

Challenge of Capacity Growth in the Southern African Power Pool

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By

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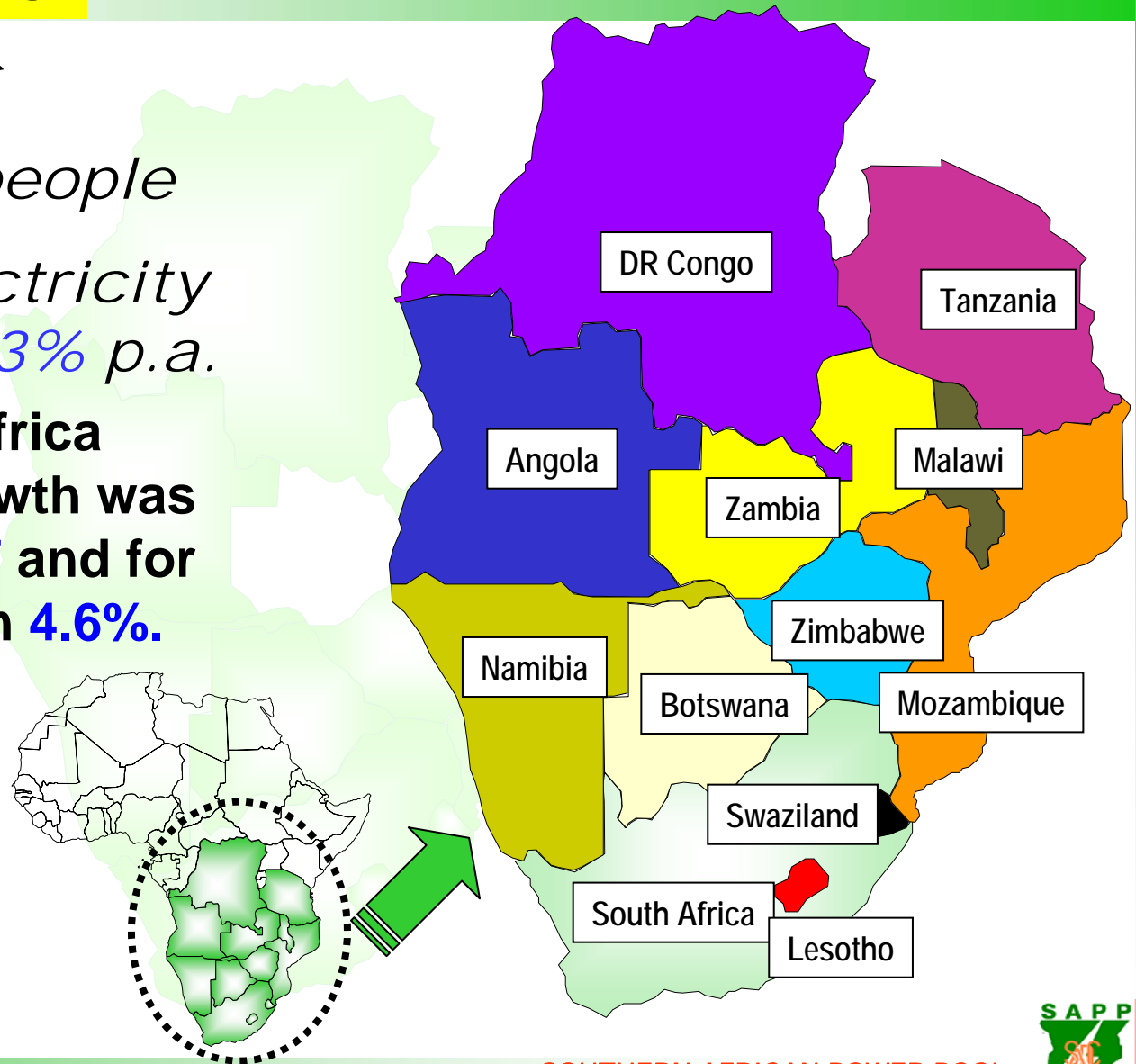
CONTENTS

- 1. INTRODUCTION TO THE SAPP*
- 2. STATUS OF POWER SUPPLY*
- 3. CHALLENGES TO CAPACITY GROWTH*
- 4. CONCLUSION*
- 5. REFERENCES*

1. INTRODUCTION TO THE SAPP

1.1 Geographic

- ❑ 12 Countries
- ❑ 230 Million people
- ❑ Average Electricity growth rate 3% p.a.
- ✓ For South Africa demand growth was 4.9% in 2007 and for whole region 4.6%.



SOUTHERN AFRICAN POWER POOL



1.2 SAPP Creation and Aim

- ❑ *The SAPP was created in **August 1995** through the signing of the Inter-Governmental MOU.*
- ❑ *The Aim was to **optimise** the use of available energy resources in the region and support one another during emergencies.*
- ❑ ***12 SADC** Members:*
 - ➔ ***9** Operating Members*
 - ➔ ***3** Non-Operating Members*

1.3 Governing Legal Documents

- ❑ Inter-Governmental MOU
 - Established SAPP.
 - Signed by SADC Member Countries in 1995.
 - Revised document signed on 23 February 2006.
- ❑ Inter-Utility MOU
 - Established the Management of SAPP.
 - Revised document signed on 25 April 2007.
- ❑ Agreement Between Operating Members
 - Signed by Operating Members only.
 - Revised document signed in April 2008.
- ❑ Operating Guidelines
 - Under Review.

1.4 SAPP Vision

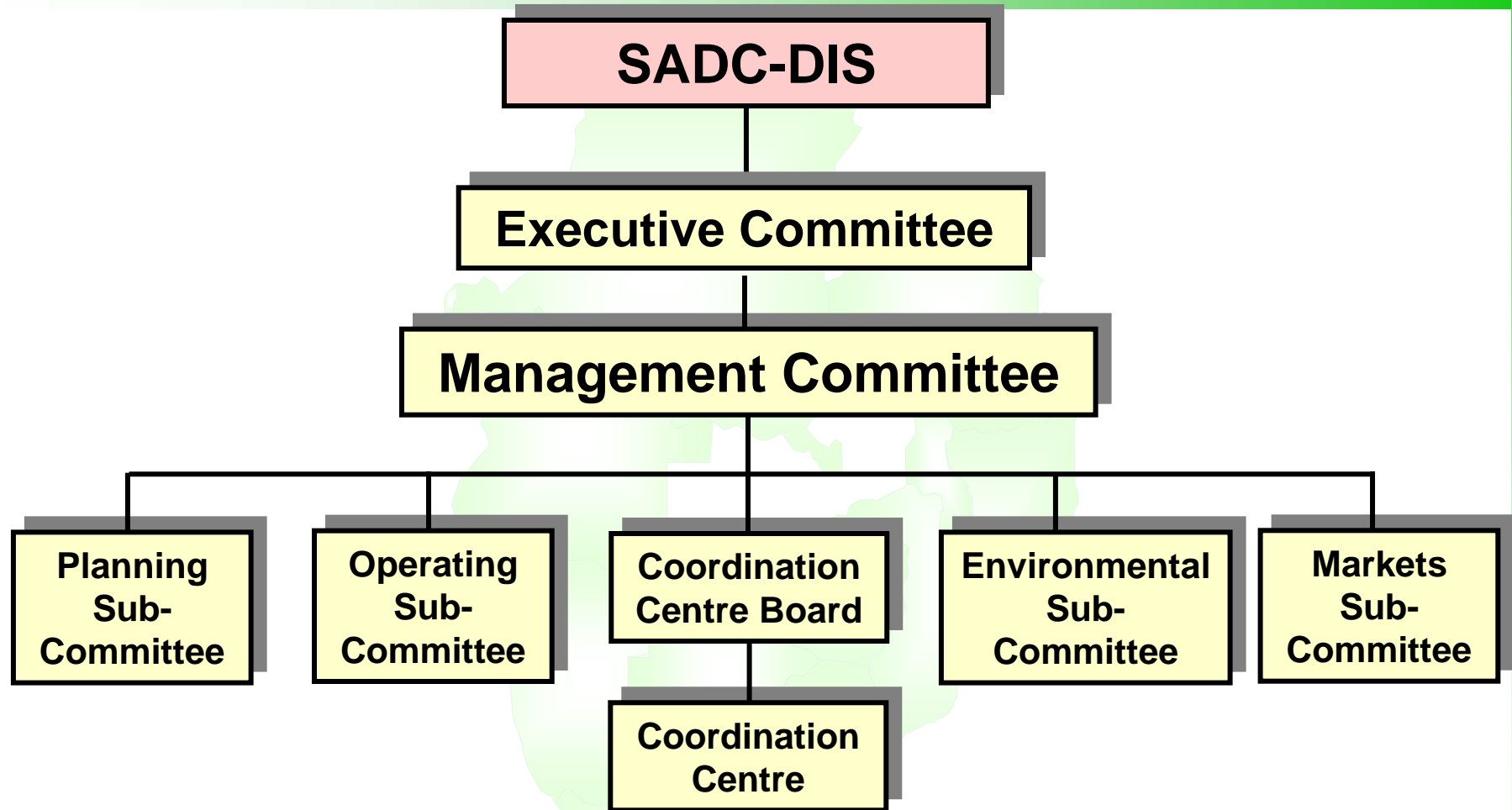
The SAPP Vision is to:

- *Facilitate the development of a **competitive** electricity market in the Southern African region.*
- *Give the end user a **choice** of electricity supply.*
- *Ensure that the southern African region is the region of choice for **investment** by energy intensive users.*
- *Ensure sustainable energy developments through sound economic, environmental & social practices.*

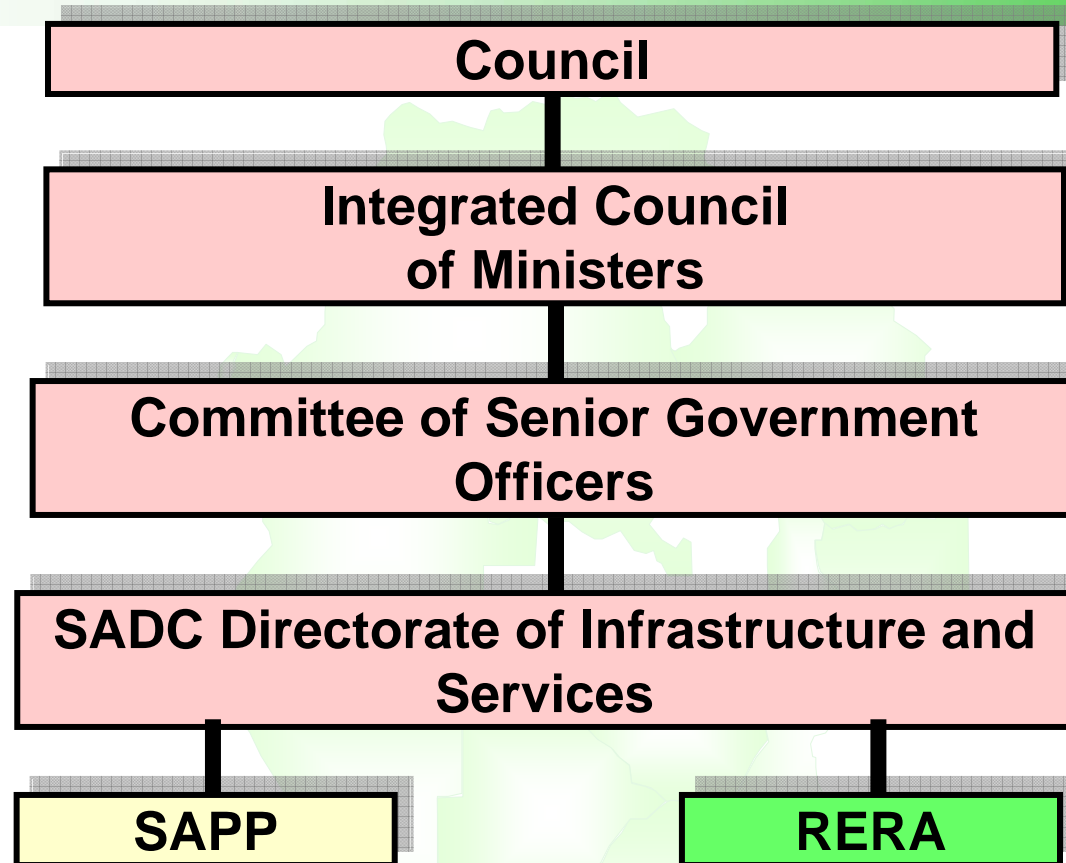
To promote her vision, the SAPP is

- *Changing from a **co-operative** pool to a **competitive** power market.*
- *Reviewing **membership** to allow for more players.*
- *Expanding both **transmission** & **telecommunication** links between members.*
- *Expanding **generation capacity** and attract high intensive energy users.*
- *Enhancing Human Capacity development and expansion - A Coordination Centre was established in **Harare**, Zimbabwe, in 2000.*

1.5 Management & Governance Structure



1.6 SAPP Reporting Protocol



- *SAPP: SADC Power Utilities*
- *RERA: SADC Energy Regulators*

1.7 Membership

No	Full Name of Utility	Status	Abbreviation	Country
1	Botswana Power Corporation	OP	BPC	Botswana
2	Electricidade de Mocambique	OP	EDM	Mozambique
3	Electricity Supply Corporation of Malawi	NP	ESCOM	Malawi
4	Empresa Nacional de Electricidade	NP	ENE	Angola
5	ESKOM	OP	Eskom	South Africa
6	Lesotho Electricity Corporation	OP	LEC	Lesotho
7	NAMPOWER	OP	Nam Power	Namibia
8	Societe Nationale d'Electricite	OP	SNEL	DRC
9	Swaziland Electricity Board	OP	SEB	Swaziland
10	Tanzania Electricity Supply Company Ltd	NP	TANESCO	Tanzania
11	ZESCO Limited	OP	ZESCO	Zambia
12	Zimbabwe Electricity Supply Authority	OP	ZESA	Zimbabwe
OP = Operating Member NP = Non-Operating Member				

1.8 Funding of SAPP Activities

SAPP activities are funded as follows:

- *Annual contribution from Members*
- *Administration fees levied on Market participants.*
- *Donor support, mostly projects:*
 - *The Government of Norway*
 - *Sida (Sweden)*
 - *The World Bank*
 - *Development Bank of Southern Africa*
 - *USAID, DFID, DANIDA and others*

2. STATUS OF POWER SUPPLY

2.1 Installed Capacity & Peak Demand

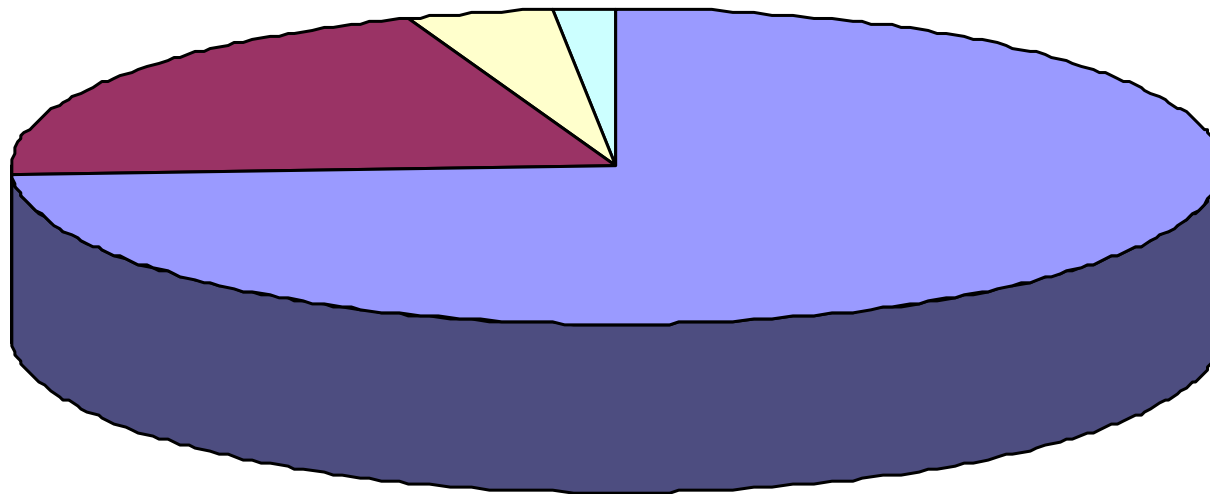
No	Country	Utility	Installed Capacity [MW]		Available Capacity [MW]		Peak Demand [MW]	
			Dec-06	Apr-08	Dec-06	Apr-08	Dec-06	Apr-08
1	Angola	ENE	742	1,155	590	870	432	535
2	Botswana	BPC	132	132	120	90	473	496
3	DRC	SNEL	2,442	2,442	1,170	1,170	993	1,075
4	Lesotho	LEC	72	72	70	70	101	109
5	Malawi	ESCOM	305	305	261	246	247	240
6	Mozambique	EDM	307	307	175	71	299	365
		HCB	2,250	2,250	2,075	2,075		
7	Namibia	NamPower	393	393	390	360	408	449
8	South Africa	Eskom	42,011	43,061	36,208	37,258	34,807	36,513
9	Swaziland	SEC	51	71	50	50	188	196
10	Tanzania	TANESCO	897	897	480	680	567	653
11	Zambia	ZESCO	1,632	1,632	1,630	1,200	1,414	1,468
12	Zimbabwe	ZESA	1,990	2,045	1,825	1,125	1,904	1,758
Total SAPP			53,224	54,762	45,044	45,265	41,833	43,857
Total Inteconnected SAPP			51,280	52,405	43,713	43,469	40,587	42,429



2.2 *Installed Capacity as at April 2008*

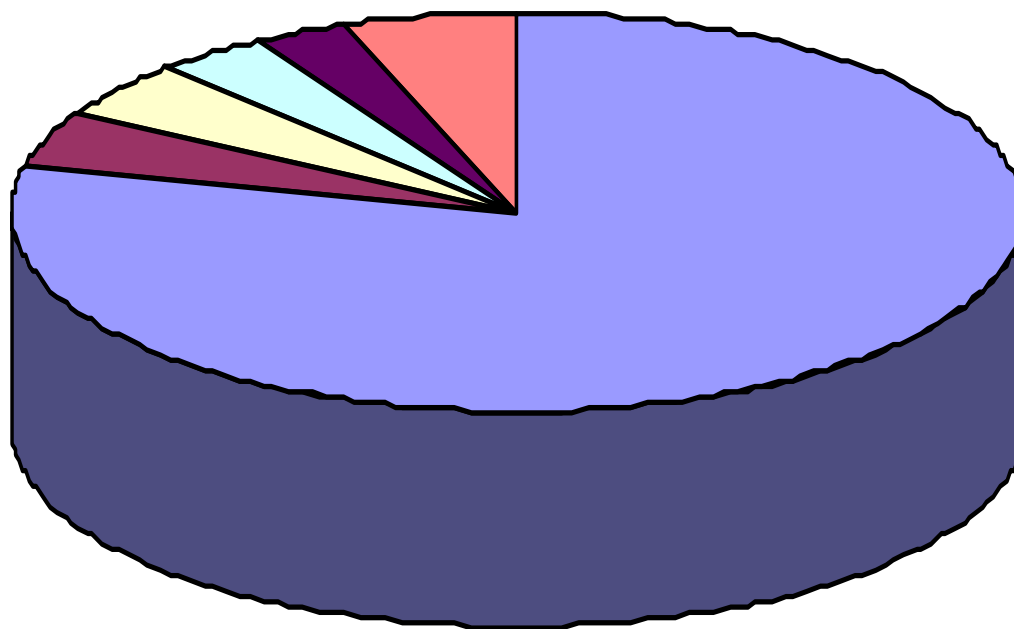
- ❑ *SAPP has an installed capacity of about 55,000MW*
- ❑ *45,000MW of capacity was available as at April 2008.*
- ❑ *Over 9,000MW of capacity is unavailable due to*
 - *Power rehabilitation projects & remedial maintenance:*
 - ✓ *Zambia (reduction of 450MW):* *Feb 2009*
 - ✓ *Zimbabwe (reduction of 400MW):* *Oct 2008*
 - ✓ *DRC (reduction of 344MW):* *Nov 2008*
 - ✓ *Botswana (30MW):* *June 2008*
 - ✓ *South Africa (2,000MW)*
 - *Power Station auxiliaries* (MW generated minus MW sent out)
 - *Fuel constraints* (water hydrological, coal supply logistics, etc)
 - *Ageing infrastructure*

2.3 Generation Mix



- 74.3% Coal
- 20.1% Hydro
- 4.0% Nuclear
- 1.6% Gas/Diesel

2.4 Country Contribution



- 78.6% South Africa
- 4.7% Mozambique
- 4.5% DRC
- 3.7% Zimbabwe
- 3.0% Zambia
- 5.5% Rest

2.5 Power Supply Challenges

- ❑ Demand for power in Southern African has been increasing at an average rate of 3% per annum.
 - ✓ In 2007, demand growth for South Africa was 4.9% and for the whole region 4.6%.
- ❑ In the last 5 years demand in the SAPP increased by 15% which is equivalent to 5,200 MW.
- ❑ Unfortunately, there has not been corresponding investments in generation and transmission infrastructure, resulting in the current supply deficit that the region is experiencing.

2.6 Why has the SAPP run into supply deficit ?

1. *Economic Growth* of more than 5% in most of the SADC member countries resulting in unprecedented growth in electricity *consumption* and *demand*.
2. *Increase in demand for base metals resulting in high metal prices* on the World Market with new mining companies being established in the *SADC* region in the last few years.
3. *Inadequate Investments* in generation and transmission *infrastructure* over the last 20-years.
4. *Electrification Programmes* have *partly* contributed to the increased consumption and demand.
5. The *challenge* was identified and communicated but not *adequately mitigated*.

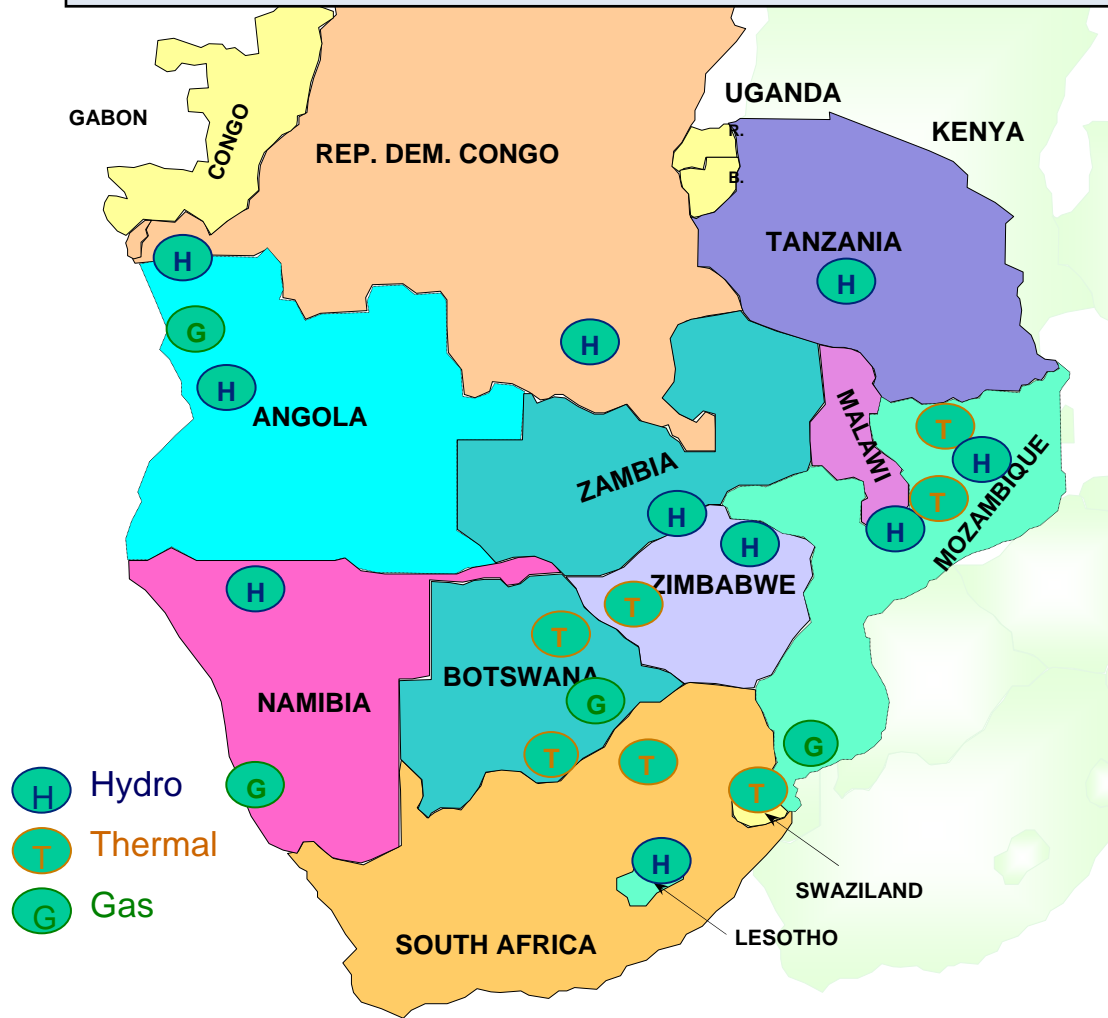
3. *CHALLENGES TO CAPACITY GROWTH*

3.1 *Problems in the SADC Power Sector*

- ✓ *Lack of infrastructure to deliver electricity*
- ✓ *Lack of maintenance of infrastructure*
- ✓ *Insufficient funds to finance new projects*
- ✓ *Other problems:*
 - *Insufficient generation*
 - *Non cost reflective tariffs*
 - *High technical and non-technical losses*
 - *High operating costs*
 - *Vandalism of infrastructure*

3.2 Key Challenges to Capacity Growth

There is an abundance of natural resources providing vast generation potential in the region



The Challenge

There are many power projects in the SADC region with superb fundamentals, but!

1. *Why are the potential power capacity projects not happening?*
2. *What are the key challenges and issues?*
3. *What could the SAPP do to change this?*



3.2.1 General (1)

1. *High Risk* perception associated with doing business with Africa.
2. *Incomplete Reforms* - These include new sector legislation and sector restructuring to pave way for competition and private sector participation.
3. *Inadequate & Unsustainable Tariffs* that are **NOT** able to provide right signals for:
 - ✓ *New Investments*
 - ✓ *Energy conservation, energy efficiency & substitution practices by customers.*

3.2.1 General (2)

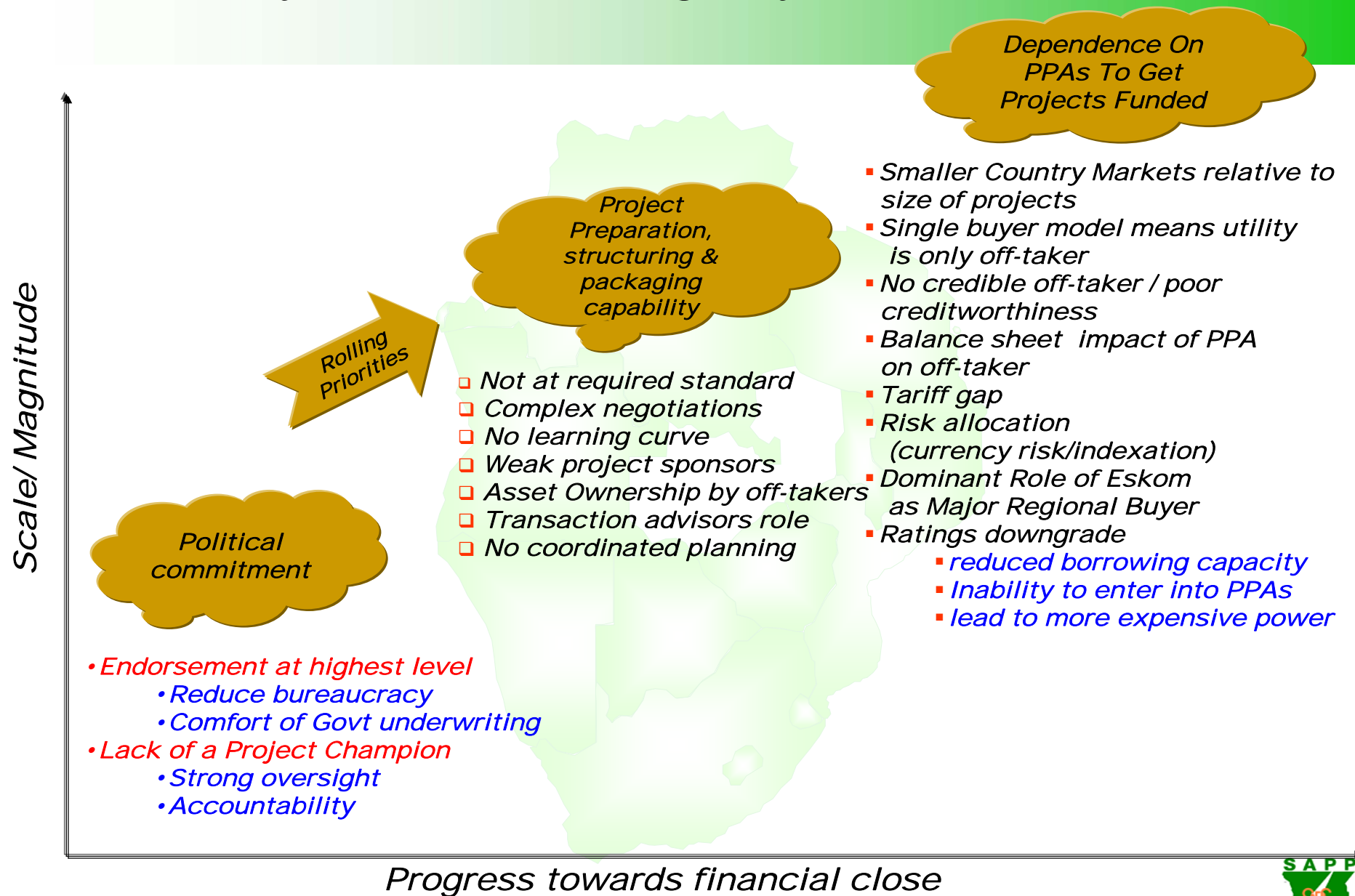
4. *Enabling Environment*

- ✓ *Lack of legal and regulatory frameworks*
- ✓ *Inconsistency policies*

5. *Other Issues*

- ✓ *Projects not reaching financial closure*
 - *Government and utilities not agreeing on mode of financing*
 - *Lenders insist on power purchase agreements*

Major Issues Affecting Project Closure



3.2.2 National Interests versus Regional Interests

<i>Allocation of power to off-takers</i>	<i>The amount of power to be retained in the country where it is produced</i>
<i>Benefit Sharing</i>	<i>Regional off-takers need to equally share in the benefits of projects over time especially after the investment has been amortised</i>
<i>Ownership of asset</i>	<i>External off-taker assumes risks and contributes to the project bankability but in the end acquires no ownership of the asset</i>
<i>Priority Off-taker</i>	<i>National off-takers may insist on receiving preferential treatment should the capacity only be partially available</i>
<i>Cross subsidy</i>	<i>National utility may expect a price discount due to using a national resource for the power generation</i>
<i>Currency</i>	<ul style="list-style-type: none">▪ <i>National utility may expect to pay in local currency and other off-takers must absorb the forex exposure</i>▪ <i>Some countries may expect the use of hard currency or to peg their currency to USD</i>
<i>Proposal – These issues need to be decided on upfront as it can seriously impact on the successful conclusion of projects</i>	



3.2.3 Financial (1)

Balance Sheet, ROR and Government Support

Partners

Projects success is dependent on parties having strong balance sheet.

Financially strong partnerships may assist with sourcing appropriate funding in different currencies.

The balance sheet of a utility is often more secure than an opportunistic developer with raised development funds but no balance sheet.

Balance sheet impact

Project could limit future opportunities for utilities as the PPA becomes a liability on own balance sheet which weakens position to obtain loans for projects in own country.

Rate of return expectations

Varying expectations with independent investors having higher ROR requirements than regional utilities

Government support

Investors and lenders tend to require Government underwriting of the utilities financial obligations

Proposal

- Need regional Government support to minimise risk of investment to regional utilities*
- IPP ROR expectations should be internalised by utilities*

3.2.3 Financial (2)

Project Finance

<i>Multiple currencies</i>	<i>Necessary to source loans from off-shore financial institutions as insufficient capital in the region</i>
<i>Forex exposure risk</i>	<i>Investor / developer may want to transfer the full foreign exposure risk to off-takers Limited appreciation of how forex volatility can impact the region and hence impact on the long term sustainability of project finance</i>
<i>Indexation</i>	<i>Expectation of developer / investor to reference natural resources (on the continent) to world market indexes, even if power generation is only option for the resource or at least provides a base foundation for the project to be kick started</i>
<i>Changing global conditions</i>	<i>Improved availability of equipment / manufacturing however Africa is competing for limited money available globally for investments</i>

Proposal – *Risks should be allocated soon to parties best suited to handle them*

- Need to upfront clarify expectations and risk appetite of developer / off-takers*
- Off-takers should indicate intentions / support to project early to aid in development*



3.2.4 Legal Systems

Different legal systems

Have different legal systems in SADC with no neutral body / country suitable for all
Refusal of international investors to understand and use available dispute / arbitration processes available in the region (e.g. UNITRAL) (confirm with legal)

Lenders expectations

Lenders / Global banks may require legal protection according to a Law more internationally recognised

Change of law under different jurisdictions

In the event that a change of law materialises then such an action is similar to a 'force majeure' for the other off taker/s which do not reside in the same jurisdiction

Proposal

- Need to agree on one standard law and to standardise on contracts with regional project involving multiple parties.*
- Need an appropriate allocation of risk - the party who is most suitable to mitigate the risk needs to accept that risk.*

3.2.5 Regulatory

Disparity

Different regulatory environments and levels of regulation within region with limited synergy between regulatory bodies.

Independence

*Varying independence of regulators and policy makers in the region.
Limited regulation and certainty with respect to cost pass-through allowed.*

Regulation - Cost recovery mechanism

Uncertain regulatory environment, makes it difficult for all parties to have a clear view on how regulators will deal with allowing cost pass-through.

Proposal

RERA has been requested to investigate these issues and advise the SAPP how to create an enabling environment in the region.

3.2.6 Transmission and System Operations

Network integration

*Limited infrastructure to ensure secure system
Lack of transmission integration in the region*

Operational discipline

*Lack of operational discipline in adherence to scheduled tie-line flows
Rights and obligations of IPPs using SAPP grid*

Reconciliation

Need effective balancing system to allocate and settle imbalances.

Point of delivery

*Expectation of buyer to take ownership at the border
Developer taking risks they cannot manage – transmission developments.*

Proposal

– Operational discipline should be improved and adhered to by SAPP

3.2.7 Build / Buy Decision

<i>Cost reflective tariffs</i>	<i>Historical Bilateral agreements with low tariff levels created an element of complacency with respect to build / buy decisions of regional utilities.</i>
<i>Transmission pricing</i>	<i>Transmission pricing and reinforcement required not conducive to encourage capacity investment decisions</i>
<i>Mind shift required</i>	<i>Understanding that future prices need to reflect the cost of supply to ensure a sustainable electricity market in region</i>

3.2.8 Environmental

<i>Environmental impact assessments</i>	<i>Some EIAs not sufficiently focusing on long-term environmental impacts Environmental approvals and public participation can delay project</i>
<i>Polluter / non-polluter</i>	<i>May be difficult to secure financing if the project is not considered "clean"</i>

Proposal

- Should have a uniform minimum SADC standard with respect to EIAs*
- Need policy / guidelines to support 'polluter / non-polluter' projects*



3.2.9 Other Challenges

<i>Contract negotiations</i>	<i>Complex negotiation with multitude of parties required with limited negotiation / contracting skills in the region</i> <i>Underestimation of complexity of documentation and volume of supporting documents / agreements required</i>
<i>Development costs</i>	<i>Underestimation of the preparation costs (esp. legal fees) to get to final closure of a project and the ability of utilities to afford these costs</i>
<i>Commissioning power</i>	<i>Securing power to conduct construction and commissioning testing in a region with no excess capacity</i>
<i><u>Proposal</u></i> <i>SAPP requires in dept training in project preparations and negotiations</i>	

3.4 Proposed Way Forward

1. Develop appropriate *policy, legal and regulatory frameworks*. Policies to address the current problems should be developed and should recognize:
 - ✓ Need for financial viability of the power utilities by implementing the policy of cost reflective and sustainable tariffs.
 - ✓ Develop appropriate policy frameworks for IPPs and PPPs
2. Create an Enabling environment
 - ✓ The independence of the regulator
 - ✓ Investment incentives
 - ✓ Payment discipline by customers

- 
3. *Develop a regional solution to the common challenges.*
 4. *Improve operational efficiency of existing utilities*
 - ✓ *Increase collection efficiency*
 - ✓ *Reduce technical losses*
 5. *Other issues to address:*
 - ✓ *A favourable political environment*
 - ✓ *A well functioning legal system*
 - ✓ *Proper regulation of tariffs, and*
 - ✓ *Security for repatriation of profits*

5. CONCLUSION

- ❑ *Attracting investments and ensuring capacity growth in the SADC region would require the region to address policy, legal and regulatory frameworks.*
- ❑ *Private sector participation (IPPs) and PPPs should be encouraged. IPPs normally look for:*
 - ✓ *A favourable political environment*
 - ✓ *A well functioning legal system*
 - ✓ *Proper regulation of tariffs*
 - ✓ *Security for repatriation of profits and capital investments, and*
 - ✓ *A place to expand their business.*

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THANK YOU