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ENERGY

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PROJ ECT NUNIBERING SYSTEM
Projects are identified using an alphanumeric numbering system:
The first three letters indicate the member State:
AAA - Regional NAM - Namibia
ANG - Angola SWA - Swaziland
BOT - Botswana TAN - Tanzania
LES - Lesotho ZAM - Zambia
MAL - Malawi ZIM - Zimbabwe
MOZ - Mozambique
The first digit defines the Sector:
- Overall Coordination/Multimodal
- Petroleum
- Coal
Electricity
- New and Renewable Sources of Energy
- Woodfuel
- Energy Conservation
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The second digit is a serial number.
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ABBREVIATIONS
ADB 2 African Development Bank
AGIP Spa 2 AGIP Spa
AIDAB 2 Australian International Development Aid Bureau
ANG 2 Angola
AUS 2 Australia
AUSt 2 Austria
BADEA 2 Arab Bank for Economic Development in Africa
BEL 2 Belgium
BOT 2 Botswana
BRA 2 Brazil
CAN 2 Canada
C81 2 Confederation of British Industries
CFTC 2 Commonwealth Fund for Technical Cooperation
CHI 2 Peoples Republic of China
CITES 2 Convention on International Trade in Endangered Species
DEN 2 Denmark
EEC 2 Commission of the European Communities
FAQ 2 Food and Agriculture Organisation of the United Nations
FIN 2 Finland
FRA 2 France
FRG 2 Federal Republic of Germany
IBRD 2 International Bank for Reconstruction and Development
ICAO 2 International Civil Aviation Organisation
ICE 2 Iceland
IDA 2 International Development Association
IDRC 2 International Development Research Centre
IDU 2 Industrial Development Unit of the Commonwealth Secretariat
IFAD 2 International Fund for Agricultural Development
ILO 2 International Labour Organisation
IMPOD 2 Import Promotion Office for Products From Developing Countries
IRE 2 Ireland
ISNAR 2 International Service for National Agricultural Research
ITA 2 Italy
ITB 2 International Tourism Board
ITU 2 International Telecommunications Union
JAP 2 Japan
KUW 2 Kuwait Fund
LES 2 Lesotho
MAL 2 Malawi
Moz 2 Mozambique
NAM 2 Namibia
NET 2 Netherlands
NOR 2 Norway
NORDICS 2 Nordic countries
OPEC 2 Organisation of Petroleum Exporting Countries
POR 2 Portugal
PTA 2 Preferential Trade Area for Eastern and Southern Africa
SADCC Southern African Development Coordination Conference
SAFTTA 2 Southern African Federation of Travel and Tour Associations
SAREC 2 Swedish Agency for Research Cooperation With Developing Countries
SATEP 2 ILO Southern African Team for Employment Promotion
SPA 2 Spain
SWA 2 Swaziland
SWE 2 Sweden
SW1 2 Switzerland
TAN 2 Tanzania
TAZARA 2 Tanzania Zambia Railway Authority
UAPTA 2 Unit of Account of the Preferential Trade Area
UK 2 United Kingdom
UNDP 2 United Nations Development Programme
UNIDO 2 United Nations Industrial Development Organisation
USA 2 United States of America
USSR 2 Union of Soviet Socialist Republics
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WB
2AM
ZIM
World Bank
Zambia
Zimbabwe

EXECUTIVE SUMMARY

The main thrust of the Energy Sectoral Programme in terms of both the number and the value of projects under implementation, has been in the Electricity Sub-Sector, for which a strategy has been developed and approved by the Committee of Ministers of Energy in Maseru, in June, 1991. The focus of the strategy is the development and implementation of inter-connector projects and the rehabilitation of the existing Power Stations and associated communication network.

The New and Renewable Sources of Energy Sub-Sector has continued to develop its portfolio and was able to secure funding for one of its projects during' the year under review.

A strategy on Energy Conservation was developed during the year and approved by the Committee of Ministers of Energy at its meeting in Maseru in June, 1991. The strategy focuses on, among others, the identification of measures to increase energy conservation and energy efficiency for all the five major energy sources, and the establishment of a management and organisation structure for the energy conservation department of TAU and its specialised sub-committee.

In the Sub-Sector of Woodfuel, a major programme on Rural Energy Planning and Environmental Training has been developed and approved by the Committee of Ministers of Energy at its meeting in Maseru in June, 1991. The programme focuses on planning for sustainable development and utilisation of this source of energy and the training needs, in order to enhance institutional capacity in member States for planning, development and implementation of projects in this Sub-Sector. Implementation of the programmes will be undertaken in conjunction with the sectors responsible for Forestry and Human Resources Development.

The Energy Sector has, as at 30th June, 1991, a portfolio of eighty projects costed at US$760 million. This includes twelve projects valued at US$47.7 million approved by the Committee of Ministers of Energy at its meeting held in Maseru in June, 1991.

US$180 million has been secured for twenty-six projects, and funding in the sum of US$149 million for seven project is under negotiation. Funding in the sum of US$432 million for forty-nine projects is being sought. Five projects are currently under suspension, pending review and reformulation. Five projects have been completed.

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The funding gap stands at 56.8% compared to 72.8% as at 30th June, 1990. The improvement in the funding status has been mainly in the Electricity Sub-Sector which has secured funding of 41.2% compared to 20.4% last year.

REVIEW OF THE REGIONAL SITUATION

SADCC Energy Balance

The Energy Balance for 1989 includes Namibia. The main highlights of the energy situation in the region based on the TAU 1989 Energy Database, is as follows:

(a) the 1989 consumption of total commercial energy, excluding woodfuel, charcoal and other biomass, in peta joules (PJ) increased by 7%, compared to the 1988 consumption. This represents a significant increase in per capita consumption of energy of approximately 4 - 5%. This means that the overall economic development, measured in terms of commercial energy, improved in 1989;

(b) overall electricity generation measured in PJs, increased by about 1 - 2% in spite of reduced generation from the Kafue Gorge Power Station due to a major fire accident in March, 1989. This increase was achieved through more intensive utilisation of Victoria Falls Power Station, Zambia; thermal Power Stations at Hwange, Harare and Bulawayo, Zimbabwe, Morupule and Selebi Phikwe, Botswana. However, the increased utilisation of coal for power generation is not fully reflected because draw-downs from stocks are not reflected in the final consumption figures. Information on stocks drawn down by member States for power generation is not available at TAU;

(c) total electricity consumption increased by about 9%. The excess 7 PJs of consumption over the region’s own generation was met from imports of power mainly from Zaire. The consumption level would have been much higher than 9% was it not for limited capacity of the current interconnector network;

(d) production of crude oil increased by about 4%. However, most of this production was exported outside the region. The overall consumption of petroleum products has not changed from the 1988 level, although gasoline consumption increased by approximately 5 - 6% due the increase of consumption in agricultural and other sectors.

coal production declined by about 8% over the period. In 1988, production was 187 PJs compared to 176 PJs in 1989. Consumption of coal in mining has continued to decline. 1988 consumption in mining was 12 PJs compared to 8 PJs in 1989. However, industrial consumption increased in 1989 (51 PJs) compared to 1988 (49 PJs) due to the deliberate efforts of member states to encourage the use of more coal for steam generation for boilers in industry instead of utilising high ash content coal for power generation.

3. PROGRAMME REVIEW

3.1 Objectives

3.1.1

The objectives of the SADCC Energy Sector are to:

(a) reduce the drain on foreign exchange reserves caused by import of petroleum and petroleum products;

(b) reduce the depletion of woodfuel resources;

(c) develop expertise in energy technologies, and promote technology transfer to the region;

(d) establish detailed knowledge of the energy situation and its inter-relation with economic development in the region;

(e) strengthen regional cooperation in the various energy sub-sectors;

(f) establish emergency supply and distribution mechanisms;

(g) rehabilitate and expand, where necessary, energy production facilities.

(h) increase efforts to conserve energy resources in all sectors of the economy

To achieve these objectives, the Sector has developed strategies for each of the sub-sectors: coal, electricity, energy conservation, new and renewable sources of energy, petroleum and woodfuel. In addition some programmes and projects relating to energy planning, appraisal of energy projects and human resources development, have been developed.

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3.1.3 The Sectoral Programme consists of eighty projects, including twelve new projects costing US$47.4 million approved by the Committee of Ministers of Energy in Maseru, in June 1991. US$180 million for twenty-six projects has been secured. Negotiations to secure US$149 million are in progress. Funding for forty-nine projects is being sought. The funding gap has been reduced from 72.8% as at 30th June, 1990 to 56.8% as at 30th June, 1991. Five projects are currently under suspension for review and reformulation. One Project AAA.6.4 (US$ 0.075) has been withdrawn from the sectoral programme and one Project MAL.5.1 1Phase II (US$31.5 million) transferred to the Forestry sector in 1990/91.

Petroleum

3.2.1 The thrust of the sub-sectoral programme during the year under review has been the mobilisation of the necessary resources for the implementation of projects. In August, 1990, NORAD confirmed funding for Project TAN.1.3: Establishment of a Regional Biostratigraphic Reference Collection, and Project AAA.1.5: Joint SADCC Petroleum Exploration Programme, Phases I and II. Both projects are now under implementation.

3.2.2 Efforts to mobilise resources for the implementation of unfunded projects are continuing.

Coal

The region’s proven coal reserves estimated at 95 million tonnes have not yet been adequately utilised due to transportation constraints, lack competitive markets and, in some cases, high ash content. Measures are under way to recruit an expert to assist the Sector in implementing the approved regional coal utilisation strategy.

Electricity

3.4.1 During the period under review the Sub-Sector continued to focus on rehabilitation and up-grading of existing, and development of new interconnector projects.

3.4.7
Substantial progress was made in the rehabilitation and upgrading of Kafue Gorge Power Station Project ZAM.3.2. The last two generators will be commissioned in August, and September 1991. This will bring this major power station back into full operation, thereby restoring 900 MW generating capacity lost to the region in 1989 following a major fire accident.

Terms of Reference for the refurbishment and up-grading of the Victoria Falls Power station were approved by the Committee of Ministers of Energy in Maseru in June, 1991. Refurbishment of this Power Station will increase power supply to Northern Botswana, Namibia and the south-western parts of Zambia.

One major interconnector Project BOT.3.1: Interconnection of the Botswana and Zimbabwe Grids, was commissioned in March, 1991 after protracted inter-utilities negotiations on the operation of and the tariff for this system. Efforts continued during the year to develop and implement new interconnector projects.

Substantial progress was made in the development of Project MOZ.3.12: Cahora Bassa Power for SADCC. Three out of five enabling agreements were concluded during the year to facilitate commencement of the implementation of the project.

Another major area which continued to receive special attention of the sector under this sub-sector is harmonisation of operation and tariffs for interconnector systems, to ensure operational efficiency and viability of the projects and the utilities. At its meeting in Maseru, in June, 1991 the Committee of Ministers of Energy decided that conclusion of operation and tariff agreements will be one of the conditions precedent to commencement of implementation of future interconnector projects, to avoid problems encountered under Project BOT.3. 1 referred to in paragraph 3.4.4 above.

A new SADCC Electricity Strategy was developed during the year and approved by the Committee of Ministers of Energy at its meeting in Maseru in June, 1991. The main focus of the strategy is the promotion of regional cooperation in the sub-sector, in human resources development; sharing of electrical power, through coordination of planning, development, and operation of mutually beneficial or jointly owned interconnections and projects; and in the long term, the establishment

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of sub-regional and regional generating pools and research into, the use of alternative energy technologies.

Efforts continued during the year to enhance internal capacity within the TAU to appraise projects. In this regard, it is noteworthy that the reformulation and the development of the Terms of Reference for the refurbishment of the Victoria Falls Power Station was undertaken by TAU in collaboration with ZESCO.

New and Renewable Sources of Ener NRSE

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Woodfuel

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Funding for Project AAA.4.7: Assessment of Applications and Markets for Solar Photovoltaic Systems in the SADCC Region, was secured during the year. Implementation of the project will start soon.

Terms of Reference for three studies: AAA.4.8: Assessment of Applications and Markets for Wind Energy Systems in the SADCC Region, AAA.4.9: Assessment of Applications and Markets for Industrial Process Solar Heat in the SADCC Region and LES.4.2: Solar Photovoltaic Power Generation in Rural Areas - Lesotho Pilot Project, were approved by the Committee of Ministers of Energy at its meeting in Maseru in June, 1991. Further, Project No. ANG.4.1: Installation and Rehabilitation of Windpowered Water Pumps, was approved by the Ministers of Energy at itheir meeting in Maseru in June, 1991.

Two new publications: 1991 Edition of SADCC NRSE Directory and SADCC Solar and Wind Data Compilation and Publication, were produced during the year under review following the approval of the project by the committee of Ministers of Energy in Gaborone in June, 1990.

Preparations are underway for a Technical Seminar on NRSE Technologies and the Power Utilities.

Woodfuel continues to be the major source of energy in the region, accounting for about 70% of the total energy consumption. Its major contribution is in the household category of consumers where it accounts for about 90% of the energy utilisation. Woodfuel is also a major source of energy for rural industries for such purposes as tobacco curing, tea drying, fish smoking, brick burning, pottery, ceramics, salt production, etc.

3.6.2 An overview of the woodfuel situation in the region in 1990/91 has revealed that:

(a) Woodfuel scarcity has continued to increase, affecting more people and causing environmental degradation. Awareness of woodfuel problems, both by the general public and decision makers, is satisfactory. However, ongoing efforts to solve the problem are far behind the desired magnitude;

(b) Upward fuel-switch from woodfuel to other commercial energy sources like kerosene, coal, gas, electricity etc, has been rather insignificant due to financial constraints on the majority of the low-income group, and unavailability of appliances. Backward fuel-switch from woodfuel to other lower-quality biomass such as farm residues and cow dung is increasing, leading to lowering of living standards.

3.6.3 One of the main constraints to the development and implementation of large scale woodfuel programmes in some member States, is the lack of comprehensive woodfuel policies and strategies which are essential for mobilizing the necessary resources to implement woodfuel programmes and projects. This is essentially a national problem which should be addressed primarily by the member States themselves. However, the SADCC Energy Sector has continued to intensify its catalytic support to enhance the sharing of regional experience between and among member States in their efforts to develop strategies and policies through the following projects:

AAA.5.6 Strengthening of Planning Capacity for Implementation of Woodfuel Programmes in SADCC Countries;

AAA.5.8 Development of National Woodfuel Strategies and Plans;

AAA.5.9 Identification and Support of Non-Governmental Organisations and Women’s Groups Dealing With Woodfuel;

AAA.5.10 Identification of Suitable Tree Species for Energy Production in the SADCC Region;

AAA.5.11 Assessment of Environmental and Socio-Economic Impact of Woodfuel Scarcity;

3.6.
AAA.5.12 Household Woodfuel Consumption Surveys in the SADCC Region;
AAA.5.13 Development of Fuel Switch Opportunities;
AAA.5.14 Increase in Mass Awareness of Woodfuel Issues;
AAA.5.15 Improvement of Woodfuel End-Use Efficiency in Rural Industries of the SADCC Region; and
AAA.5.16 Development of Improved Charcoal Production Techniques.

In addition, at their meeting in Maseru in June, 1991, the Ministers of Energy approved, a new Project AAA.5.17: Rural Energy Planning and Environment Management Training Programme.

It is planned to conduct a training programme at an estimated cost of US$3.1 million, initially for a period of three years.

The status of woodfuel energy based rural industries in the SADCC region was analyzed during 1990/91. Brick burning and fish smoking were identified as the top two rural industries which require urgent efforts to improve their woodfuel end use efficiency. Project AAA.5.15: Development of Woodfuel End-Use Efficiency in Rural Industries of SADCC Region will initially concentrate on the improvement of brick burning and fish smoking. Pilot studies will be conducted in Angola and Mozambique while studies on brick burning will be conducted in Mozambique and Zimbabwe.

The first phase of Project MAL.5.1: Blantyre City Fuelwood which was approved under the energy sector in 1984, and started in 1986, was completed in 1990/91. The main achievements of the project during the six years of its implementation are:

(a) 6,350 ha. of fuelwood plantations have been established;
(b) 10.000 ha. of indigenous forest have been reserved and put under intensive management;
(c) 190 km of roads have been constructed;
(d) 7,000 sq.m. of buildings have been constructed;

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(e) 160 farmers have been trained on extension techniques; and,
(f) a total of 4000 workers have been employed of whom 20% are women. The project has been extended for a further period of six years (1992 - 1997) at a cost of US$5 million and will be implemented by the Forestry Sector.

Energy Conservation

3.7.1
3.7.3
All the on-going Energy Audit activities were completed during the year under review under Project AAA.6.2: Energy Saving in Industry.
Preparations for a Technical Seminar on "Energy Conservation in the SADCC Region" are underway. The Seminar will be held in November 1991.
A mid-term review of the project was conducted in 1990/91. The mid-term review recommended an extension of Phase I to 3lst December, 1991 to facilitate the development of a successor Project AAA.6.5: Industrial Energy Management, for which necessary finance has been secured.
A SADCC Energy Conservation Strategy was developed during the year and approved by the Committee of Ministers of Energy in Maseru in June, 1991. The main focus of the strategy is:
(a) identification of the major policy objectives of the SADCC Energy Conservation Programmes in the next five years (1992/97);
(b) identification of measures required to increase energy conservation and energy efficiency for all the five major energy sources;
(c) presentation of outlines of future SADCC Energy Conservation projects;
(d) establishment of a management and organisation structure for the SADCC Conservation Department of TAU and its adjunct specialised Sub-Committee.

New Projects
The following twelve new projects were approved by the Committee of Ministers of Energy in Maseru in June 1991:
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Hydrocarbon Source Rock Evaluation in the SADCC Region, (US$1.0 million);
Kafue Gorge Regional Training Centre, (US$7.4 million);
Assessment and Applications and Markets for Wind Energy Systems in the SADCC Region, (US$0.2 million);
Assessment and Markets for Industrial Process Solar Heat in the SADCC Region, (US$0.2 million);
Rural Energy Planning and Environmental Training Programme, (US$3.1 million);
Energy Management in Industry, (US$9.0 million);
Installation and Rehabilitation of Wind Powered Water Pumps (US$0.4 million).
Solar Photovoltaic Power Generation in Rural Areas - Lesotho Pilot Project, (US$0.3 million).
Malawi/Zambia Power Cooperation in 1the Border Region, (US$5.0 million);
Control Centre for the Supply of the Beira Region Power Network in Mozambique, Phase I, (US$0.1 million);
Dredging of the Mkinkomo Reservoir, (US$5.0 million);
Power Cooperation Between Zambia and. Namibia, (US$16.0 million);
ENERGY PLANNING
During the period July, 1990 - June, 1991, the following activities were undertaken:
(a)
Economic Analysis and Project Promotion
(i)
new "Guidelines for Project Definition, Approval and Promotion" were developed and approved by the Committee of Ministers of Energy in Maseru in June, 1991;

(b)
(C)
(ii) a practical "Manual for Economic Appraisal of Energy Projects" was developed during 1990/91 and approved by the Committee of Ministers of Energy in Maseru in June 1991; and
(iii) economic appraisals for three projects in the Energy Sector portfolio were carried out by the TAU, thereby enhancing internal capacity of the Unit to carry out such appraisals. Enhanced internal capacity of the TAU to carry out project appraisal saves the Organisation the cost of hiring consultants to undertake such activities.

Dissemination of Energy Information and Sharing of Egperience

(i) The SADCC Energy Data Base has been continuously updated;
(ii) the 1988 Energy Statistical Year Book was produced and distributed to member States;
(iii) the draft 1989 Energy Statistics Year Book has been distributed and circulated to all member States for comments;
(iv) the second meeting of the Energy Planning/Documentation Sub-Committee took place and provided useful contributions to the work of the Energy Planning and Economic Studies Departments of member States and the TAU; and
(v) various articles of regional interest on energy economics and planning have been written and published in the SADCC Energy Bulletin;

TrainiglEducation

In order to strengthen the institutional capacities and capabilities of member States in the fields of energy analysis and planning, TAU’s Energy Planning and Economic Studies Department has initiated discussions with some cooperating partners in order to agree on a suitable training package for SADCC energy planners under the framework of Project AAA.O.8: Establishment of a Regional Energy Planning Network.

CURRENT STATUS OF PROJECTS

Overall Coordination

Project AAA.0.3: General Support to the Energy Sector/Technical and Administrative Unit (TAU)

The objective of this project is to provide technical and material support to facilitate the work of the TAU. This support involves procurement of materials, financial and technical assistance. The project is supported by Belgium, Brazil, Canada, EEC, France, Norway, Portugal, and UK. TAU has signed specific Memoranda with Canada, Portugal and Norway. Altogether seven-man years have been allocated to support TAU. including one full-time staff member from the region, have been financed under the project. This represents a reduction of two-man years compared to 1989/90. It is anticipated that the need for such external support will be phased out gradually as the TAU develops its own internal capacity.

Project AAA.O.4: Energy Bulletin

The objective of this project is to increase knowledge about the energy situation in the member States and improve the flow of energy-related information between and among member States, with a view to facilitating regional cooperation.

This is an ongoing project since September 1982. It receives financial and material support from Angola, the EEC, Canada, Portugal and, recently, NORAD which is supporting the staff training component. The printing of the Bulletin has been undertaken entirely in Angola since issue No. 17 for April/May 1988. The photocomposition is done by the Bulletin’s own staff. The production of the Bulletin has been greatly facilitated by the equipment acquired with financial assistance from Canada. Three editions, Nos. 22, 23 and 24, have been produced during 1990/91.

The Bulletin continued to experience editorial and technical/administrative problems during the year under review. Further, distribution of the Bulletin to member States continued to pose problems. Considerable difficulties continue to be experienced by TAU in the remittances of revenue realised from sale of the Bulletin by member States. In September 1987, Energy Ministers have agreed the transfer of such resources to Luanda, Angola. However, due to tied financial rules and shortages of foreign exchange in the member States, this decision has not been implemented up to now.

Project AAA.0.5: Information Coordination System

The project seeks to provide the Energy Sector Coordinating Unit with an effective tool for planning and analyzing various energy policy options. Priority is being given to economic studies. The data base will continue to be used as a tool to organize and store all information being collected, which serves as a basis for development of economic analysis. The Manual on Project Evaluation has been approved by the Committee of Ministers of Energy in Maseru in June, 1991. The 1988 SADCC Energy Statistics Year Book has been published and the draft SADCC Statistics Year Book circulated to member States for comments. New guidelines for project definition, approval and promotion has been produced and approved by the Committee of Ministers of Energy in Maseru in June, 1991. Efforts will continue in 1991/92 to enhance the database with the financial support from Belgium in the sum of US$0.15 million.

Project AAA.O.7: Documentation Centre for the Energy Sector

The objective of the project is to establish a professional filing system and an energy reference library at the TAU offices, to ensure proper management of the large flow of documents within the Energy Sector, ease access to and make the documents useful tools for sector planning and operations.

The Documentation Centre is still dependant on external backstopping services and advice due to lack of adequately experienced staff within the Unit. Efforts are continuing to enhance the internal capacity of the Centre to manage its operations. Financial support was secured from NORAD during the year to assist in the training of staff of the Centre. Training will commence in 1991/92.

Project AAA.O.8: Regional Energy Planning Network

The objective of this project is to enhance energy planning and computerised information processing capacity in member States and facilitate information flow between and among member States and the TAU. Financial support from Belgium has been secured. The Sector Coordinator and the Belgian Government are working on the practical details to conclude the financing arrangements and the implementation of the project. A meeting between the two parties took place in Luanda in June 1991.

Project AAA.0.9: Development of Manpower Assessment and Planning Capacity in the SADCC Energy Sector

The objective of the project is to assess available expertise and capacity in the member States for implementing projects and programmes in the Energy Sector and to establish within the TAU, technical capacity for manpower assessment and planning. Funding is being sought for re-appraisal of the project.

Project AAA.O.10: TAU Offices

The objective of this project is to construct permanent offices for the Sector Coordinating Unit. The project is being financed by Norway on bilateral basis. The design of the plans, financed by Portugal, is in progress.

Petroleum

Project AAA.1.2: Regional Petroleum Training Centre - Phase II

The objective of the project is to train technicians for the Petroleum Sector using the training facilities at the Petroleum Training Centre at Sumbe, Angola. In order to foster maximum utilisation of the centre by member States, a Training Coordination Committee has been created to direct and support the school’s management in the implementation of training programmes, including curriculum development, standardisation of entry qualifications.

Phase I of the project was extended to the end of January, 1990 with funding in the sum of US$0.3 million from the UNDP. The project is being supported by the Angolan Government pending the outcome of the short-term consultancy for Phase II of the project.

An evaluation of Phase I of the Project was carried out in November, 1989. A Tripartite meeting, involving Angola, Norway and UNDP, which was scheduled for July, 1990, was eventually held in Vienna on 22nd May, 1991. The meeting recommended continuation of the project, subject to the project demonstrating that there is demand in the region for the courses run at the school.

In order to confirm ithe demand for courses runi at the school, the Committee of Ministers of Energy at its meeting in Maseru in June, 1991 decided that a short-term consultancy should be commissioned to:

t update the 1988 survey;

t review, design and recommend new course structure based on the 1988 needs assessment as up-dated by the consultancy;

t redefine the framework for the establishment of a regional course selection committee;
t develop a programme for seminars in consultation with regional utilities;
t specify the need and define mechanisms for the recruitment of additional staff, including external technical assistance;
t assess the needs for materials and equipment, taking into account courses/seminars/workshops to be mounted under Phase II of the project; and
it recommend Terms of Reference, including composition and mandate, of the national staff selection and development committee.

Funding the sum of US$0.17 million for the short-term consultancy is being sought.

Project AAA.1.4: Management Development and Specialists Training for the SADCC Petroleum Sector

The objective of the project is to train and develop professional core of management staff for the national oil companies and the member States' ministries responsible for energy; promote and enhance regional cooperation in oil exploration, supply, refining, gas utilization and petrochemical projects, through mutual understanding of planning, development and economics of major projects in the oil, gas and petrochemical sectors; encourage standardization of exploration agreements, safety procedures, oil supply contracts, product handling procedures and product specifications within the region, for the purpose of enhancing international cooperation with non-SADCC oil companies; and to reduce costs and losses.

The cost of the project is estimated at US$2.5 million. Funding is being sought, in conjunction with the Regional Training Council (RTC).

Project AAA.1.5: Joint Petroleum Exploration Programme

The objective of the programme is to improve the geological database and allow individual member States to evaluate their petroleum potential. This will place the member States in a better position to formulate petroleum exploration strategies, and be well prepared for negotiations with international oil companies.

Funding in the sum of US$0.35 million for Phase I has been secured from NORAD for the Task Force to define the terms of reference for the data collection programme, and establish. a Project Steering Committee. Phase II, to finance the project steering committee, is estimated to

cost US$0.06 million and has been secured from Norway. Phase III, estimated to cost US$0.29 million entails carrying out studies of the three basins, i.e., the Karoo, Rovuma and the East African Rift Valleys. Funding for Phase III is under negotiation with Norway. Phase IV W111 involve joint exploration data collection programme at an estimated cost of US$70 - 80 million. Implementation of this phase is dependent upon the success of Phase III.

Project AAA.1.6: Potential Petroleum Cost Savings

The objective of this project is to investigate potential petroleum cost saving activities and to determine the organisational framework for carrying out their implementation, including assessment of costs and benefits. The projects originally consisted of two sub-projects: Petroleum Cost Savings in the SADCC Transport Sector (US$0.12 million) and Joint Organization of Petroleum Market Information (US$0.06 million). The first seb-project has been transferred to the Energy Conservation Section of TAU for further development. The other sub-project has been suspended pending review by the Petroleum and Coal sub-Committee Specialist Team in the second half of 1991.

Project AAA.1.7: Hydrocarbon Source Rock Evaluation in the SADCC Region

The objectives of the project are to carry out an evaluation of hydrocarbon source rocks in the SADCC region to promote petroleum exploration; establish a correlation of source rocks of similar sedimentary basins and environments in the SADCC region; and to train SADCC member States geoscientists in source rock evaluation and thereby enhance member States internal capacity to carry out such activities with minimum external assistance.

This project was approved by the Committee of Ministers of Energy in IMaseru in June, 1991. Funding for US$0.999 million is being sought.

Project ANG.1.1: oil Supply from Lobito to the SADCC Region

The project is being reformulated.

Project LES.1.1: Strategic Fund Storage Facilities in Lesotho - Phase I and II

The objective of this study is to design a project, including costings, and establish in Lesotho a strategic storage facility for fuel for at least four months consumptions.

A consultant was appointed and a contract for carrying out the study was signed in January, 1990. Phase I is concluded. The study was started in March, 1990 and the final report was presented in May, 1991. For Phase II, (Engineering Designs), the Terms of Reference (TORs) are being reformulated jointly by Lesotho government representatives and TAU.

Project MAL.1.1: Hydrocarbon Exploration in the Malawi Rift Valley

The objective of the project is to assess whether Malawi has potential to attract commercial interest exploration and establish an exploration programme to ascertain hydrocarbon occurrences.

The terms of reference will be reformulated and the project will be incorporated under Project AAA.1.5.

Project NAM.1.1: Oil Terminal in the Form of on Offshore Buoy at Swakopmund

The objective of this project is to construct an oil terminal in the form of an offshore buoy at Swakopmund, to minimise Namibia’s dependence on South African controlled ports. The project has three components:

(a) Phase I - The feasibility study which inter-alia will include ecological evaluation and cost estimates;

(b) Phase II - Design of the structures based upon the results of Phase I;

(c) Phase III - Construction of the Oil Terminal.

Funding amounting to (US$0.50 million) for Phase I is being sought. Funding requirements for Phase II and III will be determined during the execution of the first phase.

Project 8WA.1.1: strategic Storage Facilities in Swaziland

The objective of this study, estimated to cost US$0.1 million, is to design a project, including costings, and establish in Swaziland, a Strategic storage Facility for Fuel for at least four months’ consumption. A consultant was appointed and a contract signed in January 1990. Phase I which started in March, 1990 is completed, and the final report was presented in May, 1991. The T.O.R’s for Phase II (feasibility study) are being formulated jointly by the Swaziland government representatives and TAU.

Project TAN.1.1: Rehabilitation of the TAZAHA Pipeline Phase II

The objective of the project is to rehabilitate the entire pipeline system and improve/repair supporting facilities such as corrosion protection, mechanical, electrical, telecommunication and the tank farm.

Phase I and II were completed in 1988 and 1990 respectively. Phase III involves pipeline replacement including pipeline spares and equipment, eathodic protection works, telecommunication rehabilitation. A loan of US$15.75 million was secured from the ADB in January, 1991. Completion is expected in 1993/94.

Project TAN.1.3: Biostratigraphic Reference Collection for the SADCC Region

The objective of this project is greater utilization of existing biostratigraphical and geological data from the SADCC countries, together with additional studies of geological samples, to achieve a general biozonation and correlation for the entire region. The first phase of the project has been completed. A meeting took place in Dar es Salaam in November, 1990 where geoscientists from the region reviewed the programme and recommended further steps to proceed with the second phase.

Coal

Project AAA.2.3: Manpower Development and Training for the Coal Sub-Sector

The objective of this new project is to carry out a training needs survey to provide a basis for planning a manpower development and training programme for the coal sub-sector.

The cost of the project is estimated at US$0.11 million. Funding is sought.

Project BOT.2.2: Coal Distribution Yard and Coal Information, Botswana

The main objective of the project is to promote the use of coal by community services and households, and to gain experience in distribution and marketing of coal. It is hoped that the experience gained during implementation, can be applied in other member States.

The project has been funded US$0.80 million bilaterally as part of the German (FRG) Technical Assistance to Botswana and is under implementation.

Project ZAM.2.1: Investigation of Coal Briquetting (Zambia)

The objective of this project is to investigate the technical and economic feasibility of setting up and operating a coal briquetting plant fed with washed fine coal. The coal briquets so produced would be used as an alternative to woodfuel and charcoal. Studies by both Japan and FRG have been completed. The project is being implemented with Zambian and Japanese funding.

Project ZIM.2.1: Coal stoves for use in Rural and Urban Areas

The objective of the project is to establish the technical economic and environmental feasibility of introducing coal stoves for low income households and assess the user's acceptance of the stoves and gain experiences.

The project is under evaluation, to confirm its regionality.

Electricity

Project AAA.3.1: Regional Rural Electrification Programme - Phase I

The objective of Phase I of the project, financed by Canada to the tune of US$0.18 million, is to identify the institutional and socio-economic setting and framework for Rural Electrification in member States, including energy resources and electricity systems; current technical experiences in rural electrification; training facilities; expert personnel and case studies of specific projects.

As recommended by the first feasibility study, national consultants have been appointed by SADCC countries to conduct surveys, in June/July 1989. A workshop for Energy officials and experts from the member States took place in Harare, Zimbabwe in September, 1990, and discussed the reports on the national surveys, in order to prepare the strategy.

The findings of the Workshop were presented to the second Electricity Sub-Committee meeting held in Windhoek in October, 1990, and again in the meeting held in Maseru in March, 1991. Discussions clearly showed that there are different opinions on how to deal with Rural Electrification (RE), stated in the SADCC Electricity strategy as a priority. A consensus on the way of making electricity available to rural population was not achieved. Chief Executives committed themselves to look after this important matter. Comments from EDM, ZESCO, and ZESA were received and sent to the Consultants. The Final Report was issued late May, 1991 with a defined Regional Rural Electrification Strategy and 3 new activities recommended

for Minister’s approval. The three new activities were approved by the Ministers in Maseru, in June, 1991.

Project AAA.3.2: Specialised Training in the Field of Electric Power

The objective of the project is to identify training needs for electricity utilities personnel; and formulate a training programme taking into account the existing facilities in the region. Other consultants have been approached to carry out another national survey.

They have issued a draft report which was discussed at the Maseru Workshop in December, 1990, and at the Electricity Sub-Committee meeting in Maseru in March, 1991. The final report of Phase II - Regional Power Sector Training Review, has been finalised and Phase III entitled "FIVE YEAR REGIONAL POWER SECTOR TRAINING PROGRAMME" was approved by the Energy Ministers in Maseru, in June, 1991.

Project AAA.3.4: Regional Hydroelectric Hydrological Assistance Programme

The objective of the project is to improve availability, accessibility and quality of hydrological data within the SADCC region, for hydroelectric, agricultural, fisheries forestry and environmental development, etc.

First phase: Zambezi basin.

The Zambia Electricity Supply Corporation (ZESCO), the implementing agency, has made arrangements for office facilities and assistance staff for the group of consultants. Field work began in late February, 1989.

The second meeting of the Project Steering Committee to discuss and approve the inception report was held in May, 1989 in Lusaka, Zambia. At the meeting it was agreed that each country should consider sending two people to be trained at the project office in Zambia. This proposal did not materialise because it was intended to train counterparts for the project, not general SADCC training for all member States. The third meeting of the Project Steering Committee was held in Blantyre, Malawi, in May, 1990 where a preliminary proposal for Phase I of the Project was discussed. TAU is developing terms of reference and the budget for Phase II of the project estimated at US$7.0 million.

The estimated cost of Phase I of the project is US$2 million, which has been secured from Canada (US$1.05 million) and Portugal (US$0.5 million). Phase I of the Project was completed in April, 1991, funded by CIDA (Canada) and ICE (Portugal). Part I of Phase II is planned to start late 1991, and negotiations for funding are underway with CIDA. Terms of Reference for Phase II - Part

I were discussed and agreed during the fourth Project Steering Committee held in Harare in May, 1991. These Terms of Reference were approved by the Energy Ministers in Maseru, in June, 1991.

Project AAA.3.5: Plan for Integrated Utilization of the Cunene River Basin

The objective of the project is to develop a master plan to utilize the Cunene River Basin's water resources fully. The total cost of the project is estimated at US$0.62 million. Portugal and Brazil have agreed to co-finance the project. One memorandum of understanding is expected to be signed between the Angolan Government and Portugal later this year. Portugal will be responsible for consultancy work and inspection of the project. Brazil will finance the training component. The study will be completed in twelve months.

A Project Steering Committee has been appointed to oversee the implementation of the project. An inception report has been produced and will be considered by the Project Steering Committee.

Project AAA.3.6: Power Systems Control and Operation Technical Support and Training

The objective of the project is to train personnel who work with computerised control equipment; establish a permanent store of spare parts for quick replacement of faulty equipment; and regular maintenance routines for communication equipment.

Training is expected. to take place in. both Zambia and Zimbabwe using existing facilities in these countries. The spare parts will be held by each electricity utility (Zambia/Zimbabwe). In March, 1991 Sweden (SIDA) agreed to finance the training component of the project. According to the decision made during the energy Ministers meeting held in Maseru June, 1991' the portions maintenance and provision of spare parts initially included in the project should be dropped. The project cost is estimated at US$1.2 million.

Project AAA.3.7: Computer Model for Analysis and Planning of SADCC Transmission Systems, Phase I and II

Extensions and interconnections of the transmission system in the region is a continuous process. This calls for advanced tools (models) of system planning and operation. The objective of this project is to develop such a model, at regional level, in three separate stages: preliminary study; development of a computer model for analysing the grid; and implementation of the model. A technical mission, which involved a regional expert, visited five member States to assess the situation in those countries. Questionnaires were sent to the other member States not visited.

A report has been produced and dispatched to all regional utilities for comments. A workshop held in Windhoek in October 1990 discussed the report. The PSS/E model was recommended to be used in SADCC power utilities. Final decision is expected to be made soon. Funding (US$0.40 million) is being sought.

Project AAA.3.8: Coordinated Utilisation of Regional Generation and Transmission Capacities - Prefeasibility Study

The aim of this project is to assess the scope for coordinated utilisation of the total regional power generation capacity, taking into account the need for reserve capacity, reliability, etc. The study will ascertain current installed capacity against demand, both into the future; examine power tariff and pricing policies and structures, and their possible impact on regional trade in electricity, and recommend accordingly. The World Bank carried out the study with funding (US$0.25 million) from Norway and Sweden. The final report is expected in September, 1991.

The energy Ministers approved the project description for Phase II at their meeting, in June, 1991. Funding for Phase I and II has been secured from Sweden.

Project AAA.3.9: Power station Maintenance Programme

The project, which is :1 follow up to Project AAA.3.3: Maintenance of Mechanical Equipment in the SADCC Power Stations (completed), seeks to increase the reliability of power plants in the SADCC member States. Three pilot power plants, one firm each, in Angola, Tanzania and Zimbabwe, will be selected and investigated. These three member States have been requested to nominate their respective plants to be investigated.

Funding for the project, which is estimated to cost US$0.15 million, is being sought.

Project AAA.3.10: Kafue Gorge Regional Training Centre Continued Operation and Expansion

The objective of the project is to continue providing specialized training for hydropower personnel from the SADCC countries.

This is a new project which was approved by the Energy Ministers meeting in Maseru, in June, 1991.

Funding amounting US$6.77 million is being sought.

Project ANG.3.2: Interconnection of the Northern, Central and Southern Grids in Angola and Possible Extension to Namibia

The aim of the project is to study the technical and economic feasibility of interconnecting the three main electricity grids in Angola, as well as consider possible interconnection with Namibia.

The feasibility study was carried out by THEMAG. A 220 KV line from Gabela to Quileva to link the North and Central systems, and a 150 KV line from Lomaum to Lubango to make the Central to South connection was recommended. The extension to Namibia, involving a 150 KV line from Matala, was included in the Terms of Reference, and the Namibian Power Utility, SWAWEK, plans to investigate the possibility of constructing the high capacity interconnector system.

The project study is completed. However further studies are bound to be carried out, to include a possible extension to Namibia.

Project ANG.3.3: Completion of the Gove Hydroelectric Development - Feasibility Study

Phase I is a study on the generation and transmission facilities in the central system with emphasis on Gove. Phase II comprises engineering, tendering and work supervision. The study has been completed in 1990.

Shawinigan/Lavalin International has just completed the revision and upgrading of THEMAG’s report and has recommended a scheme with an installed capability of 40 MW.

Unfortunately the Gove Dam was damaged during the war. Therefore, the Ministers of Energy, at their meeting in June, 1990, approved an emergency Project ANG.3.6: Repair of Gove Dam. The progress of this project has to await the outcome of studies concerning the repair of Gove Dam (Project ANG.3.6).

Project ANG.3.4: Communication and Information System for the Angolan National Power Grid-Phase I

The project seeks to improve communications in the Angolan power system in order to prepare for possible connection to neighbouring countries.

In March, 1990, a team from Norway visited Luanda to discuss the project with TAU and Angolan utilities and authorities. The consultants, EB NERA sponsored by NORAD prepared a report which demonstrated the feasibility of the project. NORAD agreed to finance the implementation of Phases I and II at the same time, for the northern system at the cost of US$1.92 million. The estimated cost for all the Angolan Systems is US$4.0 million.

The Power Line Carrier system is expected to be installed soon. All equipment is already in Angola. The present phase is expected to finish in November, 1991, and works are progressing satisfactorily. Among other things, it covers shipment of a fair amount of communications equipment to be installed in Luanda, Cambambe, N'dalatando, Cacuso and Malanje (Northern System). English courses for nine Angolans have recently finished in Zambia, and the erection of a Training Centre is concluded. SONEFE, an Angolan Power Utility, was responsible for the foundations and furniture for the Training Centre.

Studies for next steps (Central and Southern Systems), are already under way. The training programme for the equipment included in this project commenced in June 1991.

Project ANG.3.6: Repair of Save Dam

The Cove Dam was sabotaged in February 1990. The objective of this new project is to restore the Dam to pre-sabotage level, in order to regulate the flow of the Cunene River, so that downstream hydropower facilities can operate properly. To avoid more extensive damage ea number of actions have been carried out, being all costs, so far, supported by the Angolan Government. The Angolan Government approached NORAD and a team from Norway visited the site in January, 1991. Further in depth investigations will be carried out and NORAD is ready to finance part of the costs. Funding (US$7.1 million) is sought.

Project BOT.3.1: Interconnection of the Botswana and Zimbabwe Grids

The objective of the project is to promote the rational utilisation of regional electricity resources in order to reduce dependence on imports from outside the region.

This project involve the construction of an HV transmission line from Bulawayo in Zimbabwe to Morupule in Botswana.

Since June, 1990, when the project was considered as completed by the consultants, serious operational problems have been faced. Required tariff agreements were not in place, which caused some embarrassments to International Cooperating Partners (ICPs) and to TAU, who consequently commenced to lead the process towards tariff agreement. The Chairman of SADCC Energy Ministers, drew the attention of the SADCC Energy Ministers involved in this matter and encouraged TAU to pursue negotiations. Early in March, 1991 a Project Steering Committee Meeting took place in Harare and resulted in a short-term agreement. The line was successfully energized on 15th March, 1991. Nevertheless tariff matters remain, as well as operational problems. TAU who is pressing for a solution, has been consulting all the Power Utilities and Ministries involved. A report on Firm Power and Energy Tariffs has been drafted by TAU and commented upon by the three parties involved.

Project BOT.3.2: Power Supply to Northern Botswana

The objective of the project is to promote the rational utilization of regional energy resources in order to reduce dependence on imported electricity from outside SADCC countries.

The project has been completed and was commissioned in January 1988. Additional works involving the expansion of the 60 RV transmission line on the Zambian side have been identified, and work is underway.

Project BOT.3.4: Second 220 XV Line from Morupule to Gaborone

The objective of this new project is to reduce Botswana’s dependence on power supply from South Africa by improving reliability of supply to the southern part of the country by providing a second line, which in turn will raise the transmission capacity to the expected levels by 1991. Ministers of Energy, at their meeting in June 1990, decided to defer implementation of this project until the line is required for firm power supply in 1996/97.

Project LES.3.1: Development of Small Hydropower Facilities (SHP) at Mantsonyane and Semonkong - Lesotho (Phase II)

The implementation of this project will lessen the dependence of Lesotho on South. Africa and also reduce utilisation of expensive diesel fuel for generation of power.

Phase I of both Mantsonyane and Semonkong were commissioned by the end of 1988. Phase II of the Semonkong minihydropower plant comprises installation of z: secohd turbine, and design and construction of a storage reserv01r upstream of the Phase I project. The estimated cost of Phase II is US$3.5 million at 1988 prices.

Ministers of Energy decided, at a meeting held in June 1990, to defer implementation of Phase II until the demand for power justified it.

Project LES.3.2: Transmission Network Development in Lesotho Phase III

The objective of the project is to ensure a reliable power supply of power to the rural areas of Lesotho, and hence contribute towards lessening dependence on fossil fuels, and imports from South Africa.

Phases I and II were completed in late 1987. The project was reformulated in 1989. Five additional Phases (III, IV, V, VI and VII) were identified. Funding (US$43.5 million) is being sought for implementation of these remaining phases.

Project LES.3.5: Quthing Small Hydropower Project - Lesotho

The objective of the project are:

8 Reduce dependency on external power supplies ;

8 Promote economic development in the southern parts of the country;

8 Improve the reliability and availability of electricity throughout the country.

The T.O.R’s were reformulated in 1991, to include geo-technical investigations. These new terms of reference were presented to the Energy Ministers, in June, 1991 and approved. Funding of US$1.5 million is being sought.

Project LES.3.6: Muela Hydropower Project - Lesotho

The objectives of this project are to reduce Lesotho’s dependence on South Africa for energy; and to improve the reliability and availability of electricity supply.

The project entails the construction of a hydropower complex, with a power output of 72 MW.

This project, which is part of the Lesotho Highlands Water Project (LHWP), will promote general development of the remote Highlands region, by providing electricity, potable water and water for irrigation. Economic analyses have shown that this project can generate the highest internal

rate of return among possible electricity generation projects in Lesotho.

The commissioning of the three units, each 24 MW, is scheduled for March, 1996. The major work on the LHWP started in 1990, with the construction of Katse Dam, water transfer tunnel and delivery tunnel. Construction of the hydropower complex will start in 1992, with the tender invitations for the civil construction contract for the power station and the dam at the end of 1991. The buildings of the operators village are planned to house the engineering staff during the construction period, and hence bids will need to be invited in mid-1991. Other construction works can readily be performed during a four-year period starting in 1992. During 1990, the financial requirements was recalculated by Lesotho Highlands Development Authority (LHDA). The up dated project financial requirements including price escalation during the implementation period, amounts to US$220.6 million at current prices. Negotiations for different soft loans are under way with ADB, EEC etc. So far approximately 60% of the funding is under negotiation.

Project MAL.3.1: Malawi/Mozambique Electricity Supply in the Eastern and Western Border Regions

The objective of the project is to supply electricity from the Malawi grid to three villages in Mozambique, located near the eastern and western border with Malawi, and far from the national grid in Mozambique.

Phase I which was funded by Norway has been completed. Phase II of the project comprises rehabilitation of Caia substation, 153 km of 66 RV lines, three 66/33 KV sub-stations, 50 distribution sub-stations and 50 km low voltage lines, in western Mozambique. Phase I (US$2.26 m) is financed by Norway. Phase II has been reformulated and now comprises 350 km of 33 KV overhead transmission line, 40 distribution sub-stations, 40 km low voltage network and one 66 RV substation. The cost of Phase II of the project is estimated at US$8.46 million. Funding is sought.

Project MAL.3.3: Rehabilitation and Expansion of Power Network Communication

The objective of this project is to improve the power network operation by providing reliable transmission circuits for speech, data collection and control; to enable fast restoration of power supply during disturbed conditions; increase switching capacity of subscriber circuits and isolate faulty lines rapidly to enhance safety for power plants and personnel. This is hoped to improve efficiency on the grid interconnection work between Malawi and Mozambique.

Funding (US$2.28 million) has been secured from Norwey. (50% grant and 50% in soft loan). Project implementation has started,and is expected to be completed during 1991.

Project MAL.3.4: Limbe Reinforcement

The objective of the project is to prevent disruption of electricity supplies in the Limbe area by upgrading cables laid in the 19605 to improve voltage stability, providing an extra transmission line and by constructing a second 33/11 KV substation to improve supply security.

Funding (US$0.1 million) has been secured from the European Investment Bank (EIB), on a bilateral basis.

Project MAL.3.5: Supply to Chitipa and Karonga in Malawi from Mbeya in Tanzania

The project seeks to provide a cheaper source of electricity to consumers in Karonga and Chitipa; reduce Malawi foreign exchange drain due to imports of diesel fuel; and provide a more reliable source of electricity. Project activities include the construction of 267 km 33 KV overhead lines, one substation at Ibada, two substations at Chitipa and Karonga and two distribution substations at Kuela and Chilumba.

Funding (US$3.05 million) is being sought.

Project MAL.3.6: Malawi/Zambia Power Cooperation in the Border Region

The objective of the project is to provide electricity supply as an alternative source of energy to the rural areas on both sides of the Malawi-Zambia border.

This is a new project which was approved by the Energy Ministers in Maseru, in June, 1991.

Funding amounting to US$3.63 million is being sought.

Project Moz.3.1: Mozambique/zimbabwe Cooperation in Electricity Supply

This project seeks to increase cooperation in the electricity sector between the Mutare region in Zimbabwe, and Manica province in Mozambique; by up-grading existing transmission lines and substations. Phase I of the project will increase the capacity of the Mutare substation from 15 MW to 40 MW. Funding (US$0.7 million) for Phase I was secured from Norway.

Phase 2 comprises a feasibility study on a new transmission line (100 MW) between the two countries, which has been completed, and the report issued in April, 1987. A revised summary of the final report on project MOZ.3.1/MOZ.3.8 was issued in December, 1990. An agreement on tariffs already exists. This project is nOW' entitled: Xigadora-Orange Grave 220 KV Interconnector.

Funding for Phase II amounting US$21.4 million is being sought.

Project MOZ.3.3: Corumana Hydropower Scheme

The project's objective is to reduce the dependence of the southern part of Mozambique on South Africa for electricity supply. In addition, the reserve generation capacity will improve the system's security.

Construction works are proceeding well, in spite of some security problems. The project, which is funded by Norway (US$7.4 million) and Sweden (US$13.09 million) is expected to be completed in July, 1991.

Project MOZ.3.5: Mozambique - Malawi Interconnection of Electricity Supplies

This project consists of a study of the feasibility of constructing a transmission line which would carry power generated at Cahora Bassa to Malawi, and to the northern part of Mozambique.

The feasibility report was issued in 1987, and has been evaluated by the two countries. Meanwhile the project has been suspended due to incomplete tariff negotiations.

Project MOZ.3.7: Reconstruction of Mavuzi Hydropower station - Implementation

This project involves the reconstruction and rehabilitation of the Mavuzi Power Station which was damaged during the Zimbabwe liberation struggle. The power station :n; an important energy source for projects in the Beira Corridor, including the port of Beira itself. The project also offers an opportunity for increased cooperation in the power sector, between Mozambique and Zimbabwe.

Caisse Centrale and Indo-Suez Bank (France), and Banco de Mozambique agreed to finance the project, and construction started at the beginning of 1989. The project is estimated to cost US$8 million of which US$6 million is from France, and US$2 million from Mozambique.

The project is under implementation.

Project MOZ.3.8: Completion of Chibata Substation in Manic: Province

The project seeks to complete the construction of Chibata substation, and thereby interconnect the HCB system with the central system in Mozambique, and with the system in Zimbabwe.

Canada (CIDA) allocated C$144 521 to finance a study of the project, and also to review other regional studies already completed or currently underway, which may be related to project's objectives. The final report was submitted in May 1989. The study report recommended a full feasibility study, since the findings of the pre-feasibility phase were promising, in terms of benefits, for both countries. The project has been completed.

Project MOZ.3.10: Power Cooperation in Mozambique/zimbabwe Border Areas

The objectives are to supply the border region areas with electricity; Cashel in Zimbabwe, and Catandica in Mozambique. Both areas are at present depending on expensive diesel electricity generation.

The project involves the construction of 42 km of 35 KV overhead line from Mavita to Cashel, and the local distribution network, and 76 km of 33 KV overhead line from Ruwangwe to Catandica and local distribution network development. The project has been suspended until EDM and ZEZA prepare a reformulated project description.

Project M02.3.11: Mozambique Central Region Transmission and Distribution Network Study

The objective of the project is to prepare an investment programme for rehabilitation of the existing distribution network in the Beira Corridor, as well as further expansion beyond the Corridor.

Funding of US$0.25 million is being sought.

Project MOZ.3.12: Cahora Bassa Power for SADCC - Phase II

The objective of this project is to investigate the feasibility of interconnecting the Cahora Bassa power station to the main transmission grid in Zimbabwe, thus allowing export to Botswana, Zambia and Zimbabwe.

The pre-feasibility and feasibility studies were completed at a cost of US$0.25 million.

Sweden has released US$O. 65 million for the engineering studies and preparation of tender documents, as part of Phase III.

An I.P.C. conference is scheduled to take place in Paris before the end of 1991.

Project MOZ.3.13: Control Centre for the Supply of the Beira Corridor and Mozambique-zimbabwe tie-line.

The objective of the project is to up-grade the power control centre in the EDM central Region to take account of planned national and regional power system improvement in the provinces of Manica and Sofala, and adjacent areas in Zimbabwe. This is a new project which was approved by the Energy Ministers in Maseru, June, 1991.

Funding amounting to US$0.12 million is being sought.

Project NAM.3.1: Power Supply Cooperation in Border Regions Between Angola and Namibia

The objective of the project is to provide supply of electricity to the border areas of Namibia and Angola. The project was approved by the Energy Ministers in Gaborone, June, 1990.

NORAD agreed to assist the portion of the project inside Namibia by' providing equipment which has been used by Swawek's own personnel during construction. Funding of the Angolan portion (US$3 million) is still pending.

Project SWA.3.1: DREDGING of Mkinkomo Reservoir

The objective of the project is to reduce dependence of Swaziland on South Africa electricity supply, by dredging the Mkinkomo reservoir which will increase the power production in Swaziland. This is a new project which was approved by the Energy Ministers in Maseru, in June, 1991.

Funding amounting US$.5 million, is being sought.

Negotiations for funding with Belgium are underway.

Project TAN.3.4: Songwe River Hydropower Development (Reconnaissance study)

The project seeks to investigate the potential for hydropower development of the Songwe River, in order to provide the basis for future power systems planning in Malawi and Tanzania.

The project has been suspended for reformulation.

Project TAN.3.5: Power Supply to Tunduma and Mbozi in Tanzania from Nakonde in Zambia

The objective of the project is to improve power supplies to Tunduma and Mbozi in Southwest Tanzania, by constructing some 45 km 11/33 KV overhead line to transmit power from Nakonde, in Zambia. Funding (US$2.19 million) has been

secured from Norway. The implementation of the project between Nakonde and Tunduma has started.

Project TAN.3.6: Supply of Bumbawanga in Tanzania

The project seeks to determine the preferred least cost scheme to supply Sumbawanga in Tanzania, with power.

The first phase is a load flow and cost estimate study, to decide on the best of the following alternatives:

(a) small hydropower development;

(b) extension of the Tanzanian grid from Mbeya; and,

(c) supply from the Zambian grid in Mbala.

Funding (US$0.14 million) has been secured from Norway, and the study has been initiated.

Project ZAM.3.2: Upgrading of Kafue Gorge Power Plant

The objectives of the project are to maintain the equipment; give key personnel at Kafue Gorge Power Station the opportunity to acquire knowledge and skills relevant to the requirements and problems they face in their jobs; and continue safe delivery of energy to other SADCC member States.

The project is divided into four phases. Phases I and II involve rehabilitation of Turbines and Generators and the Kafue Gorge Training Centre. At the time of the major fire accident at the plant in March, 1989, rehabilitation of turbines and generators was nearly completed.

The rehabilitation of the Training Centre financed by Norway, Sweden and Zambia at a cost of US$3.5 million is nearly complete. The first intake of students took place in February, 1991.

Phase III which involves provision of spare parts, has been suspended.

Phase IV is concerned with the refurbishment and restoration of the last two sets of generators at a cost of US$50.22 million. Funding (US$53.7 million) has been secured from Zambia, (US$5.38 million), Norway (US$15.5 million), Sweden (US$27.5 million) and ADB (US$7.2 million) to meet the cost of this work. This phase will be finalized when the two last generators are commissioned in July and September, 1991.

Project ZAM.3.3: Rehabilitation of the National Control Centre (Phase II)

The project seeks to provide the national power company with modern equipment which will enable more efficient and economic operation of the electric system; and to maintain stable conditions on the 330 KV system in Zambia and consequently assist in maintaining stable conditions in Zimbabwe and Zaire.

Phase I comprises an evaluation of existing equipment and software, and preparation of tender documents plus tender evaluation. Phase II covers the purchase of necessary hardware and software. Sweden has financed a feasibility study and the feasibility study report was submitted to ZESCO ix) December 1989. The study concluded that the present National Control Centre (NCC) has reached its normal working life and should be replaced at an estimated cost of US$8.5 million. This project was approved by Ministers of Energy in June, 1990. Funding (US$8.5 million) is sought.

Project ZAM.3.5: PLC Communications on the Northern Transmission System

The project is suspended for reformulation to confirm its regional relevance.

Project ZAM.3.6: Refurbishment of Victoria Falls Power station - Phase I and II

The project originally sought to rehabilitate the station’s machines, and improve reliability and security of the local 66 RV feeder. In December, 1990 TAU and ZESCO finalized the detailed and reformulated TOR’s, which was presented at the 1991 ACC, in Windhoek. The estimated refurbishment cost is estimated at US$10 million, but will be detailed during Phase I. Funding for Phase I (US$0.25 million) and Phase II (US$10 million) is being sought.

Project ZAM.3.7: 132 RV Tieline Zambia - Malawi: Feasibility Study

The objective of the study is to establish the economic and technical feasibility of an electricity supply interconnection between the national grids of the two countries, in order to improve power supplies to Malawi. This project involves load flow and stability analysis; assessment of up-grading the Pensulo-Lusiwasi line, along with basic design and cost estimates; evaluation of various benefits of inter-connection; assessment of impact on operation in both systems; development of principles for agreement and tariffs; and analysis of reserve connection Chama-Mzuzu.

Norway has agreed to finance (US$0.40 million) the study, which is now under implementation.

Project ZAM.3.8: 330/220 KV Tieline Zambia/Tanzania: Feasibility Study

The objective of the study is to establish the economic and technical feasibility of an electricity supply interconnection between the national grids of the two countries in order to improve electricity supplies to Tanzania.

Norway has agreed to finance (US$0.25 million) the study, which is under implementation.

Project ZAM.3.9: Power Cooperation Between Zambia and Namibia

The objective of the project is to provide hydroelectric power to enhance development of the great agricultural potential of Northern Namibia and generally improve the reliability and increase the capacity of power supply to the region which comprises Botswana, Namibia and Zambia.

This is a new project which was approved by the Energy Ministers in Maseru, in June, 1991.

Funding amounting to US$14.55 million, is being sought.

Project ZIM.3.3: Upgrading of the ZESA National Control Centre in Harare

The objective of this project is to enhance the monitoring and control of power exchange in the interconnected grids of Botswana, Mozambique, Zambia and Zimbabwe, by the installation of computer based supervisory, monitoring and control equipment at the National Control Centre in Harare.

New terms of reference for technical definition of the project were approved by Ministers of Energy in June 1990.

The cost of the project has now been revised to US$5.2 million. Funding is being sought.

New and Renewable Sources of Energy

Project AAA.4.7: Assessment of Applications and Markets for Photovoltaic Systems in the SADCC Region - Phase I

The objective of this pre-investment study is to develop a framework for identification and market assessment of viable applications of photovoltaic (PV) technology for the SADCC region.

They project cost is estimated at US$0.19 million. Funding was provided by CIDA and the project is under implementation.

Project AAA.4.8: Assessment of Applications and Markets for wind Energy Systems in the SADCC Region

The main objective of this study is to assess the technical and economic viability of wind energy applications and to determine the potential market size and financing for the most viable wind energy applications in the SADCC countries.

This is a new project which was approved by the Energy Ministers in Maseru, in June, 1991.

Funding amounting to US$0.16 million is being sought.

Project AAA.4.9: Assessment of Applications and Markets for Industrial Process Solar heat in the SADCC Region

The main objective of this study is to assess the technical and economic viability of industrial process solar heat (IPSH) applications and to determine the potential market size and financing for the most viable IPSH applications for the SADCC countries.

This is a new project which was approved by the Energy Ministers, in Maseru, in June, 1991.

Funding amounting to US$0.22 million, is being sought.

Project ANG.4.1: Installation and Rehabilitation of wind Powered water Pumps

The objectives of this project are:

(a) to supply potable water to people and livestock in remote areas using wind Pumps; and

(b) to build local capabilities to carry out repairs maintenance and installation 0f wind pumps by effectively training local technicians and users.

This is a new project which was approved by the Energy Ministers, in Maseru, in June, 1991.
Funding amounting to US$0.42 million is being sought.
Project LBB.4.2: Solar Photovoltaic Power Generation in Rural Areas -Lesotho Pilot Project
The objective of this feasibility study is to determine the conditions under which supplying photovoltaic generated electric power would be cost effective compared to other alternatives. The project will involve two phases. Phase I Feasibility Study and Phase II Implementation.
This is a new project which was approved by the Energy Ministers, in Maseru, in June, 1991.
Funding amounting to US$0.08 million is being sought for Phase I. The estimated cost for Phase II is US$0.25 million. The implementation of Phase II is subject to the outcome of Phase I.
Project AAA.5.6: Sustainable Woodfuel Development Programme
The objectives of the project are to:
(a) develop comprehensive woodfuel strategies and implementation plans for each member State;
(b) develop projects for energy production integrated with other sectors dealing with biomass management and rural development;
(0) provide data to assess national capabilities for the implementation of woodfuel programmes;
(d) increase the capability of national energy planners in the formulation of national policies and designing and implementing woodfuel programmes, through institutional strengthening;
(e) intensify people’s participation in the production of woodfuel, and adoption of improved techniques of utilising woodfuel; and
(f) intensify the awareness of decision-makers of socio-economic and environmental problems created by woodfuel scarcity, and the need to increase resources for the implementation of woodfuel programmes.
TAU and RTC have agreed to develop the project with the other sectors involved, viz; Forestry and Soil and Water Conservation and Land Utilisation. A meeting of all four parties took place in Swaziland in February 1990. A financial proposal, which was completed in February 1990, was submitted to the EEC. A decision is still awaited.

Project AAA.5.7: Support to TAU Woodfuel Section

The objectives of this project are to:

(a) Strengthen TAU planning and coordination capacity on woodfuel issues.

(b) Enable TAU to provide catalytic support to member States on planning' implementation and evaluation of woodfuel projects.

(c) Funding of a regional woodfuel expert post as part of technical support to TAU.

(d) Collection of woodfuel data in the SADCC Region using short term consultancy.

(e) Provision of essential working tools like a ndcro printing unit, audiovisual aids, etc.

The EEC has approved funding of the project in US$.0.58 million for a period of three years beginning August 1990.

Project AAA.5.8: Development of National Woodfuel Strategies and Plans

The objectives of the project are to:

t develop comprehensive woodfuel strategies and implementation plans for each member States;

t develop projects for energy production integrated with other sectors dealing with biomass management and rural development;

t provide data to assess national capabilities for the implementation of woodfuel programmes, and means of increasing such capabilities through institutional strengthening.

Project activities include the review of experiences gained by member States and the formulation of a regional strategy.

TAU has requested NORAD to provide technical assistance for developing detailed terms of reference for the project. Funding of US$1.1 millions is being sought.

Project AAA.5.9: Identification and Support of Non-Governmental Organizations and Women's Groups Dealing with Woodfuel

The objectives of the project are to:

(a) identify active NGOs and women's groups dealing with woodfuel programmes in the region;

(b) analyse NGOs and women's groups experiences in implementing woodfuel projects, in particular those based on people's participation at grassroots level; and

(c) explore possibilities of intensifying NGOs and women's groups involvement in woodfuel programmes, by providing them with catalytic support like training, project planning, provision of equipment and funds, etc.

Project activity involves the compilation of a list of active NGOs, and the formulation of strategies in support of women's groups. Canada (CIDA) has agreed in principle to finance (US$0.4 million) the project, subject to production of detailed terms of reference for the project by SADCC.

Project AAA.5.10: Identification of Suitable Tree Species for Energy Production in the SADCC Region

The objectives of the project are to:

(a) provide comprehensive data on suitable multipurpose tree species for energy production for the different climatic and edaphic zones of the region;

(b) provide data on how to obtain seeds of the recommended species; and

(c) facilitate exchange of research findings and knowledge of suitable species for energy production.

Finland pledged to support the project during the 1990 Annual Consultative Conference (ACC) in Lusaka, Zambia. The project will be merged with the SADCC Forestry Project AAA.6.23. "Improvement and Strengthening of Forestry and Forest Production Research Institutions in the SADCC region". Implementation of the project will commence in mid 1991.

Project AAA.5.11: Assessment of Environmental and Socio-Bconomic Impact of Woodfuel Scarcity

The objectives of the project are to provide:

(a) comprehensive site-specific data on environmental and socio-economic problems created by woodfuel scarcity in the SADCC region;

(b) information to be used for increase of public awareness of woodfuel aspects; and

(c) data for planning future woodfuel projects.

Currently, TAU is collaborating with the Netherlands in developing detailed terms of reference for the project. Funding (US$2.3 million) is being sought.

Project AAA.5.12: Household Woodfuel Consumption Survey in the SADCC Region

The objectives of the project are to:

(a) provide site-specific data on household woodfuel consumption rates within the SADCC region; and

(b) analyse factors which influence rates of woodfuel consumption at household level. The cost of the project is estimated to be US$0.5 million.

An initial amount of US$0.15 million was secured from the World Bank (ESMAP). The money was used to organize a regional workshop on "Household Energy Survey Applications, which was held in Arusha, April 1991. The workshop provided inputs for further developing the Terms of Reference of the project. Funding (US$0.30 million) is still being sought to implement the project.

Project AAA.5.13: Development of Fuel Switch Opportunities

The main objectives of the project are to:

(a) examine critically opportunities for fuel switch from woodfuel to other sources of energy by the majority of the population in urban and a few rural areas in the SADCC region;

(b) examine factors which hinder fuel switch, and give recommendations on how to overcome them, on a short- and long-term basis; and

(c) establish a few pilot projects on fuel switch, to test the validity of hypotheses advocated by the study.

Funding of US$0.60 millions is being sought.

Project AAA.5.14: Increase of Public Awareness on Woodfuel Issues

The objectives of the project are to intensify:

t people's participation in the production of woodfuel, and adoption of improved techniques of utilising woodfuel; and

t the awareness of decision-makers on socio-economic and environmental problems created by woodfuel scarcity, and the need to increase resources for the implementation of woodfuel programmes.

For operational purposes, the project has been incorporated in Project AAA.5.6: Sustainable Woodfuel Development Programme.

Project AAA.5.15: Improvement of Woodfuel Bnd-use Efficiency in Rural Industries of the SADCC Region

The main objectives of the project are to:

(a) contribute to sustained supply of woodfuel for rural industries by improving their woodfuel use efficiency;

(b) minimise environmental degradation being caused. by deforestation through clearing of trees and forests to supply woodfuel to rural industries;

(0) increase public awareness of the socio-economic importance of rural industries, and the need to sustain their energy supply through improvement of woodfuel end-use efficiency; and

(d) produce country reports, indicating the main rural industries using woodfuel, and possibilities of improving their end-use efficiencies.

Based on studies conducted by TAU with FAO financial assistance, the project will in the initial stage concentrate on the improvement of brick burning and fish smoking. Angola and Tanzania will conduct pilot studies on fish smoking while Mozambique and Zimbabwe will conduct studies on brick burning. Detailed terms of reference for the project were prepared by TAU in collaboration with the member states and the Netherlands Government in March 1991 and they were submitted to the netherlands on 4 April 1991. Final funding decision is awaited.

Project AAA.5.16: Development of Improved Charcoal Production Techniques

The main objectives of the project are to:

(a) minimise the wasteful use of wood in charcoal production in the region;

(b) minimise environmental degradation arising from poor charcoal production techniques;

(0) increase the income of charcoal producers through adoption of improved production techniques which will increase recovery rates; and

(d) facilitate exchange of experiences in the improvement of charcoal production techniques in the region.

A steering committee of experts will be formed to review experiences of member States, on charcoal production as part of the preparation of a regional programme. The cost of the project is estimated at US$0.50 million. FAO and the Commonwealth Science Council have each pledged US$0.02 million for a 3 week workshop. The Workshop is scheduled to take place in September, 1991. Funding for the balance is being sought.

Project AAA.5.17: Rural Energy Planning and Environmental Training Programme

The objective of this project is to build capacity in the region to deal with rural energy planning and environmental issues by providing training to the citizens from the SADCC region.

This is a new project which was approved by the Energy Ministers, in Maseru, in June, 1991.

Funding amounting to US$3.09 million is being sought.

Project ANG.5.3: Luanda Woodfuel Project (Angola)

The main objectives of the project are to:

(a) establish a woodfuel plantation of about 55,000 ha in Luanda Province;

(b) increase food and fodder production for Luanda through agro-forestry;

(0) improve people’s standard of living, especially by creating new jobs for women; and

(d) minimise on-going environmental degradation around Luanda city, mainly soil erosion due to loss of vegetation cover.

The project was suspended by the Energy Ministers at their June, 1991 Meeting.

Project MAL.5.1: Blantyre City Fuelwood Project - Phase II

The objective of the project is the establishment and administration of 65, 000 hectares of Fuelwood Plantation in the city of Blantyre to meet domestic as well as indpstrial demand for fuelwood, based on the experiences gained in Phase I. The project started in 1986. The first phase of the project will be completed in 1991. Main ach1evements attained. within the six: years period are; 6,350 ha of fuelwood plantation were established, 10,000 ha .of indigenous forest were reserved and put under 1nten51ve management, 190 km of roads were constructed, 7,000 sq.m. of building were constructed, 160 farmers were tra1ned on extension techniques, and a total of 4000 workers were employed of which 20% were women.

At the Energy Officials/Energy Ministers meeting in 1990 it was decided that TAU and the SADCC Forestry Sector in Malawi should develop detailed terms of reference, including budget, for an extension of the project. The terms of reference have been developed. SADCC is seeking financing for the extension of the project for a six year period starting in 1992. The extension will require an amount of U855. 0 million. For operational reasons the project has been transferred (phase two of the project) to the SADCC Forestry Sector.

Project MOZ.S.1: Urban Fuelwood Agro-Forestry Project for Maputo - Mozambique

The main objectives of the project are to:

(a) rehabilitate the existing equipment in project;
(b) establish an additional area of 2,500 ha of eucalyptus plantation;
(c) manage the existing plantations (3,200 ha);
(d) improve the agro-forestry schemes;
(e) create forestry extension network; and
(f) develop research and training, especially in agro-forestry, in liaison with other relevant sectors.

About 2, 500 ha of woodfuel plantations will be established, and training and research activities will be conducted.

In their June, 1991 meeting held in Maseru, the Energy Ministers have agreed to withdraw the project from the programme.

5.6
Energy Conservation
Project AAA.6.2: Energy Saving in Industry
The main objectives of the project are to:
(a) carry out industrial energy consumption audits in selected firms in the member States;
(b) organise training workshops and data collection on energy conservation; and
(0) develop a regional energy conservation strategy.
The Energy Conservation Office established in Harare in November 1987 is now fully operational.
This project, initiated in 1987, should achieve completion of the main project activities by end of November 1990. Accomplishments will include 33 energy audits, in Zimbabwe, in Malawi, in Mozambique, in Zambia and in Botswana; four industry-specific workshops and one country workshop (for Mozambique); 10 national energy seminars one in each member State, by the end of 1991, and training of three SADCC counterpart staff in both energy-auditing related management and communications activities.
In 1990 the project underwent a midterm review by CIDA, with generally positive results, including a recommendation to finance a successor project which CIDA have now accepted. In order to bridge the gap between the new project and the current project, CIDA. will sponsor an extension of Project AAA.6.2 which will include a strong emphasis on planning and database activity, promotions, and follow-up to audits already completed.
Project AAA.6.3: Development of Energy Conservation Activities at TAU
The objective of this project is to identify national consultants in the region to assist in planning and policy formulation and development, strengthen TAU energy conservation department and develop a detailed regional energy conservation plan. The project was approved in 1989, at the meeting of the Committee of Ministers, at Victoria Falls, Zimbabwe, at a cost of US$0. 6 million. Funding of US$0.60 million is sought.

Project AAA.6.4: Coordination of Industry Energy Data Base Development with BADCC Industry and Trade Coordination Division

The objective of this project is to assess current and future needs of Industry Data Base prepared by the Industry and Trade Coordinating Unit, the potential for integrating this database with that developed by TAU and to establish mechanisms for future sharing and integration of data between the two Coordinating Units. The project was approved in 1989, at the meeting of the Committee of Ministers, at Victoria Falls, Zimbabwe, at a cost of US$0.08 million.

In their June 1991 meeting, held in Maseru, the Energy Ministers have agreed to withdraw the project from the programme.

Project AAA.6.5: Energy Management in Industry

The objective of the project is to undertake several activities which were not covered under AAA.6.2.

This is a new project which was approved by the Energy Minister in Maseru, in June, 1991.

Funding amounting US$0.9 million is being sought.

Project ZAM.6.1: Energy Conservation, Indeni Petroleum Refinery - Zambia

The main objective of the project is to save energy in the existing refinery streams by the installation of waste-heat recovery equipment and the preflash tower in the atmospheric distillation unit. The project has been reviewed, and the terms of reference have been changed. During 1990 TAU has executed a project appraisal, which indicated positive economic results.

Funding (US$0.8 million) is being sought.

Project Descriptions

Estimated Cost:
Total: 0.17
Foreign: 0.17
Local: -
Funding Secured:
Foreign: -
Local: -
Objectives: -
(USS Million) Financing Gap: 0.17
Executing Agency: TAU/RTC
Start: Implementation can start
as soon as funding is secured
Duration: 7 months
Assist PTC/TCC/TAU' to review, design and
select new courses identified in the Survey
Report including the advice of a consultant
in order to ensure programme acceptance by
the member States and their respective
commitment.
Assist PTC/TCC/TAU to define the framework
for the establishment of a Regional Course
Selection Committee.
Assist PTC to define a programme of external
seminars in the SADCC member States in
cooperation with existing Institutions in
the Region.
Specify the need and define mechanisms for
the recruitment of additional staff
including external expert assistance.
Define the need for additional material and
equipment necessary concomitant with the
foreseeable volume and desired level of
courses/seminars/workshops in the second
phase of the project.
Define draft terms of reference, including
the composition and mandate of the National
Staff Selection and/or Development
Committee.
Define proposals for proper project
management of such magnitude. Consequently
the consultant will identify suitable
Institutions (regional/continental/-
worldwide) dealing with similar activities
capable of conducting the planned course
programme.

Description: The consultant shall:
Define the composition of the working team including experts from member States to fulfil the objectives herein identified.
Conduct a methodological presentation of the proposed course programme for experts from member States to discuss the proposed work programme.
Define all necessary parameters in order to establish a realistic cost estimate of the second phase of the project.
status: Funding sought.
AAA.1.4 MANAGEMENT DEVELOPMENT AND SPECIALISTS TRAINING FOR THE SADCC PETROLEUM SECTOR
Estimated Cost:
Total: 2.50
Foreign: 2.50
Local: -
Funding Secured:
Foreign: -
Local: -
Objectives: -
(US$ Million) Financing Gap: 2.50
Executing Agency: TAU/RTC
Start: As soon as funds are secured.
To produce a core professional staff and management for the SADCC Oil Companies and Government Ministries through an integrated Regional Energy Programme.
To improve regional cooperation and standardization of policy in matters of common interest in the Oil/Gas and petroleum industry.

Description:
status:
The project will consist of two phases:
Phase I: Training programme in the SADCC
countries.
Phase II: Award of scholarships to select staff
overseas for specialized training.
Funding sought.
AAA.1.5 JOINT SADCC PETROLEUM EXPLORATION PROGRAMME
Estimated Cost:
(USS Million) Financing Gap: 0.29
Total: 0.70
Foreign: 0.70 Executing Agency: SADCC/TAU
Local: 0.01
Funding Secured: Start: June 1991
Foreign: 0.41
Local: 0.01 Duration: 2-3 years
Objectives: The projects will improve the geological database
Description:
status:
and allow the individual SADCC countries to
evaluate the petroleum potential of their basins.
By merging the national projects in a SADCC
exploration programme, the short-term objectives
are:
- to promote the contribution from oil
companies interested in getting new data to
evaluate the prospectivity of the region;
- to save money as a certain crew can execute
different projects in the same region.
The project consists of four phases, (est. in USS
Million):
Phase I - Task Force: 0.35
Phase II - Project Steering Committee: 0.06
Phase III - Basin Studies: 0.29
Phase IV - Exploration Programme: 70 - 80
Funding has been secured from NORAD to finance
the services of a Petroleum Consultant, for the
Project Task Force, who will collect, analyse and
present all prospective data for the Joint
Programme.

Funding has also been secured .from NORAD to finance the Project Steering Commlttee, whlph met in March 1991 for the first time. F1nanc1ng of the Basin Studies are under discussions w1th cooperating partners.
Phase IV, The Exploration Programme is dependant upon the success of the preceding three phases.
Estimated Cost: (US$ Million) Financing Gag: 0.86
Total: 1.00
Foreign: 0.86
Local: 0-14 MW
Funding Secured: Start:
Foreign: -
Local: 0.14 Duration:
Objectives: - To carry out an evaluation of hydrocarbon source rocks in the SADCC region to promote petroleum exploration.
- To establish a correlation of source rocks of similar sedimentary basins and environments in the SADCC region.
- To train SADCC member States geoscientists in source rock evaluation.
- To generate funds after the sale of copies of the final report.
Status: New project. Funding sought.

NAH.1.1 OIL
TERMINAL IN THE FORM OF AN OFF-SHORE BUOY AT
BWAKOPMUND IN NAMIBIA
Estimated Cost: (USS Million) Financing Gap: 0.50 For Phase I
Total: 0.50 Executing Agency:
Foreign: 0.50 Namibian Government
Local: -
Funding Secured: Start: As soon as funding is
secured
Foreign: -
Local: - Duration: 6 months
Objectives: Namibia’s petroleum supply is currently based on
Description:
status:
import from South Africa via the Walvis Bay port
facilities or by rail directly from South Africa.
By constructing a new oil terminal based on an
off-shore loading buoy at Swakopmund, Namibia
will be independent of South Africa.
The project is split in three phases:
- The feasibility study in the planning phase
will include ecological evaluation and cost
estimates.
- Design of structures based upon results of
Phase I.
- Actual construction of the terminal finally
worked out to be the best solution for this
problem.
Funding is being sought for Phase I, which can
start as soon as financing is secured. Funding
requirements for Phase II and III will be deter-
mined by the work in Phase I.

AAA.2.3 MANPOWER DEVELOPMENT AND TRAINING FOR THE COAL UTILIZATION SUB-SECTOR
Estimated Cost: (US$ Million) Financing Gap: 0.11
Total: 0.11
Foreign: 0.11
Local: - Executing Agency: SADCC/TAU
Funding Secured: Start: As soon as funding is secured
Foreign: -
Local: - Duration: 6 months
Objectives: The overall objectives of the Training Needs Survey are to provide a basis for planning a manpower development and training programme for the coal utilization sub-sector.
Description: Local consultants in each of the member States will be employed. to survey ithe needs in each country. A Project Coordinator will be appointed to assist the national consultants and to integrate the national reports into a total training needs programme for SADCC.
Status: Funding is being sought. The survey can start as soon as financing is secured.
Estimated Cost: (US$ Million) Financing Gap: 7.00
Total: 7.00
Foreign: 7.00 Executing Agency:
Local: -
Funding Secured: Start:
Foreign: -
Local: - Duration:
Objectives: The objectives of this project are:
- to maximize the sharing of rural electrification information within the SADCC region;

Description:
status:
- to establish a regional rural electrification research programme which will address the key barriers to rural electrification;
- to undertake a series of concrete demonstration/pilot projects in order to demonstrate and/or test innovative approaches to rural electrification.

Activity A: Regional Rural Electrification Information Programme

This activity is designed to:
a) support the hiring of a full-time rural electrification information specialist; and
b) provide him/her with a budget to carry out a significant rural electrification information programme.

Activity B: Regional Rural Electrification Research Programme

This activity is designed to provide:
a) a budget for an initial set of high priority research projects relating to rural electrification; and
b) support for the hiring of a full-time research programme manager.

Agtivity C: Innovative Approaches to Rural Electgification DemonstrationZPilot Projects

This activity is designed to provide:
a) a budget for three or more demonstration/pilot projects relating to rural electrification; and
b) support for the hiring of a part-time demonstration programme manager.

Funding sought.

AAA.3.2 SPECIALIZED TRAINING IN THE FIELD OF ELECTRIC POWER
PHASE III: FIVE YEAR REGIONAL POWER SECTOR TRAINING PROGRAMME
Estimated Cost: (USS Million) Financing Gap: 23.99
Total: 29.53
Foreign: 23.99
Local: 5.54
w
Funding Secured: Start: January 1992
Foreign: -
Local: 5.
Duration: 1992-1996
_-._._.__-____-_-_____-_
Objective:
Description:
Status:
The objective of the project is to identify training needs for electricity utilities personnel; and formulate a 'training' programme taking into account the existing facilities in the region.
Phase III consists of three different cost items: Courses, Database and Programme management.
Courses: 33 specific courses have been defined, based on the analysis done during phase II of this project, when the needs were identified. The courses will be conducted in cooperation with existing training institutes in the SADCC region, identified in the report based on the findings during phase II.
Database: The database is meant to contain information on possibilities for attachment training in the various power utilities within the SADCC region. The database will also contain names of persons with special skills which could be of use for other utilities.
Programme management: The programme has to be coordinated by a full-time Human Resources Development Manager working as part of the TAU team. This position will be advertised within the SADCC power utilities.
Funding sought.

AAA.3.4 REGIONAL HYDROELECTRIC HYDROLOGICAL ASSISTANCE PROGRAMME

Estimated Cost:
(US$ Million) Financing Gap: 8.50
Total: 10.50
Foreign: 10.50 Executing Agency: ZESCO
Local: -
Funding Secured: Start: Phase I : February 1989
Phase II: November 1991
Foreign: 2.00
Local: - Duration:

objectives:
Improve availability, accessibility and quality of hydrological data for hydroelectric purposes within the SADCC region.

Description:
This project comprises two phases. Phase I was completed in April, 1991. Phase II was approved in Gaborone in June, 1990. Detailed terms of reference have been developed by TAU. This approach permits the programme to continue without interruption.
Phase II will include major investments in an improved hydrometeorological reporting network throughout the Zambezi basin and further work on training and publishing and analysis of data.

Status:
Phase I : Completed in April, 1991.
Phase II: Funding sought. (Estimated cost : US$8.50 million). Canada has agreed to continue the assistance.

(USS Million) Financing Gap: 0.15
Estimated Cost:
Total: 0.15
Foreign: 0.15
Local:-
Funding Secured:
Foreign: -
Local: -
Executing Agency: TAU
gLQLLL
Duration:
Phase I - 3 weeks
Phase II - 7 weeks
Phase III -
Objectives:
Description:
status:
Increase the reliability of power plants in member States.
Phase I:
Phase II:
Phase III:
Selection of 3 pilot power plants in the region depending on their technical status, potential for improvements, size and human resources.
Power plants selected:
Cambambe in Angola (hydro)
Kidatu in Tanzania (hydro)
Hwange in Zimbabwe (coal-fired)
Inspection at site before final inclusion in the programme.
Implementation.
Funding sought.

AAA.3.10 KAFUE GORGE REGIONAL TRAINING CENTRE (CONTINUED OPERATION AND EXPANSION)
Estimated Cost:
Total: 7.35
Foreign: 6.77 Executing Agency: ZESCO
Local: 0.58
Funding Secured: Start: Late 1992
Foreign: -
Local: 0.58 Duration: Up to end of 1995
objectives:
Description:
- To allow for continued operation of Kafue Gorge Regional Training Centre (KGRTC) during the years 1992-1995 after the secured funding is finished.
- To allow for an expansion programme in order to better satisfy the need for this specialised training for hydro power personnel.
- To develop long term regional self sustainability of KGRTC both
- professionally
- financially
- administratively.

The KGRTC offers specialized training for hydropower personnel in 3 levels:
- Basic courses of 12 months duration for Plant Operators and.Maintenance Technicians.
- Advanced courses of 6 months duration for Control room Technicians and Maintenance Technicians.
- High level courses of 6 months duration for Shift Charge Engineers.

Shorter courses in highly specialized topics can also be given.

An expansion programme which will satisfy part of the increased training needs, is planned to include:
- a new building with additional classrooms and laboratories;

Status:
ANG.3.6 REPAI
Estimated Cost:
- a computerized hydro power station simulator;
- additional shorter and highly specialized courses;
- additional personnel.
The building up of regional permanent and short term instructors continues in order to start phasing out non-SADCC input after 1995. Course fees/scholarships will be introduced after 1995.
Funding sought.
R 0F GOVE DAM
(USS Million) Financing Gap: 7.14
Total: 10.14
Foreign: 7.14 Executing Agency: Angola (ENE)
Local: 3.00
Funding Secured: Start:
Foreign: -
Local: 3.00 Duration:
Objectives: 1. Restore operations to pre-sabotage levels, thereby regulating the Cunene River’s flow so that downstream hydraulic facilities can operate properly.
2. Enable future implementation of SADCC Project AANG.3.3. This project is not a designed to equip the dam with turbines, but of complying with the terms and provisions of Project ANG.3.3.
Description: Studies and Design: since the project is urgent, this phase started in 1990, with both local and overseas experts involved. The first studies showed that a detailed investigation is necessary.
Short-term Action: Emergency protection measures have already been taken, financed by Angola.

Status:
Dam Structure Rehabilitation Action
- Rehabilitate the downstream wall face;
- Finish injecting the gallery;
- Rehabilitate hydromechanical equipment;
- Rehaul and reinforce the instrumentation
system;
- Consolidate the slope of the left-hand
abutment;
- Deal with surface discharge trouble.
Funding sought.
LE8.3.2 POWER NETWORK EXPANSION FOR THE SOUTHERN AND CENTRAL
REGIONS OF LESOTHO
__-____--_-___
Estimated Cost:
Total: 43.50
Foreign: 43.50
-____-._____-____._______..__________-____--______-__
(US$ Million) Financing Gap: 43.50
Executing Agency:
Lesotho Electricity
Local: - Corporation
Funding Secured: Start:
Foreign: -
Local: - Duration:
objectives: To ensure a reliable power supply to the rural
areas of Lesotho, and hence contribute towards
lessening dependence on fossil fuels and import
from RSA. The project will also assist towards a
reliable transmission of the power generated by
the Mantsonyane mini hydropower plant.
Description: The 33 KV transmission network has been subject
to extensive refurbishment after being presented
and approved as a SADCC project in 1984. Phase II
was completed in 1988. The project is a
continuation of the completed work on phases I
and II and comprises 5 new phases:
33 kV line Mazenod-Roma-Mantsonyane and
Mohale’s Hoek-Quthing US$10.6 Million

status:
33 kV line Mantsonyane-Thaba Tseka and
Thaba Tseka-Mashai US$ 7.7 Million
SINDAC upgrading US$ 9.8 Million
33 kV reformulation and refurbishment in
Mafeteng US$ 4.5 Million
132 KV transmission extensions
US$10.9 Million
Work on phase III and consecutive phases will
commence as soon as funding has been secured. Due
to the condition of the lines in question, the
work needs to start as soon as possible.
Funding sought.
LES.3.5 QUTHING HYDROPOWER PROJECT
Estimated Cost:
(US$ Million) Financing Gap: 1.50
Total: 1.50
Foreign: 1.50 Executing Agency:
Local: -
Funding Secured: Start:
Foreign: -
Local: - Duration:
Objectives: The main objectives of the Study is to define the
form and evaluate the feasibility of the
hydropower project.
Description: The scope of the proposed study will cover
economic and financial feasibility of a
development of around 10 MW to 20 MW and to make
recommendations concerning, amongst other things,
its location, lay-out, plant configuration and
operational role. Identification of social and
environmental impacts would also form an
important part of the Study.
Status: Funding sought.

Estimated Cost: (USS Million) Financing Gap: 220.60
Total: 220.60 Executing Agency:
Foreign: 220.60 LHDA (Lesotho Highland
Local: - Development Authority)
Funding Secured: Start: 1992
Foreign: -
Local: - Duration: 4 years
Objectives: - Improve the reliability and availability of electricity supply.
- Promote general development of the remote and underdeveloped highlands region.
- Provide the opportunity to undertake auxiliary development.
- Reduce the dependency from the RSA.
Description: It will be a 3 x 24 MW plant and its major components will be as follows:
- An underground powerhouse containing generators, turbines, mechanical and electrical equipment.
- A 55 meter high curved, concrete, gravity dam.
- An outdoor gas insulated, double busbar, 132 kV switchyard.
- A permanent village for the staff that will operate and maintain the plant.
Status: Funding sought. Funding for US$134.3 million under negotiations with ADB, EIB and EEC.

MAL.3.1 MALAWI/MOZAMBIQUE ELECTRICITY SUPPLY IN THE EASTERN AND WESTERN BORDER REGIONS
(US$ Million) Financing Gap: 8.46
Estimated Cost:
Total: 8.
Foreign: 8.
Local: -
Funding Secured:
Foreign: -
Local: -
W
Start:
Duration:
Objectives:
Description:
status:
Main
Saving foreign exchange for Mozambique with the replacement of diesel generation by comparatively less expensive hydropower generation in Malawi.
Development of energy cooperation between two SADCC member States on a nmdest and reliable scale with a relatively small investment.
parts of the project are:
153 km 66 kV overhead lines;
3 66/33 kV substations;
50 distribution substations;
50 km low voltage network.
Funding sought.
60

MAL.3.5 SUPPLY TO CHITIPA AND KARONGA IN MALAWI FROM MBEYA IN TANZANIA

Estimated Cost
Total: 3.98
Foreign: 3.05 Executing Agency: ESCOM/TANESCO
Local: 0.93
Funding Secured: Start:
Foreign: -
Local: 0.93 Duration: 2 years

Objectives: - Provide a cheaper source of electricity to consumers in Karonga and Chitipa.
- Reduce Malawi’s foreign exchange drain due to import of diesel fuel.
- Provide a more reliable source of electricity.

Description: Electricity supply to Karonga was established in 1979, while Chitipa was electrified by the end of 1988 by diesel generators under the present Rural Electrification Programme.

Reliability of supply in Karonga is poor due to frequent machinery breakdowns.

By connecting the two towns in Malawi to the national grid in Tanzania considerable improvements will be achieved. The following is needed:
- 267 km 33 kV overhead lines
- 1 substation for voltage regulation at Ibanda
- 2 substations at Chitipa and Karonga
- 2 distribution substations at Kyela and Chilumba.

status: Funding sought. Negotiations with Belgium, under way.

Estimated Cost:
Total: 5.
Foreign: 3.
Local: 1.
00
63
38
(US$ Million) Financing Gap: 3.63
Executing Agency: ESCOM/ZESCO
Funding Secured: Start:
Foreign: -
Local: 1.
Duration: 24 months
Objectives:
Description:
status:
To provide electricity supply as an alternative source of energy to the rural areas on both sides of the Malawi-Zambia border in order to foster national development and improve the living standards of the people in the areas through: encouragement of the formation of a locally based agro-industrial economy, reduction of rural-urban migration, reduction of deforestation and improvement in education and health standards of the people in those rural areas. The electrification will also improve the foreign exchange earning capacity of Malawi, reduce the use of costly diesel fuel at Lundazi surrounding areas in Zambia and replace it with low cost hydro-electric energy from the Malawi system, and avoid installation of diesel-electric generation on the Zambian side by supplying the areas from the Malawian hydro-based grid.
The project includes construction of more than 300 km 33 kV lines, upgrading/construction of two 33/11 kV substations, 27 distribution substations and about 15 km low voltage lines.
Funding sought.
62

MOZ.3.1 HOZAMBIQUE/ZIMBABWE COOPERATION IN ELECTRICITY SUPPLY
(XIGADORA - ORANGE GROVE 220 IV INTERCONNECTOR)
Estimated Cost: (USS Million) Financing Gap: 21.40
Total: 23.90
Foreign: 21.40 Executing Agency:
Local: 2.50
Funding Secured: Start:
Foreign: - .
Local: 2.50 Duration:
Objectives:
Improvement of the power transmission system between Mozambique and Zimbabwe. Implementation of the project will provide the following benefits:

- Improved system reliability and operational security within the strategically important Beira corridor in Mozambique arising from its connection to Cahora Bassa as well as to the ZESA/ZESCO system.
- Export of power up to 125 MW from Mozambique to Zimbabwe, over and above the 500 MW of power being considered for a direct 330/400 kV link between Cahora Bassa and the Harare area .
- Reinforcement of transmission to the Mutare area of Zimbabwe, thereby permitting deferral of later transmission extensions required by 1996 to the ZESA system in that area, where considerably increased loads are having to be catered for over the next four years.
- The shut down or reduced utilization of some of the uneconomic, old, small coal-fired power stations in Zimbabwe.

Description: The work has been divided into two stages, namely Engineering Studies and Construction works.
A network analysis has proven a 220 kV transmission line between Chibata in Mozambique and Orange Grove in Zimbabwe feasible, given the present load forecast for Zimbabwe.
The construction will include:
- 87 km 220 kV overhead line Chibata - Orange Grove
- 120 MVA transformer Orange Grove
- 220 kV and 132 kV bays in Orange Grove
- 220 kV bay and busbar extension in Xigodora.
Status: Funding sought.

MOZ.3.11 MOZAMBIQUE CENTRAL REGION TRANSMISSION AND DISTRIBUTION NETWORK STUDY

Estimated Cost: (US$ Million) Financing Gap: 0.25
Total: 0.25
Foreign: 0.25 Executing Agency:
Local: -
Funding Secured: Start:
Foreign: -
Local: - Duration: 12 months
Objectives: Prepare an investment programme regarding:
- refurbishment of existing networks along the Beira Corridor
- expansion of networks
- connection of new consumers
- training of EDM staff
- identification of required technical assistance.

Description:
status:
Mozambique’s Central Region constitutes an isolated network supplied from 2 hydropower stations rated 84 MW. A programme has already been initiated for rehabilitating and expanding the production sources, and strengthening the transmission network. This study is aiming at the preparation of a comprehensive investment programme for a reliable power distribution network in the Beira Corridor.
Funding sought.
MOZ.3.12 CAHORA BASSA POWER TO SADCC
Estimated Cost: (US$ Million) Financing Gap: 157.55
Total: 158.20
Foreign: 158.20 Executing Agency: EDM
Local: -
Funding Secured: Start:
Foreign: 0.65
Local: - Duration:
Objectives: To establish an overhead transmission line from Cahora Bassa to existing 330 kV grid in Zimbabwe for transmission of at least 500 MW firm power to the SADCC interconnected grid (Zimbabwe-Zambia-Botswana-Mozambique).
Description: The project consists of three phases:
Phase I1II Feasibility study (Completed in June, 1990, cost 0.25). Tariff negotiations and Government Agreements still to be finalized.
Phase III a) Survey, Design and Tender Documents (Financial gap 15.00)
Phase III b) Construction works (Estimated cost 143.200)
A consultant has been engaged to survey the proposed line route, to design the transmission line and substations works in detail and to prepare the tender documents in accordance with international bidding standards (phase IIIa), before phase IIIb can commence.

Status:
Phase IeII Completed June, 1990
Phase IIIa) Funding secured for engineering
design
Phase IIIb) Funding sought.
MOZ.3.13 CONTROL CENTRE FOR THE SUPPLY OF THE BEIRA CORRIDOR
AND MOZAMBIQUE-ZIMBABWE TIE-LINE
Estimated Cost:
(US$ Million) Financing Gap: 0.12
Total: 0.12
Foreign: 0.12 Executing Agency: EDM
Local: -
Funding Secured: Start:
Foreign: -
Local: - Duration:
objective: To upgrade the power control centre in the EDM
Central Region to take account of planned
national and regional power system improvement in
the Provinces of Manica and Sofala, and adjacent
areas in Zimbabwe.
Description: Phase I Feasibility study
Phase II Tendering
During Phase I the feasibility of a control
centre will be assessed, giving a cost estimate
for the optimum configuration of the control
centre.
Status: Funding sought.

NAM.3.1 POWER SUPPLY COOPERATION IN BORDER REGIONS BETWEEN ANGOLA AND NAMIBIA
Estimated Cost: (US$ Million) Financing Gap: 3.00
Total: 9.40
Foreign: 9.40
Local: -
Executing Agency: SWAWEK
Funding Secured: Start: Construction started
Foreign: 6.40
Local: -
objectives:
Description:
Status:
in 1990 in Namibia
Duration:
- Supplying electricity to the northern region of Namibia (more specifically the Owambo area) making sufficient provision in the distribution system to allow for power to be exported across the border.
- Supplying Xangongo and Ondgiva in Angola with electricity from Namibia.
- Creating a source of energy for the local population thereby combating deforestation.
- Creating job opportunities for Namibians who are quite capable of constructing the necessary power lines and substations under supervision of SWAWEK (the electricity utility company of Namibia) and the cooperating partner.
SWAWEK made a detailed study with the necessary designs to carry out the scheme. Representatives from NORAD visited the area, and approved SWAWEK’s scheme.
SWAWEK only needed the necessary materials (delivered according to specifications for local conditions) together with sufficient funds for construction. The construction is being done by SWAWEK personnel.
Funding secured for the work in Namibia. Funding sought for the portion in Angola.

8WA.3.1 DREDGING OF MKINKOMO RESERVOIR
Estimated Cost: (USS Million) Financing Gap: 5.00
Total: 5.00 Executing Agency:
Foreign: 5.00 Swaziland Electricity Board
Local: - (SEB)
Funding Secured: Start: June 1991
Foreign: - Duration:
Local: - Dam construction 6 months
Dredging 12 months
Objectives: The dredging of the Mkinkomo Reservoir will increase the power production in Swaziland, and thus reduce dependence of foreign supply.
Description: First a dam will be constructed during the dry season in 1991. Then the silt accumulated since the reservoir was commissioned 28 years ago will be dredged and disposed in the silt retaining dam.
status: Funding sought.
ZAM.3.3 REFURBISHMENT OF THE NATIONAL CONTROL CENTRE - ZAMBIA (Phase II)
Estimated Cost: (USS Million) Financing Gap: 8.50
Total: 8.56
Foreign: 8.50 Executing Agency: ZESCO
Local: 0.06
Funding Secured: Start:
Foreign: -
Local: 0.06 (Zambia) Duration:
Objective: The objectives of this project are:
- to provide the national power company with modern equipment which will enable more efficient and economic operation of the electric system;

Description:
Status:
ZAM;3.6
Estimated Cost:
Total: 10.26
Foreign: 10.25
Local: 0.01
Funding Secured:
Foreign:
Local:
-_____._____
Objective:
Description:
to maintain stable conditions on the interconnected 330 kV system in Zambia and Zimbabwe and consequently assist in maintaining stable conditions in Zambia and Zimbabwe.
Phase I Feasibility study (Completed in December, 1989).
The conclusions of the study was: to replace the whole National Control Centre (NCC) system with a modern scheme of the latest technology in hardware and software. The mimic board would be the only item to be interfaced. with the new system. The existing NCC building will be retained with enhancement to the electrical system and provision of a new UPS system as well as replacement of the air conditioner system. Fire fighting systems will be incorporated. All RTU’s will be replaced by new ones, while the telecommunication equipment will be upgraded and enhanced as necessary.
Funding sought. Sweden is financing preparation of tender documents.
REFURBISHMENT OF VICTORIA FALLS POWER STATION
(US$ Million) Financing Gap: 10.25
Executing Agency: ZESCO
Start:
Duzgtign; _____
Refurbish the power station and improve reliability of supply to the local 66 kV feeder to ensure an interconnection with Botswana first and then with Namibia.
There are 3 stations A, B and C:
- "A" station is fifty years old and is operating satisfactorily, but the 3.3 kV switchgear and cables associated with the machines are in a poor state of repair and are subject to high failure probability.

- The problems in "B" and "C" stations are mainly related to turbine crown seal wear, which causes bearing failure, excitation problems due to lack of spare parts, and the cooling water system. There are also problems with drop gate seals and control gear, etc.
- This project will survey the stations to identify and specify detailed refurbishment requirements.

Status: Funding sought for engineering study.

ZAM.3.9 POWER COOPERATION BETWEEN ZAMBIA AND NAMIBIA

Estimated Cost:
(US$ Million) Financing Gap: 14.55
Total: 15.94
Foreign: 14.55 Executing Agency: ZESCO/SWAWEK
Local: 1.40
Funding Secured: Start:
Foreign: -
Local: 1.40 Duration: 33 months

Objectives:

Description:

The objectives of the project is to provide hydroelectric power to enhance development of the great agricultural potential of Northern Namibia and generally improve the reliability and increase the capacity of power supply to the region which comprises Namibia, Zambia and Botswana.

It is intended to construct a 215 km 132 kV overhead line from Victoria Falls Power Station to Katima Mulilo, construct a 132/66 kV 10 MVA substation at Katima Mulilo and connect it to the existing 66 kV line at Katima Mulilo. A 132 kV line will be constructed from the 132/66 kV substation at Katima Mulilo into Namibia. SWAWEK will determine the length of this line and the location of their step down substation to distribute power in Northern Namibia which has a great agricultural potential, and which is too costly to supply from Namibia’s power grid because of the long distance.

status:
At Victoria Falls Power Station it will be necessary to construct a 33/132 kV 40 MVA substation.
Funding sought.
ZIM.3.3 UPGRADING OF ZESA NATIONAL CONTROL CENTRE. INSTALLATION, COMMISSIONING AND TRAINING
Estimated Cost:
Total: 5.20
Foreign: 3.50 Executing Agency: ZESA
Local: 1.70
Funding Secured: Start:
Foreign: -
Local: 1.70 Duration:
Objective: To monitor and control the power exchange between Botswana, Mozambique, Zambia and Zimbabwe. System operators in the Control Centre can minimize outage time and reduce possible damage to equipment by fast and correct actions. Also lower total losses can be achieved.
Description: Both hardware and software have to be upgraded. Also training and test equipment is included.
Status: Funding sought.

AAA.4.8 ASSESSMENT OF APPLICATIONS AND MARKETS FOR WIND ENERGY SYSTEMS IN THE SADCC REGION
Estimated Cost: (USS Million) Financing Gag. 0.16
Total: 0.16
Foreign: 0.16 Executing Agency: TAU
Local: -
Funding Secured: Start: After funding has been secured.
Foreign: -
Local: - Duration: 6 months
Objective: The principal objective of this study is to assess the technical and economic viability of wind energy applications and to determine the potential market size and financing for the most viable wind energy applications in the SADCC countries.
Description: The principal outputs of the study will be:
- development of an analytical framework for the financial and economic evaluation of wind energy systems used in SADCC for water pumping for potable supply, drainage, irrigation, power generation, and other applications;
- an assessment of the conditions under which wind energy systems are economically viable for each of these applications and in each member state;
- an analysis of the market size for technically and economically viable wind energy applications; and
- an evaluation of whether applications which are economically viable are also financially viable, and what financing arrangements and industry development conditions could encourage their widespread use.
Status: Funding sought.

AAA.4.9 ASSESSMENT OF APPLICATIONS AND MARKETS FOR INDUSTRIAL PROCESS SOLAR HEAT IN THE SADCC REGION
Estimated Cost:
Total: 0.22
Foreign: 0.22
Local: -
Funding Secured:
Foreign: -
Local: -
(US$ Million) Financing Gap: 0.22
Executing Agency: TAU
Start: After funding has been secured.
Duration: 8 months
Objective:
Description:
Status:
The principal objective of this study is to assess the technical and economic viability of industrial process solar heat (IPSH) applications and to determine the potential market size and financing for the most viable IPSH applications in the SADCC countries.
The principal outputs of the study will be:
development of an analytical framework for the financial and economic evaluation of IPSH systems used in SADCC for industrial applications;
an assessment of the conditions under which IPSH systems are economically viable for each of these applications and in each member state;
an analysis of the market size for technically and economically viable IPSH applications; and
an evaluation of whether applications which are economically viable are also financially viable, and what financing arrangements and industry development conditions could encourage widespread use.
Funding sought.

ANG.4.1 INSTALLATION AND REHABILITATION 0F WIND POWERED WATER PUMPS
Estimated Cost: (USS Million) Financing Gap: 0.44
Total: 0.44
Foreign: 0.42 Executing Agency: TAU
Local: 0.02
Funding Secured: Start: After funding has been secured.
Foreign: -
Local: 0.02 Duration: 18 months
Objective: The principal objectives of this project are:
- to supply potable water to people and livestock in remote areas using windpumps; and
- to build local capabilities to carry out repairs, maintenance and installation of windpumps by effectively training local technicians and users.
Description: In 1990 an in-depth study of the windpump situation in Angola was carried out. The results of the study recommended a project on rehabilitation of the existing windpumps and installation of new ones be implemented. During the SADCC Woodfuel/NRSE sub-committee meeting held in Maputo in March 1991, the project idea was expanded to cover other SADCC countries with similar water supply problems, Mozambique and Tanzania.
It was revealed that, in these countries, water has been pumped using wind power mechanical equipment of different models, for quite some time now. However, at present, great shortage of drinking water for rural people and their livestock in some places, due to lack of proper maintenance and repair routines of windpumps has been experienced.
Other contributing factors to shortage of water, include transportation difficulties of oil products, inadequate maintenance and repair on the existing diesel pump setups and bad roads, especially to the most remote places.

Therefore in this regard, actions have been initiated to attempt to meet these people's needs, using indigenous energy sources and available regional capacities and facilities.
The project consists of rehabilitation and installation of windpumps in the three SADCC countries (Angola, Mozambique and Tanzania) using regional capacities and facilities in order to ensure sustainability of the project.
Status: Funding sought.

LE8.4.2 SOLAR PHOTOVOLTAIC POWER GENERATION IN RURAL AREAS - LESOTHO PILOT PROJECT

Estimated Cost: (USS Million) Financing Gap: 0.08
Total: 0.08
Foreign: 0.08 Executing Agency: TAU
Local: -
Funding Secured: Start: After funding has been secured.
Foreign: -
Local: - Duration: 3 months (Phase I)
Objective: The principal objective of the feasibility study (Phase I) is to determine the conditions under which supplying photo-voltaic generated electric power would be cost effective compared to other alternatives.
Description: The SADCC Power Utilities are mandated with providing electric power in each of the member States. Typically, this is done through the national and regionally connected power networks, and in some remote areas by diesel powered generators or by small hydro-electric facilities. One potentially cost effective alternative to these distribution systems is to provide power by the installation of solar photovoltaics in remote growth areas; these areas being distant from the established grid and located where grid extension would not be expected for many years.

This proposed project will investigate the feasibility of providing solar photovoltaic generated power in remote areas. The project will be carried out in two phases. Phase I is a feasibility study to document the technical and economic viability of the proposed project, including identification of an appropriate site for a pilot project. Phase II will be the implementation of a pilot installation, if the results of the feasibility study warrant such action.

The level of effort for the feasibility study is estimated to be 26 person weeks during a 3 month period. The estimated cost is US$75,000.

Detailed level of effort and costs for Phase II - Implementation will be an output of Phase I - Feasibility Study. The estimated cost of implementation is US$250,000.

Status: Funding sought for Phase I, Feasibility Study. Estimated funding for Phase II, Implementation to be sought subject to recommendations of Phase I; estimated cost for Phase II is US$250,000.

AAA.5.6 STRENGTHENING OF PLANNING CAPACITY FOR IMPLEMENTATION OF WOODFUEL PROGRAMMES IN THE SADCC COUNTRIES

Estimated Cost: (US$ Million) Financing Gap: 0.79
Total: 0.85
Foreign: 0.79 Executing Agency: TAU
Local: 0.07
Funding Secured: Start: Implementation can commence once funding is secured.
Foreign: -
Local: 0.07 Duration: 2 years

Objectives: The overall goal (n? the project is increased capability of national energy planners in designing and implementing woodfuel programmes. To achieve this goal, the project has the following objectives:

- Dissemination of the findings in SADCC wood-fuel studies to as many institutions and woodfuel experts as possible at the national level;

- Formulation of national policies and integrated strategies for ensuring sustained woodfuel supply and environmental protection;
- Facilitation of national policies and integrated flow of useful information in the woodfuel subsector to support ongoing national mass awareness campaign on woodfuel.

Description: In order to achieve the above mentioned objectives, the project will engage in the following activities:

- Production of sufficient copies of the woodfuel study documents (the six volumes of books and audi-visual aids produced as output of project AAA.5.1 "Wood Energy Development"). At least 60 copies of all the documents and 10 copies of the audio-visual aids will be distributed to each member State;
- Conduction of national seminars which will critically review the findings of the woodfuel studies in relation to national policies and the woodfuel situation.

Status: Funding sought. Negotiations underway with the EC. (For funding reasons the project has been merged with Project AAA.5.14.).

(US$ Million) Financing Gap: 1.10
Estimated Cost:
Total: 1.20
Foreign: 1.10 Executing Agency: TAU
Local: 0.10
Funding Secured: Start:
Foreign: -
Local: 0.10 (SADCC) Duration: 3 years
Objectives:
Description:
status:
The
The main objectives of the project are to:
develop comprehensive woodfuel strategies and implementation plans for each. member State;
intensify development of projects for energy production, integrated with other sectors dealing with biomass management and rural development; and
provide data to assess national capabilities for the implementation of woodfuel programmes, and. means of increasing such capabilities through institutional strengthening.
following activities will be undertaken:
review of experiences, and formulation of detailed strategies and plans for implementing the project;
strategies and plans will be compiled to form a regional woodfuel strategy and implementation plans which will be published for distribution in the member States.
Funding sought.

AAA.5.9 IDENTIFICATION AND SUPPORT OF NON-GOVERNMENTAL ORGANISATIONS AND WOMEN'S GROUPS DEALING WITH WOODFUEL
Estimated Cost: (US$ Million) Financing Gap: 0.40
Total: 0.46
Foreign: 0.40 Executing Agency: TAU
Local: 0.06
Funding Secured: Start: Implementation can commence once funding is secured.
Foreign: -
Local: 0.06 (SADCC) Duration: 3 years
Objectives: The main objectives of the project are to:
- identify active NGOs and women's groups dealing with woodfuel programmes in the region;
- analyse NGO's and women's groups experiences in implementing woodfuel projects, in particular those based on people's participation at grassroot level;
- explore possibilities for intensifying NGO's and women's groups involvement in woodfuel programmes, by providing them with catalytic support like training, project planning, provision of equipment and funds, etc.
Description: The following activities will be undertaken in order to achieve the above objectives:
- compilation of a comprehensive list of active NGOs and women's groups dealing with woodfuel in each member State will be made:
- formulation of strategies and projects to support NGOs and women's groups on short-and long-term basis.
Status: Funding sought.

AAA.S.10 IDENTIFICATION OF SUITABLE TREE SPECIES FOR ENERGY PRODUCTION IN THE SADCC REGION
Estimated Cost:
Total: 0.99
Foreign: 0.90
Local: 0.09
Funding Secured:
Foreign: -
(US$ Million) Financing Gap: 0.90
Executing Agency: TAU
Start: Implementation can
commence once funding is secured.
Local: 0.09 (SADCC) Duration: 3 years
Objectives:
Description:
Status:
The main objectives of the project are to:
provide comprehensive data on suitable multipurpose tree species for energy production for the different climatic and edaphic zones of the SADCC region;
provide data on how to obtain seeds of the recommended species; and
facilitate exchange of research findings and knowledge of suitable species for energy production.
A steering committee of woodfuel species specialists will be formed to plan and implement the project;
Surveys on suitable species will be conducted in each member State;
A regional workshop will be organised to scrutinise results of the national surveys, whose report will be published for general information.
Funding sought.

AAA.5.11 ASSESSMENT OF ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACT OF WOODFUEL SCARCITY
Estimated Cost:
Total: 2.53
Foreign: 2.30
Local: 0.23
Funding Secured:
Foreign: -
(US$ Million) Financing Gap: 2.30
Executing Agency: TAU
Start: Implementation can commence once funding is secured.
Local: 0.23 (SADCC) Duration: 3 years
Objectives:
Description:
status:
The main objectives of the project are to provide:
comprehensive site-specific data on environmental and socio-economic problems created by woodfuel scarcity in the SADCC region;
information to be used for increase of public awareness of woodfuel aspects; and
data for planning future woodfuel projects.
A steering committee of environmental experts will be formed, to provide a detailed plan on how to implement the project.
Review of experiences in member States will be undertaken by short-term consultants.
Priority areas to be studied in the main project will be defined, based on the seriousness of the problem in member States.
Obtained data will be analysed and a final report prepared. Demonstration materials like photographs, slides, video cassettes and films will be included as part of the study.
Funding sought.

AAA.5.12 HOUSEHOLD WOODFUEL CONSUMPTION SURVEY IN THE BADCC REGION

Estimated Cost: (US$ Million) Financing Gap: 0.30
Total: 0.50
Foreign: 0.45 Executing Agency: TAU
Local: 0.05
Funding secured: Start:
Foreign: 0.15 (World Bank)
Local: 0.05 (SADCC) Duration 3 years
Objectives: The main objectives of the project are to:
- provide site-specific data on household woodfuel consumption rates within the SADCC region;
- analyse factors which influence rates of woodfuel consumption at household level.
Description: In order to achieve the above objectives, the following activities will be undertaken.
- Indepth household woodfuel consumption surveys for specific climatic zones within the SADCC region will be undertaken.
- Factors which influence household woodfuel consumption rates will be examined, also their impact in future woodfuel consumption trends.
- A regional workshop on how to conduct household woodfuel consumption surveys will be conducted to examine findings and experiences gained.
- Results of the survey as well as the workshop proceedings will be printed and circulated to member States.
Status: Funding sought. An initial amount of US$150,000 was provided by the World Bank (ESMAP), for conducting a workshop on "Household Energy Survey Applications Programme Design", which provided inputs for further developing the terms of reference for the project.

AAA.5.13 DEVELOPMENT OF FUEL SWITCH OPPORTUNITIES
Estimated Cost:
Total: 0.69
Foreign: 0.60
Local: 0.09
Funding Secured:
Foreign: -
Local: 0.09
(USS Million) Financing Gap: 0.60
Executing Agency: TAU
Start:
Duration: 5 years
Objectives:
Description:
Status:
The main objectives of the project are to:
examine critically opportunities of fuel switch from woodfuel to other sources of energy by the majority of the population in urban and a few rural areas in the SADCC region;
examine factors which hinder fuel switch, and give recommendations on how to overcome them, on a short and long-term basis; and
establish a few pilot projects on fuel switch, to test the validity of hypotheses advocated by the study.
A steering committee consisting of energy experts and economists will be established to plan how to conduct the survey and evaluate its results.
Preliminary surveys on fuel switch opportunities will be conducted in all member States. The surveys will indicate main areas with high fuel switch opportunities which will be studied in detail.
Funding sought.

AAA.5.14 INCREASE OF MASS AWARENESS OF WOODFUEL ISSUES
Estimated Cost: (US$ Million) Financing Gap: 1.50
Total: 1.80
Foreign: 1.50 Executing Agency: TAU
Local: 0.30
Funding Secured: Start:
Foreign: -
Local: 0.30 (SADCC) Duration: 5 years
Objectives: The main objectives of the project are to:
- intensify people’s participation in production of woodfuel, and adoption of improved techniques of utilizing woodfuel; and
- intensify the awareness of decision-makers on socio-economic and environmental problems created by woodfuel scarcity, and the need to increase resources for the implementation of woodfuel programmes.
Description: - The project will be divided into two major phases, mainly formulation of effective ways of increasing awareness and actual implementation of mass awareness programmes.
- Nine country reports will be produced, indicating existing ways of raising mass awareness of woodfuel and environmental issues, as well as their effectiveness with regard to specific areas and target groups.
- A guideline indicating future strategies and specific programmes at regional and national levels will be produced le a book form, along with illustrative materials such as photographs, slides, video cassettes and a film.
Status: Funding sought. (For funding purposes, Project AAA.5.14 has been merged with Project AAA.5.6).

AAA.5.15 IMPROVEMENT OF WOODFUEL END-USE EFFICIENCY IN RURAL INDUSTRIES OF THE SADCC REGION

Estimated Cost:
(US$ Million) Financing Gap: 0.67
Total: 0.79
Foreign: 0.67 Executing Agency: TAU
Local: 0.12
Funding Secured: Start: Implementation can commence once funding is secured.
Foreign: -
Local: 0.12 Duration: 3 years
Objectives: The broad objectives of the project are to:
Description:
Status:
- evaluate the possibility for improving energy efficiency in rural industry;
- identify design improvement in local technologies that would increase energy efficiency;
- promote the improved technologies in consultation with local users paying particular attention, where appropriate, to the role of women in local industrial production; and
- disseminate emerging knowledge on enduse efficiency in rural industry through TAU to individual member states and also to a wider African context.

The project will concentrate on the improvement bf brick burning and fish smoking. Angola and Tanzania will conduct pilot studies on fish smoking while Mozambique and Zimbabwe will conduct studies on brick burning.

Funding sought.

AAA.5.16 DEVELOPMENT OF IMPROVED CHARCOAL PRODUCTION TECHNIQUES
(US$ Million) Financing Gap: 0.41
Estimated Cost:
Total: 0.50
Foreign: 0.45
Local: 0.05
Funding Secured:
Executing Agency: TAU
Start: Implementation can
commence once funding is secured.
Foreign: 0.04 (FAO, CSC)
Local: 0.05 (SADCC) Duration:
Objectives:
Description:
Status:
The
The main objectives of the project are to:
minimise the wasteful use of wood in
charcoal production in the region;
minimise environmental degradation arising
from poor charcoal production techniques;
increase the income of charcoal producers
through adoption of improved production
techniques which will increase recovery
rates; and
facilitate exchange of experiences in the
improvement of charcoal production
techniques in the region.
following main activities will be undertaken:
A steering committee of experts will be
formed to provide detailed plans on how to
implement and evaluate the project.
Review of experiences in member States on
charcoal production will be made and country
reports prepared.
Partial funding secured from the FAO Forestry
Department and the Commonwealth Science Council
for conducting a regional training workshop on
improved charcoal production techniques scheduled
to take place in September 1991. Funding sought.

AAA.6.3 CONTINUING DEVELOPMENT OF ENERGY CONSERVATION ACTIVITIES AT TAU

Estimated Cost:
Total: 0.60
Foreign: 0.
Local: -
Funding Secured:
Foreign: -
Local: -
(US$ Million) Financing Gap: 0.60
Executing Agency:
Start:
Duration: 24 months
Objectives
Description:
The main objectives of the project are:
to continue planning and project development work undertaken under Project AAA.6.2/ZAM.6.2;
to identify national consultants from the region to assist in planning and policy development;
to strengthen the Energy Conservation Department at TAU;
to develop a detailed Regional Energy Conservation Plan.
Recruit a two-person team to take over management of the Energy Conservation Department (currently managed by the Electricity Department) at the TAU.
Visit SADCC energy contacts and assess the level of energy conservation expertise in each country, both in the public and private sectors.
Prepare a Training Plan for the Energy Conservation sector, taking into account the availability of facilities and trained teaching personnel, as well as providing estimates of the demand which exists or could exist for these skills.
Appoint ten local consultants who will carry out the basic background studies for the project and attend a strategy workshop for presentation of their papers and produce a preliminary regional energy conservation plan.

status:
- Prepare a report outlining a programme of background research for each country, and establishing an overall terms of refetence and style/content guide for the ind1v1dual country papers.
- Prepare an Energy Conservation Plan for the TAU, outlining future sectoral activities and presenting guidelines for the future functioning of this department within TAU. Funding sought. (Negotiations with Canada underway).

ZAM.6.1 ENERGY CONSERVATION PROJECT, INDENI PETROLEUM REFINBRY - ZAMBIA

Estimated Cost:
(US$ Million) Financing Gap: 0.80
Total: 0.95 Executing Agency:
Foreign: 0.80 Indeni Petroleum
Local: 0.15 Refinery Ltd.
Funding Secured: Start: Implementation can commence once funding is secured.
Foreign: -
Local: 0.15 Duration: 24 months

Objectives: The main objective of the project is to save

Description:
energy in the existing refinery streams by the installation of waste-heat recovery equipment and the preflash tower in the atmosphere distillation unit. The combined effect of the conservation projects would result into increased availability of petroleum products to meet the additional fuel needs for Zambia and part of the requirements of other SADCC countries.

The core energy conservation projects have been identified as follows:
- Modification of the crude oil preheater exchange train at a total cost of US$350,000.
- Installation of the preflash tower at a cost of US$182,000.
- Installation of a preheater to the Hydrotreater feed at a cost of US$153,000.

Status:
- Installation of a hot flash separator at a cost of US$32,000.
- Replacement of Splitter heater with a heat exchanger at a cost of US$58,000.
- Installation of a preheater to the Reformer feed at a cost of US$175,000.

The local costs are mainly due to civil works, transportation of materials from Dar-es-Salaam to Ndola and Installation.

Funding sought.

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Annex I
Criteria for the Selection of Regional Projects

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ANNEX I

CRITERIA FOR THE SELECTION OF REGIONAL PROJECTS

CRITERIA FOR THE SELECTION OF REGIONAL PROJECTS

The basic criteria for the selection of regional projects is whether or not they contribute to the achievement of the development objectives of SADCC as defined in the Lusaka Declaration - Southern Africa: Toward Economic Liberation which are:

- the reduction of dependence, particularly, but not only, on the republic of South Africa;
- the forging of links to create a genuine and equitable regional integration;
- the mobilisation of resources to promote the implementation of national, interstate and regional policies;
- concerted action to secure international cooperation within the framework of our strategy for economic liberation".

In the energy sector there are three types of criteria which can be applied in the selection of SADCC projects. These criteria relate to:

(a) The Energy Crisis

SADCC projects should contribute to:-

- the reduction of dependence on external supply of energy;
- the lessening of fossil, especially petroleum fuel, consumption;
m energy conservation;
- meeting the energy needs of the rural populttjmn.

(b) Regional Cooperation

SADCC projects should:

- contribute to the energy balance of more than Ofe country;
- represent a significant investment;

- be owned, managed and operated from within the region;
- utilise inputs from within the region.

Technical Criteria

SADCC projects should:

- satisfy a clearly defined need;
- be technically feasible;
- be socially and economically justifiable;
- be clearly preferable to other alternative or competing projects;
- make a positive contribution to development;
- seek to provide for the long term operational conditions and manpower implications.

1.3 Given the nature of SADCC, and in the light of the above, five types of regional project can be distinguished:

(a) projects of overall regional utility which result from a coordination of the investment programmes of two or more member States, with a view to reducing competition, avoiding unproductive duplication and taking advantages of a larger market;

(b) projects located at the frontier between two or more countries which depend on the presence of natural resources which they exploit, as in the case of hydroelectric power, coal and gas deposits or other raw materials;

(d) pilot and research projects whose results can be repeated in other member States, especially those promoting the utilization of new and renewable sources of energy;

(8) studies, training programmes and other general service activities/project;

national projects with a regional impact; have a significant impact on the national energy balance, but cannot be replaced by regional projects and for which economic alternatives cannot be found in neighbouring countries.

2.1
2.2
PROCEDURE FOR PROPOSAL EVALUATION AND APPROVAL OF PROJECTS

Formulation of New Projects

For a project to be considered, it should be formulated in a standardized manner covering the following aspects:

Objectives

Description

- reference to how the project relates to SADCC objectives;
- why it has relevance as a regional project;
- relation to national energy programmes;
- socio-economic justification;
- full technical description of how the work is to be carried out;
- cost estimates and sources of financing.

Implementation

- Executing Agency;
- work programme and time schedule.

Projects can be proposed by member Governments and/or the Sector Coordinator.

The formulation can be done by:

- a member State, or member States in cooperation;
- the Energy Sector (TAU);
- the TAU and (a) member state(s) in cooperation.

Aggraval Procedure

A new project shall go through the following steps:

(a) Project Formulation and Documentation

This should be done by the entity proposing the project.

(b) Presentation to TAU
The project document should be submitteq to the TAU at least three months prior to a meeting of ’Energy Ministers, in order to allow for due conSideration and analysis.
(c) Evaluation by TAU
The TAU shall carry out an evaluation to ascertain that the project proposal is consistent with the objectives, strategy and criteria of the SADCC Energy Sector, before being submitted to the relevant sectoral authority for approval.
(d) Distribution of Project Proposals
The documentation for new projects should, preferably, be distributed to all member States well in advance of the meeting in which they will be considered.
(e) Presentation to Energy Officials
The member state(s) concerned, supported by the TAU present(s) the project for consideration at a Meeting of relevant sectoral authority.
(f) Approval
Project proposals must be considered by Energy Ministers for recommendation for approval by the Council of Ministers, before they are formally placed on the Sectoral Programme of Action.
(g) Urgent Proposals
Only in exceptional circumstances, as in the case of emergency projects, should consideration be given to project proposals which have not been processed as above.
PROCEDURE FOR CONTACTS WITH THE COOPERATING PARTNERS
Sectoral programmes and projects are, generally communicated through the sectoral programme document produced for the Annual Consultative Conference. However, in between Annual Consultative Conferences, specific projects may be communicated to interested cooperating partners directly.
In the case of a project located in one country, the member State which is host for the project, assisted by the TAU, will coordinate contact with interested cooperating partners. In the case of projects involving more than one country, and general coordination activities or projects

involving all member States, the TAU assisted as appropriate, by the member States, will coordinate contacts. Both the TAU and member States must be kept fully informed of progress in consultations on the implementation of projects.

AGREEMENT AND CONTRACT PROCEDURES

The Council of Ministers has agreed that as a matter of general principle, SADCC project agreements should be signed by the member States directly involved and cooperating partners, and witnessed by the relevant Sector Coordinator. Such agreements should spell out the rights and obligations of all parties and, in particular, should indicate clearly the reporting and monitoring procedures.

PROJECT IMPLEMENTATION OPERATION AND MONITORING

Implementation refers to the preparation and execution of a project but does not include subsequent operation and maintenance (e.g. of a plant).

Member States involved in each project, with the assistance of the Coordinating Country, are responsible for its implementation and operation, through their appropriate institutions.

The Coordinating Country will provide the required assistance to member States in all stages of the project.

Financial responsibility for each project will be of the member State (5) involved, and each member State will be responsible for servicing its financial commitments.

It will, in a number of cases, be necessary to have a project steering committee, which is responsible for over-seeing and monitoring the implementation of the project and serves to give policy guidance and control. The steering committee would have the following members:

- representatives of the Member Government(s) responsible and involved;
- a representative of the cooperating partners supporting the project; and
- a representative from the Sector Coordinating Country.

The executing agency, implementing the project, will not be a member of the committee, but will participate in the meetings for reporting and liaison purposes.

When a project involves simultaneous and inter-dependent implementation in more than one country, the steerlng committee will ensure the overall coordinat;on of the implementation of the various parts of the progect.
The Sector Coordinating country is responsible for reporting on the status and progress of sectoral programme and project implementation and related activities t9 the Sectoral Officials and Ministers, and to the Counc11 of Ministers and Summit of Heads of State and Government, at the scheduled meetings.
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Annex II
Funding Status of Projects

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Estimated Cost	Funding Secured	Funding Under Financing				
_ _ _ US$ Million	8. Source	Negotiation Gap				
PFOJeCt PrOJect T1tle	Total	Foreign	Local	US$ Million	USS Million	US$ Million	Commnts/Status
M							
ENERGY							
OVERAL COORD I NAT I 0N							
AAA.0.3 General Support to the Energy	23.85	18.54	5.31	5.31 (ANG)	-	-	Under in’pLementation.
Sector - TAU	17.04 (NOR)						
	1.49 (BEL,BRA, CAN,EEC, FRA,POR,UK)						
AAA.0.4 Energy Bulletin	0.87	0.26	0.61	0.61 (ANG)	-	-	Under inplementation.
	0.26 (CAN, EEC POR,NOR)						
AAA.0.5 Information Coordination System	1.25	1.25	-	1.25 (BEL,NOR,SUE	-	-	Under implementation.
Phase II	0.15	0.15	0.15 (BEL)				
AAA.0.7 Docunentation Centre for Energy Sector	0.31	0.31	-	0.31 (NOR)	-	-	Under inplementation.
AAA.0.8 Establishment of a Regional Energy Planning Network in SADCC	2.50	2.50	-	2.50 (BEL)	-	-	Funding sought.
AAA.0.9 Development of Manpower Assessment and Planning Capacity in the SADCC Energy Sector	-	-	-	-	-	-	Suspended. Under Evaluation
AAA.0.10 TAU Office Facilities	2.67	2.00	0.67	0.67 (ANG)	-	-	Under inplementation
Sub-totaL	31.60	25.01	6.59	31.59	0.00	0.00	
PETROLEUM							
AAA.1.2 Regional Petroleun Training Centre	-	-	-	-	-	-	Conpleted.
Phase II 2 PLanning Period	0.17	0.17	-	-	-	0.17	Funding sought.
AAA.1.4 Specialist Training for the SADCC Petroleun Sector	2.50	2.50	-	-	-	2.50	Funding sought
AAA.1.5 Joint Petroleun ExpLoration Programme							
Phase I Task Force	0.35	0.35	-	0.35 (NOR)	-	-	Funding secured.
Phase II Project Steering Committee	0.06	0.06	-	0.06 (NOR)	-	-	Funding sought.
Phase III Basin Studies	0.29	0.28	0.01	0.01 (SADCC)	0.28	-	Fmdmg sought.
Phase IV Join Exploration Data Collection Programme	-	-	-	-	Funding sought.		

Estimated Cost US$ Million Project Project Title Total Foreign Funding Secured 8. Source Local USS Million Funding Under Financing Negotiation Gap 053 Million USS Million Conments/Status
98
AAA.1.6
AAA.1.7
ANG.1.1
LES.1.1
MAL.1.1
NAM.1.1
SHA.1.1
TAN.1.1
Potential Petroleun Cost Savings
Hydrocarbon source rock evaluation in the Oil Supply from Lobito to the SADCC Region
Strategic Fuel Storage in Lesotho
Phase I Prefeasibility Study
Phase II Engineering Design
Hydrocarbon Exploration in the Malawi Rift Valley
Oil Terminal in the Form of an Off-Shore Buoy at Swakopmnd in Namibia
Phase I - Feasibility Study
Strategic Storage Facilities for Petroleun Products in Swaziland
Phase I: Prefeasibility study
Phase II: Feasibility study
Rehabilitation of TAZAMA Pipeline
Phase I
Phase II
Phase III
Biostratigraphic Reference Col letion
1.00
0.50
0.85
0.50
0.15
0.15 (SADCC)
0.85
0.50
Under review
Funding soug1t. New project.
Under review.
Conpteted.
TOR under preparation by Lesotho/TAU
Under review.
Funding sought.
Conpleted
TOR under preparation by Suaziland/TAU
Completed.
Conpleted.
Under inplamntation.
Under irrplementation.
BOT.2.2
ZAM.2.1
ZIM.2.1
Manpower Development and Training for the Coal Sub-sector
Coal Distribution Yard and Coal Information, Botswana
Investigation of Coal Briquetting
Coal Stoves for Use in Rural and Urban Areas
0.11

0.11
0.40
1.00
0.41 (FRG)
0.40 (BOT)
1.00 (2AM)
0.60 (JAP)
0.11
Funding sought .
Under inplementation.
Under inplenentation.
Under revi en.
Sub- total

Estimated Cost			Funding Secured		Funding Under Negotiation	Financing Gap	
PrOJect	Preject T1tle	Total US$ Million	Foreign US$ Million	Local US$ Million	US$ Million	US$ Million	Comnents/Status
M							
ELECTRICXTY							
AAA.3.1	Regional Rural Electrification Programne						
	Phase I: National Surveys Conpleted.						
	Phase II: 3 different activities	7.00	7.00	-	-	-	7.00 Funding sought.
AAA.3.2	Specialised Training in the Field of Electric Power						
	Phase I: Prefeasibility study	-	-	-	-	-	Conpleted.
	Phase 11: Power Sector Training Needs	-	-	-	-	-	Coapleted.
	Phase III: Five Year Regional Power Sector Training Programme	29.53	23.99	5.54	5.54 (SADCC)	-	23.99 Funding sought.
AAA.3.4	Regional Hydroelectric Hydrological Assistance Programne						
	Phase 1: Zanbezi Basin	-	-	-	-	-	Conpleted.
	Phase II: Zanbezi and Other Basins	8.50	8.50	-	-	4.50	4.00 Funding sought.
	- Part 1: Upper and Middle Zambezi and Kafue Sub-Basins						
	- Part II: Lower Zarrbezi and Malawi SLb-Basins						
	- Part III: Outside Zanbezi Basin						
AAA.3.5	Plan for Integrated Utilization of the Cunene River Basin	0.62	0.60	0.02	0.02 (ANG)	-	- Funding secured. 0.60 (POR, BRA) Under inplementation.
AAA.3.6	Power System Control and Operation Technical Support and Training	1.20	1.20	-	-	1.20	- Funding sought.
AAA.3.7	Conputer Model for Analysis and Plaming of SADCC Transmission Systems						
	Phase I: Preliminary Study	Cotrp1eted.					
	Phase II: SADCC Power Grid Model	0.40	0.40	-	-	0.40	Funding sought.
	3 (SHE)	-	-	Under implementation.			
	2 (NOR)						
AAA.3.8	Coordinated Utilisation of Regional Generation and Transmission Capacities - Prefeasibility Study	0.25	0.25	-			
	Phase I: Inception	Cmpleted.					
	Phase 11: Intermediate	0.45	0.45	-	0.45 (SUE)	-	- Preparations for conmencement underway.
	e-u-						
	QC)						
AAA.3.9	Power Station Maintainance Programne Phases I and II	0.15	0.15	-	-	-	0.15 Funding sought.
ANG.3.2	Interconnection of Angola Grid to Nanibia	-	-	-	-	-	- Study conpleted. Followup action plamed.

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Project Title
Zinbabue/Mozatbicpe Cooperation in Electricity Supply (Phase II)
Mozarrbique/Zinbabwe Cooperation in Electricity Supply (Xigadora-Orange Grove 220 KV lntercornector)
Phase I: Study
Phase 11: Tender docs and construction
Corunane Hydropouer Scheme
Mozanbique/Malaui Interconnection of Electricity Supplies (PhaseII 8.111)
Reconstruction of Mavuzi Hydropouer Station, Mozanbique
Conpletion of Chibata Sub-station in Manica Province, Mozanbique - Prefeasibility Study
Power Cooperation in Zinbabue/ Mozambique Border Areas (Phase I)
Mozanbique Central Region Transmission 8. Distribution Network Study
Cahora Bassa Power for SADCC - Phases I and II Feasibility Study
Phase III Engineering Services and Inplementation
Control Centre for the Supply of the Beira Corridor and Mozanbque-Zinbabwe Tie-Line
Phase 1: Feasibility Study
Power Supply Cooperation in Border Regions Between Angola and Namibia
Dredging of Mkinkomo Reservior
Estimated Cost
USS Million
Total
23.90
23.00
8.00
0.25
0.25
158.20
0.12
9.40
5.00
Foreign Local
1.38
21.40 2.50
21.40 1.60
6.00 2.00
0.25 -
0.25
158.20
0.12 -
9.40
5.00 -
Funding Secured
8. Source
US$ Million

2.50 (M02)
1.60 (M02)
13.99 (SHE)
7.41 (NOR)
0 (M02)
0 (FRA)
00
NO
5 (SHE)
5 (SUE)
NO
00
6.40 (NOR)
1.38 (MAL 2AM)
Funding Under
Negotiation
USS Million
5.00
Financing
Gap
USS Mi llion Caments/Status
21.40
0.25
157.55
0.12
3.00
Funding sought. New project.
Coupleted.
Fmding sougwt. Refomulated
project conbining Hoz.3.1 and
Moz.3.8
Funding secured.
Under inplementation.
Conpletion in 1991.
Suspended.
Under inpletmntation.
Continuation included in project
MOZ.3.1
Suspended. To be reformulated.
Funding sought.
Conpleted.
Funding sought .
Funding sought.
Funding partially secured. Works in
Namibia bilaterally financed by
Norway.
Funding sought. New project.
Negotiations with Belgium

101

Project	Project Title	Estinated Cost US$ Million Total	Foreign Funding Secured & Source	Local US$ Million
ANG.3.4	Provision of a connunication and information system on the Angolan NationaL Power Grid	1.80		
ANG.3.6	Phase 1: Evaluation study	10.14		
BOT.3.1	Phase II: Inplementation - Part 1: Northern System	10.60		
BOT.3.2	Repair of Gove Dam	7.70		
BOT.3.4	Interconnection of the Botswana and Zintabue Grids	9.80		
LES.3.1	Power supply to Northern Botswana	4.50		
LES.3.2	Second 220KV Line from Moropule to Gaborone	10.90		
LES.3.5	Developnent of Small Hydropouer Facilities - Lesotho	1.50		
LES.3.6	Phase 1	220.60		
MAL.3.1	Phase 11	8.46		
MAL.3.3	Transmission Network Developnent in Lesotho	2.28		
MAL.3.4	Phase III	3.98		
MAL.3.5	Phase IV	1.80		
	Phase V	7.14		
	Phase VI			
	Phase VII			
	Outhing Hydropouer Project			
	Muela Hydropouer Project			
	MalaHi-Mozanbique Electricity Suppty in the Eastern and Western Border Regions			
	Phase I			
	Phase II			
	Refurbishment & Expansion of Power Network ConnLnication			
	Limbe Reinforcement			
	Supply to Chitipa and Karonga in Malawi from Mbeya in Tanzania			

10.60
7.70
9.80
4.50
10.90
1.50
220.60
8.46
2.22
3.05
3.00
0.06
0.93
1.80 (NOR)
3.00 (ANG)
0.06 (MAL)
2.22 (NOR)
0.93 (MAL, TAN)
Funding Under
Negotiation
US$ Million
134.30
Financing
Gap
7.14
10.60
7.70
9.80
4.50
10.90
1.50
86.30
8.46
3.05
US$ Million Connents/Status
Conpleted.
Under implenentation.
Funding sought. Norway has funded
the study.
Construction conpleted.
Operational and tariff problens.
Coapleted. Additional HOFk underway.
Suspended.
Conpleted.
Suspended.
Funding sought.
Funding sought.
Funding sought. Negotiations with
the EEC, A08 and E15.
Conpleted.
Funding sought.
Funding secured. Based on
50% grant and 50% soft loan.
Funding secured bilaterally
from E.I.B
Funding sought.

1()2
Estimated Cost Funding Secured Fmding Under Financing
USS Million 8. Source Negotiation Gap .
Project Project Title Total Foreign Local USS Million U53 Million USS Mlll’lm Connents/St
atus
M
TAN.3.4 Songue Rwer Hyropouer Development - - - - - - Suspended.
TAN.3.5 Power Supply to Turxiuna and Mbozi 2.19 1.80 0.39 0.39 (2AM) - - Inplementation u
nderway.
in Tanzania from Nakonde in Zanbia 1.80 (NOR)
TAN.3.6 Supply of Surbawanga in Tanzania 0.15 0.14 0.01 0.01 (TAN) 9 - Inplementation und
erway.
Load flow and Cost Estimated Study
0.14 (NOR)
ZAM.3.2 Upgrading of Kafue Gorge power Plant
Phase 11 Extension (Training Centre) 3.50 3.50 - 2.00 (NOR) - - Funding secured.
1.50 (SHE)
Phase III Provision of spare parts - - - - - Suspended.
Phase IV Restoration after 55.70 50.22 5.48. 5.48 (2AM) - - Funding secured.
Fire Accident 27.50 (SHE) To be conpleted Sept.91
15.50 (NOR)
7.22 (ADB)
ZAM.3.3 Rehabilitation of the National
Control Centre
Phase II 8.50 8.50 - - - 8.50 Funding sought.
2AM.3.5 Power Line Carrier Comnunications on the - - - - - - Suspended. To be reformlated
.
Northern Transmission System
2AM.3.6 Rehabilitation of Victoria Falls
Power Station
Phase I: FeasibiLity Study 0.26 0.25 0.01 0.01 (2AM) 0.25 Funding sought.
Phase II: Inplementation 10.00 10.00 10.00 Funding sought.
ZAM.3.7 132 KV Tieline Zanbia - Malawi 0.40 0.40 - 0.40 (NOR) Inplementation underway.
Feasibility Study
ZAM.3.8 330/220 KV Tieline Zarbia - Tanzania 0.25 0.25 - 0.25 (NOR) Inplementation underw
ay.
Feasibility Study
ZAM.3.9 Power Cooperation Between Namibia and
Zanbia 15.94 14.55 1.39 1.39 (ZAM,NAM) - 14.55 Funding sought, new project.
ZIM.3.10 Upgrading of ZESA National Control 5.20 3.50 1.70 1.70 (21M) 3.50 5 Funding soug
ht.
Centre - Installation, Conmissioning
and Training
Sub-total 675.58 649.57 26.01 122.34 148.90 404.34
NEW AND RENEWABLE SQJRCE OF ENERGY
AAA.4.7 Assessment of Applications and
Markets for Solar Photovoltaic

103		
Project		
AAA.4.8	Systans 1n the SADCC RegIon	0.16
AAA.4.9	Assessment of Applications and Markets for wind energy in the SADCC Region	0.22
ANG.4.1	Assessment of Applications and Markets for Industrial Process Solar Heat in the SADCC Region	0.44
LES.4.2	Installation and Rehabilitation of Hind Powered Hater PLn;5	0.86
UOODFUEL	Solar Photovoltaic Power Generation in Rural Areas - Lesotho Pilot Project Phase I: Feasibility study	0.64
AAA.5.6	Sub-total	1.20
AAA.5.7	Strengthening of Planning Capacity for hnalanentation of Hoodfuel Prograrnnes In SADCC Countries	0.46
AAA.5.8	Support to TAU Hoodfuet Section	0.99
AAA.5.9	Developnent of National Hoodfuel Strategies and Plans	2.53
AAA.5.10	Identification & Support to N60 and Women’s Groups Dealing with Uoodfuel & Environnental Protection	0.50
AAA.5.11	Identification of Suitable Tree Species for Energy Production in the SADCC region	0.69
AAA.5.12	Assessment of Environnental & Socio-Economic Impacts of Uoodfuel Scarcity	1.80
AAA.5.13	Household Hoodfuel Consunption Surveys in the SADCC Region	
AAA.5.14	Developnent of Fuelsuitch Opportunities	
	Increase of Public Awareness on Hoodfuel and Environmental Issues	
Project Title	Estimated Cost US$ Million	
	Total	Foreign
	0.16	0.16
	0.22	0.22
	0.44	0.42
	0.86	0.79
	0.64	0.58
	1.20	1.10
	0.46	0.40

0.90
2.30
0.45
0.60
1.50
0.02
0.07
0.06
0.10
0.06
0.09
0.23
0.05
0.09
0.30
0.02 (ANG,MOZ,
0.07
0.06
0.58
0.10
0.06
0.09
0.23
0.05
0.15
0.09
0.30
Funding Secured
& Source
Local US$ Million
TAN)
(SADCC)
(SADCC)
(EEC)
(SADCC)
(SADCC)
(SADCC)
(SADCC)
(SADCC)
(U8)
(SADCC)
(SADCC)
Funding Under
Negotiation
US$ Million
Financing
Gap
US$ Million Ccnnents/Status
0.16
0.22
0.42
0.79
1.10
0.40
0.90
2.30
0.30
0.60
1.50
Fde ng secured.
Funding sought, new project.
Funding sought, new project.
Funding sought, new project.
Funding sought, new project.
Funding sought.
Funding secured.
Under implementation.
Funding sought.
Funding sought.
Funding sought.
Funding sought.

Funding partially secured
Funding sought.
Funding sought.

Project	Project Title	Estimted Cost US$ Million Total	Foreign	Local	Funding Secured Fmding Under Financing 8. Source Negotiation Gap USS Million	USS Million	USS Million	Comnents/Status
AAA.5.15	Inprovement of Hoodfuel End-use Efficiency in Rural Irxjustries of the SADCC Region	0.79	0.67	0.12	0.12 (SADCC) -	0.67		Funding sought.
AAA.5.16	Development of Inproved Charcoal Production Techniques	0.50	0.45	0.05	0.05 (SADCC) - 0.04 (FAG, CSC)	0.41		Funding partially secured.
AAA.5.17	Rural Energy Flaming and Envirormental Training Programme	3.12	3.09	0.03	0.03 (SADCC) -	3.09		Funding soudIt, new project.
ANG.5.3	Luanda Hoodfuel Project, Angola Phase I - Feasibility Study Phase II - Inplementation	-	-	-	- -	-		Suspended.
MAL.5.1	BLantyre City Fuelwood Project Phase I - Phase II - Extenstion	-	-	-	- -	-		
MOZ.5.1	Urban Fuelwood Agro Forestry Project ’ for Maputo	-	-	-	- -	-		Suspended. To be reformulated.
	Sub-total	14.08	12.83	1.25	2.02	0.00	12.06	
	ENERGY CONSERVATION							
AAA.6.2	Energy Saving in Industry	4.20	4.20	-	4.20 (CAN) -	-		Under inplenentation.
AAA.6.3	Continuing Development of Energy Conservation Activities at TAU	0.60	0.60		0.60	Funding sought.		
AAA.6.4	Coordination of Industrial Energy Database Development with SADCC Industry and Trade Unit	-	-	-	- -	-		withdrawn.
AAA.6.5	Energy Management in Industry	9.00	9.00	9	- -	9.00		Funding sought. New Project.
ZAM.6.1	Energy Conservation Indeni Petroleun Refinery, Zanbia	0.95	0.80	0.15	0.15 (2AM) -	0.80		Funding sought.