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DRAFT
PREFEASIBILITY STUDY
ON THE ESTABLISHMENT
OF THE AFRICAN ENERGY COMMISSION
(AFREC)

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PREFACE

This report, which is to be used for inter-organizational discussions is a review and update of the comprehensive work undertaken by several institutions particularly the UNDP(1984/85), the OAU, the ECA and the African Development Bank on the requisite institutional structure for the effective coordination, harmonization and management of the African Energy Sector. The report proposes how the development and management of the African Energy Sector should evolve. The recommended actions are consistent with the policies and strategies as outlined in the Draft OAU/African Economic Community Policies and Strategies for Energy Cooperation which appear as Appendix B of this document.

This document will be finalized after receiving comments from different fora whereupon it will be presented as the Pre-feasibility Study on the Establishment of the African Energy Commission which the OAU/AEC Secretariat is presently implementing.

DRAFT PRE-FEASIBILITY STUDY ON THE ESTABLISHMENT OF THE AFRICAN ENERGY COMMISSION (AFREC)

1. INTRODUCTION

African planners and policy makers have for a long time appreciated the importance of energy as a basic requirement for human activities, as one of the yard sticks by which societies are judged, and as an essential input for the process of industrialization. Consequently, a lot of proposals have been made on how to develop and utilize the vast energy resources with which Africa is endowed in order to facilitate the process of industrialization, achieve economic development and raise the standards of living of the African people. However, to date the African Economic Community is still not in a position to implement, in conjunction with its Member States, the Regional Economic Communities, (RECs) international cooperating partners, UN organizations, Non-Governmental Organizations (NGOs) and Financiers, coordinated and coherent energy policies and strategies commonly developed and owned by all the stake holders.

Consequently, the Council of Ministers of the Organization of African Unity, meeting in its Sixty-Third Ordinary Session in Addis Ababa, Ethiopia, from 26 to 28 February, 1996, convinced that the Energy Sector in Africa is very important for the economic cooperation and integration of the continent and therefore needs an institution at the continental level to face common challenges and to solve its problems of integration through greater regional and subregional cooperation, requested the Secretary General of the OAU/African Economic Community to undertake a pre-feasibility study on the creation of the African Energy Commission. Council further mandated that the study should be undertaken in cooperation with the ECA and the ADB and that it should place special emphasis on the role, the mandate and the structure, as well as the financial resources required for the upkeep of such a commission and report to the Council during its 65th Ordinary Session.

There were inadvertent delays in immediately implementing the study which were due mostly to financial and human resources

constraints. However, the OAU, in January, 1997 employed a Chief of Energy and Mineral Resources Section who has been detailed, inter-alia, to coordinate, under the overall supervision of the Head of the Division of Industry, Energy and Mineral Resources, activities relating to the establishment of the African Energy Commission and to maintain close working relations with the relevant divisions of the UN particularly the ECA, and all African regional and sub-regional organizations in the field of energy including the ADB and OAU specialised agencies.

2. IMPLEMENTATION OF THE STUDY

2.1 METHODOLOGY

In order to carry-out the study the OAU/AEC Secretariat drafted "The Terms of Reference For a Pre-Feasibility Study on the Establishment of the African Energy Commission". These were sent to both the ADB and the ECA with a request that they comment on them and that they assign officers to the study team. Both organisations welcomed the move by the AEC Secretariat but however, regretted that they were at the time unable to assign officers to the study team. The study team, therefore, comprised two officers from the AEC Secretariat, viz, Messrs. Libère Buzingo and Freddie O. Motlhatlhedhi, who are the Head of Industry, Energy and Mineral Resources Division and the Chief of Energy and Mineral Resources Section, respectively. The ECA also went further to suggest how best the study should be programmed while the ADB made available comprehensive report on the African Energy Sector compiled under their African Energy Programme (AEP). This report is made according to the tasks in the Terms of Reference and has taken on board the suggestions of the ECA, the ADB reports and contributions from meetings with the Regional Economic Communities (RECs), AEC member states, as well as individuals and institutions involved in energy in Africa.

2.2 TASK A: Review of the OAU/ African Economic Community Policies and Strategies for Cooperation in Energy.

2.2.1 Discuss and come to a consensus with the ECA and ADB on the OAU/AEC Policies and Strategies for Cooperation in energy:

The study team drafted the "OAU/AEC Policies and Strategies for Cooperation in Energy" document and distributed it for comments within the Economic Development and Cooperation Department of the AEC, the ADB, ECA, WEC, SADC, ECOWAS, and the Latin American Energy Organization (OLADE). The document explains the role of energy in economic development and the challenges to Africa, the importance of energy planning and coordination, and proposes strategies for cooperation in energy. The goals of planning the African energy sector, as contained in the document are:

- to promote the efficient exploitation and utilization of energy without adversely affecting the environment;
- to increase the security of energy at national, sectoral and individual household level; and
- to improve distribution and equity in access to sufficient and affordable energy supplies.

The Policies and Strategies document is largely based on previous consultancy work particularly by the ECA, ADB, World Energy Council (WEC), UNDP and the OAU. The process of consultations initiated by OAU will ensure that the finalized document belongs to the AEC Member States, the Regional Economic Communities, and cooperating regional, UN Agencies national and international organizations. The policies and strategies contained in it will be implemented by the African Energy Commission (AFREC) whose establishment is proposed herein.

Comments on the policies and strategies document have to date been received from the Heads of Division of the OAU Department of Economic Development and Cooperation (EDECO), the WEC, ECA, ADB and the Union of Producers, Conveyors and Distributors of Electric Powers in Africa (UPDEA).

2.2.2 Undertake Study Tours to Organization Latino-Américaine de Développement de l'Énergie (OLADE), the RECs and WEC

OLADE, a Latin American Energy Organization which has been operational since 1973, will be visited in order to evaluate and establish the relevance of their policies and strategies, taking into consideration their successes and/or failures.

2.2.3 Re-orientate the zero draft on the basis of the information acquired from the study tours and produce the first draft.

(still to be done)

2.2.4 Send the draft at above to the relevant organizations to be invited to an interagency seminar.

The seminar which will include ECA, ADB, UNESCO, UNEP, UNIDO, WEC and the RECs will review and approve the final draft.

2.3 TASK B: Review the necessary Institutional Mechanism for the achievement of the proposed strategies :

2.3.1 Rationale for the Establishment of the African Energy Commission (AFREC)

The African Energy Sector is characterised by high costs of petroleum imports, heavy reliance on biomass fuels, inadequate energy policy formulation and planning capacity and poor performance of some of the governments and continental institutions to implement and follow-up programmes and decisions, even those made at the highest decision making levels. The following catalogue of lost opportunities clearly illustrates the points raised.

The OAU Charter (May 1963)

Article II of the OAU Charter propounds as one of the purposes of the Organization that the Member States shall intensify and coordinate their cooperation and efforts to achieve a better life for the peoples of Africa. The Article goes on to identify several areas, amongst them Science and Technology (which includes energy) where this cooperation should be intensified and coordinated. It is, however, to be noted that in the energy sector particularly there exists no mechanism at continental level for the coordination and harmonization of policies, strategies and programmes.

The Lagos Plan of Action (April, 1980)

In 1980 the Heads of State and Government of the OAU meeting in Lagos, Nigeria at the Second Extraordinary Session adopted the Lagos Plan of Action (LPA) and Final Act of Lagos. The LPA, amongst other things, included Chapter XI on Energy which acknowledged the disturbing energy situation in Africa, identified the main energy problems and proposed short, medium and long-term plans to address the problems. In order to implement these plans the session endorsed the recommendation for the urgent establishment of the African Energy Commission (AFREC) whose role would be the coordination of activities in the field of energy in Africa. It is now seventeen years since this recommendation was made but no action has yet been taken to actually establish AFREC

UNDP Consultancy on the Establishment of the African Energy Commission (September, 1984)

This consultancy, which was quite comprehensive, was funded and implemented by UNDP in conjunction with the OAU. It recommended that in order to implement African Energy Cooperation Programmes a thorough energy assessment of the member countries should be undertaken so that a good regional energy policy can be designed. The consultancy also proposed areas of cooperation, recommended a gradual and phased establishment of an African Energy Commission and defined its responsibilities. The ADB has undertaken the energy assessment of the member countries as recommended by the study but the recommendation to establish AFREC has not been implemented.

The Treaty Establishing the African Economic Community (AEC) (June, 1991)

The Member States of the Community, in terms of the Treaty establishing the AEC under Article 54 on Energy and Natural Resources agree to coordinate and harmonize their policies and programmes in the field of energy. The article specifies the actions to be taken to coordinate and harmonize energy policies and programmes and defines the fields for cooperation by the Member States. However,

besides actions taken by some RECs to coordinate and harmonize their activities there exists no mechanism at continental level to do so.

The Cairo Agenda for Action (June, 1995)

The Thirty-first Assembly of Heads of State and Government in June, 1995 adopted a resolution on the Relaunching of Africa's Economic and Social Development : The Cairo Agenda for Action (CAA) which on the section under industrialization notes that "Industrial Development is central to structural change and transformation of African economies, to the increase in incomes and employment, to the diversification of our exports and to the satisfaction of needs of the African peoples". The CAA also notes on the section under Mineral Resources and Energy that "in Africa, a major hindrance to industrial development is the inadequacy of energy resources. The Secretary General of the OAU, in close cooperation with the Executive Secretary of the ECA and the President of ADB should therefore undertake, urgently, measures for establishing the African Energy Commission, stipulated in the Lagos Plan of Action, taking into account, inter alia, the ADB Study on the African Energy Programme".

The First Consultative Meeting on the Establishment of the African Energy Commission, Addis Ababa (November, 1995).

This meeting was organized jointly by the OAU and the ECA and attended by representatives of the OAU, ECA, World Energy Council (WEC), and the UNEP. The meeting recommended, inter alia,

- a) the establishment of the African Energy Commission (AFREC) initially and provisionally as a loose body serviced by the existing institutional capacity in OAU, ECA, ADB and the sub-regional groupings; and,
- b) promotion of solidarity in the energy sector through the development of sub-regional cooperation, the exchange of experiences, the coordination of programmes and the exploitation of complementary energy resources and the sharing of training and technology management.

Resolution of the UNECA First Regional Conference of African Ministers responsible for the Development and Utilization of Mineral Resources and Energy (November, 1995)

This conference which was held in November, 1995 adopted policies and strategies for the African Energy Sector which are essentially no different from those proposed by the UNDP study in 1984 or as are also enshrined in the LPA. Similarly, it recommended under the title Cooperation and Integration that the African Energy Commission should be established provisionally and initially as a loose body serviced by the existing capacity in the ECA, OAU, ADB and the subregional economic groupings until the time is opportune for the creation of the AFREC.

Sixty-Third Ordinary Session of the OAU Council of Ministers - (February 1996)

Council during this session requested the OAU Secretariat to undertake a comprehensive prefeasibility study in cooperation with the ECA and the ADB on the creation of the African Energy Commission (AFREC) placing special emphasis on the role, the mandate, the structure and the financial resources required to set it up and run it.

The study has taken more than a year before it could be started and even then the allocation of funds and expertise to ensure that that study is expeditiously implemented are insufficient.

The African Energy Programme (AEP) of the African Development Bank (1992 to date)

The AEP was launched by the ADB in 1992 in collaboration with the ECA, OAU, UNDP and the World Bank. Its objective was to carryout an in-depth analysis of the African Energy situation in order to enable the ADB to help its regional member countries to develop coherent policies and programmes that would promote cooperation and integration in the region's energy sector. The AEP, which is well implemented indeed, has amongst its outputs, two major synthesis reports entitled "Energy Situation of Africa Synthesis Report", and "Energy and Environment". Its other outputs include analytical tools, regional analytical reports on the six main energy sub-sectors (oil and

gas, biomass, coal, electricity, renewable energies and nuclear), reports on energy resource assessment, household energy, institutional analysis etc.

The ADB study supports the idea of establishing the AFREC and an African Energy Development Fund (AEDF) as called for in the Lagos Plan of Action and as proposed by the numerous follow-up meetings. It has also made specific proposals on the role, mandate, structure and modality for the establishment of AFREC which have been taken on board in this report.

2.4 TASK C: Preparation of Budgetary Requirements for the African Energy Commission

2.4.1 Prepare cost estimates for the operations of AFREC over a five year period under two headings, viz capital and recurrent expenditure.

The budget is prepared under paragraph 7 of this report following the elaboration of the Work Plan and activities of AFREC.

2.4.2 Propose modalities to raise funds for the establishment and operations of AFREC

This sub-task is addressed in paragraph 7 of this report.

3. RECOMMENDATION FOR THE ESTABLISHMENT OF THE AFRICAN ENERGY COMMISSION

It has so far been shown that:

- a) for Africa to develop it must industrialize and that industrialization requires energy as an input
- b) although the AEC Member States are well endowed with energy resources the amount of energy they actually have is inadequate to meet their needs .
- c) Many strategies and policies have been made by the AEC Member States but there is persistent lack of their coordination, harmonization and implementation.

- d) the overall effect of i), ii), iii) above is that African countries will continue to hold many workshops/seminars/conferences/etc., at which they will propose even more and more energy policies and strategies and spend more financial resources but the status quo will prevail, i.e. they will continue to lag behind in industrialization and socio-economic development.

The OAU/African Economic Community Policies and Strategies developed in Task A above cannot be implemented without the coordination, harmonization and ultimately the integration of programmes and activities of the AEC Member States and other institutions which are involved in the development of the African Energy sector. The Member States of the AEC, that is, fifty-three countries in all, have a very vast diversity of culture, ethnicity, population and economic bases which, coupled with the complexity of their energy sectors make it very difficult for them to operate in a concerted effort without some legal institutional framework being put in place to ensure conformity. As such, some legal framework for cooperation needs to be conceived which will ensure that the Member States do not only pay lip service on striving towards development but also feel committed to their proposals. What is required is a mechanism which can evolve, overtime leading to a full fledged institutional arrangement for cooperation and harmonization of energy activities. This recommendation which has consistently been made over the years by the numerous studies and meetings mentioned above calls for the creation of the African Energy Commission. It is justified and is supported fully in this report.

The Treaty Establishing the African Economic Community (AEC) under Article 88-91 Chapter XIX entrusts the responsibility for coordination, harmonization and progressive integration of existing and future Regional Economic Communities, the conclusion of Cooperation Agreements with African continental organizations and the setting up of mechanisms for consultation with African NGOs and socio-economic organizations and associations to the AEC. Due to this mandate, the fact that Africa cannot industrialise without developing and utilizing its energy resources, the consistency of the recommendations of the different meetings and studies reviewed above, and the proposals regarding the future of the African energy sector as contained in the Draft OAU/ECA Policies and Strategies for

Cooperation in Energy, particularly the need to implement these within a coordinated continental framework, the following cause of action is proposed for the establishment of AFREC:

- a) the African Energy Commission should be established initially and provisionally as a loose body serviced by the existing institutional capacity in OAU/AEC, ECA, ADB and the sub-regional groupings;
- b) the Energy Commission should be established in phases with its structure evolving over time; and
- c) the African Economic Community Secretariat should take the lead responsibility for the establishment of the African Energy Commission.

The above recommendations call for the AEC to spearhead the implementation of the proposals. This call has been made over the last 17 years even at the level of the OAU Summit. To make the decision realizable the member states will be made to first appreciate the long term role and mandate of the AFREC. Thereafter the short term role and mandate will be clearly spelt out which after further assessment could lead on to the implementation of the long term role and mandate of the African Energy Commission. The decision will then be left to the member states so that if they accept the responsibility for the establishment of the African Energy Commission they will also assume the commensurate financial obligations that go with it.

4. LONG TERM STRUCTURE OF THE PROPOSED AFRICAN ENERGY COMMISSION

4.1 Role of the AFREC

The Role of the African Energy Commission will be to promote solidarity of action among the AEC Member States and other stake holders by coordinating and harmonizing their energy activities to enhance the exploitation and development of their energy resources for the industrial and socio-economic development of the African Continent.

4.2 Mandate of the AFREC

In pursuance of the above role the AFREC shall have the mandate to:

- i) formulate an overall energy development policy and strategy based on regional and sub-regional studies and analysis of energy problems of the continent;
- ii) formulate suitable and realistic framework for cooperation on regional and sub-regional basis, in search for exploration, development and utilization of various energy resources;
- iii) identify priority energy projects that can be implemented cooperatively on sub-regional and/or regional basis;
- iv) establish centralized energy information systems and timely disseminate data and information to member States in order to help them to learn from each other and to avoid duplication of efforts;
- v) promote R&D in the energy field at the sub-regional and regional level;
- vi) coordinate related manpower survey and training;
- vii) secure suitable source of financing for the development of the energy sectors on the continent;
- viii) promote related trade and technical assistance among the member States;
- ix) establish a common bargaining position regarding energy trade and technology acquisition in order to safeguard the member States interests;
- x) cooperate with national institutions and organizations within member States which are devoted to similar or related objectives;
- xi) cooperate with public and private institutions in other countries outside Africa and with international institutions which are devoted to similar or related objectives; and

4.3 Structure of the AFREC

The structure of the proposed African Energy Commission which is portrayed below has been developed based on the role and mandate of the Commission, the need to fulfill the policies and strategies as proposed in the document "OAU/AEC Policies and Strategies for Cooperation in Energy" and reports by the ADB and ECA.

- Council;
- Executive Board ;
- Secretariat; comprised of
 - Administration Division;
 - Documentation and Information Division;
 - Planning and Economic Studies Division;
 - Regional and Extra-Regional Cooperation;
 - Legal Affairs Division;
 - Training Division;
 - Technical Division; comprised of
 - Hydrocarbon Section;
 - Hydroelectric Section;
 - Geothermal Section;
 - Solar Energy Section;
 - Wind Energy Section;
 - Biomass Energy Section;

4.4 Description of AFREC Organization Structure

The Council would be the highest entity and would be composed of Energy Ministers of member states, the Administrative Secretary General of the OAU and the Executive Secretary of ECA. Its role would be to provide policy guidelines, determine priorities and evaluate the progress of the cooperation programme. The Executive Board would be responsible for supervision and follow-up, whilst day to day execution and coordination would be the responsibility of the Secretariat. The Executive Board would comprise a representative of ECA, and a few elected representatives from member states and sub-regional centres dealing with energy matters; the Administrative Secretary General of OAU would be its Ex-officio Chairman. The Secretariat would be made up of the Executive Director and his staff.

The Technical Division would be responsible for technical cooperation activities including energy resource assessments, research, development, transfer and adoption of energy technologies to members states. The Administration Division would be responsible for personnel, finance, conference support and general services. It would also deal with the mobilization of resources to support the technical cooperation programme projects. The Documentation Division would manage the energy resources data base and maintain a continuous flow of information exchange with national, sub-regional and extra-regional entities involved with energy matters.

The Planning and Economic Division would be responsible for formulation of projects to be undertaken under the cooperation programme and definition of the terms of their implementation. It would also be responsible for the harmonization of national, sub-regional and regional energy policies, plans, strategies, programmes and projects. The Regional and Extra-Regional Cooperation Division would promote collaboration with other energy related institutions and organizations inside and outside the region for the sharing of experiences, and to avoid duplication of efforts, interference or confrontation, harmful to the region's interests.

The Legal Affairs Division would assist member states in the formulation of energy and environmental legislation and also assist in energy contract negotiations. The Training Division would prepare and implement training programmes, including fellowships, workshops and seminars in member states.

The Commission would emphasise full utilization of the region's skilled manpower resources. To facilitate this it is proposed that one of the first tasks of the Commission would be to draw up a list of experts in different energy related fields who would be available in member states, to be called upon when needed.

5. MODALITY FOR THE ESTABLISHMENT OF THE AFRICAN ENERGY COMMISSION

5.1 Introduction

Over the last seventeen years, beginning with the Lagos Plan of Action in 1980, many fora have with good justification, recommended the establishment of AFREC. It is however observable that African Governments are averse to the formation of institutions, and justifiably so, given the multiplicity of already existing institutions the majority of which have performed very poorly.

In view of the strong justification for the establishment of AFREC and the adverse effects that lack of its establishment has on regional integration and socio-economic development due to lack of coordinated planning and inability to i) share excess supply, ii) optimize operations, iii) avoid over-investment, iv) distribute the unevenly distributed energy resources, v) share resources while negotiating funding for the capital intensive energy projects which also have a long lead time, etc. it is recommended that a phased approach be employed for the establishment of AFREC which initially utilizes the existing capacities of institutions already involved in energy in Africa. This is the loose arrangements that has been recommended all along by numerous fora the latest of which is the Second Regional Conference of African Ministers responsible for the development and utilization of Mineral and Energy Resources held in Durban, South Africa, November, 1997. This arrangement should be regarded solely as a short term measure within a phased programme for the ultimate establishment of a long term structure. The proposed loose structure should operate within agreed parameters as too much looseness is tantamount to having no coordination and harmonization.

5.2 Short Term Structure and Role of AFREC and Related Institutions (July 1998 - January 2000)

5.2.1 OAU/AEC Secretariat

During the short term phase the Energy and Mineral Resources Section which is under the Industry, Energy and Mineral Resources Division of the AEC's Department of Economic Development and

Cooperation will be charged with the responsibility of undertaking activities geared towards the coordination and harmonization of the programmes and projects within the African Energy Sector. In order for the Section to be accorded flexibility and expediency in decision making as well as to give it authority which is commensurate with the increased level of responsibility and accountability it should be strengthened and upgraded.

Human Resources Requirements at OAU/AEC Secretariat

As the ADB and ECA reports have observed the OAU/AEC does not have adequate manpower. Presently the section has one energy engineer who has expertise in Administration, Energy Technologies, Energy Planning and Energy Management . It has been proposed that provision should be made in the Programme Budget of the Division in 1998-2000 Biennium to de-freeze the post of energy coordinator and an energy economist/statistician should be recruited into this post. He should be conversant with the establishment and operation of computerized energy data banks. A secretary will also be required. Additional staff will be approved as the member states agree to the need and provide the necessary resources. The ECA and the ADB will as necessary, provide logistical and planning support to the AEC's Energy Division.

Office and Equipment requirements

These should be provided in line with the requirements by the staff and work to be done e.g. computers for the Secretary and for data banks.

5.2.2 African Development Bank's African Energy Programme

The AEP during its phase I and II has produced the following outputs on the African Energy situation:

- (i) sectoral reports on situation analysis (Forest & Biomass, Oil and Gas, Electricity, Coal, New & Renewable Energy and Nuclear);

- (ii) reports on the linkage analysis (Energy & Environment; Energy Conservation & Efficiency; Energy Resource Potential; Sectoral Energy Requirements; Institutional & Organizational Issues; Finance, Tariffs & Pricing; Energy Requirement for Agriculture; Household Energy Consumption Patterns; Scenario for Economic Development; and Capacity Building Requirements); and
- (iii) Analytical Tools/Methodology for Energy Planning and Management; (Energy Sector Information, Accounting and Forecasting Tools for Planning and Management; Energy Sector Specific Environmental Interactions; Energy Conservation & Efficiency Options; Environmental Impact Assessment Guidelines for Energy Sector)

The AEP has thus undertaken some of the activities which are envisaged during the AFREC's short term programme, therefore, in order to expedite the implementation of this programme the OAU/AEC should welcome the contribution of the Bank and utilize the outputs of the AEP. The Bank has spent considerable resources in the implementation of phases I & II of the AEP and it would not be worthwhile if it does not implement phase III, that is to disseminate the tools and information it has as well as train concerned institutions.

It is recommended that the ADB, with the assistance of the OAU/AEC's coordination and ECA's organizational and related expertise should organize seminars, meetings, workshops etc. at sub-regional and regional levels to disseminate information and train the prospective users. In addition, the Bank should initially maintain and update the energy information within its data bank using local institutions (RECs, ECA, member states, etc.), however, simultaneously the OAU/AEC Secretariat, with the assistance of the Bank should build capacity so that ultimately it will assume full responsibility for the tools and data developed by the bank and be able to update and use it for forecasts and project development.

The comprehensive studies that the Bank has completed should be summarized and discussed in workshops held with sub-regional and regional experts and bankable projects, particularly those that benefit

more than one member state should be proposed and studied with the assistance of the ADB. The OAU/AEC should coordinate and harmonize these activities.

5.2.3 UN Economic Commission for Africa (ECA)

The ECA as a United Nations body established to provide and coordinate development assistance for the Continent has played an important role in the development of the energy sector in Africa. It provides advisory service to African countries and subregional organizations and also organizes meetings, workshops and seminars at subregional and regional levels. It is recommended that in order for it to enhance its role as a forum for fostering regional intergovernmental cooperation and integration of the energy sector in Africa it must plan and implement its programmes in full consultation and involvement of the proposed AFREC. In this manner, it will assist in the implementation of the proposed activities leading to the establishment of a fully pledged AFREC and the development of bankable regional and subregional projects. This could be done through coordinated and harmonized staging of meetings and provision of financial, human and equipment resources for training in energy planning, management, project identification, etc.

5.2.4 Regional Economic Communities (RECs)

As previously mentioned the RECs have developed to different capabilities and capacities. Since AFREC will be established gradually it would be beneficial to utilize the more advanced RECs to assist the others so that they are strengthened beginning at the subregional levels and then at the regional level. The OAU/AEC Secretariat should organize workshops for this purpose utilizing the ECA, ADB and other relevant institutions such as WEC, UPDEA and regional and subregional institutions.

An analysis of the relevant energy institutions should be carried out in order to determine their usefulness, to eliminate duplication and overlap of functions and where necessary, even recommend closure of non viable ones. The activities of these institutions should be coordinated and harmonized by AFREC to reduce resource wastage.

6. Financing of the AFREC

If the member states are convinced and accept that AFREC has a role to play in their development then they should also accept the main responsibility of financing it. The member states, by providing core funds would enhance the Commission's negotiating power to secure financial resources from elsewhere to support its programmes on energy cooperation. In addition, the Commission through charging fees for services that it renders under its mandate will be able to raise some funds for its activities. (This paragraph will be developed further).

7. WORK PROGRAMME

7.1 Introduction

The OAU/African Economic Community Policies and Strategies for Energy Cooperation identify the following priority areas for cooperation: i) Acquisition and Dissemination of Information, ii) Energy Trade, iii) Human Resource Development & Capacity Building, iv) Financing of Energy Projects, v) Energy Conservation and Efficiency. This Work Programme is based on the implementation of activities which lead to the realization of these areas of cooperation. In the Work Programme reference is made to the OAU/AEC Secretariat as it is the body that would be responsible for the implementation of the programme. This is the proposed arrangement which assumes that the AFREC will initially operate under the OAU/AEC Secretariat pending further developments.

7.2 Acquisition and Dissemination of Information

Any process, no matter how rudimentary it may be, whose final outcome is the presentation of recommendations and projects on the energy sector of a country in order to improve the socio-economic development and standards of living of its people is energy planning. Therefore, every African country has some kind of energy plan but the issue is that the level of development and utilization of these plans in most cases is far inadequate to satisfy the planning needs. The basic approach to energy planning involves the following steps:

- i) reviewing a country's overall economic, social and energy situation;

- ii) reviewing the natural energy resources endowment and energy technologies;
- iii) analyzing the energy supply and demand;
- iv) forecasting the future energy supply and demand on the basis of the expected performance of the economy, development strategy and population growth;
- v) analysing the issues of the energy sector, proposing policy recommendations, formulating projects and addressing issues of projects financing.

These activities require data (historic and recent) in order to be implemented. The African Development Bank, through its African Energy Project, implemented since 1992 has developed analytical tools for Energy Information and Accounting and Energy Forecasting Model for the African Energy Sector. In addition, six Energy subsector studies, viz, oil and gas, coal, electricity, forest and biomass, renewable energy and nuclear energy have been carried out. The OAU/AEC will liaise with the Secretariats of the RECs, the ADB and ECA in order to agree on the establishment of 5 standardized and computerized data bases, viz

- i) Energy resources data bank;
- ii) Energy supply-demand data base established in accordance with the International Energy Agency (IEA) format. The data banks would consist of energy supply, demand and transformation statistics to enable each REC to produce energy balances by country and by region;
- iii) Data base of major national and regional energy projects and activities;
- iv) Data base of energy institutions (governmental, parastatals and non-governmental) and their activities;
- v) Directory of regional energy experts and their specific areas of expertise.

Each Regional Economic Community will have the responsibility to:

- i) Collect, collate, analyze and disseminate energy information on the basis of the standardized and computerized energy statistics as well as on all the other data bank maintained by each of its Member States.

- ii) Act as a repository of the national energy policy documents of the Member States and ensure that they are updated regularly.

Each AEC Member State will have the responsibility to:

- i) Collect, collate, analyze and disseminate energy information that it has within the agreed standardized and computerized energy data bank
- ii) regularly and at agreed times, provide energy data to the respective Regional Economic Community.

The role of OAU/AEC would then be to consolidate the regional data bases into continental energy data bases. In this respect OAU/AEC will be a repository of regional energy policies, documents and data. A specific activity to be undertaken would be to assist all the countries and RECs to come to a level of planning and governance whereby they can easily handle issues of data collection, data analysis, energy planning, production of energy balances and operation of computerized data bases.

Due to the present inadequacy of the resources (human and financial) at the AEC Secretariat the implementation of this strategy will be in stages. The ADB would implement the third phase of its African Energy Programme which would be to disseminate the information it has so far gathered to the member states and to hold training workshops on the training tools. It will also assist the member states to study and develop energy projects to be considered for financing. The OAU would be fully involved with the ADB where in addition to being trained by the ADB to building capacity to actually take over the responsibility for this activity and for the data bases from the ADB, it will also coordinate and harmonize all the activities mentioned here.

7.3 Trade in Energy

7.3.1 Oil and Gas Subsectors

Africa has about 6% of the World's proven oil and gas reserves estimated at approximately 60 billion barrels and 9,760 billion m³ respectively. These reserves are, however, unevenly distributed throughout the Continent with four out of the fifty three African

countries having about 90% of the reserves. Consequently, most African countries depend on imported petroleum and petroleum products for the operations of their industry, transport and mining sectors. The importation of these sources of energy contributes in a very substantial degree to the high national debt bills and the reduction of the already scarce foreign currency earnings. World Bank studies have shown that there exist great possibilities to realize savings if there is intercountry cooperation in petroleum and gas prospecting, production, processing, marketing, transportation, supply and end use.

The OAU/AEC would set up an inter-regional forum comprising the OAU, ADB, ECA and RECs. The forum would meet annually (initially) and thereafter every two years with a mandate to:

- i) develop strategies and projects for the rationalization of the downstream and upstream petroleum operations, particularly procurement, refining, transportation and storage;
- ii) harmonize laws, rules, regulations, standards and investment planning; and
- iii) agree on pricing structures

7.3.2 Coal subsector

Coal was a major factor in the Industrial Revolution of Europe, and it could play a similar role in Africa particularly because, on a per unit of energy output basis, it is the cheapest fossil fuel. Almost 99% of the proven coal reserves of Africa are in the Southern region and coal contributes approximately 35% of the commercial primary energy consumption in Africa. The RSA, with about 6% of Africa's population consuming just over 50% of the electricity consumed in the whole Continent has 90% of its electricity generated from coal. However, concern over the contribution of coal to carbon dioxide and green gases emissions prohibit its wide spread use. In spite of these disadvantages there are technologies on clean coal combustion which should be promoted.

The OAU/AEC would treat coal as a short to medium term energy source. It will coordinate the provision of the necessary institutional arrangements, training, projects identification and assistance in sourcing financial support which should lead to the utilization of comparatively low cost coal end-use technologies.

7.3.3 Electricity Subsector

This subsector is most amenable to intercountry trade particularly if there is political stability. Electricity grid interconnections have already proved to be beneficial in a number of African countries. Cases in point include the Southern African Power Pool, within which at least 7 SADC countries are interconnected, interconnections between Morocco and Algeria, Libya and Egypt, Nigeria and Niger, Kenya and Uganda, etc. Increased cross border trade of electricity through bilateral and multilateral agreements would provide least cost supply options, optimisation of energy resources, postponement of investment in new generation capacity and exchange of technical information.

The OAU/AEC will encourage regional planning and the establishment of power pools which promote integrated resource planning to take advantage of economies of scale, investment optimization and equitable sharing of benefits. The OAU/AEC should convene expert meetings which would assist the less developed RECs and Member States of the AEC to learn from the experiences of others. In this respect the mandate will include developing coordinated regional power system plans and a continental power plan for Africa. Common regional standards, rules, operation procedures relevant to generation, transmission and distribution of electricity, etc will be evolved. Consideration will be given to the development of cheap means of electricity generation e.g. hydro for use within the Continent rather than outside the Continent.

Institutionally, the power utilities of the AEC member states will be encouraged to become affiliated to the Union of Producers Conveyors and Distributors of Electric Power in Africa (UPDEA) as the oldest existing and unified African Power organization which also has OAU observer status. UPDEA, with the necessary support of the OAU/AEC and working in conjunction with the ADB will develop projects and programmes, and update related data bases.

7.3.4 New and Renewable Sources of Energy Subsector

For the majority of the people in the rural and remote areas of Africa, biomass will continue to be a major source of energy in the

foreseeable future. Renewable Energies, particularly solar energy for lighting, water heating and water pumping can play a role in providing people in these remote areas with clean environment and energies. However, there is no appreciable progress made on the utilization of this resource due, in part, to the multiplicity of institutions with overlapping mandates, lack of knowledge about the technology, etc.

In virtually all African countries woodfuel contributes to over 50% of their energy balances. Wood is however, being harvested, at a rate greater than that of replacing it which leads to deforestation and environmental degradation.

OAU/AEC would coordinate and rationalize the activities of the various institutions involved in the subsector in order to avoid duplication and resource wastage. The OAU/AEC in conjunction with the RECs, ADB, UNIDO, UNESCO, UNDP, WEC and ECA will develop training plans to upgrade the skills of technicians in the design, installation, operation and maintenance of renewable energy systems. In addition, the OAU/AEC in conjunction with possible financiers e.g. World Bank, ADB, Renewable Energy for African Development, etc will develop self-sustaining financing mechanisms to facilitate widespread utilization of photovoltaics (solar) electrification. Feasibility studies, with the assistance of the ADB should be undertaken on the feasibility of manufacturing of photovoltaic cells locally.

The AEC will, working in conjunction with the Member States, develop appropriate management practices and efficient end-use technologies for woodfuel.

7.3.5 Human Resource Development & Capacity Building

The success of any programmes depends on the efficiency and sufficiency of the tools to implement it. All the strategies thus far mentioned cannot be realized unless appropriate training is carried out at all levels. Financing institutions will be approached to assist in providing training.

The OAU/AEC would develop programmes for human resources development in energy planning and management, data

collection, analysis and dissemination, energy auditing, energy pricing, etc. at national and regional levels. In addition technical and degree level training in electrical, combustion, petroleum and power engineering and other energy related engineering and management fields should be maximized through sharing of facilities and increasing the capacity of continental institutions. Information on the training capabilities and capacities of these institutions will be collected and disseminated to Member States.

7.3.6 Financing of Energy Projects

Many institutions have hitherto funded a lot of energy projects in Africa. There is now, reduced availability of funds into the African continent. As a consequence it is necessary that the allocation of the scarce investment resources should be undertaken through a coordinated regional mechanism which allows for information exchange to avoid duplication and encourages the involvement of the private sector.

The AEC would provide the necessary harmonization and coordination of activities the ADB would contribute to resource mobilization by:

- i) providing seed money which would encourage other investors who have confidence in the Bank
- ii) assisting member states to develop appropriate tariffs, legal framework and an enabling environment
- iii) disseminating information of the African energy situation to facilitate review of projects by other prospective financiers.

The activities proposed above are resource intensive. As a lot of work has been done both within and outside Africa; it will not be necessary to start from scratch. Therefore, the ECA, UNDP, UNESCO, ADB, UNEP, WEC, World Bank and other regional bodies and international cooperating organizations and countries will join hands under the coordination of OAU/AEC to provide as available, technical, managerial and financial support.

8. BUDGET

8.1 Acquisition and dissemination of information and exchange of experiences.

Funds are required to host meeting of experts from the RECs in order to agree on the establishment of the standardized and computerized data bases. Thereafter, similar meetings will be held every two years with regions paying for themselves. Computer hardware and software will also be required at the AEC Secretariat. Two energy experts an energy planner and an energy statistician, plus a secretary will be required:

ESTIMATED COST USD:

	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5
Capital					
Recurrent					

8.2 Trade in Energy

i) Oil and Gas

The AEC Secretariat will organize and attend inter-regional oil and gas fora to meet annually initially and thereafter every two years. The Secretariat will assist the Member States to develop strategies and projects for the rationalization of their up and down stream petroleum operations (procurement, refining, transportation, storage, etc.)

ESTIMATED COST USD:

	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5
Capital					
Recurrent					

ii) Coal Subsector

The Secretariat will coordinate the provision of the necessary institutional arrangement for training, project identification, finance

sourcing, etc. in order to promote the use of low cost clean coal end use technologies.

ESTIMATED COST USD:

	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5
Capital					
Recurrent					

iii) Electricity Subsector

The OAU/AEC Secretariat will encourage integrated and coordinate regional power systems planning to take advantage of economies of scale, investment optimization, equitable sharing of benefits etc. The Secretariat will convene/coordinate the convening of expert meetings to develop common regional standards, rules, operation procedures relevant to generation, transmission and distribution of electricity.

ESTIMATED COST USD:

	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5
Capital					
Recurrent					

iv) New and Renewable Sources of Energy

NRSEs, particularly Solar Energy for lighting and water heating could play a role in providing energy to the people in remote and rural areas if properly harnessed. The Secretariat in conjunction with the RECs, etc. will develop training plans to upgrade skills of technicians to design, install, operate and maintain NRSE systems. Financiers, eg. ADB will work with the AEC to identify self-sustaining financing arrangements, include possibilities of local manufacturing.

ESTIMATED COST USD:

	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5
Capital					
Recurrent					

v) Human Resources Development & Capacity Building

ESTIMATED COST USD:

	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5
Capital					
Recurrent					

vi) Energy Conservation and Energy Efficiency

Given the current supply and end-use energy efficiency level in Africa, there exists a high potential for energy savings through energy conservation and efficiency programmes. Estimates of 15% commercial energy savings have been made if simple "housekeeping" measures could be implemented. In the household sectors estimates of 30-40 % savings in fuel wood have been made if improved stoves could be introduced.

The AEC will assist the Member States so that they can undertake energy audits leading to the implementation of measures for energy conservation and efficiency.

TOTAL ESTIMATED COST USD:

	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5
Capital					
Recurrent					

9. CONCLUSION

There already exists a proliferation of institutions at regional and subregional levels in Africa many of which are afflicted with problems of mismanagement, political interference, unwarranted top heavy bureaucracies, and inadequate human and financial resources. In some of the institutions most of the member states which formed them never even once paid their subscriptions to the extent that these institutions have been recommended for closure as some of their employees at times have gone without salaries for periods of over six months. The OAU/AEC which is the prime institution in Africa charged with the facilitation of socio-economic development has itself had inadequate manpower and financial resources.

It has been shown that for Africa to develop it must industrialize and that industrialization requires energy. Furthermore, it has been shown that for the realization of the OAU/AEC energy policies and strategies, Africa's energy resources must be developed and utilized in a coordinated and harmonized manner. Africa has made this observation, particularly so over the last seventeen years but to date this dream has not materialized. In order to overcome these problems a phased implementation is recommended which gives the OAU/AEC Secretariat the responsibility to coordinate and harmonize the development and implementation of the policies and strategies of the member states and other institutions involved in the African Energy Scene. However, in recognition of the inadequacy of the OAU/AEC's resources, the existing capacities of other institutions such as ADB, UN Agencies, the RECs, WEC, etc. under the coordination of the OAU/AEC should be utilized. The OAU/AEC will in the interim gradually build up capacity to assume more responsibility leading to the establishment of AFREC. The gradual build up of capacity will be governed by whether the AEC Member States are convinced that the benefits that have so far accrued warrant it and that additional responsibility should be assumed.

Within the OAU/AEC Secretariat itself the Energy and Mineral Resources Section which is under the Division of Industry, Energy and Mineral Resources of the Department of Economic Development and Cooperation will be charged with the mandate for the gradual assumption of responsibilities of coordinating and harmonizing the energy activities in the African energy scene.

Only through gradual development with regular and consistent review accompanied by assignment of accountability to the role players and the requisite financial and political support can the objectives of establishing the AFREC be ultimately realized.

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