Global Insight **covers areas of topical interest and is meant to provide the reader with an initiation to the subject and its policy implications. The analysis is meant to be simple yet elegant, and without sacrificing depth, useful to a broad policy community. We welcome and encourage comments and suggestions.**

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The Southern African Power Pool: meeting the sub-continent's electricity needs

How linking the electricity grids of the southern African region can play an important role in its socio-economic development

by
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Introduction

The importance of energy as a catalyst for socio-economic development can not be overstated. The services provided by access to modern energy are absolutely essential for any subsistence economy to transform itself into a globally competitive economy capable of sustaining levels of economic growth comparable to those of its main international trading partners. In Africa, for more than 90 per cent of its almost 650 million people, energy is about wood, waste, dung, candles and kerosene.

The sad reality is that for the greater part, access to clean and modern energy (in the form of grid electricity) on the African continent is at best stagnating, with traditional fuels becoming increasingly sparse and more labour intensive to collect. In addition to this, existing energy provision systems are finding it very difficult to keep pace with population growth. The fact that access to modern energy is declining from an already low base means that many Africans are effectively excluded from an energy driven development process.

An indicator of the importance people in developing countries attach to energy is the fact that they spend on average 12 per cent of their income on energy, while their counterparts in the Organisation for Economic Cooperation and Development (OECD) countries spend an average of only 2 per cent of their income on energy. This is a clear indication that energy ranks very high on the agenda of those wishing to escape the conditions of poverty under which they live.

The member states of the Southern African Development Community (SADC) recognised the importance of cooperation within the energy sector and in 1995 created the Southern African Power Pool (SAPP). The SAPP is the first formal international power pool to be set up outside North America and Western Europe.

A Brief History of the SAPP

The drought experienced in the southern African region in 1992/93 resulted in severe electricity shortages due to reduced hydro-electric generation. These shortages highlighted the need for some form of formalised regional power cooperation. In an attempt to prevent the problems which resulted from the drought the SAPP was created in August 1995 when twelve SADC countries signed an Intergovernmental Memorandum of Understanding. Later in the same year an Inter-Utility Memorandum of Understanding was signed. It is important to keep in mind that membership to the SAPP is limited to the national utilities of the twelve continental members of SADC. The twelve SAPP members are:

Angola	Empresa National de Electricidade (ENE)
Botswana	Botswana power Cooperation (BPC)
DRC	Société Nationale d'Electricité (SNEL)
Lesotho	Lesotho Electricity Commission (LEC)
Malawi	Malawi Electricity Supply Commission (ESCOM)
Mozambique	Electricidade de Mozambique (EDM)
Namibia	Namibia Power (NAMPOWER)
South Africa	Electricity Supply Commission (ESKOM)
Swaziland	Swaziland Electricity (SEB)
Tanzania	Tanzania electricity supply Company (TANESCO)
Zambia	Zambian Electricity Supply Corporation (ZESCO)
Zimbabwe	Zimbabwe Electricity Supply Authority (ZESA)

Due to the fact that some of the SAPP members are not connected to the grid, membership is divided into operating and non-operating members. Of the twelve members of SAPP, only seven are operating members. They are Botswana, the DRC, Mozambique, Namibia, South Africa, Zambia and Zimbabwe. The remaining five are classified as non-operating members. The rights enjoyed by operating and non-operating members under the SAPP agreement are identical, with the exception of those relating to membership of the SAPP's Operating Subcommittee.

The coordination centre for the SAPP was established in Harare, Zimbabwe. This is because Harare serves as a good nexus between the predominantly coal-fired thermal system of the south and the predominantly hydro-electric system to the north of the sub-region. Given that the SAPP was born out of the need to prevent recurrences of the 1992/93 drought-induced electricity shortages in the region, it was maintained that placing the coordination centre of the SAPP in Harare would serve as a further incentive to exchange power between the two systems on a large scale, thus reducing the northern members of the SAPP's dependency on hydro-electricity.

Objectives of the SAPP

It has been said that the SAPP was not designed with the interests of the poor in mind. Given that the poorest of the poor are seldom able to afford electricity in the first instance, it is clear that they will not benefit directly from a decrease in electricity prices or more efficient supply. During the initial planning of the SAPP it was envisaged that reduced electricity prices and an improvement in the quality of supply would be its objectives. It was never intended to increase the access to electricity.

It is therefore important that the intended objectives of the SAPP be fully explored if its ability to reach these objectives is to be evaluated. The objectives of the SAPP have been categorised by Annecke[1] under the following headings:

Power-sharing arrangements

[1] See suggested readings.

In terms of the SAPP agreements each member has an 'accredited capacity obligation'. According to this each member undertakes to have sufficient generational capacity to cover the forecasted monthly peak. This obligation also imposes the following conditions on the national utilities:

- each member undertakes to provide automatic generation control and certain other facilities in its control area;
- each member undertakes to allow wheeling through its system provided it is technically and economically feasible;
- each member undertakes to submit maintenance schedules;
- each member undertakes to disclose information and costs related to thermal generating facilities; and
- each member undertakes to contribute towards the centre's costs.

Creation of a shared transmission network

A major challenge facing the SAPP is the development of a consistent approach to transmission access in the region. This is due to the increased interest shown by both independent power producers and independent transmission projects to invest in the region. In order to meet this challenge the SAPP will have to find ways to finance extensions and harmonise the existing grid networks of the twelve member states. The success of the SAPP

will to a large extent be dependent on its ability to find financially viable and sustainable ways of doing this.

Common tariff arrangements

Central to the operation of the SAPP is the pricing arrangement. This is done through thirteen detailed schedules in the operating agreement. Four basic transaction types are covered within the schedules. They are:

- $ firm power contracts of varying duration;
- $ non-firm power contracts of varying duration;
- $ mutual support contracts such as operating reserve, emergency energy and control area services; and
- $ scheduled outage energy, energy banking and wheeling.

The challenge facing the members of the SAPP in arriving at a common tariff arrangement should not be underestimated. The process of standardisation of tariffs began in 1993 in South Africa by the National Electrification Forum. To date very little progress has been made and there are still more than 400 tariffs in South Africa alone.

Shared funding of electrification programmes

At the 11th meeting of the SAPP committee in February 2000 the South African minister of minerals and energy, Phumzile Mlambo-Ngcuka, suggested a new policy framework. One of the key aspects of this new policy framework is the establishment of a fund to address rural electricity shortages. The fund could be financed through electricity taxes, government grants and the promotion of private sector investment. Whether this suggested policy framework will result in the SAPP becoming increasingly involved in the provision of access to electricity to the poor remains to be seen. It would certainly be a departure from the already stated objectives of the SAPP.

Difficulties associated with regional energy cooperation

However, if the SAPP is to achieve its full potential a number of challenges will have to be addressed. These can be categorised under the following five headings:

Political instability

One of the major causes of insecurity regarding infrastructure is political instability. Civil wars make it very difficult to attract much needed investment for the development of infrastructure. The DRC has enormous potential for the generation of hydro-electricity, but the lack of political stability within the country has meant that virtually no investments into the energy infrastructure have been made. On a similar level the Cahora Bassa power station has been out of operation since 1983 as a result of the Mozambican civil war. After the civil war came to an end in 1996 the electricity generated at Cahora Bassa became available once more.

Over-emphasis on energy self-sufficiency

For many countries their preoccupation with energy self-sufficiency has resulted in the development of expensive and environmentally unfriendly generation systems. This often occurred while cheap energy imports were readily available from neighbouring states. An example is the Zimbabwean case where cheap electricity imports from Zambia decreased drastically after the construction of the Hwange coal-based power station, which was not only expensive but also very damaging to the environment.

Security of supplies

Security of supplies are of major concern to any energy importer. In March 1989 a fire in the Kafue Gorge power station resulted in the loss of the total 900MW generational capacity of the power station. The result was that Zambia was unable to fulfill its supply obligation to Zimbabwe and stopped exporting electricity to Zimbabwe without warning.

Mutually beneficial agreements

Often the parties to a regional energy arrangement experience problems agreeing on terms that are mutually beneficial to all concerned. In 1990 Botswana, Zambia and Zimbabwe failed to agree on a tariff after a 220KV interconnector was commissioned. The interconnector which was financed by the Canadian International Development Agency (CIDA) allowed Botswana to import electricity from Zambia through Zimbabwe, but due to this and other technical problems it was put out of commission within a few months of becoming operational.

Payment delays

Payment delays can to some extent be blamed for the deteriorating financial performance of many utilities. The finding of a 1989 Commission of Inquiry indicates that in 1986 Zimbabwe paid for electricity exported by Zambia contrary to the tariff agreement between ZESA and ZESCO. Zimbabwe further disputed the currency in which payments were to be made. Consequently payments for electricity exported from December 1987 to March 1988 to the value of US $17.3m were still outstanding by June 1989.

Conclusion

In terms of impact on the region's socio-economic development, the SAPP is certainly one of the more important initiatives to emerge from within the Southern African Development Community. As was stated above, access to clean and efficient forms of energy is crucial for the socio-economic development of any economy. The path taken by the SAPP will have a determining influence on the future of the southern African region, and for this reason it is vital that the integration and coordination of the region's electricity network be managed efficiently.

Policy considerations

It is clear that the SAPP is facing a number of serious and challenging obstacles in the pursuit of its objectives. The following policy considerations could assist the SAPP in overcoming these obstacles and will contribute towards the facilitation of the region's socio-economic development through access to modern energy.

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all members and consequently they should be allowed to meet their accredited capacity obligations through contracts with other members. This will have the added advantage of giving all members the perception that they have a voice in the implementa

tion of the SAPP agreements

isdiction of the various national energy regulators should be carefully planned in order to ensure compatibility. This is to avoid the creation of regulatory loopholes whereby members can benefit from unfair advantages. The member states where

3. ***The coordination of the scope and jur***

national energy regulators should take cognisance of this when they set up national energy regulators.

4. ***The SAPP should seriously consider widening its membership beyond the existing 12 energy utilities.*** Given the increasing activity of independent power producers (IPPs) and independent trans

mission projects (ITPs) the future success of the SAPP can only be enhanced by giving new entrants into the regional energy market, such as the Zambezi River Authority, the Copperbelt Energy Consortium and Hidroelectrica de Cahora Bassa, a voice within the SAPP.

Suggested readings: Annecke, W. *Assessment of the impact of the Southern African Power Pool on the poor of the region*. Energy & Development Research Centre, UCT. 2000.

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