



Clean Energy Developments in the Southern African Region

By

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Presentation for the USEA Global Workshop on Clean Energy Development, Washington DC, December 01 – 08, 2012



Presentation Outline

- ❑ **Background (Southern Africa & RERA)**
- ❑ **Electricity Supply and Demand**
- ❑ **Energy Efficiency**
- ❑ **Other Renewable Energy (RE) Efforts**
- ❑ **Policies and Incentives**
- ❑ **Concluding Remarks**



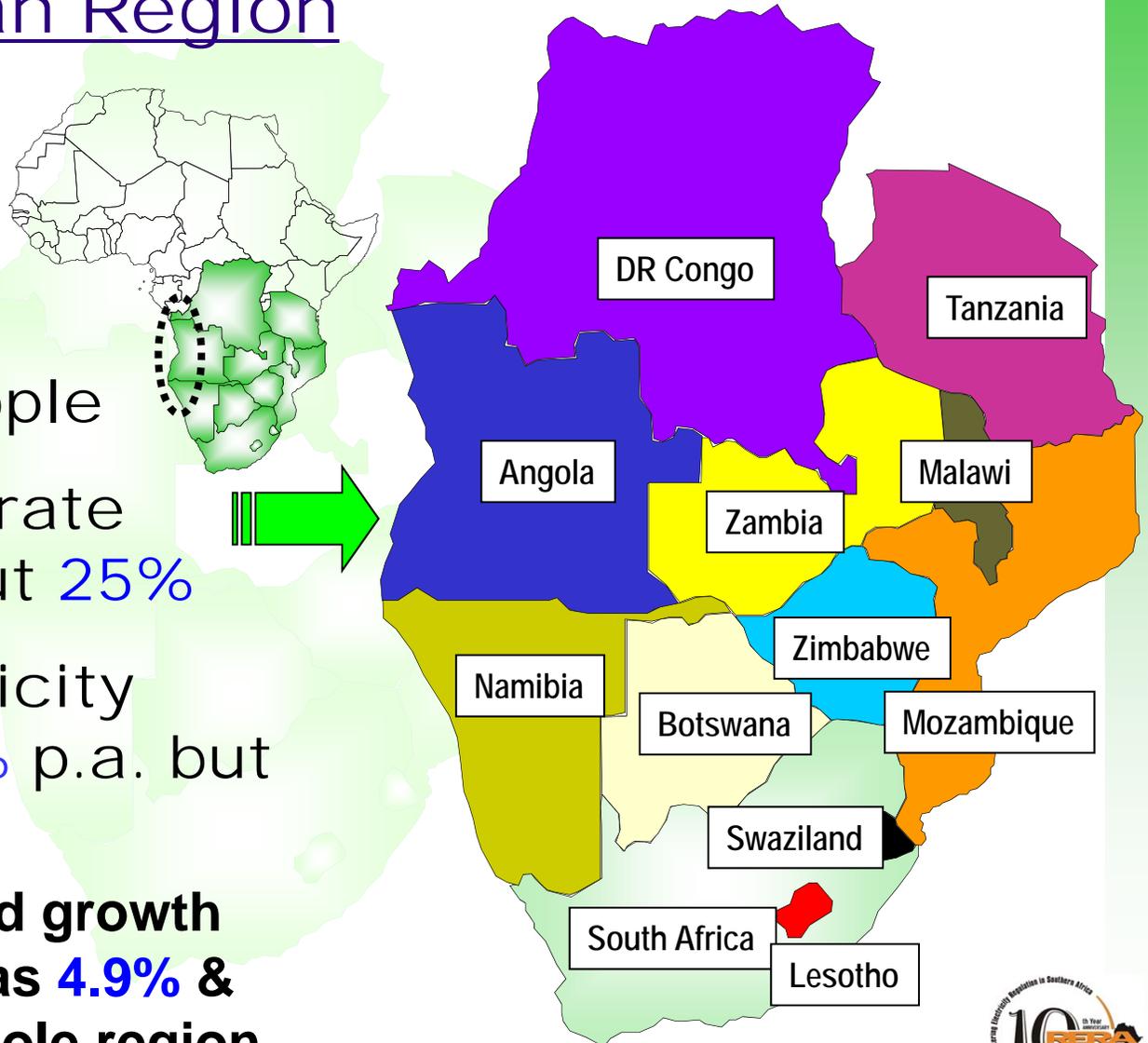


Background (Southern Africa & RERA)

Background (1)

Southern African Region

- ❑ 15 Countries
 - ❖ 12 main land
 - ❖ 3 islanded
- ❑ 280 Million people
- ❑ Electrification rate averaging about 25%
- ❑ Average Electricity growth rate 3% p.a. but increasing
 - ✓ In 2007, demand growth South Africa was 4.9% & 4.6% for the whole region



Background (2)

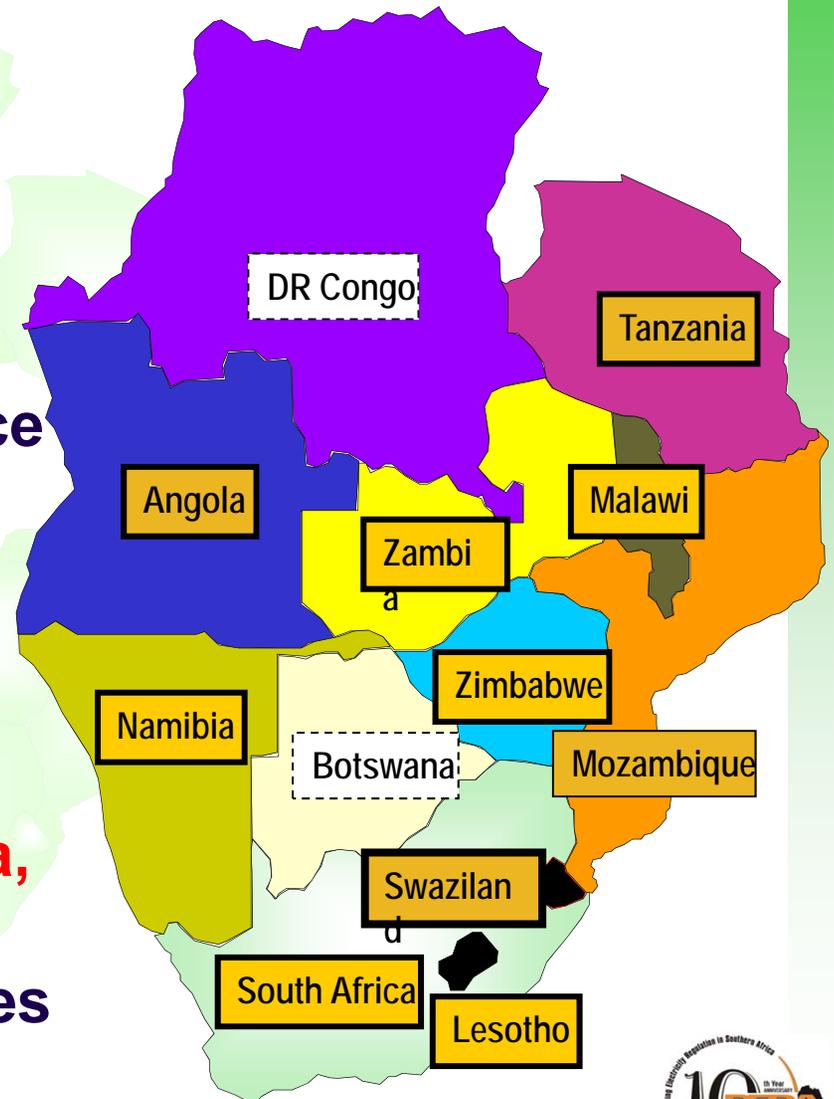
About RERA

- **SADC Energy Ministers approved the establishment of RERA at a meeting in Maseru, Lesotho on **12 July 2002****
- **RERA was launched on **26 September 2002** in Windhoek, Namibia though the Secretariat became functional in **2005 – 10th Year RERA Anniversary****
- **As the first electricity regulatory association in Africa, RERA considers itself as one of the building blocks of the African Forum for Utility Regulators (AFUR)**

Background (3)

About RERA - Regulators

- **11/15** SADC countries have energy/electricity regulators
- **10/11** are Members of RERA
- **ORE of Madagascar** is in existence but not yet Members of RERA
- **4** are electricity regulators, **5** are energy regulators & **2** are multi-sector (energy/water) regulator
- Remaining **4** countries (**Botswana, the DRC, Mauritius & Seychelles**) are at various sector reform stages



Background (4)

About RERA - Membership

1. **Angola** - Institute for Electricity Sector Regulation (IRSE)
2. **Lesotho** - Lesotho Electricity Authority (LEA)
3. **Malawi** - Malawi Energy Regulatory Authority (MERA)
4. **Mozambique** - National Electricity Advisory Council (CNELEC)
5. **Namibia** - Electricity Control Board (ECB)
6. **South Africa** - National Energy Regulator of South Africa (NERSA)
7. **Swaziland** – Swaziland Energy Regulatory Authority (SERA)
8. **Tanzania** - Energy & Water Utilities Regulatory Authority (EWURA)
9. **Zambia** - Energy Regulation Board (ERB)
10. **Zimbabwe** - Zimbabwe Energy Regulatory Authority (ZERA)

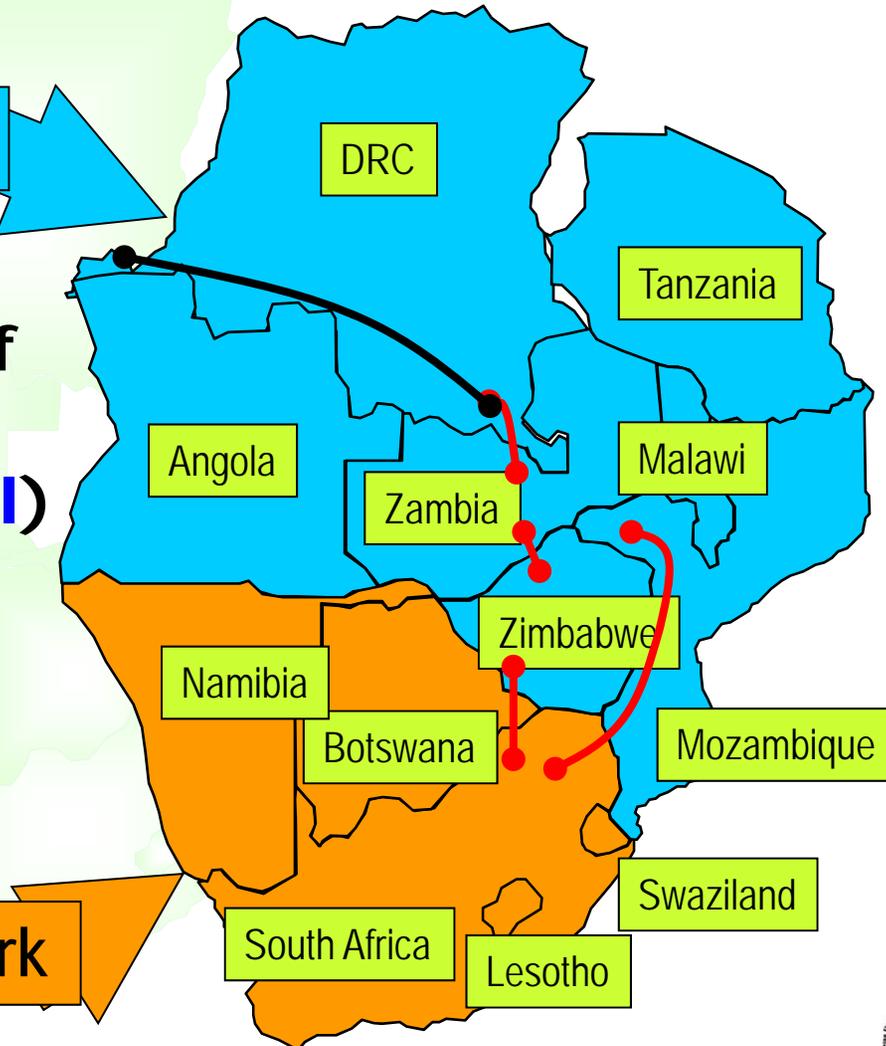
Background (5)

Historic Electricity Development

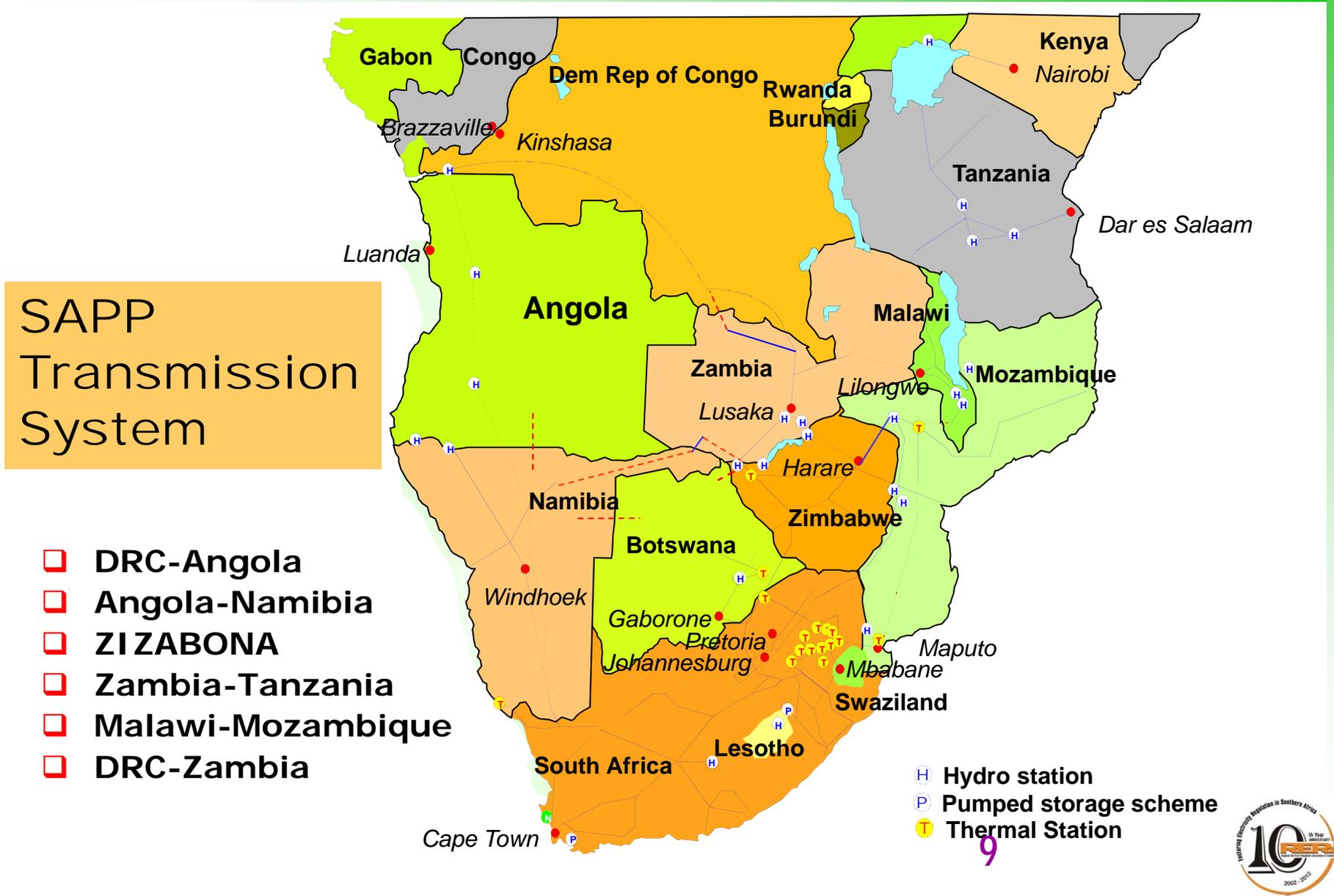
Hydro Northern Network

The interconnection of the northern (**hydro**) and southern (**thermal**) networks created a platform for **regional trade** and **cooperation**

Thermal Southern Network

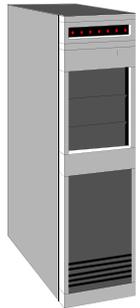


Background (6)



Background (7)

Day Ahead Market (DAM) System



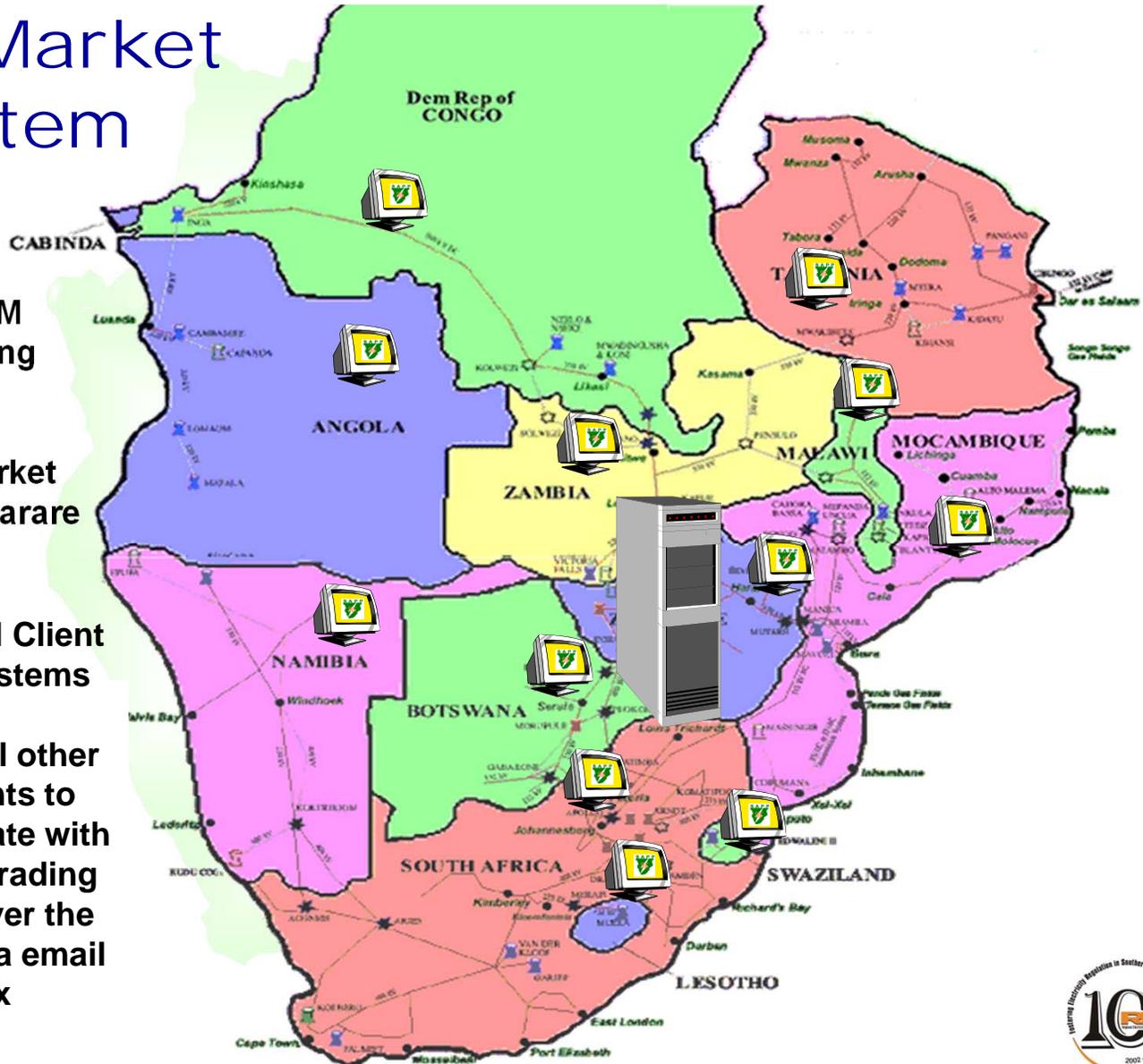
**SAPP DAM
Main Trading
System**

-
**Used by Market
Operator in Harare**



**SAPP DAM Client
Server Systems**

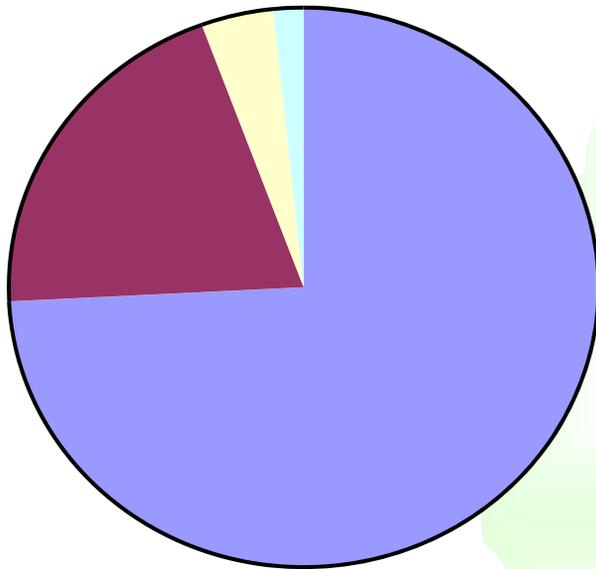
-
**Used by all other
participants to
communicate with
the Main Trading
System over the
internet, via email
or fax**



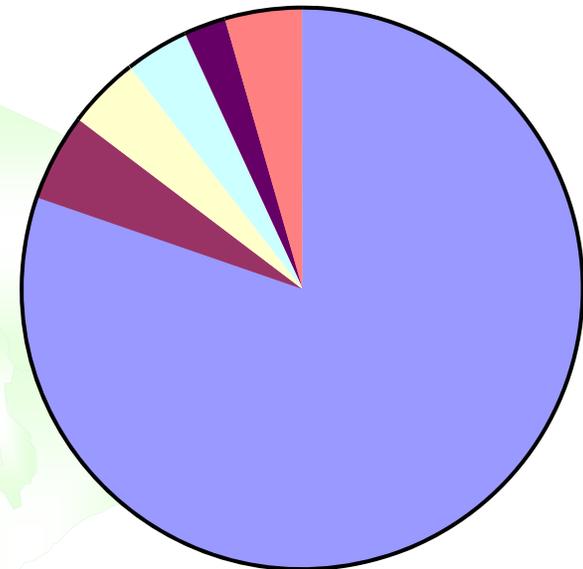
Electricity Supply & Demand

Electricity Supply & Demand (1)

Share of Generation Mix & Contribution



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

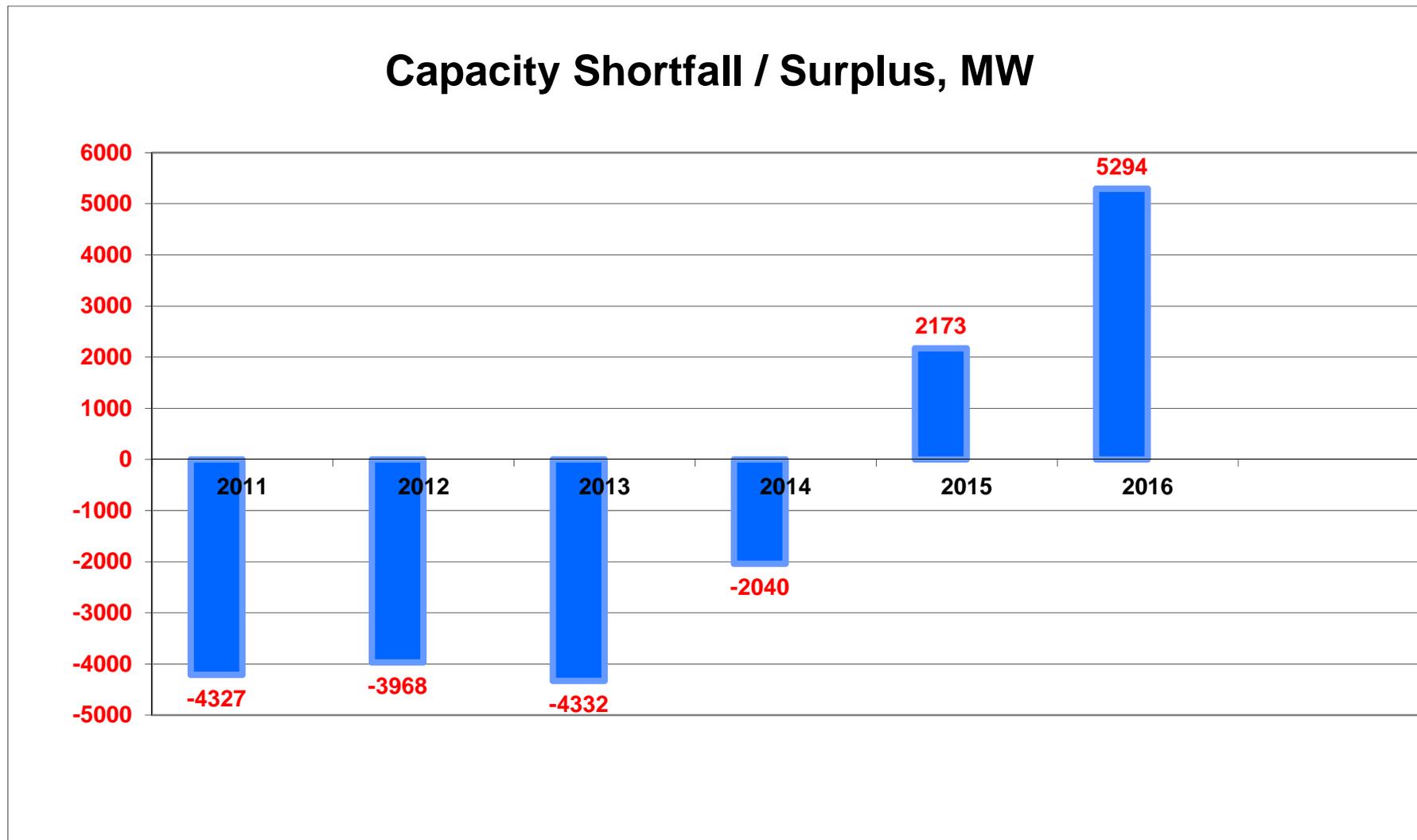


- 80.4% South Africa
- 5.0% Mozambique
- 4.1% Zimbabwe
- 3.6% Zambia
- 2.6% DRC
- 4.4% Rest

Electricity Supply & Demand (2)

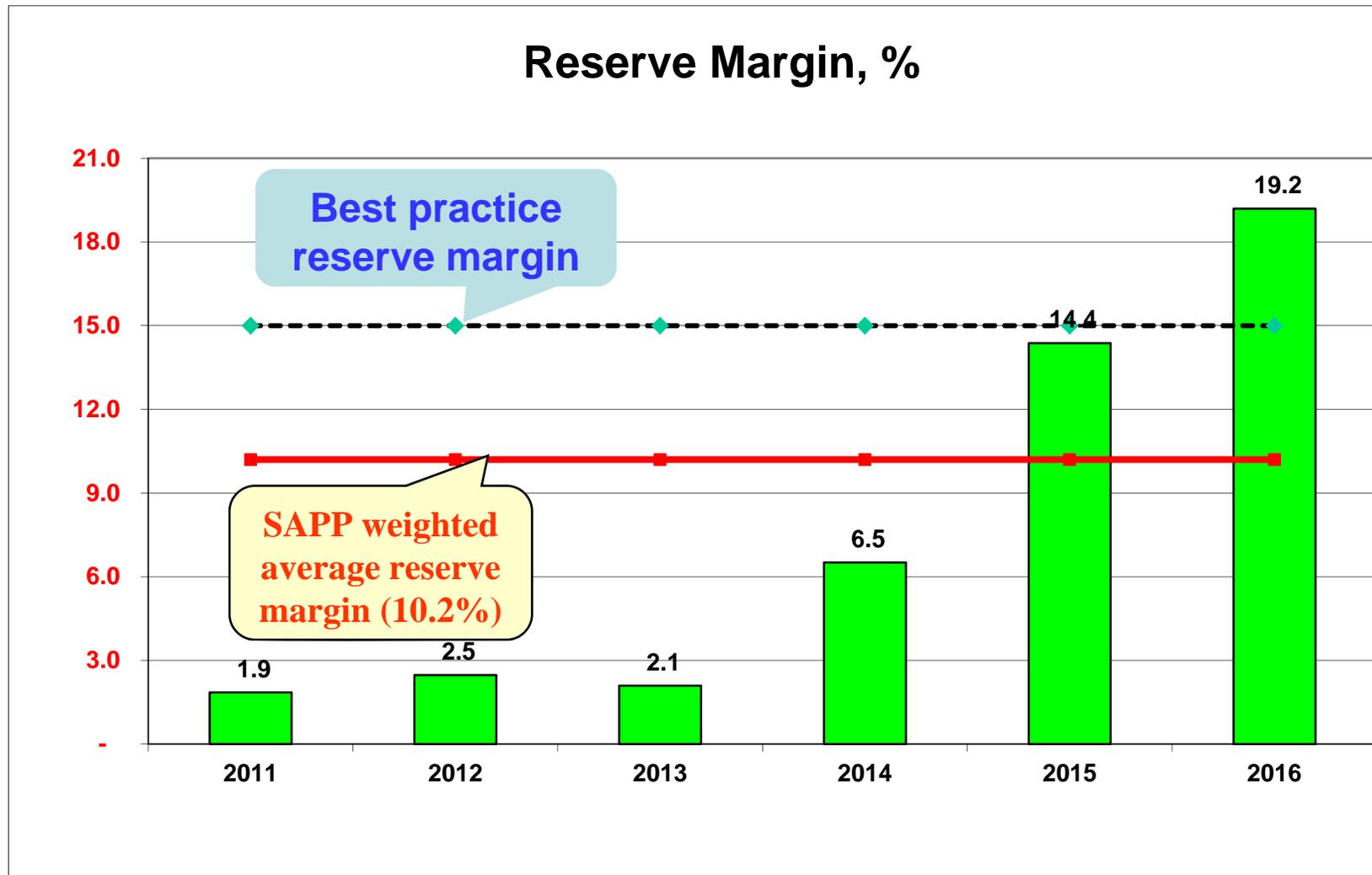
No.	Country	Utility	Installed Capacity [MW] As at Aug 2012	Available Capacity [MW] Aug 2012	2012 Peak Demand Forecast [MW]	2012 Demand Forecast with reserve	Surplus / Short Fall
1	Angola	ENE	1,507	1,310	1,320		
2	Botswana	BPC	352	322	587		
3	DRC	SNEL	2,442	1,170	1,351		
4	Lesotho	LEC	72	72	132		
5	Malawi	ESCOM	287	287	394		
6	Mozambique	EDM	233	204	630		
7		HCB	2,075	2,075	-		
8	Namibia	NamPower	393	360	620		
9	South Africa	Eskom	44,170	41,074	40,095		
10	Swaziland	SEC	70	70	245		
11	Tanzania	TANESCO	1380	1,143	1,097		
12	Zambia	ZESCO	1,818	1,798	1,301		
13	Zambia	CEC			748		
14	Zambia	LHPC	52	47	49		
15	Zimbabwe	ZESA	2,045	1,690	2,201		
	TOTAL SAPP		56,896	51,622	50,770	55,949	(4,327)

Electricity Supply & Demand (3)



Generation Capacity shortfalls up to 2015

Electricity Supply & Demand (4)



Tight Reserve Margin Position for SAPP Members

Electricity Supply & Demand (5)

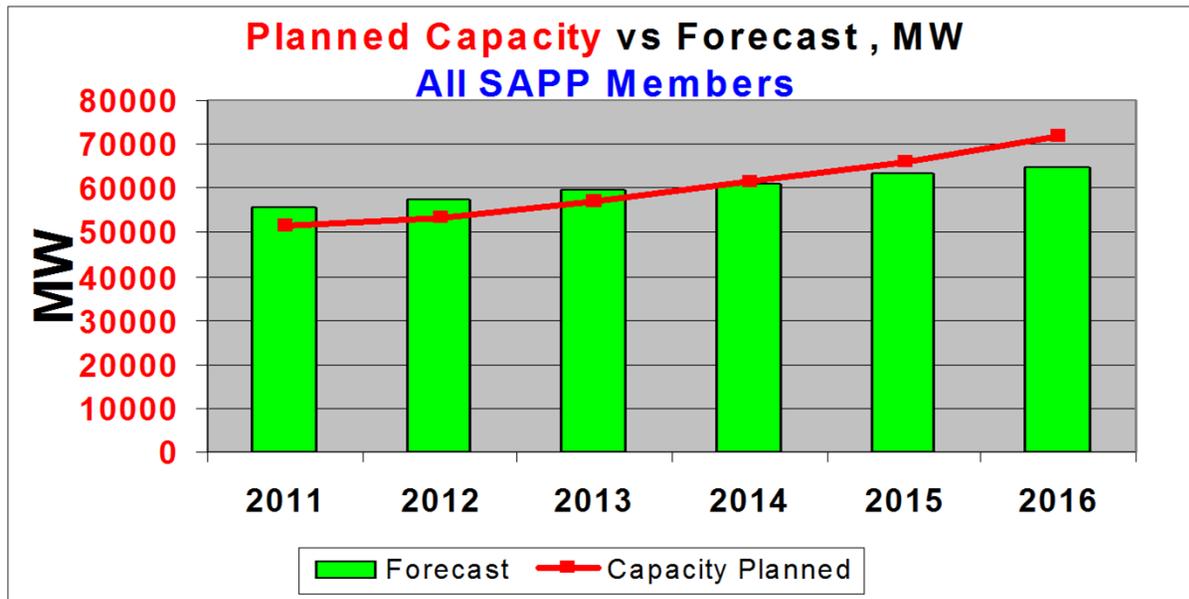
Some challenges

- ❑ **Economic Growth** of more than **5%** in most countries resulting in unprecedented growth in electricity **consumption** and **demand** averaging **3%** per annum.
- ❑ In the last **5 years** demand in the SAPP increased by **15%** which is equivalent to **5,200 MW**.
- ❑ No corresponding **investments** in generation and transmission infrastructure, resulting in the current **supply deficit** that the region is experiencing.
- ❑ The **challenge** was identified and communicated but not **adequately mitigated**.

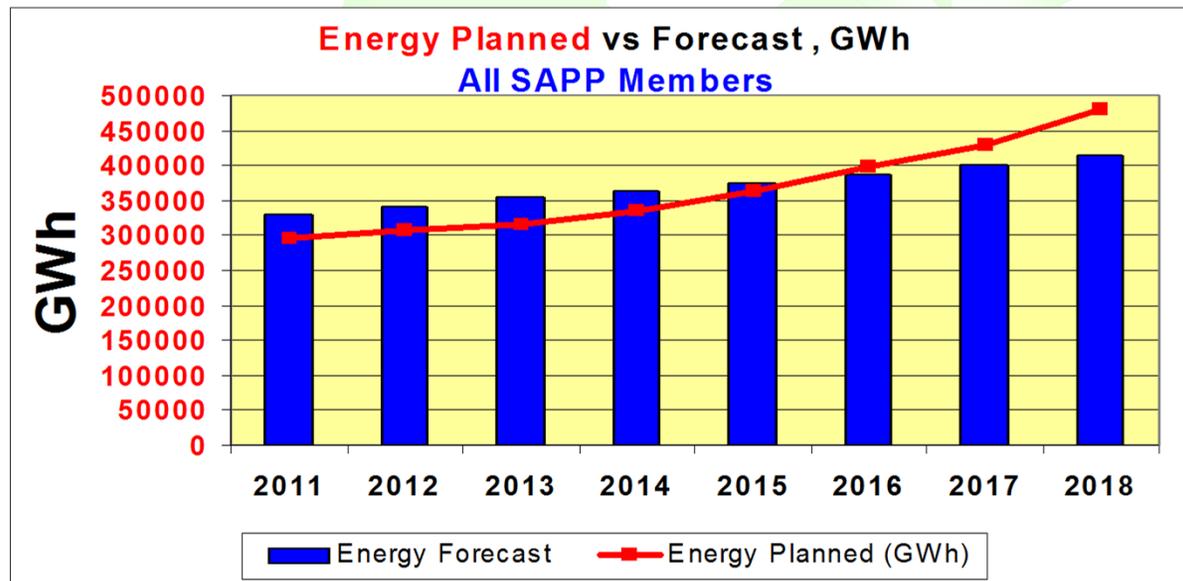
Electricity Supply & Demand (6)

No	Country	NEW GENERATION CAPACITY, MW					
		2012	2013	2014	2015	2016	TOTAL
1	Angola	310.6	50	595	900	2000	3,856
2	Botswana	150	450	-	-	300	900
3	DRC	120	-	-	580	-	700
4	Lesotho	-	-	25	300	-	325
5	Malawi	-	64	-	-	300	364
6	Mozambique	100	-	-	450	300	850
7	Namibia	92	60	-	-	-	152
8	RSA	303	923	3,105	2,543	1,322	8,196
9	Swaziland	-	-	-	-	-	-
10	Tanzania	100	120	210	810	610	1,850
11	Zambia	56	180	315	600	374	1,525
12	Zimbabwe	-	-	330	1,260	300	1,890
TOTAL		1,232	1,847	4,580	7,443	5,506	20,608

Electricity Supply & Demand (7)



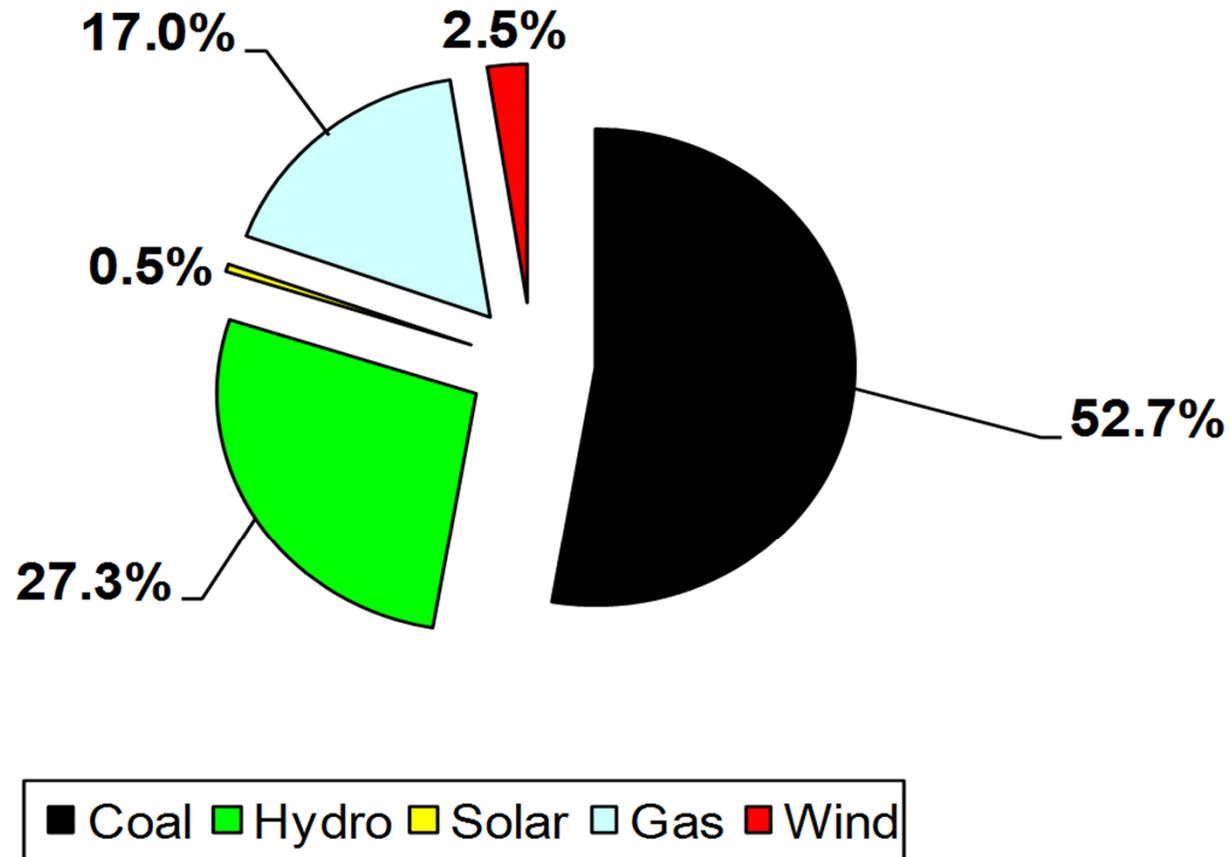
2015
Critical
For
Capacity



2016
Critical
For
Energy

Electricity Supply & Demand (8)

MW Installed Capacity by Technology



Introduction of Renewable Energy

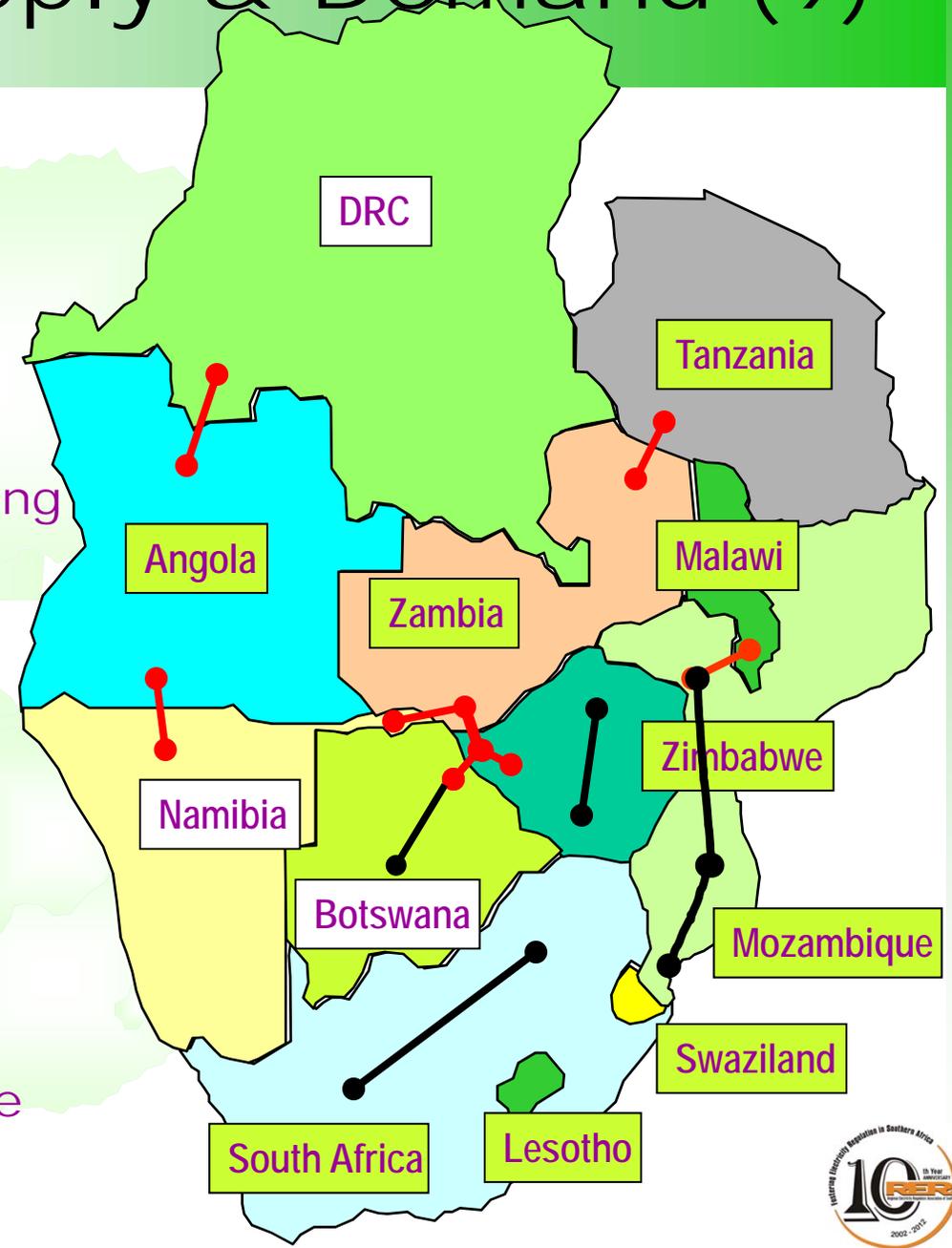
19 (3% from renewable energy in 5 year period)



Electricity Supply & Demand (9)

Transmission Projects
USD 5.6 billion

- 2015: Mozambique- Malawi
- 2015: RSA Strengthening
- 2015: Botswana Strengthening
- 2015: Central Transmission Corridor (Zimbabwe)
- 2016: ZIZABONA
- 2016: Zambia-Tanzania
- 2016: DRC-Angola
- 2017: Mozambique Backbone
- 2017: Namibia - Angola

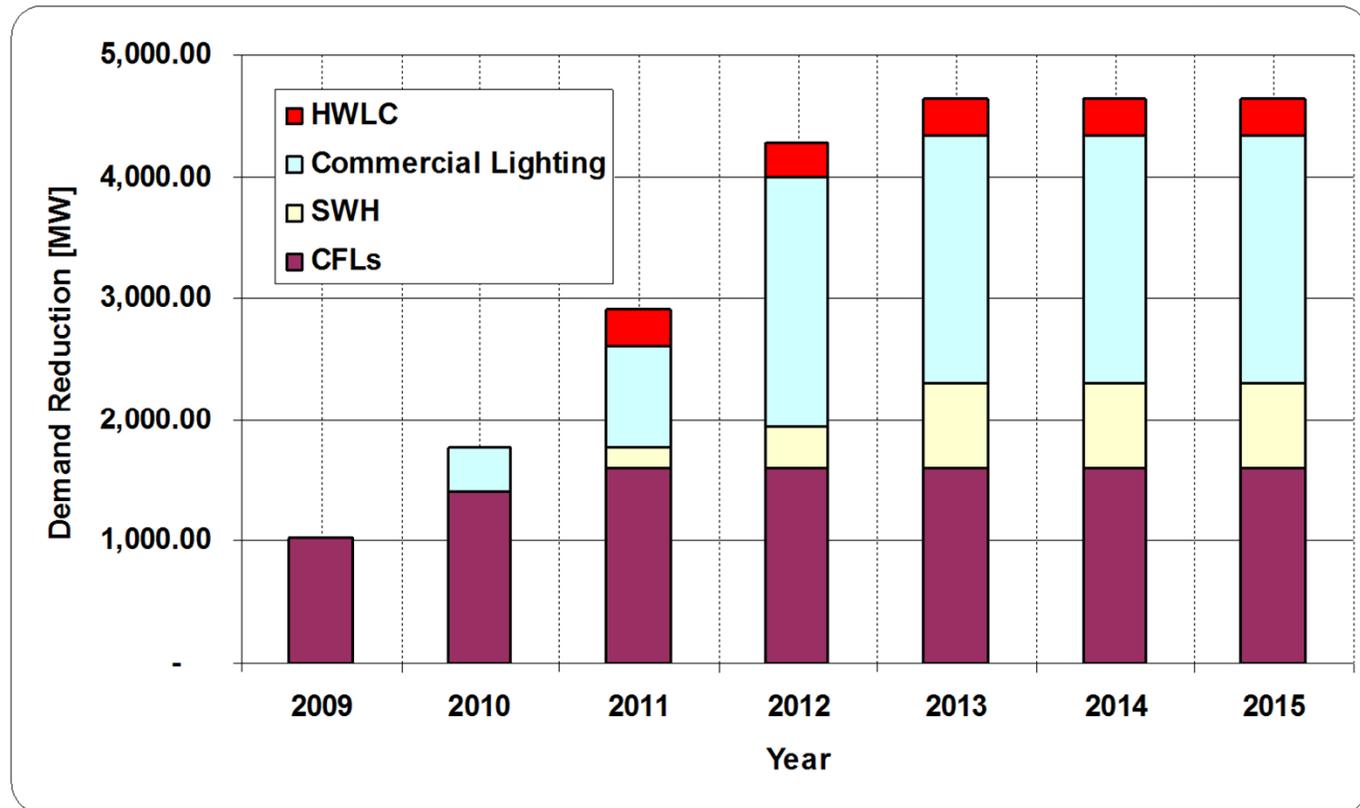


Energy Efficiency



Energy Efficiency (1)

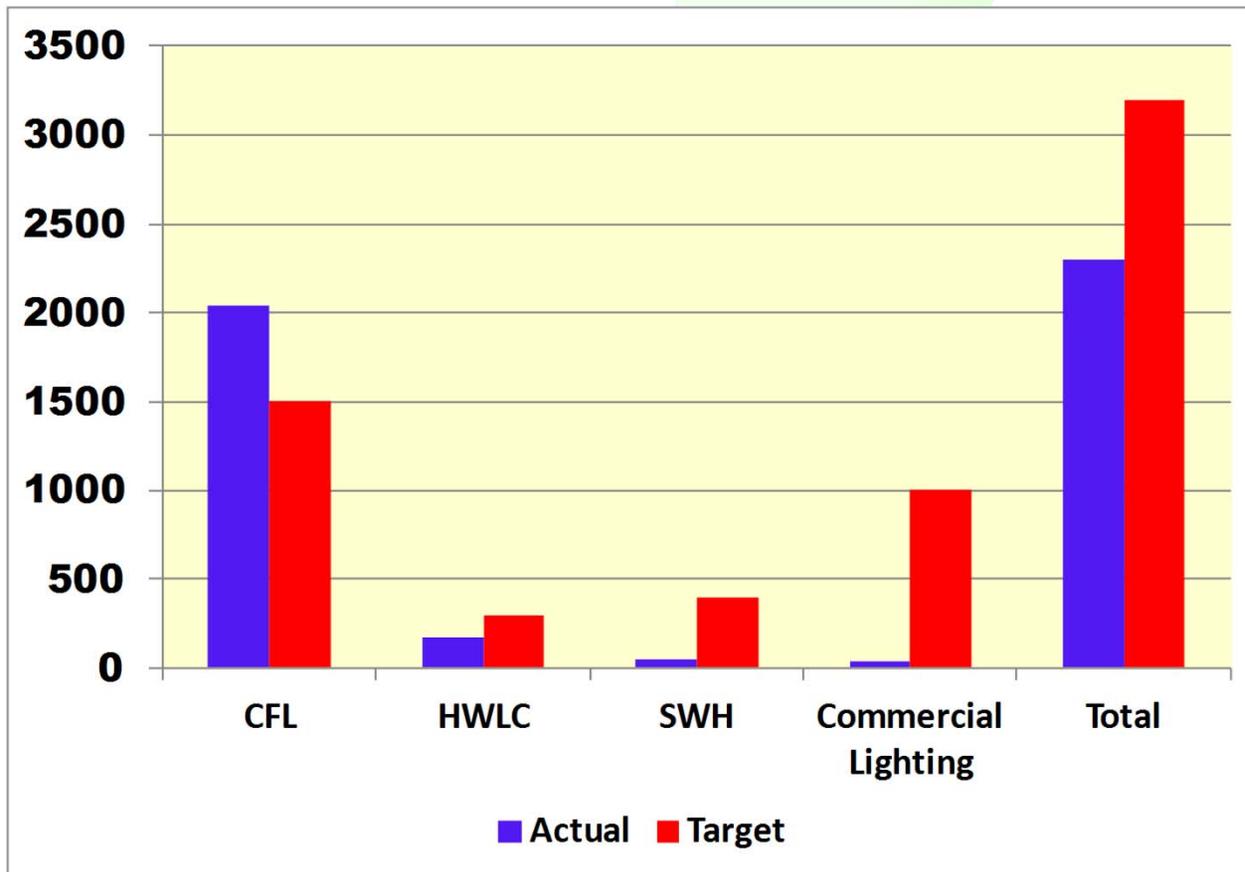
SAPP DSM Virtual Power Station



- Four technologies targeted:
 - i. Compact florescent lamps (CFLs)
 - ii. Solar Water Heaters (SWH)
 - iii. Hot Water Load Control (HWLC), and
 - iv. Commercial Lighting

Energy Efficiency (2)

2012 Actual vs. Target



CFL = 2045 MW
HWLC = 169 MW
SWH = 48.4 MW
CL = 42 MW

CFL = 136%
HWLC = 56%
SWH = 12%
CL = 4%

2,305 MW installed vs. 3,200 MW target (72%)

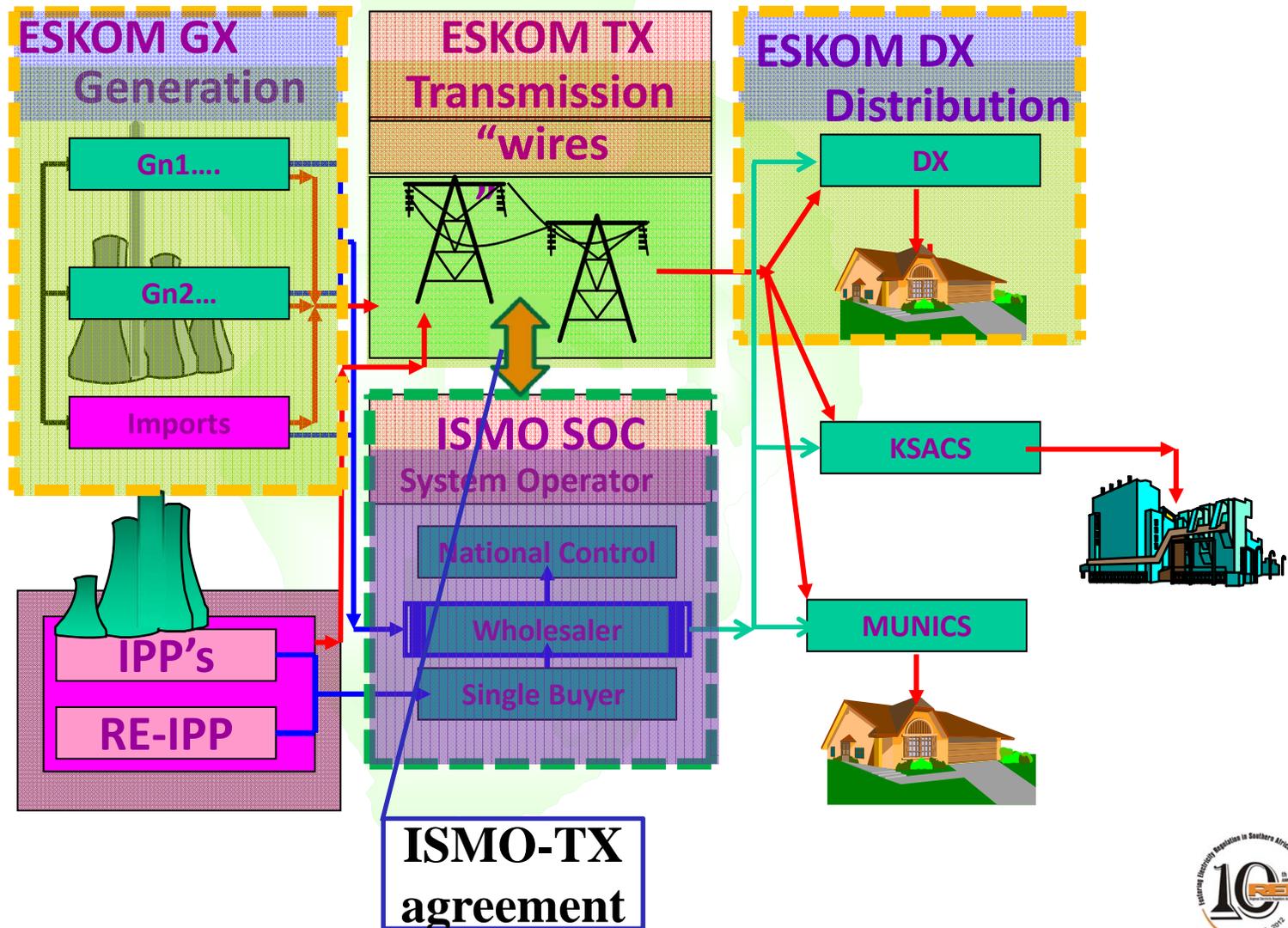
Policies & Incentives



Policies & Incentives (1)

Some policy initiatives to reform the ESI

An example of on-going discussions in South Africa



Policies & Incentives (2)

- ❑ **Incentives are varied across the region and include:**
 - **Fiscal incentives (tax exemption & rebates)**
 - **Subsidies (capital, interest rates & project preparation)**
 - **Feed-in tariffs**
 - **Demand side market participation**

Other RE Efforts



Other RE Efforts

- With support from **TRADE HUB** and funding from the **USAID**, the following 5 training courses have been carried out in 2012:
 1. Renewable Energy Regulation (March, 2012 in Lusaka, Zambia)
 2. Regulatory Commissioners Orientation Programme (May 2012 in Swakopmund, Namibia)
 3. Regulation for Practitioners (July 2012 in Swakopmund, Namibia)
 4. Renewable Energy Finance (September 2012 in Centurion, South Africa)
 5. Renewable Energy Policy (December 2012 in Johannesburg, South Africa)

- About 240 officials have been trained in 2012 on the 5 training courses.

Concluding Remarks



Concluding Remarks

- Electricity supply industry (ESI) in Southern Africa has evolved over a long period of time
- Electricity supply situation is very tight and likely to ease up in 2016 should all projects be implemented
- Some countries have started addressing the structural issues with a view to enhance the ESI performance and/or attract other players such as the private sector (through IPPs and/or PPPs)
- Critical roles of renewable energy and energy efficiency are recognised and being incorporated in the country and regional plans
- Opportunities for investments and work in the ESI in Southern Africa are vast and exciting

Thank You!

RERA Secretariat

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