POWER, POLITICS AND PRIVATE SECTOR PARTICIPATION IN SOUTHERN AFRICA

A Political Economy Analysis of the Southern African Power Pool

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ABSTRACT

Southern Africa has experienced power shortages since the mid-2000s as the surplus energy generation capacity in the region has diminished while demand for electricity has grown. Ensuring energy security within SADC is a priority, given that a stable, affordable energy supply underpins socio-economic development, acts as an enabler for infrastructure development and investment, and ultimately increased industrialisation and enhanced competitiveness.

Even before the current energy crisis, the Southern African Development Community (SADC) Secretariat had aimed to enhance regional energy security through establishing the Southern African Power Pool (SAPP). Regional power pooling involves the interconnection of national energy grids in the region, both through physical means across borders, as well as through agreements governing energy cooperation and trade. Power pools ultimately have the benefit of lowering capital and operating costs for electricity generation, improving the reliability of supply through diversification of resources, and ensuring wider rollout and greater access.

This paper explores regional energy cooperation within Southern Africa through a political economy framework. Particular emphasis is placed on the structural aspects of energy cooperation, the institutions driving regional power integration, and engagement of key actors (member states and development partners) in the regional energy agenda. The research also investigates the public-private sector nexus in the energy sector, how the private sector has engaged in the region, while drawing on the experience of Independent Power Producers in South Africa. Relying on available literature, the research also includes consultations with stakeholders from the public and private sectors and academia. Ultimately, the research aims to provide greater insight into drivers of decisions and policies within the regional energy milieu, ultimately looking to inform and enhance dialogue among policymakers, development partners, academics and the private sector engaging in regional energy affairs.

Findings indicate that the SAPP is an illustrative example of how regional needs and cooperation can be pursued when a fairly competent institution is co-ordinating cooperation and the political will exist between member states to follow a cooperation agenda. Nevertheless, while member states at times clearly recognise the benefits of regional cooperation, often the regional agenda is abandoned to pursue national interests. And while development partners have played a significant role in the development of regional infrastructure and the promotion of cooperation, at times they have influenced the integration agenda. Furthermore, while increasingly key stakeholders recognise the need for private sector engagement, (and there is clearly an interest and willingness from the private sector to engage), entry into the regional energy market has been hobbled by regulatory and political constraints.

ABBREVIATIONS AND ACRONYMS

DAM	Day-Ahead-Market
DRC	Democratic Republic of Congo
G20	Group of Twenty
IGMOU	Intergovernmental Memorandum of Understanding
IPP	Independent Power Producer
ITC	Independent Transmission Company
kW/h	Kilowatt/hour
MW	Megawatt
REI4P	Renewable Energy Independent Power Producer Procurement Programme
REM	Regional Energy Market
SADC	Southern African Development Community
SADCC	Southern African Development Coordination Conference
SAPP	Southern African Power Pool
SOE	State Owned Enterprise
SSA	Sub-Saharan Africa
STEM	Short-term Energy Market

1. INTRODUCTION

Over the past two decades, surplus energy generation capacity in Southern Africa has been eroded due to a growing demand for electricity. This has been the case even in South Africa, which contributes more than 75% of generation capacity in the region. As a result, energy security in the region has increasingly become a challenge, characterised by power blackouts and leading to various coping mechanisms such as load-shedding (as scheduled electricity outages are locally referred to). Ensuring energy security within the Southern African Development Community (SADC) is a priority, given that a stable, affordable energy supply underpins socio-economic development, acting as an enabler for infrastructure development, investment and ultimately increased industrialisation and enhanced competitiveness.

The energy crises in Sub-Saharan Africa in general, and Southern Africa specifically, has been highlighted at the most recent G20 meeting in Turkey, where the first ever Energy Ministers Meeting was held alongside other key discussions between global financial and political leaders. At the conference focus was aimed at the need for stronger regional collaboration in Africa, allowing for the accelerated development of energy resources through the creation of economies of scale and the spreading of the risks involved. Furthermore, "the need for public-private partnerships, stakeholder alliances and strong political commitment to energy access" was highlighted (SE4All, 2015).

One of the ways in which the SADC Secretariat has aimed to ensure regional energy security through regional cooperation, even before the current crisis, has been through establishing a regional power pool, the Southern African Power Pool (SAPP). Regional power pooling involves conscious efforts to integrate national energy grids, both through physical means across borders, as well as through interchange agreements governing energy cooperation and trade. Through the pooling of energy resources, the potential exists for countries to benefit significantly by lowering capital and operating costs for generating electricity (through the creation of economies of scale), improving the reliability of supply (through diversifying their sources of generation), and ensuring wider rollout and greater access (due to lower costs) (Manduna, 2013). While power-pooling is a relatively new phenomenon in Africa (with similar initiatives being established throughout Sub-Saharan Africa (SSA) in West, East and Central Africa as recently as the past two decades), it has been successfully applied in other regions such as the US and Europe for much longer.

The Southern African Power Pool was established in 1995, making it the oldest established power pool in SSA and arguably the most advanced on the continent. Its key mandate, as directed by the SADC Secretariat, has been to achieve "regional energy self-sufficiency and self-sustainment" (SADC, 1995). The SAPP includes all 12 member states within SADC on continental Africa, only excluding the island states of Madagascar, Mauritius, and the Seychelles.

This paper explores regional energy cooperation within Southern Africa through a political economy framework. Particular emphasis is placed on the structural aspects of energy cooperation, the institutions driving regional power integration, and engagement of key actors (member states and development partners) in the regional energy agenda. A particular focus of this research has also been on private sector participation within the power milieu in the SADC and SAPP. Private sector participation in electricity issues in the region has been important for two reasons: given the vital importance of electricity as an input into their operations, they have been a vocal pressure group on related issues; the private sector has also displayed willingness and eagerness to participate in national and regional energy markets through investment and development of generation infrastructure. Examples of the latter are drawn from South Africa's experience in engaging IPPs in the renewable energy sector.

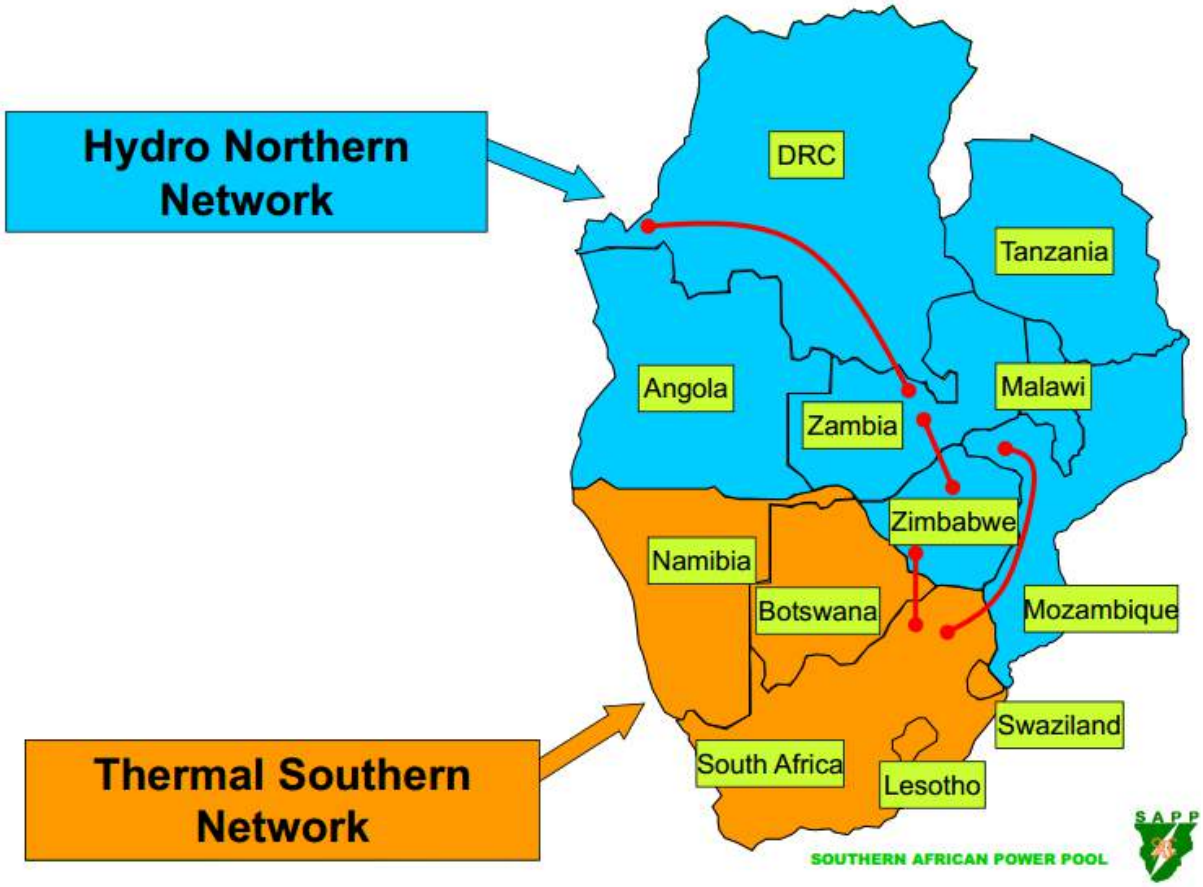
The research draws widely on available literature, as well as consultations with stakeholders from the public and private sectors and academia. The research aims to provide greater insight into drivers of decisions and policies within the regional energy milieu, ultimately looking to inform and enhance dialogue among policymakers, development partners, academics and the private sector engaging in regional energy affairs.

The paper is structured as follows: The first section explores the structural aspects that influence the regional energy cooperation in SADC. This is followed by the key institutions behind the regional energy agenda, namely the SADC Secretariat and the SAPP, and their respective roles and drivers within this agenda. Section 4 discuss the roles of various key actors, namely that of member states and development partners, while Section 5 considers the role of the private sector in the energy milieu in Southern Africa. The final section summarises key findings.

2. HISTORY AND CONTEXT

Energy cooperation in Southern Africa is not a new phenomenon and cooperation between member states started even before the establishment of the SAPP. Structural factors – those often underlying factors related to history, geography, or natural resource allocation – are factors that are deeply ingrained in the region, difficult to change and have a significant influence on the operations of a system. Three key structural factors that significantly influence the cooperation agenda in Southern Africa includes the natural resource allocation between SADC member states, the development of resource generation in member states, as well as the segregation policies in South Africa that dominated the political environment in South Africa and the region throughout the 20th century.

Across Southern Africa, natural resources employed towards energy generation are largely divided between the hydro-rich northern states (notably the six riverine countries of Angola, the DRC, Malawi, Mozambique, Zambia and Zimbabwe) and the thermal rich southern states. Countries typically strive to diversify their energy generation supply (relying on a mixed bag of sources including fossil fuels, renewables, nuclear and energy imports) to mitigate risk of over-reliance on one source. However, for many countries, generation capacity is largely influenced by natural resource allocation.



Source: Southern African Power Pool

Even before the formalisation of energy cooperation in Southern Africa, countries were engaging in cross border energy cooperation through bilateral engagements, the first of which was that between Zaire (Democratic Republic of Congo, DRC) and Zambia in the 1950s. However, towards the 1980s, regional energy cooperation was largely a response to destabilising policies employed by apartheid South Africa (Muntschick, 2013). Notably the so-called frontline states of Angola, Botswana, Lesotho,

Mozambique, Swaziland, Tanzania, Zambia and Zimbabwe, in line with their overall agenda to avoid reliance on South Africa, drove cooperation. While South Africa at the time provided the region with access to cheap, reliable electricity supply, over reliance on this source could allow South Africa to exert significant political power on these states. Thus, cooperation between states in Southern Africa during this period was largely driven by political attempts to minimise this risk.

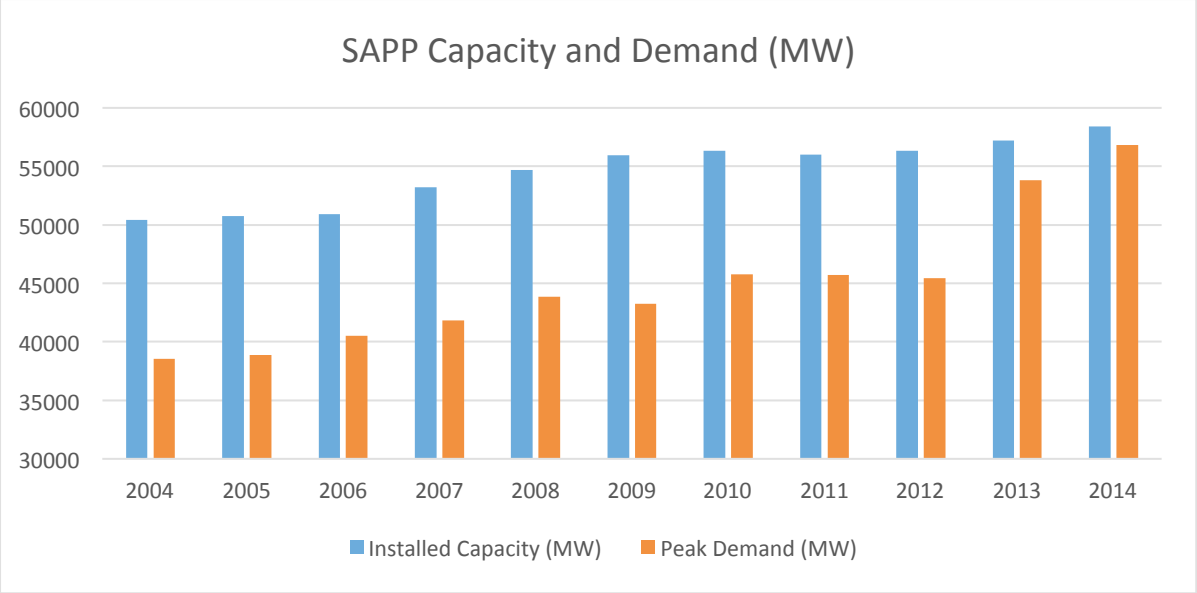
While the frontline states relied heavily on generation capacity from hydro sources, a severe drought in the region in 1992 necessitated closer cooperation with South Africa (Muntschick, 2013). This also coincided with political change in South Africa, abandoning their segregation policies, which changed the agenda and nature of SA's cooperation with other members in the region. The abolishment of apartheid in South Africa eventually led to it joining the SADC and catalysed closer cooperation within this regional grouping and participation in regional power cooperation. Ultimately, the incentives of South Africa to destabilise the region by leveraging their dominance in power supply minimised, and instead, the incentive to export excess capacity to generate additional income drove energy cooperation. This ultimately led to South Africa, along with the other 11 main land members of SADC, signing the Intergovernmental Memorandum of Understanding (IGMOU) that established the SAPP in 1995.

At the outset of the formalisation of energy cooperation in the region through the establishment of the SAPP, another clear divide that influenced power relations and interests, was the divide between countries with a shortage of generation capacity and those with excess generation capacity. The following table illustrates this differentiation at the outset of energy cooperation in 1996:

Excess Capacity		**Capacity Shortage**	
Country	**Capacity (MW)**	**Country**	**Capacity (MW)**
South Africa	2160	Zimbabwe	388
Zaire (DRC)	1985	Botswana	128
Zambia	604	Lesotho	76
Angola	145	Swaziland	75
Malawi	7	Mozambique	36
		Namibia	14
		Tanzania	1
Source: Muntschick, 2013.			

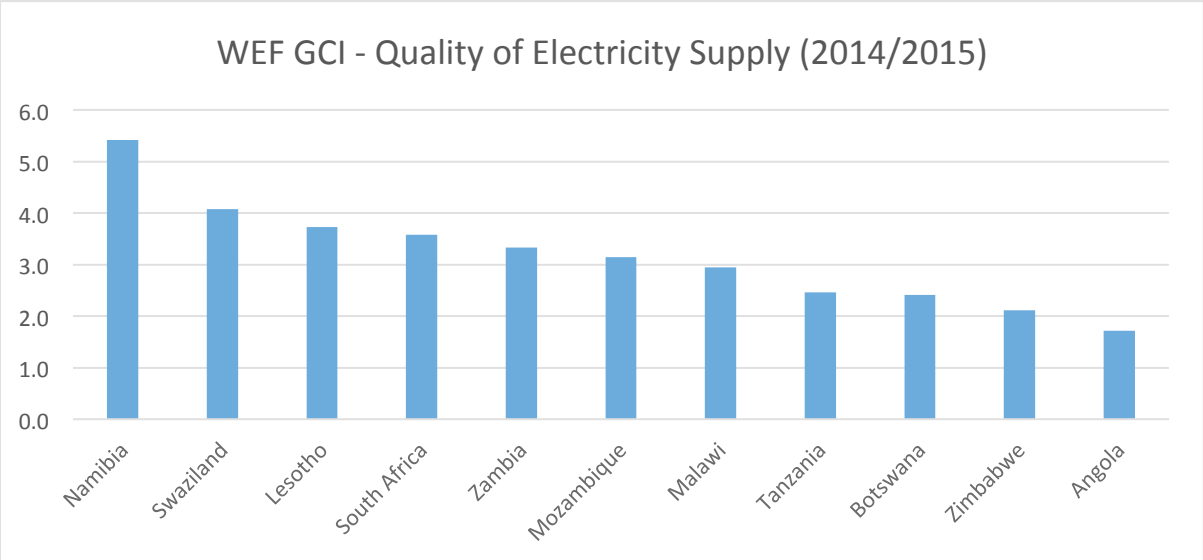
With the cessation of apartheid policies in South Africa, political incentives driving regional energy cooperation was less pressing. Instead, as illustrated above, some countries in the region had significant excess generation capacity that could be exported for financial gains. South Africa in particular was a key driving force behind energy cooperation, and those countries with a shortage of supply were happy to cooperate.

Since the mid-2000s SAPP has experienced a significant shortfall in the available energy supply. This was largely as a result of shortage in South Africa, which neglected continuous investment in generation infrastructure throughout the 1990s and 2000s, while demand for energy grew. While the SAPP requires member countries to carry a reserve capacity margin of about 10%, the lack of investment in South Africa, as well as other countries, resulted in a gradual decline of this reserve capacity. While SAPP had a reserve capacity of nearly 25% in 1998, in 2014, the difference between installed capacity and peak demand was about 2000MW (3%, Hammons, 2011).



Source: SAPP Annual Report 2014

While South Africa's share of total generation capacity in the region has declined in the past decade, it remains the largest energy producer with more than 75% of the region's installed capacity (down from 83% in 2004). Other countries in the region, most notably Angola, Botswana, Mozambique and Tanzania have increased their installed capacity since 2004. The current state of energy security in SAPP members is partly reflected in the graph below, drawing on the World Economic Forum's Global Competitive Index, with specific reference to the "supply of electricity" indicator, measuring reliability of electricity supply (lack of interruptions and lack of voltage fluctuations)[1]



Understanding these structural factors, namely the natural resource division between the hydro-dominated North and the thermal-dominated South, the different level of generation capacity development between member states and the political changes following cessation of South Africa's segregation policies, would assist in understanding the shaping of regional power politics.

[1] Measured on a scale of 1 – 7, where 1 = extremely unreliable; 7 = extremely reliable; data unavailable for DRC

3. INSTITUTIONS

Understanding the role of formalised institutions within a system provides better insights into the political and other incentives at work in a particular environment. The two most prominent institutions behind regional energy cooperation in Southern Africa, is the SADC Secretariat and the SAPP. While the structural factors highlighted in the preceding section provides key insights into the informal "rules" of the game and how policies and initiatives are driven, the formal structures and institutions in energy cooperation assist us in understanding the formal "rules" within the energy milieu. The following section highlights the roles and responsibilities of the SADC and SAPP, and how they have largely (successfully) played a facilitating role in achieving regional cooperation.

3.1. SADC SECRETARIAT

The SADC Secretariat was instrumental in the formalisation of energy cooperation in the region through coordinating efforts towards the signing of the SADC Protocol on Energy in 1996, which established the SAPP and set out its mandate. Since this initial involvement, however, the SADC Secretariat's role has largely been of a strategic nature, while also providing SAPP the political credibility and backing it needs to carry out its mandate. The SAPP therefore took the leading role in overseeing and facilitating cooperation.

In its strategic guiding role, the SADC has enacted a number of protocols and strategies to facilitate cooperation. Driven by the Secretariat's acknowledgement of the role energy security plays in economic development and poverty eradication, the Protocol on Energy set forth the institutional mechanisms and financial provisions to achieve this goal. Currently, the SAPP operates under the authority of the SADC's Directorate of Infrastructure and Services and the SAPP Executive Committee, which consists of CEOs of national energy utilities that provide strategic oversight to the organisation.

Strategies geared towards energy development and cooperation in the region were developed by the Secretariat, and includes the SADC Energy Cooperation Policy and Strategy (1996); the SADC Energy Action Plan (1997); the SADC Energy Activity Plan (2000); as well as the Energy Sector Plan (as part of the Regional Infrastructure Development Master Plan, 2012). The SADC Secretariat has also been involved in driving the renewable energy agenda in the region, through supporting the establishment of the SADC Centre for Renewable Energy and Energy Efficiency, based in Namibia. The Secretariat itself, however, notes that "implementation of these strategies has been slow" (SADC Website). It is suggested that this has largely been due to member states prioritising national interests ahead of regional cooperation (see section 4.1).

3.2. SAPP

The SAPP executes its mandate through the SAPP Coordination Centre, established in 2006 and based in Harare. As noted above, the SADC Secretariat has little influence on or interference with the day-to-day activities of the SAPP (Interview: SAPP). Instead, daily operations are carried out through various SAPP committees, including the Management Committee, within which five sub-committees exist: Environmental (responsible for advising the SAPP Management Committee on best environmental management practices), Markets (facilitating the development of a competitive electricity market in the region), the Coordination Centre Board, Operating (ensuring harmonisation of efforts between members) and Planning (managing demand and supply situation).

Other activities of the SAPP include coordinating technical support to its members (for example, through undertaking studies), collecting and sharing energy related data for reporting to its members and the Secretariat, facilitating funding for various infrastructure projects with development partners and providing capacity building to national utilities.

The success of regional energy integration has largely been attributed to the successful operation and management of the SAPP Coordination Centre, as well as the SAPP's efforts in promoting the regional energy agenda and cooperation (Muntschick, 2013). Operational success has been attributed to the organisation eluding any accusations of mismanagement or unsound financial practice (ECA, 2009). Annual publicly published financial audits enhance the sense of transparency and accountability within the organisation.

With regards to promoting the regional energy agenda in Southern Africa, SAPP's success is, for example, attributed to the successful creation of the regional energy market (REM). Development of the REM, from a bi-lateral trading approach to ultimately a competitive energy-trading market, was largely driven by the SAPP, with technical and financial assistance from development partners. While bilateral agreements are sufficient for long-term energy security, their inflexible nature (fixed prices, fixed volumes and fixed periods) was inadequate to deal with the short term requirements of various member states. Development of the Day-Ahead-Market (DAM) provided a more flexible mechanism, allowing countries who require additional short-term electricity the ability to trade with members who had additional generation capacity above and beyond bi-lateral contracts. Through trading excess generation capacity across borders, member states are therefore able to more efficiently use available resources. This is because electricity cannot be stored effectively, and once generated it is better traded with others than wasted.

The SAPP is officially registered as a non-profit organisation. Funding of the organisation is dictated through the SADC Protocol on Energy, which notes that membership contribution to SAPP should be in accordance to Article 28 of the Treaty establishing the SADC, thus in the same manner and according to the same formula as for other institutions of the SADC (SADC, 1995). Zimbabwe contributes an additional 10% of funding of the SAPP (totalling US$ 51 476 in 2014), in recognition of the advantages of hosting the SAPP Coordination Centre in Harare. In addition to membership fees, the SAPP also derives funds from administration fees collected by managing the DAM, as well as contributions from development partners. While up to 80-90% of membership fees are employed to fund SAPP operations, external funding applied is mainly geared towards technical studies and projects in pursuit of regional energy cooperation (ECA, 2009). Income from DAM administration fees has contributed towards the sustainability of the organisation, having increased from US$ 1 732 in 2009 to about US$ 170 000 in 2014 (SAPP, 2014). Following significant trading activity on the DAM in 2015, the organisation generated more than US$ 1 million from administration fees (AGM, 2015).

Success of the SAPP has also been noted by member states, who have in particular praised SAPPs capacity building efforts, noting the significant positive impact this has had on capacity within the region. There is a sense of pride among members and individuals in the advances achieved by the SAPP, to the extent that it is perceived that other power pools (both in Africa and abroad) could learn from its experiences (Interview: Eskom). Already there is a precedent where other power pools draw on the experience of the SAPP, for example through receiving representatives other developing nations to learn about the organisation, operations and development impact (SAPP, 2014).

Participation in SAPP activities seems to be active across all member states, with priority of meetings illustrated through the high-level participation in SAPP meetings, notably the biannual SAPP Management Committees meetings. These meetings are regularly attended by Senior Ministers, senior management of national energy utilities, and have in the past included participation from national presidents. The meetings seem to be decentralised across the region, with no one country dominating facilitation of these meetings. The 42nd, 43rd and 44th annual meetings were held in Lesotho, Mozambique and Zimbabwe, respectively. Officially, the sense is that within the organisation, all members are equal and none of the members "bully or bulldoze" each other

(Interview: SAPP, Eskom). Equitable distribution on participation in the energy integration agenda is further strengthened by the decentralised nature of efforts, for example with the SAPP established in Zimbabwe, while the new SADC Centre for Renewable Energy and Energy Efficiency, after a competitive bidding process among SADC member states, will be based in Namibia.

The sense of equitable distribution of resources and focus of the regional energy agenda in Southern Africa, including SAPP operations, is further strengthened when looking at the prioritisation of development of infrastructure projects. The methodology employed to select priority affords greater weighting on multi-country projects and projects where excess generation capacity will be available for trading on the REM to the region. The following scoring system, employed when assessing priority energy generation infrastructure, is illustrative:

Item	Criteria	Weight %	1 Weak	2 Below Standard	3 Standard	4 Above Standard	5 Best
1	Size of the Project (MW)	15	<50	50-200	200-500	500-1000	>1000
2	Levelised costs (USD/MWh)	25	>=131	101 - 130	71 -100	41 - 70	<= 40
3	Availability of associated transmission infrastructure (km of lines needed)	10	>750 km	101-750 km	50-100 km	<50km	0
4	Economic impact (descriptive)	10	Little impact, limited to small area	National impact only - jobs, >GDP	Mainly national impact - jobs, >GDP and some regional benefit	Balance between regional and national impact	Mainly regional impact - jobs, > GDP
5	Commissioning date (year)	10	After 2019	2018	2017	2016	2015
6	Share of capacity already committed (%)	10	<20	21 - 35	36 - 50	51 - 80	81 -100
7	Share of capacity available for regional power trade after commissioning	15	<20	21 - 35	36 - 50	51 - 80	81 -100
8	Number of participating member countries (#)	5	1	2	3	4	>= 5

Source: (World Bank, 2014)

Following their mandate as key coordinating institutions of the regional energy agenda in Southern Africa, the SAPP also takes the lead in recruiting and coordinating funding from development partners towards development of infrastructure in the region. Considering that regional power cooperation often requires inputs across two or more member states, the SAPP is the ideal actor to coordinate such efforts in a centralised manner. With the start of massive multi-country projects such as the Zimbabwe-Zambia-Botswana-Namibia transmission project (ZIZABONA), coordination through SAPP will be more efficient and effective (ICA, 2011).

The SADC Secretariat has historically taken a very hands-off approach, leaving regional energy cooperation to the SAPP. The SAPP in turn, has been a key driver behind regional energy integration, coordinating physical infrastructure development efforts, as well as soft infrastructure development (e.g. the regional energy market trading platforms). Success of the SAPP, resulting in significant buy-in from development partners and member states, is largely attributed to the efficient and effective management of the SAPP Coordination Centre. This support has allowed the organisation to make significant strides towards enhancing the regional energy agenda. However, the lack of enforcement mechanisms in SADC and SAPP, has hamstringed its efforts.

4. ACTORS AND INCENTIVES

The following section draws on key stakeholders within the energy cooperation environment in the SADC, including political elites, state bureaucrats and sector actors, to establish the incentives driving regional energy cooperation. This approach focusses on how the structural and institutional context highlighted above interacts with key actors (within the broader groupings of member states and development partners) and ultimately how this relates to policy choices, interests and behaviour.

4.1. Member States

Given the wide disparities that exist between members of the SAPP, with South Africa clearly the most prominent actor contributing more than 75% of generation capacity in the region, it is unsurprising that the country would be in a position to exert more influence than others. Unlike the official voice noting that all members are equal (Interview: SAPP; Eskom), it has been clear that South Africa has been able to assert its preferences (whether conscious or otherwise) on both SAPP structures and policies, as well as on infrastructure development in the region. This is illustrated by the decision to allow trading on the REM in either USD or ZAR (Hammons, 2011). Similarly, the country has also left its mark on the Operational Guidelines (defining specific regulations of plant operations, transmission, safety and sharing of costs) developed for the SAPP. The Operational Guidelines adopted by SAPP reflects the unique operating procedures followed by Eskom in its operations (Muntschick, 2013).

South Africa's engagement in regional energy affairs and vis-à-vis other members is further dominated by the near monopoly the country has on coal-generated electricity. While carbon-based generation is coming under mounting pressure due to its adverse environmental impact, and production costs of coal is increasing due to easily accessible coal having already been exploited, South Africa actively tries to maintain this monopoly due to domestic pressures. Despite the increasing threat of coal as a generation method, it still provides significant employment and economic incentives for the country, which is actively being lobbied for protection by domestic labour unions, which carries significant influence in politics in South Africa. One example where this manifests in practice has been around the development of the Mmababula coal reserves in Botswana. The Government of Botswana and various private companies have over the past two decades tried to exploit coal reserves around Mmababula to generate up to 3000MW of electricity. While Eskom initially signed a MoU regarding the development of Mmababula, it faced domestic pressures from key labour groups and eventually halted any further developments. Trade unions maintain that they want to protect employment opportunities provided within the domestic sector, and not export these opportunities to the rest of Southern Africa (Grynberg, 2012). Without South Africa's support and commitment to buying off significant quantities to be developed at the Mmababula project, it is simply not feasible for other countries to invest the initial capital to establish coal generation plants, because they cannot take advantage of economies of scale due to lack of domestic energy demands or even through the SAPP. The case of Mmababula is illustrative of how SA has employed its position as regional hegemon to act as a blocker within the regional energy agenda due to domestic interests and pressures.

In contrast, however, South Africa has at times actively participated in the regional energy agenda. The country has played a significantly encouraging role in the development of hydro generation in the region. South Africa, with high-level political backing from President Zuma, has thrown its support behind efforts to develop the Grand Inga hydro complex in the DRC by signing a development agreement to this extent. This agreement included South Africa's commitment to buy power from the initial phases of Inga development, while providing South Africa the right of first refusal for equity and off-take in future phases of the project (Vecchiatto, 2014). This support could

be explained for two reasons: not only does this not interfere with South Africa's monopoly on thermal generated electricity, but direct transmission from DRC is impossible, requiring transmission infrastructure offered by SAPP to acquire the generation capacity.

South Africa, through key national energy institutions, has also been active in supporting the development of renewable energy nationally. Sentiment from key energy-related stakeholders is that IPPs can provide additional energy capacity in the country quickly, as well as having access to the capital for such investments (Interview: Eskom) (see Section 5 for further details).

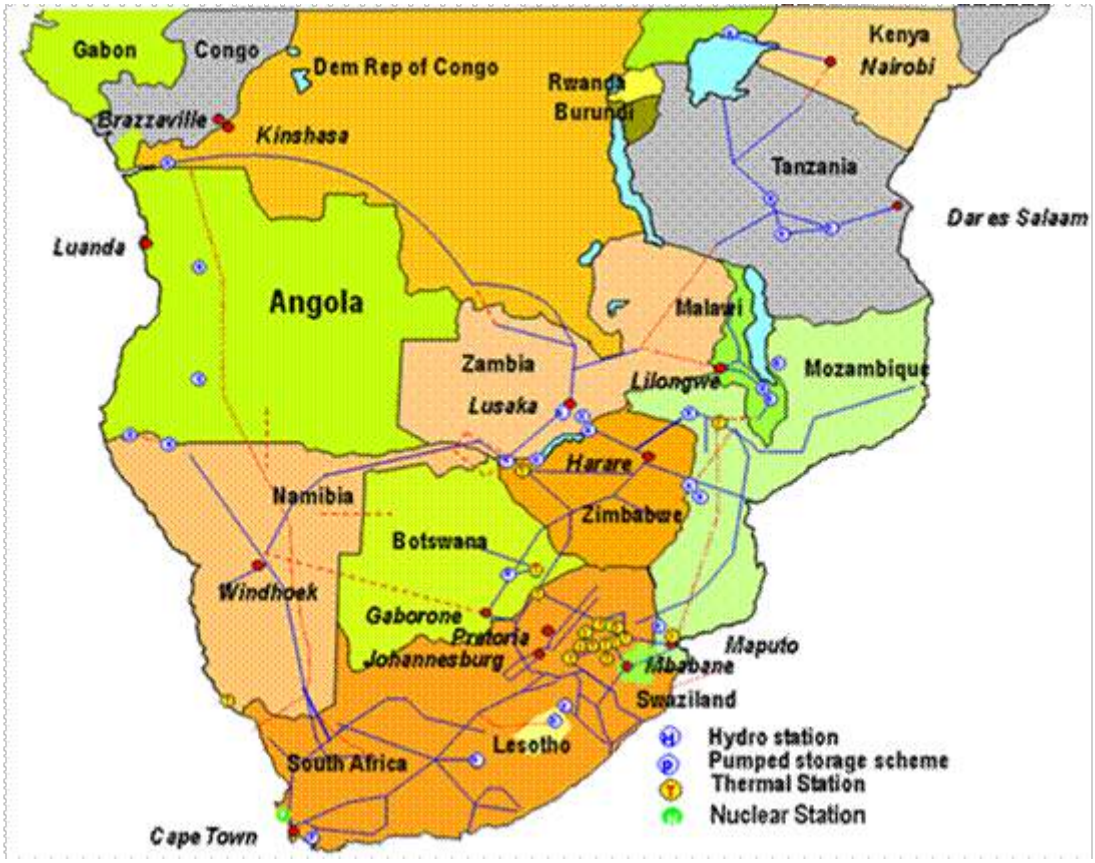
In response to the energy crisis in South Africa towards the mid-2000s, Eskom started re-examining their supply contracts to the rest of Southern Africa and, as contracts came up for renegotiations, they negotiated more flexible contracts. The renegotiated contracts also provided Eskom with more leverage, e.g. to block supply when its own grid came under pressure. The unintended consequence of this move has been an increase in market stimulation. Where previously countries could rely on cheap energy supply from South Africa, especially in the post-apartheid era where risk of related political pressures were minimised, there has since been a greater urgency from other countries in the region to secure supply independent from SA. For example, **Botswana** has undertaken development of its own generation operations through its Morupule power plant. It has also reached out to IPPs to provide capacity in the short term. While at times countries within the region engaged in the regional cooperation agenda, national interests are pursued when more convenient.

Unlike most countries in Southern Africa, **Namibia** has thus far been able to avoid load shedding and is, according to the WEF GCI indicator which measures reliability of electricity supply, the best performing SAPP-member. It has done this through pursuing bilateral energy deals with neighbours (Zimbabwe, Angola) in order to secure supply. It has also embarked on an innovative approach to securing power: through sharing the capital costs of the rehabilitation of some of Zimbabwe's generation infrastructure, it has in return been able to negotiate long-term fixed contracts for generation supply (New Era, 2014). Namibia's active role in regional energy efforts has also been demonstrated by their commitment to renewable energy in the region through its successful bid to host the SADC's Centre for Renewable Energy and Energy Efficiency.[2]

Zimbabwe's interest in SAPP appears to be driven by the need to secure electricity supply. Energy security in Zimbabwe is currently critical, as reflected in the WEF GCI, indicating Zimbabwe as the 2nd worst performer in the SAPP. Currently, the country generates little more than 50% of the electricity needed during peak demand, with local generation capacity at 1200MW against a peak demand of 2200MW. Generation infrastructure in Zimbabwe has long been neglected and new infrastructure investments have been minimal. The energy crises in Zimbabwe has been compounded by the fact that it has been unable to service its energy purchasing commitments with some of its major suppliers with whom it had fixed bilateral contracts, including South Africa's Eskom, Zambia's ZESCO and Mozambique's Electricidad de Mozambique (EDM), who have subsequently cut off electricity supply (Mhlanga, 2015). While it has not been explicitly stated, Zimbabwe stands to potentially benefit significantly from wheeling charges[3] accrued from energy trading across the region, especially if the Inga-capacity comes online, given its central geographic location and key interconnectors already passing through it (see current SAPP grid below; SAPP, 2014).

[2] http://www.tralac.org/images/docs/8211/sadc-renewable-energy-and-energy-efficiency-report-ren21-2015.pdf

[3] Charges related to the transportation of electricity over transmission lines



Source: Southern African Power Pool

The **DRC**'s participation and drive within the SAPP has largely been focused on the development of the Inga hydro complex and interconnectors that links its national grid with the SAPP. Ultimately, the Grand Inga complex will have a generation capacity of 40 000MW, which is considerable given that total current installed capacity in the SAPP is just under 60 000MW. While the development of the Grand Inga scheme has received high-level political backing from DRC President Kabila, the current political instability and energy infrastructure challenges faced (e.g. transmission, distribution, maintenance) could severely affect development of the scheme and buy-in from other stakeholders (e.g. financiers) (Interview: UCT ERC, Imani). The DRC's commitment to the SAPP seems to be less driven by the Southern African energy security agenda. Instead, DRCs electricity parastatal, Société Nationale d'électricité (SNEL) membership to SAPP, the East African Power Pool and the Central Africa Power Pool, suggest that their interests are more aligned with the development of their resources, and securing channels through which this could eventually be distributed. Given the DRC's central location, it would be ideally placed to provide electricity supply to all three these power pools, as well as the West African Power Pool.

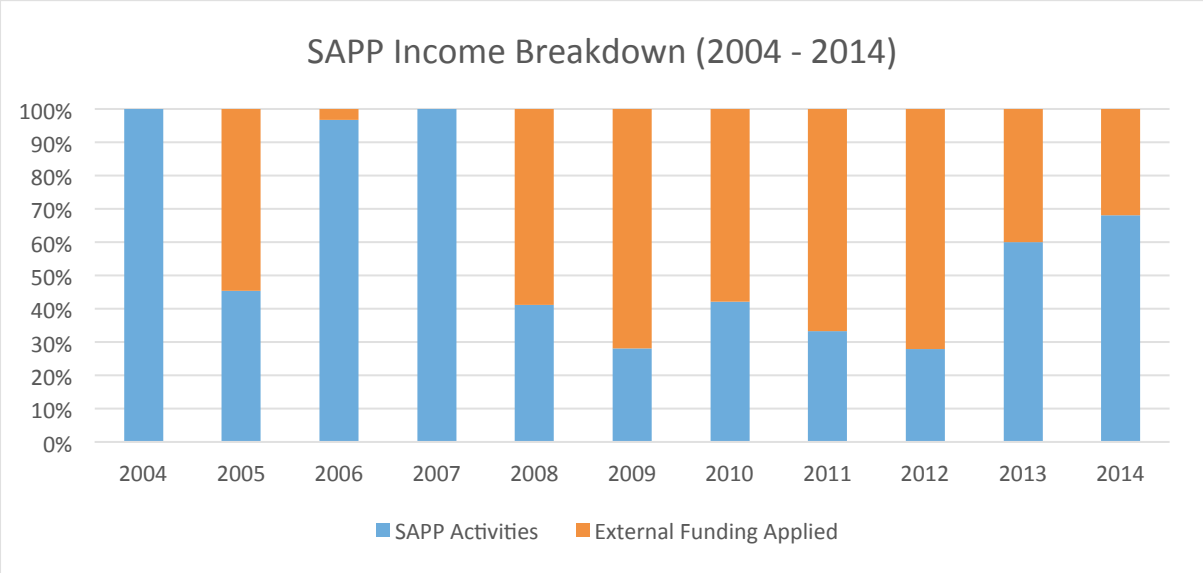
Angola, along with **Malawi** and **Tanzania**, are the only SAPP member states who are yet to be connected to the SAPP grid. While the Zambia-Tanzania-Kenya transmission project falls under the ambit of the Nile Basin Initiative, Angola and Malawi's connection to the SAPP grid is coordinated by the SAPP. Within the SAPP, there appears to be a greater push to connect Angola to the grid via the Namibia-Angola interconnector, largely due to the significant generation potential within Angola (both thermal and hydro). For example, at a recent investment conference in Beijing, the Angola interconnector was pitched as one of the priority projects, while the Malawi interconnector has received comparatively little attention and is not included as one of SADC's high-priority energy transmission projects (likely given Malawi's status as minor net-importer) (Sikuka, 2015; Muheya, 2014). There is also a notable urgency from Namibia in support of connecting Angola, who, as noted

earlier, has been very proactive in procuring bi-lateral energy contracts and is currently co-developing the Baynes Hydropower project (400MW) along with Angola.

Regional energy cooperation in Southern Africa by member states can by understood by the incentives that drive cooperation. Overwhelming consideration for cooperation is at times either driven by national interests or at times through mutual (at least more than one country) benefit. Within the SAPP, ample examples of both such cases exist. For example, national self-interest is clearly the overwhelming consideration in what can be described as the "scramble" for bilateral energy trading contracts among members to ensure national energy security. In contrast, in the case of South Africa and Mozambique, mutual benefit has been pursued in development of the infrastructure generation and transmission between these countries, where both costs and benefits of increased generation are shared. Similarly, Pretoria has thrown significant weight behind talks of developing the Inga hydro-power schemes in the DRC. Given that direct transmission from DRC to South Africa is impossible, dialogue has been framed within the context of the SAPP and regional energy cooperation.[4]

4.2. Development Partners

The SAPP relies mainly on three sources of funding for its operations: membership fees; administrative fees from management of the DAM; and funding from development partners. Since inception, SAPP has largely employed membership fees to fund its operations, while applying additional funds towards specialised studies, projects and programmes (ECA, 2009). This practice remains the status quo. The total income of the SAPP has increased considerably in the past decade, from just under US$300,000 in 2004 to US$2,2 million in 2014. In 2014, membership contribution accounted for roughly 28,5%; income from DAM administration accounted for 7,5% and grants from donors applied totalled 33% with the balance from other income sources (SAPP, 2014). Since 2001 the SAPP has held regular donor meetings to present its priorities to development partners with the aim of attracting funds. This strategy seems to have been fairly successful, with a clear inflow of donor funding in the years following meetings (Muntschick, 2013).



Source: SAPP Annual Reports 2004 - 2014

In 2014 financing from donors constituted roughly 33% of the SAPP's income. In other years, however, finances applied from development partners totalled more than 70% of the SAPP's

[4] See for example Southern Times Africa: South Africa Charms for Inga Project

income. Given the significance of this funding, it is unsurprising that it has been suggested that donors have had some level of influence, or provided some of the driving force behind SAPP's agenda. One of the examples includes the development of the regional energy market over the past decade and a half, from the Short Term Energy Market (STEM) in 2001, to the Day-Ahead-Market (DAM) in 2009.

As noted earlier, one of SAPPs key successes has been the development of the REM into a fully competitive energy market. During the late 1990s and early 2000s, before the shortage in generation capacity in the region, there was a need for a more flexible market mechanism. At the time, electricity trade was dominated through largely inflexible bi-lateral agreements between nations that dictated fixed prices, fixed volumes and fixed periods for which energy could be traded. However, countries often had surplus capacity that they could offer to others, while other members required additional capacity at ad-hoc intervals. As a response, the SAPP developed the STEM through an EU-funded grant of $0.7million. At its peak, electricity trade on the STEM reached more than 120GWh during July 2002 (Hammons, 2011). However, as the lack of generation capacity became apparent, trade eventually decreased to on average less than 20GWh/month between November 2005 and November 2006. While the STEM operated functionally and served the needs of SAPP members, it represented a mere 5 – 10% of total electricity trade in the region, with member states' preferring to trade through more secure bi-lateral contracts, and employing STEM when atypical demands needed to be met (Muntschick, 2013).

Despite the lack of surplus energy to be traded, the STEM was followed by the Day-Ahead-Market (DAM), again with the SAPP being the main coordinating body. While the STEM had some limitations in terms of participation from IPPs, the DAM would be a fully competitive market that would allow private sector actors to participate in the process. Development of the DAM started in 2004/2005, at a time when the lack of surplus energy to be traded in the region was evident, with a grant from the government of Norway of about $7.5million. An additional grant of about US1.5million was provided by the government of Sweden to develop related components. The platform was completed in 2009 and has been operational since (SAPP, 2014). Energy trade on the DAM has grown since its introduction, from 545MWh in 2009/2010 to 84 000 MWh in 2013 and more than 500 000MWh in 2014, representing roughly 6% of total trade volumes (SAPP, 2015). Despite this initial increase, outlook for increases in future trading volumes seems to be tepid given that the generation gap will not be remedied in the short term. While the DAM is undoubtedly a useful tool, and will ultimately contribute to building a more competitive regional energy market, it has been suggested that part of the agenda to develop the DAM has been driven by availability of funds from development partners, likely ahead of other priorities (Muntschick, 2013).

This challenge facing the DAM was highlighted in an evaluation by Norway of its support to developing the DAM, which noted that energy volumes generated and consequently traded would have to increase significantly before the full market dynamism expected could be reached. Nevertheless, it noted that the technical assistance to the project has been successful and that technically the DAM was operating effectively (Norad, 2011). Subsequent funding from Norway and Sweden was also provided for the period 2013 – 2015 of about US$6million under the *Implementation of the SAPP Regional Competitive Electricity Market* programme, which included support for capacity building and software to manage the DAM (SARDC, 2013; SAPP, 2015). Despite the perceived influence in the particular case of development of the REM, support from Norway and Sweden, has been characterised by the SAPP as working with the organisations to support its own agenda, rather than influencing it. (Interview: SAPP).

One of the key challenges energy infrastructure development in the region faces, is at the planning stage. Often, national governments are reluctant to commit the initial investments required to

identify, design and develop bankable infrastructure projects, especially multinational projects. To facilitate this process, the World Bank provided a grant to the SAPP of US$20 million under the Program for Accelerating Transformation Energy Projects in 2014. This grant will allow the development of such bankable projects, with the project implementation end date in 2019 (World Bank, 2014). The African Development Bank and the Development Bank of Southern Africa have also provided support in these areas.

Apart from Norway and Sweden, and the World Bank grant noted above, the SAPP has also been supported by other development partners. However, for many of these partners co-operation is limited (e.g. to special studies) and on an ad-hoc basis. USAID, for example, has a long history of involvement with the SAPP. Funding was provided to assist the SAPP between 1997 and 2002 to develop short- and long- term models for the development of the interconnected grid. Between 1998 and 2006, USAID also provided technical assistance to the SAPP through the secondment of an expert from the New York power pool to assist operational aspects of the SAPP Coordination Centre (ECA, 2009). While USAID has continued providing support in the energy sector through the Southern African Trade Hub, the focus of its activities has been on private sector participation and renewable energy in Southern Africa (particularly Zambia and Swaziland). As a result, assistance has been geared towards technical support and capacity building to RERA and national regulating agencies (Interview: SATH). The next iteration of USAID's Trade Hub will not include support in the energy sector. Instead, it is believed that these activities will be subsumed under its larger Power Africa initiative.

The EU, through its ACP-EU Energy Facility, was instrumental in the development of the DAM's predecessor, the STEM. Further support has been provided mainly for capacity building for network operations, systems planning and promotion of public-private partnerships (SAPP, 2009). Other donors such as DFID and DANIDA have been involved to a lesser extent, through providing technical support or specialised studies (ECA, 2009).

The following table provides an overview of the activities currently supported by various donors.

ACTIVITY	Norway and Sida	DBSA	AfDB	EU	World Bank	SAPP
Capacity Building Programmes	✓			✓		✓
DAM Support & Maintenance	✓					
Project Packaging	✓	✓	✓		✓	✓
Transmission Pricing Development	✓					
Projects Peer Review	✓					
New Trading Platform Development	✓					✓
Source: SAPP, 2015						

Given that regional power pooling requires both hard and soft infrastructure, the SAPP has been able to rely on long-term support from different development partners with interests within these respective domains. The SAPP's successful track record in the past has often ensured, or at least contributed, to continued funding. However, given the significant sums provided, influencing of the SAPPs agenda through development partners should be recognised as a potential risk (with evidence to suggest that this has been the case on occasion).

5. PRIVATE SECTOR PARTICIPATION

The private sector's role in regional energy cooperation is two-fold. Firstly, having access to reliable, affordable and sustainable energy is paramount to their operations, thus at times they act as a pressure group on governments (along with civil society players) to work towards energy

cooperation and security. Secondly, segments of the private sector have an interest in and ability to directly participate in electricity generation and transmission.

Energy issues in SADC are addressed at regional level by the private sector in numerous ways, key of which is through engagement from apex private sector bodies. The Southern Africa Business Forum, for example, notes in a declaration that "sustainable and affordable access to energy…is critical for all of the economic development goals of SADC." The declaration further urges member states in SADC to cooperate and notes "the role of the private sector lies in financing, providing innovative technologies and technical expertise" towards addressing the energy challenge (SABF, 2015) Similarly, the Association of SADC Chambers of Commerce and Industry notes that "participation in value chains (regional and global) is an important pathway to industrialization; this requires competitive infrastructure service inputs such as energy…" (ASCCI). Nevertheless, the response from regional bodies appears limited given the scale of the crisis.

Nationally, businesses and citizens have been more vocal with regards to the energy crises, notably in countries such as South Africa and Zimbabwe. Advocacy and lobbying has come from various sector specific bodies across industries, including hospitality, mining, manufacturing and retail, and from national private sector bodies such as the Confederation of Zimbabwe Industries. Equally, response in South Africa has been seen from, among others, the SA Chambers of Commerce and Industry, the South African Reserve Bank and Business Leadership South Africa who notes that the current energy crises is arguably "the biggest threat to business confidence and growth that [South Africa] has encountered in the last two decades" (BLSA, 2015).

Despite widespread criticism from the private sector, energy utilities recognise the need to engage them to relieve energy related pressures. IPPs have the capacity to introduce new skills, technology and investment in the industry, allowing for greater generation, as well as diversification and competition, ultimately ensuring more reliable and cost effective electricity generation(Carter-Brown, 2015).

Energy operations (generation, transmission and distribution) throughout Southern Africa have for the most part remained largely public owned in the post-independence era. The lack of business frameworks within the majority of these SOEs resulted in inefficient and inadequate supply by the 1980s. While various processes of reform involved creating more efficient SOEs and private sector participation, as well as structural changes (e.g. separating generation, transmission and distribution) have been undertaken and continue to be implemented, progress has been slow and the majority of energy operations remain state controlled (Manduna, 2013).

The SAPP has been a key driver behind private sector participation in the energy environment in Southern Africa. While the SAPP's founding document, the Inter-Governmental Memorandum of Understanding (IGMOU) that was signed in 1995, did not specifically make provision for their inclusion, the 2006 revised IGMOU created scope to include other Electricity Supply Enterprises (such as Power Utilities, Independent Power Producers, Independent Transmission Companies, etc.) besides national power utilities (Hammons, 2011). The need to include the private sector came from members, albeit somewhat begrudgingly, as the reluctance of SOEs to decentralise (political) power is characteristic in the region (Manduna, 2013; Interview: UCT ERC; Imani). For example in South Africa, President Zuma recently announced that Eskom will receive a further $23 billion in 2015 to "stabilise" its finances, despite its poor record in the past. Similar situations in two other struggling SOEs, South African Airways and the South African Postal Service, have resulted in direct high-level political oversight over the reformation of these institutions along with Eskom, by Deputy President Cyril Ramaphosa (Dodds, 2015).

Despite this reluctance to relinquish power across SAPP member states, the SAPP oversaw the facilitation of the Revised Intergovernmental MOU in 2006 that ultimately made provision for the inclusion of IPPs and ITCs within the SAPP structures, allowing these independents participation in the REM. Currently, SAPP's membership includes 16 members, of which 12 are national energy utilities, 2 are IPPs and 2 are ITCs. Independents, however, do not share the same decision making powers and influence within the SAPP as national regulators – their domestic role is seen as much less significant (i.e. not responsible for the entire grid) and therefore their voting power within SAPP is diminished (Interview: SAPP).

According to the SAPP, the greatest stumbling block to increased private sector participation in REM is that most countries do not allow IPPs to engage in cross-border trading. While some national regulators are more welcoming of private sector participation (e.g. Zambia and Mozambique), others are less so (e.g. South Africa who regulates entrance). Just like the SADC lacks enforcement mechanisms to carry out its mandate in the region, the SAPP remains merely a coordinator of efforts and remains toothless to enforce any regional decisions at national level. In response, calls for a new and revised (from the 2006) IGMoU has been echoed by various high-level officials (e.g. senior SADC officials; Sikuka, 2012), to ensure that the SAPP has greater powers to pursue the regional energy integration agenda. In the interim, the SAPP relies on continuous advocacy efforts (RERA, SADC, and Energy Ministers) to increase private sector participation (SAPP, 2015).

While participation from the private sector has largely been met with reluctance from national utilities in the region, the experience in South Africa thus far has been positive. From 2011, Eskom, together with the SA Department of Energy and the National Energy Regulator of South Africa (Nersa) has thrown considerable weight behind the renewable energy sector domestically through its Renewable Energy Independent Power Producer Procurement Programme (REI4P). This programme supports independent power producers that engage in renewable energy (including wind, solar, biomass, biogas and small hydro), and has procured such services through a number of procurement windows (Joemat-Pettersson, 2015).

To date the REI4P has resulted in adding more than 4GW of electricity to South Africa's national grid. From this, nearly a third of the R145.5 billion in investments have been sourced locally and the projects have created more than 60 000 job years. Local communities in which these projects are based have particularly benefitted from the job creation effects (Carter-Brown, 2015).

Introducing private sector participation in the energy generation also has the benefit of increasing competition in the market, ultimately driving down costs. For example, in South Africa's REIPPP programme, the average price for generation from the first procurement window was R2,15/kWh; dropping to R1,42/kWh in the second round of bidding and R1,14/kWh in the third procurement round, representing almost a 50% reduction in costs over a three year period (Carter-Brown, 2015). However, as has been witnessed in the Southern African energy markets, electricity subsidies have distorted markets in the energy sector. Currently, within the SAPP, Namibia and Tanzania are the only two countries that have achieved cost-reflective tariffs (SADC, 2015). Ensuring a level playing field will be important to securing engagement from the private sector.

Infrastructure investment needs are significant and won't be met solely through public sector or ODA funds. As noted above, sourcing of financing for infrastructure investment can be addressed through involving the private sector. Large scale capital intensive projects, with potential to bring significant generation capacities on board, requires both time and capital. For example, the estimate costs for the planned 9600MW to be added to South Africa's grid through eight new nuclear reactors is around $50 billion and will only be connected to the grid in 2023 (ENCA, 2015). Similarly, South Africa's latest energy investments in Medupi ran up to more than $12 billion (up from initial

estimates of $5.6bn) and another coal fired plant, Kusile saw its costs rise from $6.5bn to $13.9bn (Mannak, 2015). Through allowing participation from the private sector to engage in IPP schemes, as in the case of South Africa, Southern Africa can address the short term electricity crisis through bringing hundreds of small capacities online quickly.

While SA's REIPPP scheme has indicated a willingness of the public sector in South Africa to participate in the national energy market, entry into this market remains constrained to bidding windows as the DoE has the sole mandate to initiate renewable and alternative fuel generation projects (South African Government). Furthermore, while Eskom does not have exclusive rights on energy generation, it does own and operate the national electricity grid, affording it significant influence. These restrictions, and the reluctance to decentralise and privatise within the energy sector in South Africa and the region, would need to be addressed both politically and legislatively in order to further encourage private sector participation (BLSA, 2015).

From South Africa's experience highlighted above, it is clear that involvement of the private sector in regional energy affairs could contribute to greater energy security in the region. Not only do they already act as a key pressure group, but direct participation will likely lead to greater competition, resulting in lower costs, increased investment in the sector, as well as an overall diversification of available resource generation capacity. Nevertheless, while the SAPP has been a key driver behind the inclusion of the private sector, allowing participation of these stakeholders ultimately rest with member states. And while national governments have clearly recognised the need for their inclusion, the political will to drive their participation is still lacking. This, together with the regulatory challenges, will ensure continued reluctance on the part of business to get involved.

6. CONCLUSION

The Southern African Power Pool was initially established to enhance energy security in the region through facilitating cross border physical and trade infrastructure. The significance of this agenda intensified across the region following the energy crises from the mid-2000s.

Despite (or due to) limited intervention from the SADC Secretariat, the SAPP has played a significant role in successfully promoting and facilitating regional energy integration. This has largely involved coordinating regional energy infrastructure investment in the region and facilitating the development of a Regional Energy Market. Another key success of the SAPP has been through facilitating private sector participation in the REM. While SADC remains one of the key institutions driving the regional integration agenda in Southern Africa, it has largely allowed the SAPP to focus on energy cooperation, with little interference, partly as a result of the successful manner in which the organisation has done this. The organisation's success has to a great degree rested on the good management of the institution, which has attracted significant cooperation from development partners. At the same time, while the national interests of its members remain dominant, their commitment to the regional energy agenda at times assisted in promoting this agenda. However, in many ways, the SAPP can be seen as merely a coordinating body without any mechanisms to ensure regional cooperation.

Just as with the SADC, certain member states dominate the energy environment in the region through size and available resources. However, unlike SADC, there appears to be no single country driving the SAPP agenda with no one country seeking to derive political control/power in the regional energy sector via the SAPP. Even before the SAPP, there were no "(political) power struggles" within Southern Africa for energy dominance (South Africa has always been and still is the regional powerhouse), with none of the other states really competing with each other, so no one country needs to dominate the institution to ensure greater legitimacy (unlike, for example, in the EAPP where Egypt, Kenya, and Ethiopia vie for dominance in the energy sector). Instead, there is ample evidence to suggest that members participate and drive the agenda for practical motives i.e. efficient usage of available resources or financial gains. Nevertheless, national interests often trump commitment to regional energy integration – for example nations "scrambling" to ensure bi-lateral energy contracts with others to ensure national energy security. However, for smaller SADC members facing resource constraints, the SAPP adds significant value in co-ordinating donor funds towards the development of bankable cross-border projects.

While the SAPP has largely relied on funding from member states to support its operations, it has, at times, relied heavily on funding from development partners for the implementation of activities. Evidently, it has been suggested that at times availability of funds from these partners drove the integration agenda and specific interventions. While these interventions did not have a negative influence on the energy integration agenda, arguably there were greater priorities that could have been pursued. Nevertheless, the organisation's excellent track record has secured the cooperation of many of these partners over a lengthy period.

From South Africa's experience highlighted above, it is clear that involvement of the private sector in regional energy affairs could contribute to greater energy security in the region. Not only do they already act as a key pressure group, but direct participation will likely lead to greater competition, resulting in lower costs, increased investment in the sector, as well as an overall diversification of available resource generation capacity. Nevertheless, while the SAPP has been a key driver behind the inclusion of the private sector, allowing participation of these stakeholders ultimately rest with member states. And while national governments have clearly recognised the need for their

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7. BIBLIOGRAPHY

AllAfrica. 2015. Southern Africa: SADC Experts to Strategise on Regional Energy Development. AllAfrica (online). Available online: http://allafrica.com/stories/201503030847.html. Accessed 31 March 2015.

Annual General Meeting (AGM), 2015. Final Minutes of the Annual General Meeting between SAPP, Sida and the Government of Norway held at the SAPP CC, Harare, Zimbabwe.

Association of SADC Chambers Of Commerce and Industry (ASCCI). *SADC Summit - Priorities for SADC's regional economic integration agenda.* Available online: http://www.ascci.info/index.php/8-home-news-slider/25-sadc-summit-priorities-for-sadc-s-regional-economic-intergration-agenda. Accessed 25 October 2015.

Bornman, N. and Anestor, P. 2014. *SA Braces for Cold Turkey as Eskom Falters*. Times Live (online). Available online: http://www.timeslive.co.za/local/2014/12/07/sa-braces-for-cold-turkey-as-eskom-falters. Accessed 30 March 2015.

Brendan, R. 2015. *Trio of Forces behind Botswana Coal Failure*. MiningMx (online). Available online: http://www.miningmx.com/page/news/energy/1650264-Trio-of-forces-behind-Botswana-coal-failure. Accessed 31 March 2015.

Business Leadership South Africa (BLSA). 2015. *Business Solutions to our energy crisis.* Available online: http://www.businessleadership.org.za/newsletters/Business-Solutions-to-our-energy-crisis/index.html?&re=1. Accessed 25 October 2015.

Carter-Brown, C. 2015. *IPPs critical to South Africa's energy security*. Available online: http://www.engineeringnews.co.za/article/ipps-critical-to-south-africas-energy-security-2015-05-19. Accessed 25 October 2015.

Department of Energy: SA. *Renewable Energy Independent Power Producer Procurement Programme.* Available online: http://www.ipprenewables.co.za/#page/303. Accessed 31 March 2015.

Dodds, C. 2015. *Energy crisis 'soon behind us'.* IOL (online). Available online: http://www.iol.co.za/business/news/energy-crisis-soon-behind-us-1.1909977#.Vh05i3qqqko. Accessed 25 October 2015.

Eberhard, A. *et al*. 2011. *Africa's Power Infrastructure: Investment, Integration, Efficiency.* World Bank.

Economic Consulting Associates (ECA). 2009.The Potential of Regional Power Sector Integration: Southern African Power Pool Transmission & Trading Case Study. Available online: http://www.esmap.org/sites/esmap.org/files/BN004-10_REISP-CD_The%20Potential%20of%20Regional%20Power%20Sector%20Integration-Literature%20Review.pdf. Accessed 29 June 2015.

ENCA. 2015. *SA power crisis threatens country's economy*. ENCA (Online). Available online: https://www.enca.com/money/sa-power-crisis-threatens-countrys-economic-outlook. Accessed 25 October 2015.

Grynberg, R. 2012. *SA Plays Power Games with Coal.* Mail and Guardian (online). Available online: http://mg.co.za/article/2012-09-14-sa-plays-power-games-with-coal. Accessed 31 March 2015.

Hammons, T.J. 2011. *Electricity Infrastructures in the Global Marketplace.* InTech Publishers.

Infrastructure Consortium for Africa (ICA) Secretariat. 2011. *Regional Power Status in African Power Pools.* African Development Bank.

IRENA. 2013. Eastern African Power Pool. Available online: http://www.irena.org/DocumentDownloads/events/2013/July/Afriac%20CEC%20session%202_EAPP_Gebrehiwot_220613.pdf. Accessed: 29 June 2015.

Jindal Africa. *Mmamabula Energy Project.* Jindal Africa (online). Available online: http://www.jindalafrica.com/mmamabula-energy-project. Accessed 31 March 2015.

Joemat-Pettersson, T. 2015. Expansion and Acceleration of the Independent Power Producer Procurement Programme. Available online: http://www.ipprenewables.co.za/#page/2179. Accessed: 29 June 2015.

Manduna, C. 2013. *Energy Sector Capacity Building Diagnostic & Needs Assessment Study*. African Development Bank.

Mannak, M. 2015. *The economic impact of South Africa's energy crisis*. Public Finance International (online). Available online: http://www.publicfinanceinternational.org/feature/2015/06/economic-impact-south-africa%E2%80%99s-energy-crisis. Accessed 25 October 2015.

Mhlanga, P. 2015. ZESA Scrambles for Electricity Imports. The Financial Gazette (online). Available online: http://www.financialgazette.co.zw/zesa-scrambles-for-electricity-imports/. Accessed: 29 June 2015.

Muheya, G. 2014. Malawi excluded in SADC US$4bn power interconnection projects. Nyasa Times (online) http://www.nyasatimes.com/2014/08/18/malawi-excluded-in-sadc-us4bn-power-interconnection-projects/. Accessed 8 September 2015.

Muntschick, J. 2013. Regional energy cooperation in SADC: is the southern African power pool currently powered by external funding? Published in Monitoring Regional Integration in Southern Africa Yearbook 2012, tralac.

Namibia Economist. 2014. NamPower sighs relief as new PPA is signed. Namibian Economist (online). Available online: http://www.economist.com.na/headlines/6391-nampower-sighs-relief-as-new-ppa-is-signed. Accessed: 29 June 2015.

New Era. 2014. Zimbabwe: Namibia Signs New Power Purchase Agreement With Zimbabwe. New Era (online). Available online: http://allafrica.com/stories/201410171382.html. Accessed: 29 June 2015.

Norad. 2011. Energy for Sustainable Development – Annual Report 2011. Available online: http://www.norad.no/globalassets/import-2162015-80434-am/www.norad.no-ny/filarkiv/vedlegg-til-publikasjoner/energy-for-sustainable-development---annual-report-2011.pdf. Accessed 29 June 2015.

SADC. 1995. *Protocol on Energy in the Southern African Development Community (SADC) Region.* Southern African Development Community.

SADC. 2012. Regional Infrastructure Development Master Plan: Energy Sector Plan. Southern African Development Community.

SAPP. 2004 – 2014. *Annual Reports*. Southern African Power Pool.

SAPP. 2014a. Monthly Report: May 2014. Available online: http://www.sapp.co.zw/docs/R05-%20MAY%202014%20SAPP%20Monthly%20Report.pdf. Accessed 29 June 2015.

SARDC. 2013. Major boost for the regional energy competitive market as SAPP, Norway sign agreement to support DAM. Southern African Research and Documentation Centre (online). Available online: http://sadc-energy.sardc.net/index.php?option=com_content&view=article&id=125:major-boost-for-the-regional-energy-competitive-market-as-sapp-norway-sign-agreement-to-support-dam&catid=37&Itemid=143. Accessed 29 June 2015.

Sikuka, K. 2012. SAPP should have more authority to promote energy development. Southern African Research and Documentation Centre (online). Available online: http://www.sardc.net/en/southern-african-news-features/sapp-should-have-more-authority-to-promote-energy-development/. Accessed 29 June 2015.

Sikuka, K. 2015. SADC goes to China looking for investment in infrastructure. Namibia Economist. (online) http://www.economist.com.na/general-news/8217-sadc-goes-to-china-looking-for-investment-in-infrastructure. Accessed 8 September 2015.

South African Government. About SA: Energy. Available online: http://www.gov.za/about-sa/energy. Accessed 25 October 2015.

Southern African Business Forum (SABF). 2015. *The Savuti Declaration.*

Southern African Development Community (SADC). 2015. *34th Meeting of SADC Energy Ministers.*

Southern African Power Pool (SAPP), 2015. 2014/15 Annual Progress Report to the Government of Norway and Sida (Sweden) on SAPP Activities in Southern Africa

Sustainable Energy for All (SE4All). 2015. *G20 ministers adopt Africa-focused Energy Access Action Plan* (online). Available online: http://www.se4all.org/2015/10/07/g20-ministers-adopt-africa-focused-energy-access-action-plan/. Accessed 25 October 2015.

United States Energy Information Administration. 2014. *South Africa: Country Analysis.* Available online: http://www.eia.gov/countries/country-data.cfm?fips=SF. Accessed 30 March 2015.

Vecchiatto, P. 2014. *Hydroelectric deal with Congo gets nod from MPs*. Business Day (online). Available online: http://www.bdlive.co.za/business/energy/2014/11/05/hydroelectric-deal-with-congo-gets-nod-from-mps. Accessed 31 March 2015.

World Bank. 2014. Project Appraisal Document: Southern African Power Pool (SAPP) – Program for Accelerating Transformational Energy Projects.