



SADC ENERGY PROGRAMMES AND PROJECTS.

GABORONE, BOTSWANA

October 2006

1. SECTORAL OBJECTIVES

1.1 The overall objective of the SADC Energy Sector is to ensure the availability of sufficient, reliable, least cost energy services that will assist in the attainment of economic efficiency and the eradication of poverty whilst ensuring the environmentally sustainable use of energy resources.

2. STATUS OF PROJECTS

2.1 Within this context and guided by the SADC Energy Activity Plan, the Regional Indicative Strategic Development Plan (RISDP), the SADC Energy Protocol, the 15, 5 and 1 year Business Plans and other related documents, the following projects have been conceived and progress on their implementation is given below.

a) Southern African Power Pool (SAPP) Plan

2.2 The SAPP was established in 1995 through an Inter Governmental Memorandum of Understanding (IGMOU), as a regional SADC body with the objective of optimizing the use of available energy resources in the region and supporting one another during emergencies. Thereafter, the SADC Utilities

signed an Inter Utility Memorandum of Understanding (IUMOU) in order to facilitate and develop power pooling and trade in the region. The SAPP comprises of 12 SADC Member States Utilities in exclusion of the utilities of the two SADC island states of Madagascar and Mauritius. It is funded by subscriptions paid by the member utilities. The SAPP Co-ordination Centre is based in Harare, Zimbabwe and SAPP operations are run through sub-committees. The SAPP facilitates optimal utilization of regional hydro and thermal energy resources and reduces capital and operating costs through coordination.

2.3 In 2001 a Short Term Energy Market (STEM) was operationalized which has since grown from strength to strength. The STEM facilitates contracts of periods up to a month long for the supply of electrical energy to individual customers and utilities. It is the *'Stock Exchange'* of regional power supply, and the SAPP Coordination Centre is the facilitator. To date nine countries are participating with the exception of Angola, Malawi and Tanzania.. The SAPP facilitates optimal utilization of regional hydro and thermal energy resources and reduces capital and operating costs through coordination.

STEM trading was 5-years old in April 2006. The demand has been rising every year since April 2001 when STEM started from 766-GWh in 2001 to 4,222-GWh in 2004. The supply side for the first four years has been around 2,500-GWh. The energy traded was on the rise in the first 2 years and then declined steadily in the last two years. The total sales in monetary value have been increasing every year. The highest sale was recorded in 2004 when total sales amounted to USD4.4 million. The year 2005 saw a decline in sales due to reduced energy trade. This was mainly due to few members participating in the STEM. HCB and ZESCO did not participate in the STEM as the two utilities embarked on major power rehabilitation and maintenance works in their respective countries, Mozambique and Zambia. From the beginning of 2006, the two utilities are back and the STEM sales have started to increase again.

In addition to trade, the SAPP coordinates planning and operation of the interconnected regional power system and ensures system security and reliability.

b) Review of the 1995 Inter Governmental Memorandum of Understanding (IGMOU) on the SAPP

2.4 The IGMOU establishing SAPP has been reviewed and was signed by the SADC Energy Ministers on 23rd March 2006. The review took on board new developments in the region. These include:

- i) The restructuring of SADC and its Institutions, specifically the dissolution of the Energy Sector Institutions like the electricity subcommittee,

- ii) Increased SAPP Membership from the initial three to include all SADC utilities, except Mauritius and Madagascar.
- iii) The proposed SAPP and Coordination Centre restructuring and staffing.
- iv) The emergence of independent power producers and other players in the electricity sector in the region.

c) The Western Corridor Project (WESTCOR)

2.5 WESTCOR is a SADC project conceived through the combined initiative of the SADC Secretariat and the power utilities of Angola, Botswana, Democratic Republic of Congo (DRC), Namibia and the Republic of South Africa. The project's aim is to harness the large water resources of the Congo River at Inga, to produce and supply electric power, initially for the five countries involved but ultimately to the whole SADC sub-region. The project will comprise the construction of a 3500MW hydroelectric dam, a transmission line and a telecommunications line. The participating utilities have agreed an equity initial contribution of 20% of the total \$500 000 required for initial studies to enable the project to be financed. Each of the electricity utilities of the participating Member States has paid the required \$100 000 seed money as a contribution towards the initial development work on the project. The Headquarters of the WESTCOR is in Gaborone, Botswana and a chief executive for the company was appointed in February 2006.

d) Implementation of the Transmission Expansion Plans

2.7 A number of projects which would improve system reliability and enable the exchange of energy to improve system economy have been identified as priority. These projects which are at different stages of development comprise seven transmission projects including the WESTCOR.

- i) **DRC-Zambia interconnection** – This project aims to strengthen the existing interconnection between the DRC and Zambia. The project also includes the refurbishment of the converter station at Kolwezi and the AC transmission lines to Karavia and up to the border with Zambia.
- ii) **Malawi-Mozambique interconnection** – The work in Malawi and Mozambique includes the construction of a 400kV transmission line, which will initially be energised at 220kV, for about 219-km from Tete in Mozambique to north of Blantyre in Malawi, and construction and extension of related substations in the two countries.
- iii) **Zambia-Tanzania-Kenya interconnection** - The objective of the interconnector is to export between 100 to 200MW from ZESCO (Zambia) to TANESCO (Tanzania) and later to connect with Kenya. The project will

- also help to strengthen the ZESCO 66kV networks and interconnect TANESCO to the SAPP grid.
- iv) **2nd 400kV Zimbabwe-Botswana-South Africa Interconnector_** – The project aims to increase the capacity of the existing interconnector up to 650MW by constructing a second line from Insukamini substation in Zimbabwe via Phokoje substation in Botswana to Matimba substation in South Africa.
 - v) **2nd Mozambique-Zimbabwe Interconnector** - The project aims to construct a second 400kV interconnector from Songo substation in Mozambique to Bindura substation in Zimbabwe.
 - vi) **Zambia-Namibia Interconnector_** - The project aims to interconnect Zambia to Namibia at 220kV. The result will be Zambia feeding into the northern part of Namibia in the Katima Mulilo area. Construction of the Zambia-Namibia line is currently underway.

e) **SADC Regional Energy Planning Network Project (REPN)**

2.8 The long-term objective of this project is to strengthen the capacity of national energy planning institutions to efficiently and effectively perform energy planning tasks, undertake energy forecasting and projections, and formulate energy projects. This will be done, amongst others through the development of technical and human resources in each of the Member States' energy planning ministries. The project started in May 2000 and ended in February 2006 following a 2 years no-cost extension. It was funded by the Belgian government and managed from the SADC Secretariat in Gaborone following the centralization of all SADC activities at the Secretariat. The following activities have been undertaken:

- i) **Equipment Supply and Installation** – One computer including data base software was installed in all Member States Energy Departments during the first part of the project for facilitation of the Statistical Year Book production..
- ii) **Staff Development and Training** –Four Energy Specialists were trained in each Member state to enable them to be able to develop energy database and integrate them into systems that support energy policy analysis, preparation of supply and demand projections and generation of projects. This is a continuous task to be done even after the end of the project.
- iii) **Publication of SADC Statistical Yearbook** –The publication of the 2000 Statistical Year Book has been done and the combined 2001, 2002 and 2003 Statistical Year Book is being produced.
- iv) **Final Project Termination Report and Definition of a Strategic Plan for the sustainability of SADC Energy Planning** - The draft report has been produced. It provides an overview and evaluation of the work carried out under the project and contains a chapter comprising a Strategic Plan for sustainable REPN to be run by the Member States.

f) Regional Electricity Regulatory Association (RERA)

2.8 RERA has six members, namely, Zambia, Namibia, Malawi, South Africa, Lesotho and Zimbabwe. The other SADC Member States are being approached to indicate their stand on the formation of regulators and most of them have indicated that they will form regulators once all formalities have been completed in their respective countries.

2.9 The overall objective of RERA is to facilitate the operation of the national electricity regulators to exchange information on their activities, identify areas of common interest and engage in regional cooperation in electricity regulation by:

- Building regulatory understanding, capacity and skills among regulators and other entities with regulatory responsibilities;
- Promoting the timely creation and establishment of independent regulators in countries where such presently do not exist;
- Assisting the harmonization of legal and regulatory systems and practices governing electricity markets in the region; and
- Undertaking economic regulation of electricity interconnection and trade between SADC Member States

g) Regional Petroleum and Gas Association (REPGA)

2.9 The objective of this project is to contribute to the overall goal of having an efficient and effective petroleum and gas industry in the region that fulfils its role of ensuring reliable supply of petroleum and gas products at least costs. The industry will make optimal economies of scale (e.g. joint product procurement).

2.10 The main project components are:

- i) Identify functions, tasks and structures of an appropriate body which can serve as a regional petroleum and gas sector association;
- ii) Formally establish association and secure commitment from participating institutions for funding of its operation; and
- iii) Identify issues that need harmonisation and draft appropriate laws, rules, standards etc, and making optimal use of experience and expertise of relevant private and public bodies of Member States.

Funding has been provided by the Belgian Technical Agency

h) Rural Energy Planning and Environmental Management Project (REPEM)

2.11 The main objective of the project is to contribute to the building of sufficient human resources for sustainable rural energy development, utilisation and environmental management in the SADC region. The project will contribute to the overall goal of improved quality of life for the poor rural population in SADC countries by enabling them to fulfil the energy needs of households and small-scale industries in a socially and environmentally sustainable manner.

2.12 Four institutions are implementing this project on behalf of the SADC Secretariat, namely the Eastern And Southern African Management Institute (Esami), Arusha, Tanzania, the Minerals and Energy Education and Training Institute (MEETI), Johannesburg, South Africa, Mananga Management Centre, Ezulwini Swaziland, and the University Of Eduardo Mondlane, Maputo, Mozambique.

i) Programme for Biomass Energy Conservation (ProBec)

2.13 Over 70% of the people in the rural areas depend on biomass for cooking and heating. It is not foreseen that in the very near future they will be able to move up the energy ladder due to the high cost of the modern forms of energy. Therefore in the meantime while they are dependent on biomass provision has to be made so they can consume the limited biomass resources more efficiently. This is particularly so because poor combustion also causes eye diseases.

2.14 The project will also contribute to the overall goal of improved quality of life for the poor rural population in SADC countries by enabling them to fulfil the energy needs of households and small-scale industries in a socially and environmentally sustainable manner. It provides the best practices for biomass utilization and is in line with the New Partnership for Africa's Development (NEPAD) initiative aimed at poverty reduction.

j) CHALLENGES AND CONSTRAINTS

2.15 SADC is undergoing a process of restructuring which has to date resulted in the SADC Energy Sector Utilities being administered from SAPP in Harare, and regulatory issues being administered by RERA from Windhoek. The process of consolidating and updating information on SADC energy programmes and projects which is in line with the RISDP requires more technical support and

manpower than initially envisaged. Some of the more prominent challenges and constraints are:

- Restructuring exercise
- Inability of new structure to address issues previously deliberated by the dissolved energy sector technical committees
- Inadequate financial resources to implement projects
- Inadequate human resources capacity due to scale down of personnel in the new structure.