Niger Basin, the United Republic of Cameroon, the Republic of Chad, the Republic of the Ivory Coast, the Republic of Dahomey, the Republic of Guinea, the

Republic of Mali, the Republic of Niger, the Federal Republic of Nigeria and the Republic of Upper Volta adopted the Act of Niamey thereby creating the River Niger Commission. The composition and functions of the Commission were the subject of the Agreement of Niamey of 1964. The Agreement of Niamey has been modified in 1968 and revised in 1973. The River Niger Commission is entrusted with the task of encouraging, promoting and coordinating studies and programs concerning the exploitation and the development of the resources, including water, of the Niger Basin for the purpose of ensuring the most effective use of the resources of the Niger Basin.

Purpose of Grant and Statement of Duties

The purpose of the Grant Agreement between the United States Agency for International Development and the River Niger Commission is to provide the services of a transport economist to act as an advisor to the Executive (formerly Administrative) Secretary of the River Niger Commission for the implementation of the resolutions of the Commission and the decisions of its Chairman, relative to all projects in the field of transport interesting Member States.

My personal services contract with the Commission states that the transport economist shall analyze the economic feasibility of various transportation projects and proposals, with particular

reference to navigation on the lower and middle reaches of the River Niger. He shall also study other types of transportation in the River Niger Basin region, with a view to making recommendations on the most economical systems and routes.

My Services to the Commission

I had been hired as a transport economist to accomplish some of the tasks suggested in the Grant Agreement and my personal services contract. At the commencement of my work at the Commission, the organization was nearly nine years old but much younger in terms of accomplishments. The Commission required broadly based technical assistance to aid it in defining its immediate goals relative to the mandate from the Member States of the Commission for the exploitation and the development of the resources of the Niger Basin.

It became apparent that water resources and their management and exploitation were potentially a major, if not the major, area of interest for the Commission. Projects were being planned, financed and implemented at national levels in the Basin requiring the use of the Basin's waters. Some of these projects were not mutually compatible. It would not be possible to fully develop certain projects without causing harm to other existing or planned projects.

My training as an economist and civil engineer and my experience in the water resource field provided the necessary background for me to move with the Commission into the water resource planning and management field with confidence. It was important that I as the Commission's first technical advisor be integrated entirely into the activities of the Commission and be of assistance to the Commission in the fulfillment of its mandate from its Member States.

The Commission has, in fact, made considerable progress in determining the needs of Member States in the past couple of years and in fostering the cooperation and collaboration of the Commission's Member States on specific projects. My work has been an integral part of the Commission's activities, and my role has been an important one in these activities.

Schedule of Events

During the period of my personal services contract, AID/afr 847 from May 17, 1972 to May 16, 1974, the following is an outline of the Commission's major events and my own related activities:

17 May, 1972 to 1 July, 1972 - French language training in Boston; Consultation at United Nations, New York; Consultation at USAID, Washington; Travel from Washington to Niamey via: The Netherlands Engineering Company (NEDECO) at The Hague for consultation; United States Embassy, Paris, for consultation.

2 July, 1972 - Arrived at Niamey, Niger

- 15 October, 1972 to 3 November, 1972 - Reconnaissance Trip
Landrover: Niamey, Niger to Parakou, Dahomey
Railroad: Parakou to Cotonou, Dahomey
Landrover: Cotonou, Dahomey to Lagos, Benin, Warri,
Onitsha, Lokoja, Jebba, Kainji Dam, Kaduna, Kano,
Nigeria to Zinder, Maradi, Dosso, Niamey, Niger.
- 5-14 December, 1972 - Reconnaissance Trip
Air: Niamey, Niger to Ouagadougou, Upper Volta to
Bamako, Mali
Road: Bamako to Mopti, Mali
Air: Mopti, Mali to Niamey, Niger
- 16 January, 1973 - Arrival at Gaya, Niger from Port Harcourt,
Nigeria of a push-tow and three barge fleet carrying
petroleum products on the River Niger.
- 29 January, 1973 to 6 February, 1973 - Travel to Ouagadougou,
Upper Volta for the VIIth Session of the River Niger
Commission from 1-3 February, 1973.
- 14-27 April, 1973 - Participation in the Earth Resources
Technology Satellite (ERTS) Seminar in Bamako, Mali.
- 15 June, 1973 - Meeting of the Plenipotentiaries of the
River Niger Commission at Niamey, Niger for the re-
vision of the Agreement of Niamey of 1964.
- 6 July, 1973 - Departure of Mr. Leon Bokpe, the outgoing
Administrative Secretary of the Commission.
- 7 July, 1973 - Commencement of duties of Mr. Ebenezer M.
Adegbulu, the incoming Administrative (later Executive)
Secretary of the Commission.
- 3-5 September, 1973 - Meeting at Niamey, Niger of National
Experts of Member States of the River Niger Commission
on Water Resources.
- 6-7 September, 1973 - Meeting at Niamey, Niger, of the sub-
Commission on General Regulations for Navigation on
the River Niger.
- 9-11 January, 1974 - Meeting at Niamey, Niger of Experts
of Member States of the Commission to examine the
working documents of the First Meeting of the Council
of Ministers.
- 21-22 February, 1974 - First Meeting of the Council of
Ministers of the River Niger Commission at Niamey,
Niger.

3 March, 1974 - 12 April, 1974 - I made several field trips relative to the decisions of the First Meeting of the Council of Ministers and including preliminary work on the Indicative Plan for Water Resources Development in the River Niger Basin and the identification of common project possibilities involving two or more States in the Niger Basin.

3-19 March, 1974 - Nigeria, Cameroon, Chad, Ivory Coast and Mali.

1-2 April, 1974 - Upper Volta

9-12 April, 1974 - Dahomey

22 April, 1974 - My departure from Niamey for several weeks accumulated vacation leave.

16 May, 1974 - Termination of my personal services contract.

PART II

PERIOD OF SERVICE TO THE COMMISSION

CHAPTER III

BACKGROUND

Two circumstances during my period of service to the River Niger Commission were favorable for the Commission. On 15 June, 1973 the plenipotentiaries of the Member States of the Commission met in Niamey and revised the 1964 Agreement of Niamey in order to give the Commission the organizational structure to more effectively initiate, propose and execute projects for the effective development of the resources of the Basin. The revised statutes created a Council of Ministers in place of the Commissioners thus raising the level of Member State participation in the orientation and decision making of the Commission to that of one Minister from each State. The creation of the Council is an indication of the increased importance which the Member States attach to the work of the Commission. Also, an Executive Secretariat was created in place of the Administrative Secretariat thus manifesting the more active role that the States wished to vest in the Commission.

The second circumstance has been the arrival of Mr. E. M. Adegbulu as the Administrative (later Executive) Secretary of the Commission.

Without these two occurrences, the Commission's potential for achieving concrete results would have been much reduced. My work has consisted of assisting the

Commission in the exploitation of this potential in the conservation, use and development of the Niger Basin in the interests of the Commission's Member States.

My work at the River Niger Commission can be divided into three, though not thoroughly distinct, phases.

1. Familiarization with the work of the Commission, definition of technical goals and the identification and the conceptualization of projects.
2. Preparation of project ideas and working papers and their presentation to the Commission's Member States.
3. Execution of the Resolutions of the Commission and the identification of new project possibilities.

CHAPTER IV

FAMILIARIZATION WITH THE WORK OF THE COMMISSION,
DEFINITION OF TECHNICAL GOALS AND THE CONCEPTUALIZATION OF PROJECTS

During the first phase, I spent considerable time examining the Minutes of the past annual meetings of the River Niger Commission. The resolutions of these meetings contain the decisions of the delegates on the issues discussed, and theoretically chart a course of action for the Commission for the coming year. These annual meetings are the sole means of introducing ideas and projects at the Commission. Work remained to be accomplished in the execution of resolutions issuing from former meetings of the Commission.

During this period I visited five of the Commission's Member States and met with the delegates to the Commission's annual meetings and officers in relevant Member State governmental departments. The purpose of these contacts was to ascertain:

- what the Member State governmental officials were considering in terms of the development of the Basin within their territorial limits.
- what should the Commission be doing in order to accomplish its purposes and to assist Member States in achieving their individual goals.

The following were some of my observations during this time. The first part relates to the search for a strategy for effectively ascertaining, presenting

and having decisions take on some of the immediate goals for the Commission.

1. The Member States were the best sources of ideas for defining what the Commission should be doing to fulfill its catalytic role in the promotion of the integrated development of the Basin.
2. The Commission could glean project ideas from Member States, examine their mutual compatibility and select and prepare papers on these project ideas for presentation to the Commission's Member States at its meetings.
3. The Commission's annual meetings were the only viable means of presenting project ideas to the Member States.
4. The qualifications and interests of the delegates to the Commission's annual meetings were disparate. Frequently, the agendas were not matched by delegates or their experts with the required background to discuss and decide competently on the issues. This caused a certain inertia at the Commission relative to the adoption of courses of action.
5. On highly technical questions, competent experts were seldom present to inform the delegates and answer questions.
6. Special meetings would have to be convened or sub-commissions created to handle issues which could not be effectively discussed at the annual meetings. Where necessary, experts would be present to present papers and answer the questions of the delegates. (Special meetings are less necessary now with the new structure at the Commission.

Member State experts and technical specialists now meet just prior to the Commission's annual meetings of the Council of Ministers to deliberate on all items on the agenda and subsequently to present their recommendations to the Council of Ministers.)

The following relates to specific functions of the Commission and project ideas.

7. Many of the important issues discussed at previous Commission meetings and those gleaned from Member States' officials fell in the broad category of water resources. Basinwide planning would be necessary to ensure the optional use and development of the water resources of the Basin for the mutual benefit of the riparian states.

8. Although it had been a function of the Commission to receive and solicit information from Member States on projects in the Basin, almost no information had been received in Niamey. The Member States' practice of orally announcing projects at the Commission's annual meetings did not produce the precision required for states to be enabled to effectively use the information and/or analyze the effects of these projects on their countries. The Commissioners were often misquoted in the Minutes of the meetings although in theory the Minutes of each meeting were read by the Commissioners and later amended and adopted. Since the Commission did not know the existing and planned projects in the Basin, it could not disseminate this information to the Member States. Rumors that other States were planning projects involving the Basin's waters were not uncommon.

9. A Flood Forecasting and Warning System was being installed on the Upper River Niger in Guinea and Mali as far downstream as Mopti, Mali. Other Member States were interested in the downstream extension of this project for the exchanges or hydrological information which the project would make possible. The regime of the River Niger is such that downstream Member States could know from several weeks up to several months in advance of the occurrence of hydrological phenomena in their territories. States could therefore more efficiently manage their water resources for irrigation, hydro-electrical generation, navigation, flood control, etc.

10. A project proposal was introduced at the Commission's Vth Session at Abidjan in 1970 for "A Study Programme to Determine the Causes in the Anomalies in the Flood Regime of the Niger." Modifications had recently been observed in the regime of the Niger in the Interior Delta in Mali. The object of the studies would be to determine the causes and to know whether the regime was in a state of evolution. FAC had been requested to finance the studies.

11. The Government of Niger was preparing for a navigation trial with a push-tow and three barges on the River Niger from Port Harcourt, Nigeria to Gaya, Niger. The trial culminated in the arrival of the fleet at Gaya on 16 January, 1973. Meanwhile, the Government of Niger had prepared Draft Regulations for Navigation on the River Niger and submitted them to the Commission for review and presentation at the Commission's VIIth Session at Ouagadougou, Upper Volta in February, 1973.

CHAPTER V

PREPARATION OF PROJECT IDEAS AND WORKING PAPERS
AND THEIR PRESENTATION TO THE COMMISSION'S MEMBER STATES

This phase bears witness to a number of meetings of the Commission's Member States. Given the heterogeneous composition of the delegations to the annual meetings and of the consequent difficulty of having fruitful discussion on a variety of issues relative to water resource management and general regulations for navigation, it was decided at the Commission's VIIth Session at Ouagadougou, Upper Volta in February, 1973, that technical meetings would be held at Niamey, Niger. The meetings of National Experts on Water Resources and of the Sub-commission on General Regulations for Navigation on the River Niger were held from 3-5 September, 1973 and on 6 and 7 September, 1973 respectively. Meanwhile, the Commission prepared working documents on specific project proposals and also invited international experts to present papers on topics which could lead to concrete projects. The results of the meetings were the following:

- The Recommendation that the Commission accept the offer of Nicolet, Carrier, Dressel and Associates of Montreal to prepare a preliminary study on the applications of a Simulation Model to the River Niger Basin.

- The Recommendation that the Commission draft a project request in collaboration with the

Flood Forecasting and Warning System already existing in the Republics of Guinea and Mali.

- The Recommendation that the Member States regularly and systematically transmit to the Commission information on water resources and projects and studies in the Basin.

- The Recommendation that the Documentation Centre assemble and analyze data relative to the drought in semi-arid zones.

- The Draft General Regulations as submitted by the Government of Niger would be entrusted to the Economic Commission for Africa for review and reorganization into a standardized format.

These meetings were successful. The Water Resources Meeting was leading to two projects: A Simulation Model for the Basin which would allow the Commission to weigh the consequences of projects in the Basin and to advise the States of these effects and the extension of the flood forecasting and warning system already existing on the River Niger in Guinea and Mali. Upon the completion of the latter project, downstream Member States would be enabled to anticipate hydrological phenomena from several weeks to several months before the occurrence in their territory, thus leading to better water resource management. In addition, the Commission would be enabled to be in daily contact with Member States since a communications system linking all States would be part of this program.

Ignored at these meetings were papers treating of the following topics:

- A Strategy for Water Resource Development in the Niger Basin - an Indicative Plan.
- Priority for the Establishment of a Hydrological Data Base for the Development on Water Resources in the Basin.
- The Solar Pump - Possibilities for Using Solar Energy to Pump Water in the Sahelian and Sudanese zones.
- Pluviometric and Hydrographical Statistics - For the Continuation of the Effort to establish Observation Stations and a Graphic Utilization of Data.
- Discussion on Patrolling, Marking, Maintaining and the Improvement of the Navigable Way and related facilities on the River Niger.
- Note on the Evolution of Navigation and of Traditional Fishing on the Middle Niger since 1968.

Largely disappointing at the meetings was the failure of the delegates to respond to the proposal for an Indicative Plan for Water Resources Development in the Niger Basin. The acceptance of the principle of an Indicative Plan would provide the necessary framework for the integrated development of water resources development.

Also, with respect to navigation, the delegates did not discuss the principles inherent in making the

navigable way a viable transport mode. Any transport facility must be maintained, patrolled and marked periodically in order that navigators be aware of shifts in the channel. The responsibility for these tasks and the incidence of costs are other aspects of the issue. Because of low traffic volume on the River Niger, it is likely too early to come to any definitive decisions on these points. As the traffic volume increases, then arrangements should evolve to ensure that the River is a viable transport mode. However, it is not too early for Member States to consider the criteria for proper maintenance, improvement and marking of the channel and of the responsibilities and incidence of costs.

There would, however, be other opportunities to present these proposals at the First Meeting of the Council of Ministers which would be preceded by a Meeting of National Experts to review project proposals and working papers. These meetings were held in Niamey on 21-22 February, 1974 and 9-11 January, 1974 respectively.

Meanwhile, at the Commission we were busy proceeding with the directives in the Recommendations of the Experts on Water Resources and Navigation and in redrafting the working paper for the Indicative Plan. We would relate the Indicative Plan to the drought since the Commission includes four of the six States most affected by the drought and other less affected States.

Also, we were engaged in preparing new proposals relative to improving the operational efficiency of the Commission and to new projects in the Basin.

Working papers were prepared for these meetings on the following topics on the agendas:

- Rule of Procedure
- Staff Regulations
- 1974 Budget
- Construction of an Office for the Commission
- Staff Training Program
- Phase III of the Documentation Centre
- A Strategy Against Drought - An Indicative Plan for Water Resource Development in the Niger Basin
- Development of Fishery on the Basin
- Streamflow Simulation Model for the Niger Basin
- Flood Forecasting and Warning System
- General Regulations for Navigation.

The First Meeting of the Council of Ministers approved all of these proposals with the exception of the revision of the Staff Regulations and made the budgetary provision where required. It is reasonable that so many of the issues presented to the Council were accepted since some of these ideas were as old as 18 months and many of the items on the agenda had undergone screening at three or four prior meetings. The change in the

Commission's structure permitting an annual meeting of the Council of Ministers preceded by a meeting of national technicians, makes it possible to separate the technical aspects of issues from other considerations. With the appropriate technical expertise at these meetings, the gestation time for final decisions on project proposals should be greatly reduced.

CHAPTER VI

EXECUTION OF THE RESOLUTIONS OF THE COMMISSION
AND THE IDENTIFICATION OF NEW PROJECT POSSIBILITIES

The objective of my final two months at the Commission was to begin the execution of the resolutions of the Commission including the preliminary work on the preparation of an Indicative Plan for Water and Complementary Resource Development in the Basin, and the identification of new project possibilities for the Commission.

This phase follows the First Meeting of the Council of Ministers on 21 and 22 February, 1973 and includes visits beginning on 3 to 19 March, 1974 to Nigeria, Cameroon, Chad, Ivory Coast and Mali; on 1-2 April, 1974 to Upper Volta and from 9-12 April, 1974 to Dahomey. Contacts with the Government of Niger relative to the execution of the resolutions of the Commission and the identification of new project possibilities were not possible due to the sudden change in government on 15 April, 1974. I left Niamey on 22 April, 1974 and took several weeks of accumulated vacation prior to the termination of my contract on 16 May, 1974.

In Resolution No. 2, the Council of Ministers accepted, in principle, an Indicative Plan for Water Resources Development in the River Niger Basin. The

Indicative Plan is the delineation of a common approach and its periodic updating for the coordinated development of water and complementary resources in the Basin. The Indicative Plan will provide a dynamic conceptual framework into which the conservation, use and development of the resources of the Basin can be placed.

The following suggests a strategy for an Indicative Plan for water resource development in the Niger Basin. More complete documentation on an Indicative Plan exists at the Secretariat.

1. The national and regional objectives of the riparian states.
2. Alternative syntheses of the national and regional objectives of the riparian states.
3. The establishment of an appropriate data base for the development of water and complementary resources.
4. The alternative water resource project possibilities and the costs and benefits.
5. The alternative water resource development programs and their costs and benefits.
6. The comparative evaluation of the consequences of the alternative programs in terms of the individual and collective objectives of the riparian states of the Niger Basin.
7. The presentation of several courses of action and their consequences to the Member States of the River Niger Commission.
8. The adoption of a course of action - an Indicative Plan for the Basin by the Member States.

During my missions to Member State countries,
my intention was:

- to determine the level of development of the River Niger Basin in the countries visited by collecting information on all existing projects in the Basin.

- to determine the overall development strategy of the individual countries with respect to the Basin and their priorities in the development of the Basin.

- from a technical point of view, to identify common areas of possible project and program development in accordance with the development strategies of the individual states, and the requirements of a common approach for the development of the Basin, the Indicative Plan.

These missions have been the subject of a report to Mr. E. M. Adegbulu, the Executive Secretary of the River Niger Commission. The report outlines the preliminary findings of the missions and should be followed up by more complete papers on:

- A Synthesis of the National and Regional Objectives of the Riparian States of the River Niger with respect to the Development of the River Niger Basin.

- The projects which have been preliminarily identified in the report referred to above.

In summary, the following are the most important conclusions from my report to the Commission's Executive Secretary on these missions.

1. The Commission's Member States are interested in a basinwide project for conducting studies and investigations for dam/sites in the Niger Basin. Such a project is an early requirement of the Indicative Plan since dams are an important element in the determination of the technical possibilities of water resource use and therefore of the development potential of the Niger Basin. The project would provide a flow of inputs to the Indicative Plan. Some states have already initiated their own programs and would provide lists of initial sites which require investigation. The project could be entitled "Operation Dams in the River Niger Basin."

2. The three countries sharing the Bani sub-basin of the Niger system are each programming development projects in the parts of the sub-basin within their territories. Ivory Coast is planning a study of the integrated development of the North including the Baoulé and Bagoé River Basins which are tributaries of the Bani, where an estimated 8,000 to 20,000 hectares could be brought into agricultural production. Upper Volta is planning a project, "Hydro-Agricultural Development of the Niena" in the Bani Basin. Mali is further along with the preliminary work on its part of the Basin having already signed an agreement with the Government of Italy for an inventory of all dam/sites in the Bani Basin within the Republic of Mali. Perhaps a project could be drafted entitled, "Integrated Development of the Bani Basin - Joint Project - Ivory Coast, Mali and Upper Volta" (Mr. Lamine Keita's project title. He is the Director of Hydraulics in the Republic of Mali). Such a

project would be related to the dams project above. Phase I could be the Malian investigations and Phase II, those for Ivory Coast and Upper Volta.

3. Two other possible regional development ideas exist but these remain only ideas at this time. Little preliminary work has been done on them to determine whether sufficient interest and justification exist. A joint Cameroon-Nigeria Regional Development Project in the Benue Basin within the Province of North Cameroon and in the Northeastern State in Nigeria had been proposed by Cameroonian officials during my visit. Also, Mr. Adegbulu and I have on several occasions discussed the possibility of linking the "Dallol Maouri Project" and "Operation for the Integrated Development of Borgou" now underway in Niger and Dahomey respectively with a joint Dahomean-Nigerien project in which an important element would be fisheries development, on the part of the main River Niger shared by Niger and Dahomey.

4. Several project possibilities in cooperation with the Inter-African Committee for Hydraulic Studies (ICHS) exist. One is the sponsoring of the completion of the "Monograph of the Niger" to include those parts of the Niger Basin within Cameroon, Chad and Nigeria, the updating of the Monograph and the translation of the Monograph into English. Water legislation could be another issue of common interest to the Commission as well as ICHS.

5. Perhaps the Commission could select one or more priority sectors in which to concentrate its energies at this time. Most of the Basin's population gain their livelihood through agriculture and there is a need to improve agricultural methods for increased food production, particularly now during these years of drought. Agriculture and fisheries could be two priority sectors.

6. In addition, responsables in the Republic of Mali presented the following project ideas for the Commission:

- A basinwide project for the development of pilot irrigation schemes in different parts of the Basin under differing conditions, could be developed for the purpose of increasing crop production and experimenting with and demonstrating improved methods of agriculture. A crop such as rice could be selected and work coordinated with existing rice schemes in the Basin states and with the West African Rice Development Association.

- A project for agricultural research and application.

- A regional training project based on the need of Member States' Nationals to receive training in priority areas to be decided by them.

- A basinwide study on navigation.