

# **Southern African Power Pool**

**Presentation by  
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# Presentation Outline

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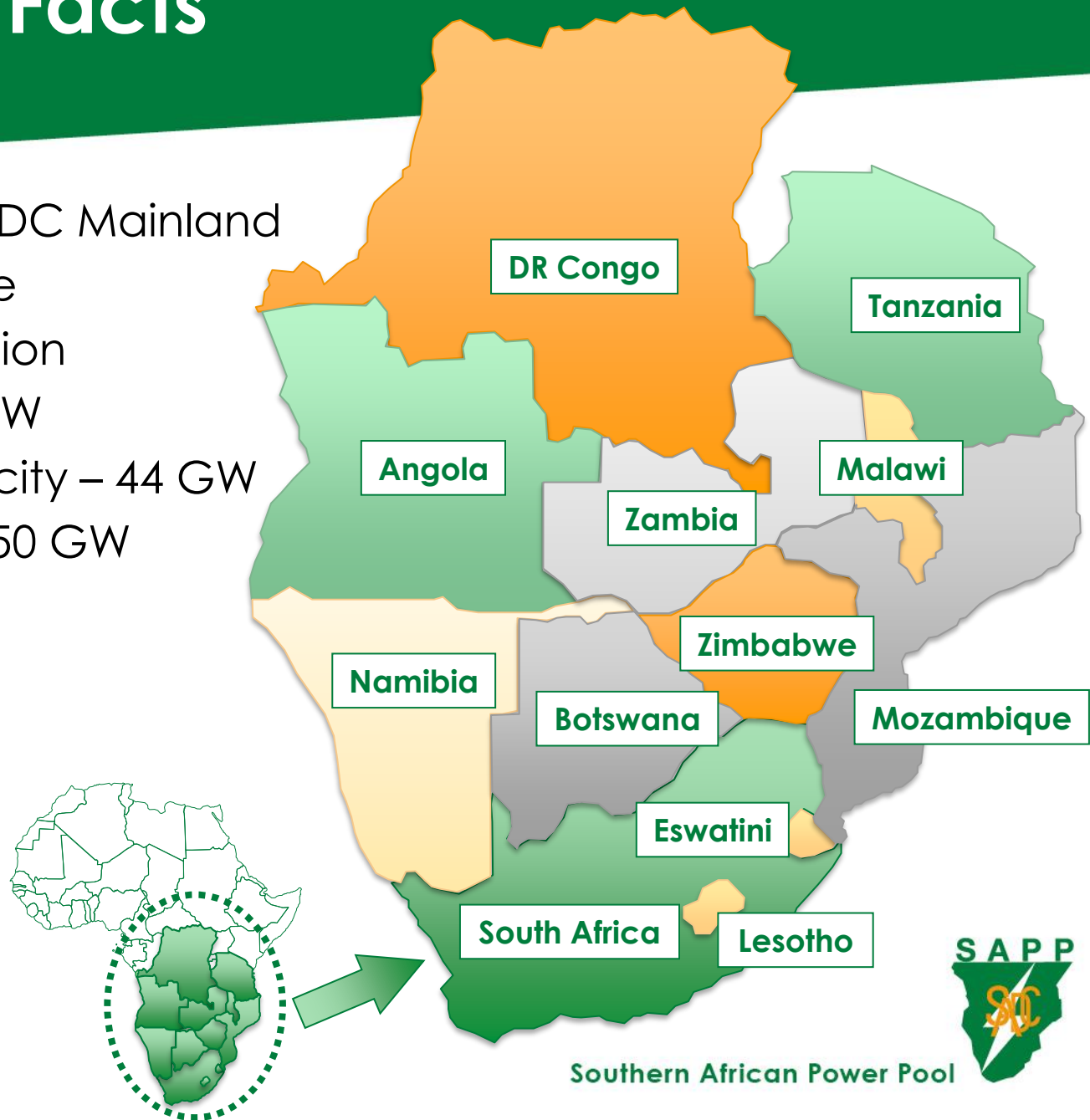


Southern African Power Pool



# SAPP Key Facts

- 12 Countries – SADC Mainland
- 350 Million people
- Installed Generation Capacity – 69 GW
- Operating Capacity – 44 GW
- Peak Demand – 50 GW



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# Creation and objectives

- ❑ Created in **1995** at SADC summit; member govts., except Mauritius, signed **IGMOU** which was revised in 2006
- ❑ **Key objectives:**
  - Participants to coordinate and cooperate in the planning and operation of their power systems to minimize costs while maintaining reliability, autonomy and self sufficiency to the degree they desire
  - fully recover their costs and share equitably in the resulting benefits, including reductions in required generating capacity, reductions in fuel costs and improved use of hydro-electric energy; and
  - coordinate and cooperate in the planning, development and operation of a regional electricity market based on the requirements of SADC Members States.

# Vision and Mission

## The SAPP Vision

- To be a fully integrated, competitive energy market and a provider of sustainable energy solutions for the SADC region and beyond

## SAPP Mission

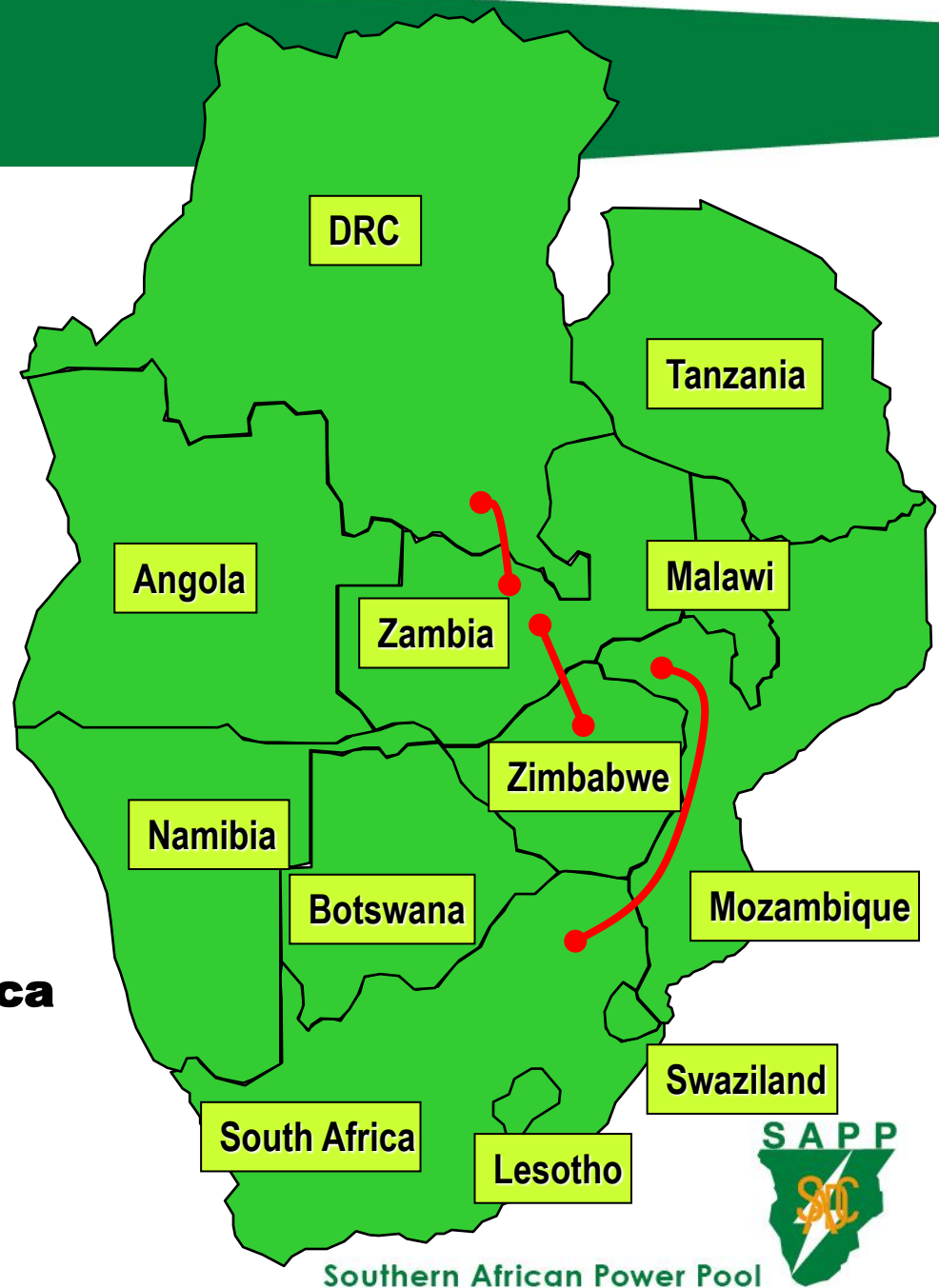
- To provide energy associated services in the region and beyond

# Historic

**1950s: DRC – Zambia**  
**220kV AC into Zambia**

**1960s: Zambia – Zimbabwe**  
**330 kV at Kariba Dam**  
**(Zambezi River)**

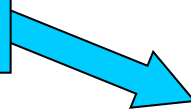
**1975: Mozambique – South Africa**  
**533 kV HVDC – 1420 km**



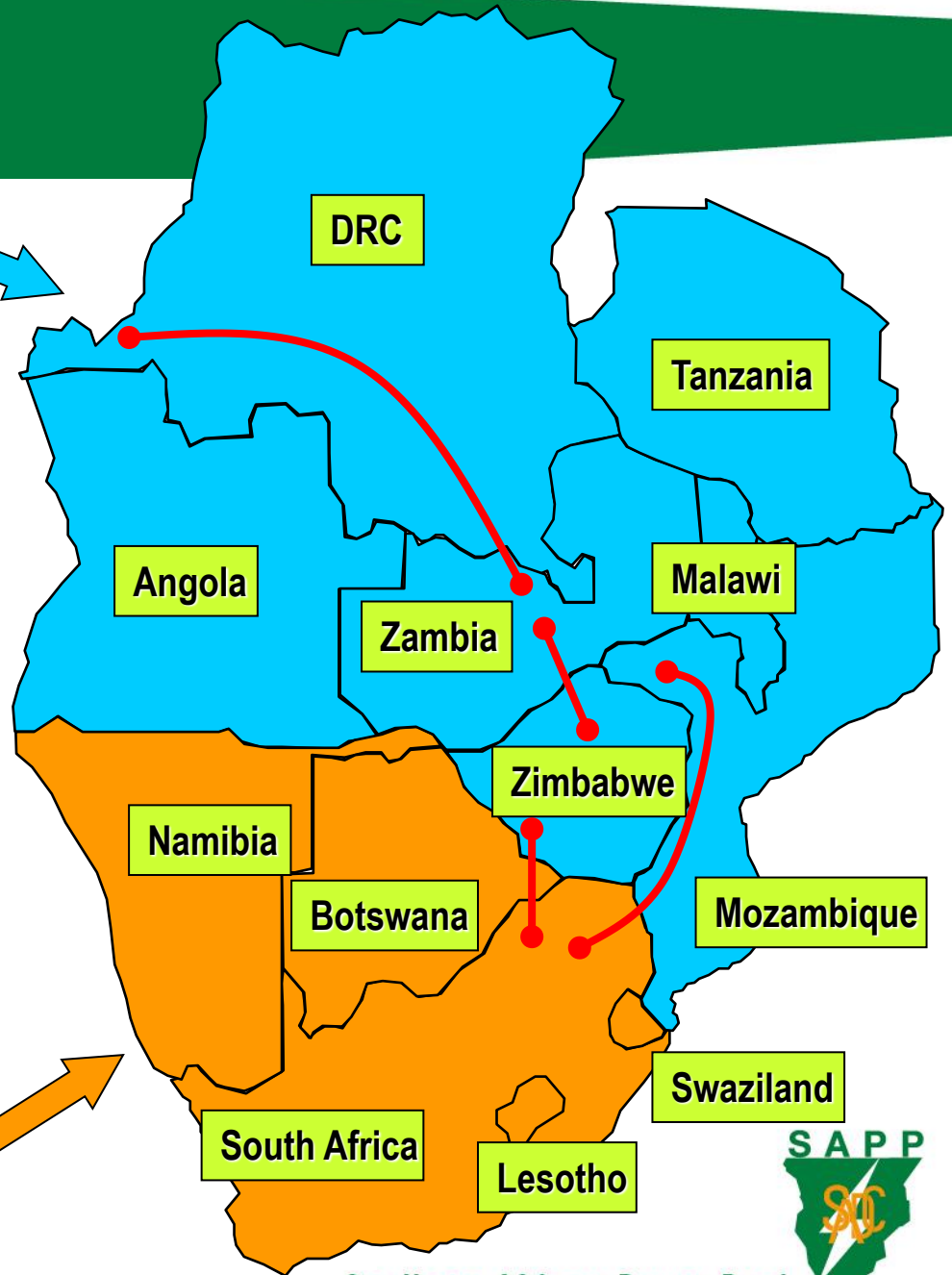
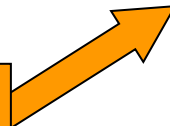


# Historic

Hydro Northern Network



Thermal Southern Network

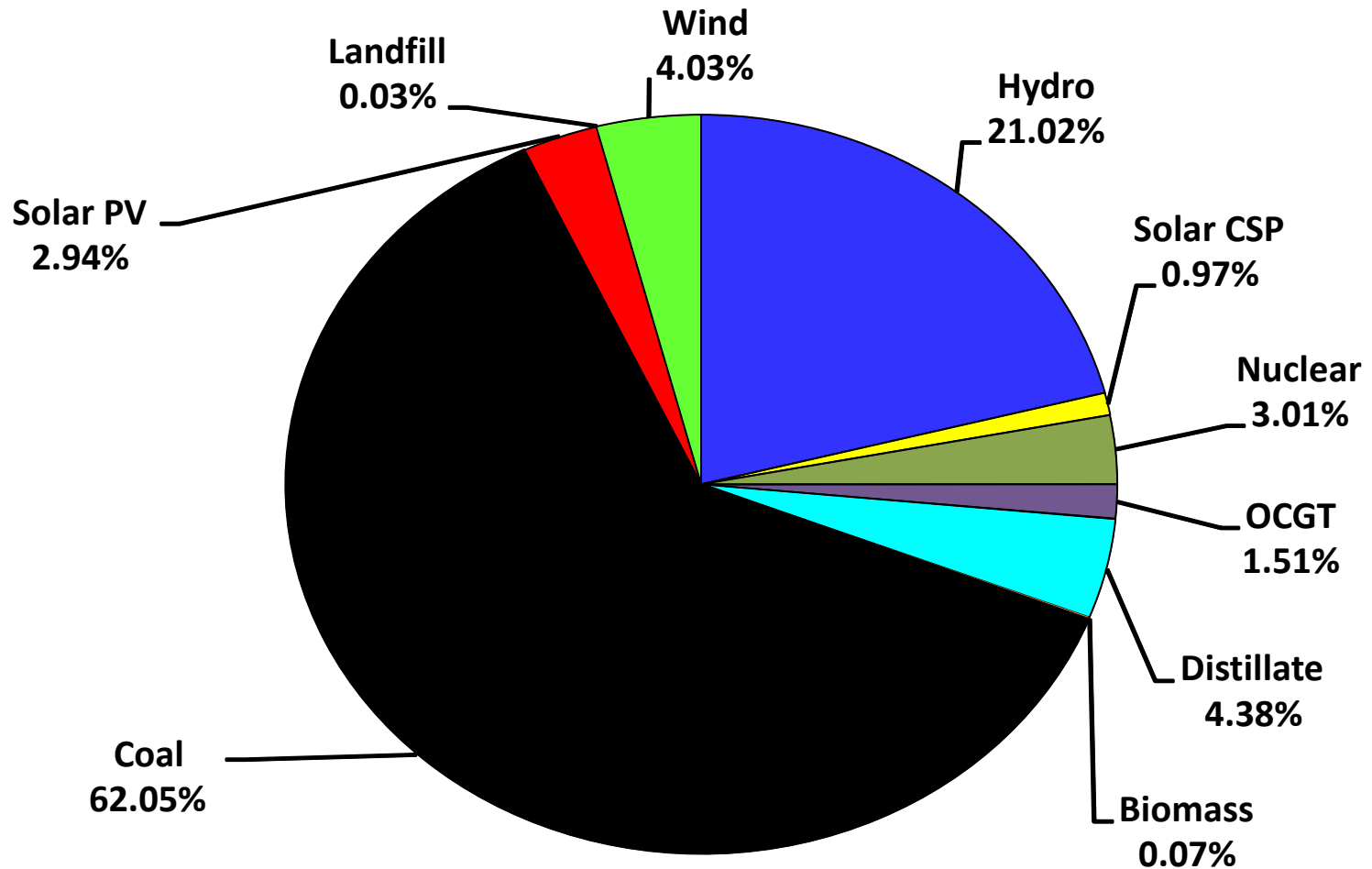


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# Generation Mix in SAPP

## SAPP Installed Generation Capacity

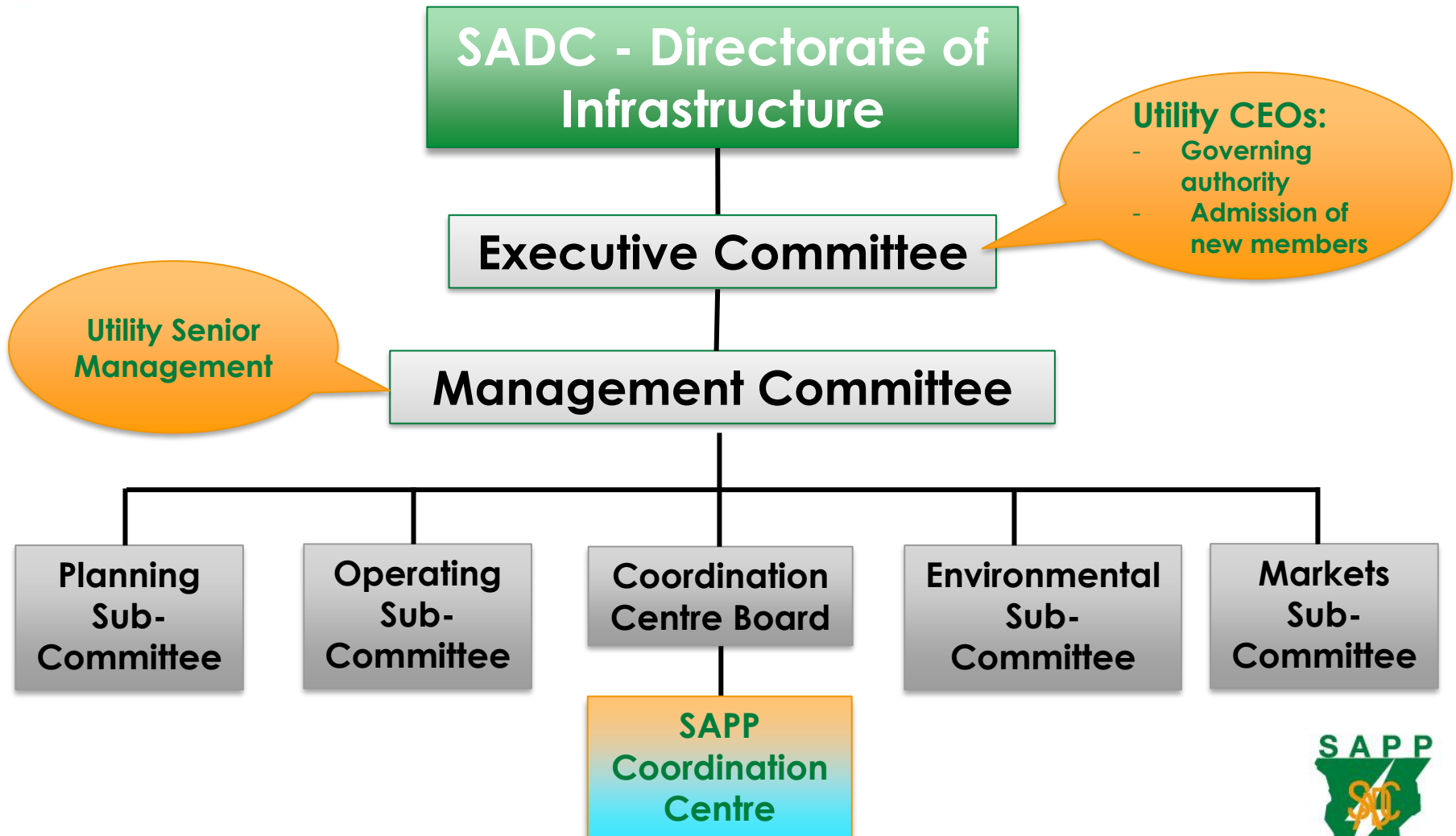




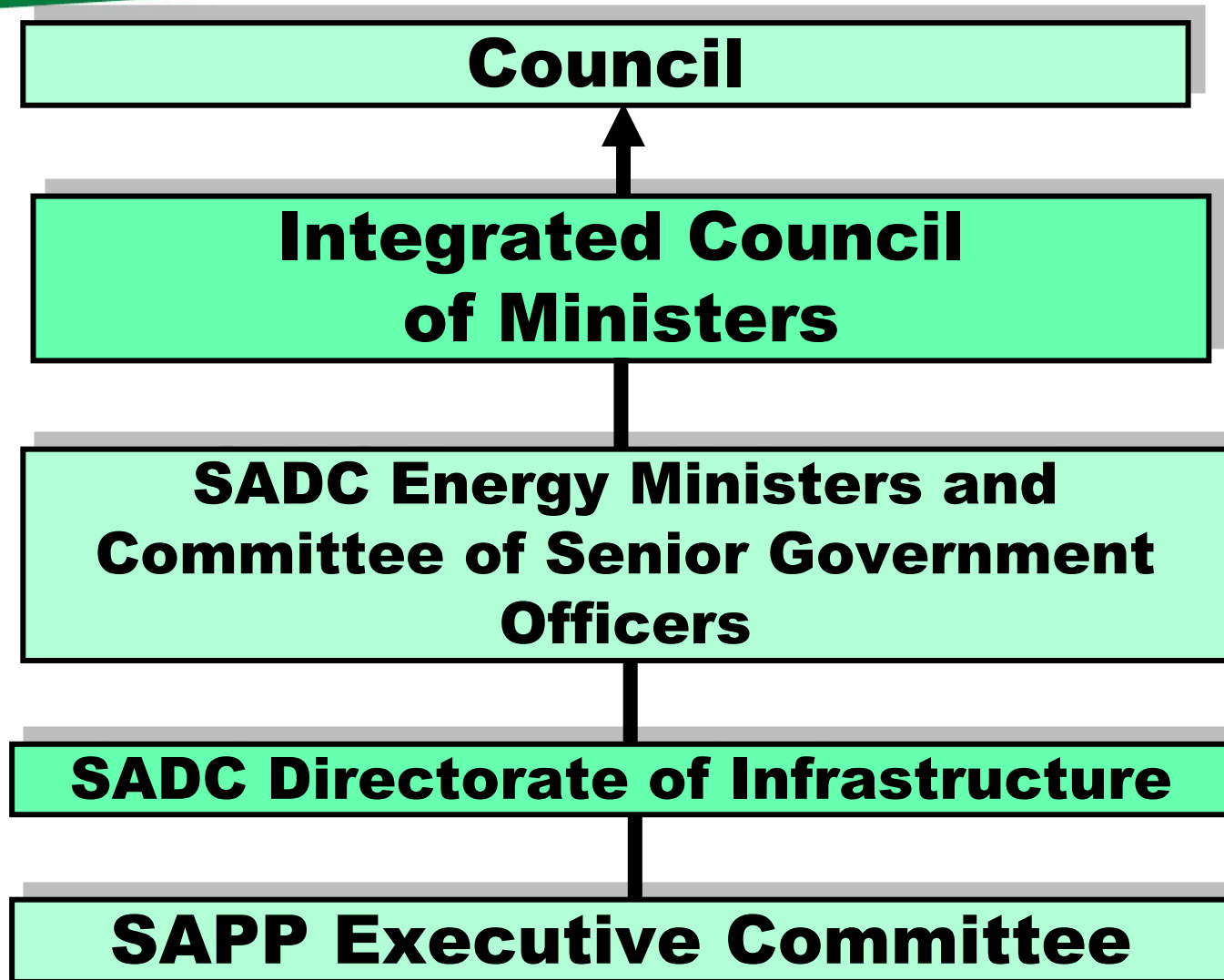
# SAPP Governing Documents

- ❑ Inter-Governmental MOU
  - Established SAPP
  - Signed by SADC Member Countries
- ❑ Inter-Utility MOU
  - Established the Management of SAPP
  - Signed by the SAPP Members (Utilities)
- ❑ Agreement Between Operating Members
  - Sets requirements for interconnected operations
  - Signed by Operating Members (Interconnected Utilities)
- ❑ Operating Guidelines
  - Guidelines for system operations
- ❑ Market Guidelines and Market Book of Rules
  - Govern operations of electricity trading
- ❑ Coordination Centre Constitution
  - Governs operations of the Coordination Centre

# Governance Structure



# Governance Structure to SADC



# SAPP Membership Categories

- SAPP reviewed membership criteria and guidelines to allow more players including private participation in the markets in response to directive by the SADC Ministers of Energy. The following categories have been agreed upon:
  1. **National Power Utility Member** – meant to recognize members entrusted by Governments for SAPP ownership
  2. **Operating Member** – meant for members whose operations have significant impact to the operations of the SAPP Grid
  3. **Market Participant** – meant for members whose main objective is to trade on the SAPP markets

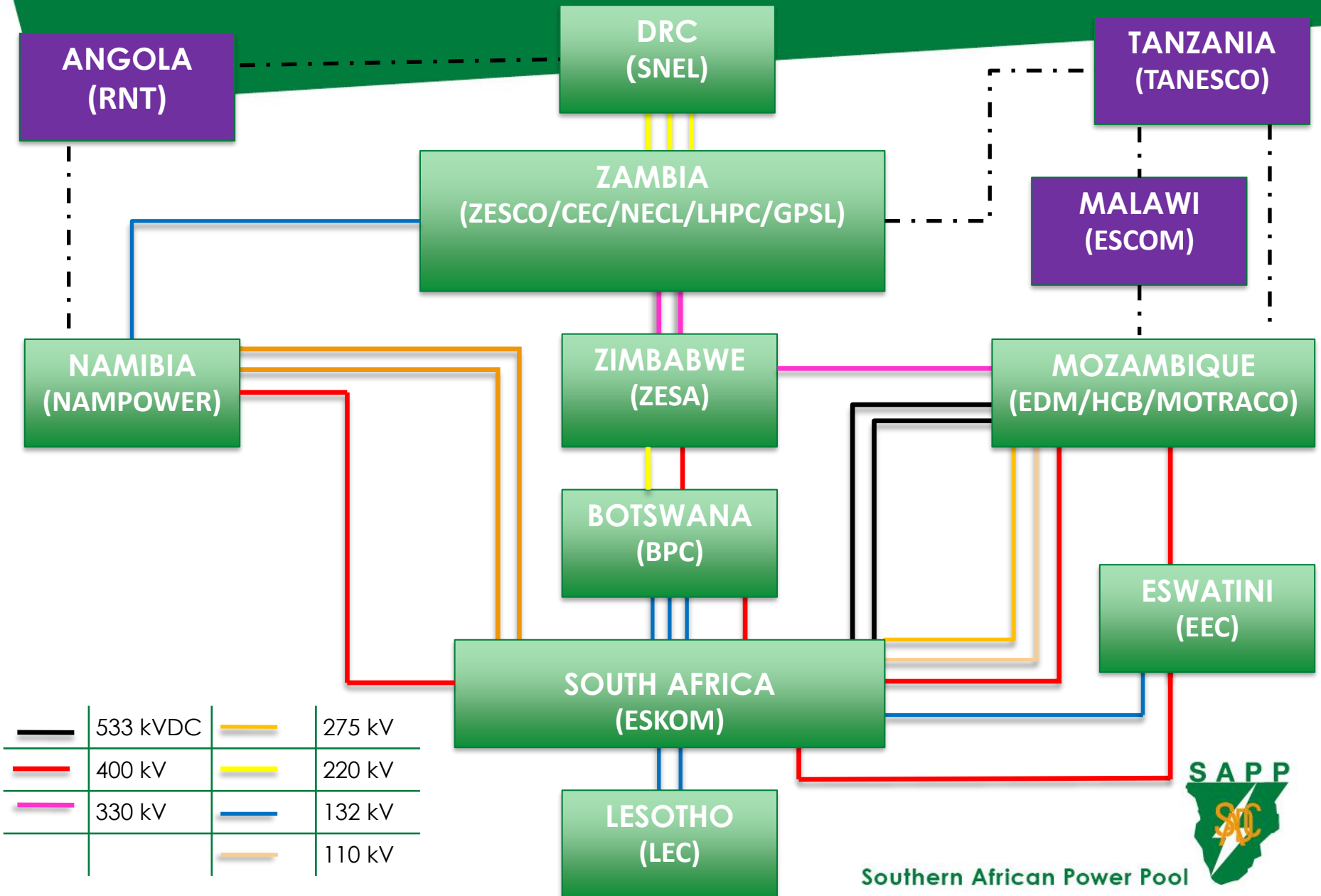
# Current SAPP Membership

No.	Full Name of Power Utility	Type	Abbreviation	Country
National Power Utilities				
1	Botswana Power Corporation	NPU	BPC	Botswana
2	Electricidade de Mozambique	NPU	EDM	Mozambique
3	Eswatini Electricity Company	NPU	EEC	Eswatini
4	Electricity Supply Corporation of Malawi	NPU	ESCOM	Malawi
5	Eskom	NPU	Eskom	South Africa
6	Lesotho Electricity Corporation	NPU	LEC	Lesotho
7	Nam Power	NPU	Nam Power	Namibia
8	Rede Nacional de Transporte de Electricidade	NPU	RNT	Angola
9	Societe Nationale d'Electricite	NPU	SNEL	DRC
10	Tanzania Electricity Supply Company Ltd	NPU	TANESCO	Tanzania
11	ZESCO Limited	NPU	ZESCO	Zambia
12	Zimbabwe Electricity Supply Authority	NPU	ZESA	Zimbabwe
Operating Member				
13	Copperbelt Energy Cooperation	ITC	CEC	Zambia
14	Hidroelectrica de Cahora Bassa	IPP	HCB	Mozambique
15	Lunsemfwa Hydro Power Company	IPP	LHPC	Zambia
16	Mozambique Transmission Company	ITC	MOTRACO	Mozambique
17	Ndola Energy Corporation	IPP	Ndola	Zambia
Market Participant				
18	GreenCo Power Services Ltd	IPP	GreenCo	Zambia

**S A P P**

**NPU:** National Power Utility **ITC:** Independent Transmission Company  
**IPP:** Independent Power Producer

# The SAPP Interconnected Grid



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# SAPP Markets evolution

## PREVIOUSLY

- Bilateral contracts
- Short-Term Energy Market (STEM) – 2001
- Post STEM (Balancing Market) – 2002
- Day-Ahead Market (DAM) – 2009
- Post Day Ahead Market (PDAM) – 2013

## FUTURE ADDITIONS

- Ancillary Services Market
- Financial Markets
- Capacity Market

## CURRENT

- Bilateral contracts
- Day-Ahead Market (DAM) – 2009
- Forward Physical Markets (Month Ahead & Week Ahead) – 2016
- Intra Day Market (Hour Ahead) – 2016
- **Balancing Market – 2022**

MARKET  
EVOLUTION

SAPP has slowly evolved into a regional market

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# SAPP Markets Framework

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## TSOs

### FPM

Forward Physical Contracts

Weekly and monthly  
- auction trading -

Forwards

Week – Peak  
Week – Standard  
Week – Off-Peak

Monthly – Off-Peak  
Monthly – Standard  
Monthly – Peak

### DAM

Physical Contracts  
Market equilibrium  
one day ahead  
- auction trading -



### IDM

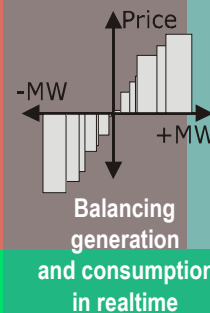
Physical contracts

Up to hour ahead

Continuous Trading

114,25 (50)  
114,00 (20)  
113,75 (60)  
113,50 (45)  
113,00 (25)  
112,75 (55)  
112,50 (40)  
112,25 (15)

Balancing Power  
@SAPP  
Regional market



System Operation  
Real-Time Operation

Services during the Real-Time-Operation:  
Controlling frequency and voltage etc.

## SAPP Settlement and financial management

Settlement of all physical contracts

Settlement of wheeling and losses

Market monitoring and reporting

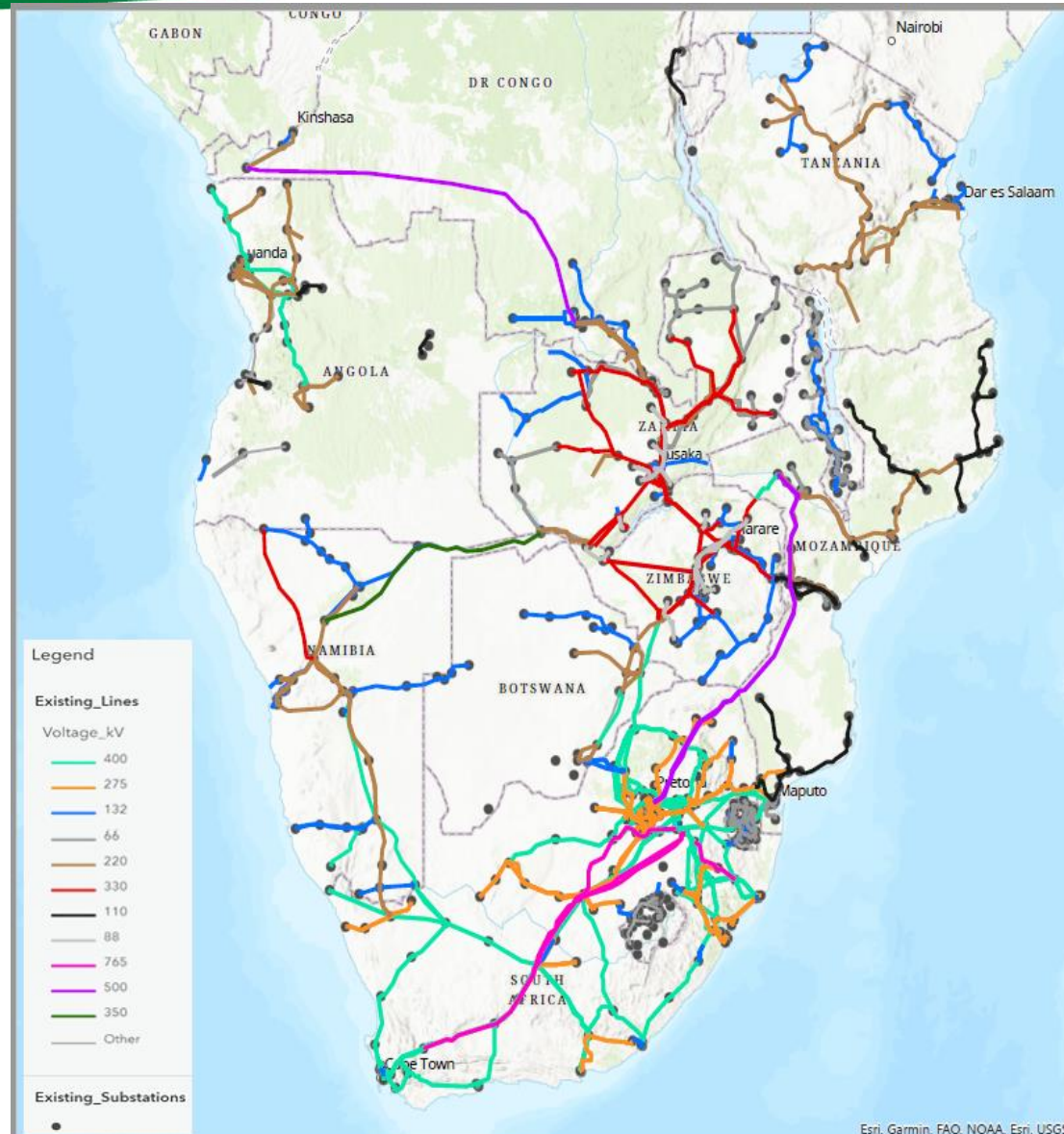
# Project Preparation

- The Project Advisory Unit (PAU) was established to focus on project preparation, analytical work and transaction advisory
- Unit is funded by the World Bank and Multi-Donor Trust Fund
- Project preparation studies also funded by other partners including AfDB, EU, KfW, SwedFund

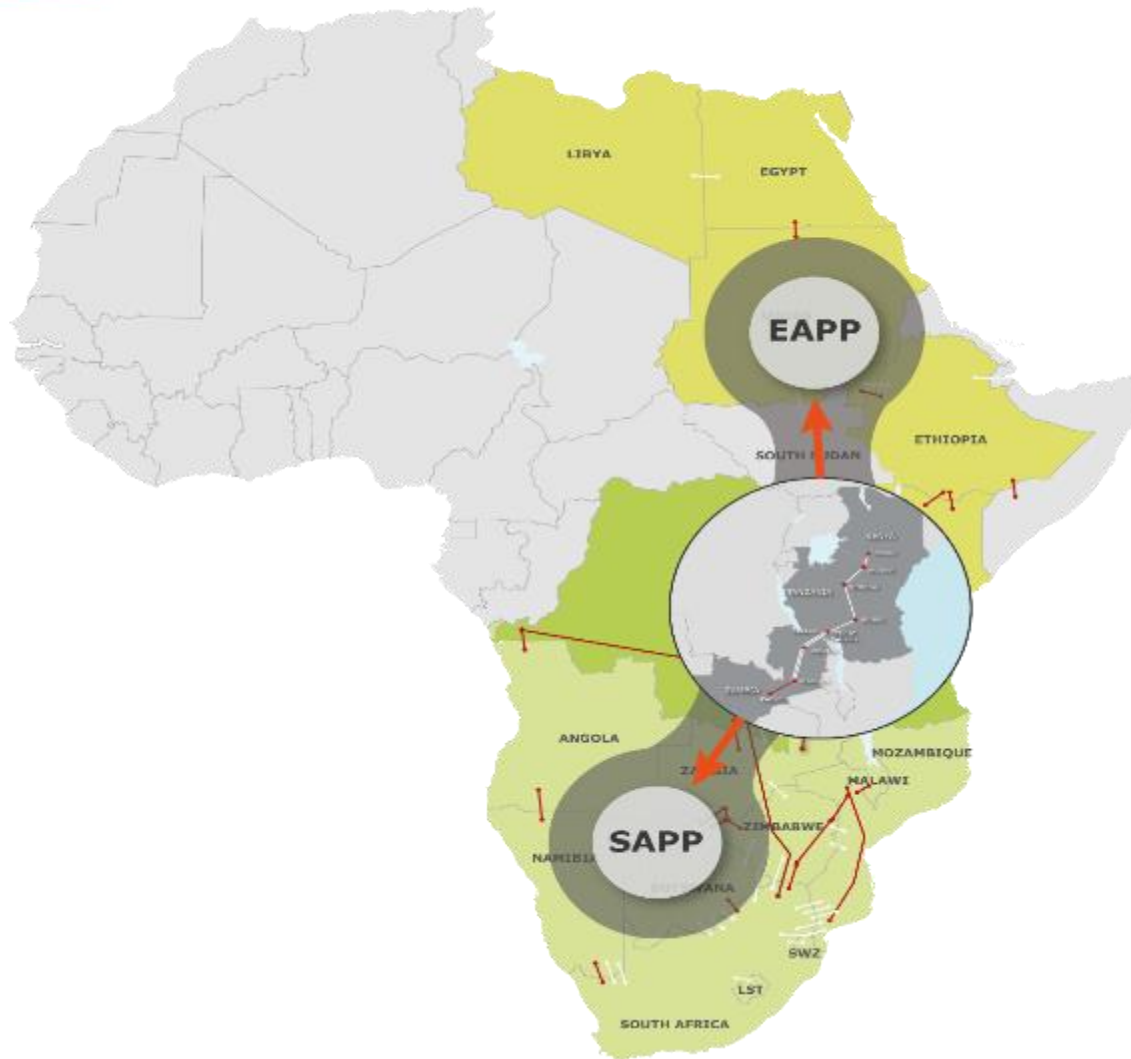
# SAPP Regional Transmission Projects

Categories of Transmission requirements are:

- ❑ **Category 1:** Projects to Interconnect Non – Operating Members (**Angola, Malawi, Tanzania**)
- ❑ **Category 2:** Projects to Relieve transmission Congestion (**both interconnectors and domestic transmission networks**)
- ❑ **Category 3:** Transmission Projects to move Power from new generating stations to load centres – **Pool Plan**



# Regional Transmission Integration



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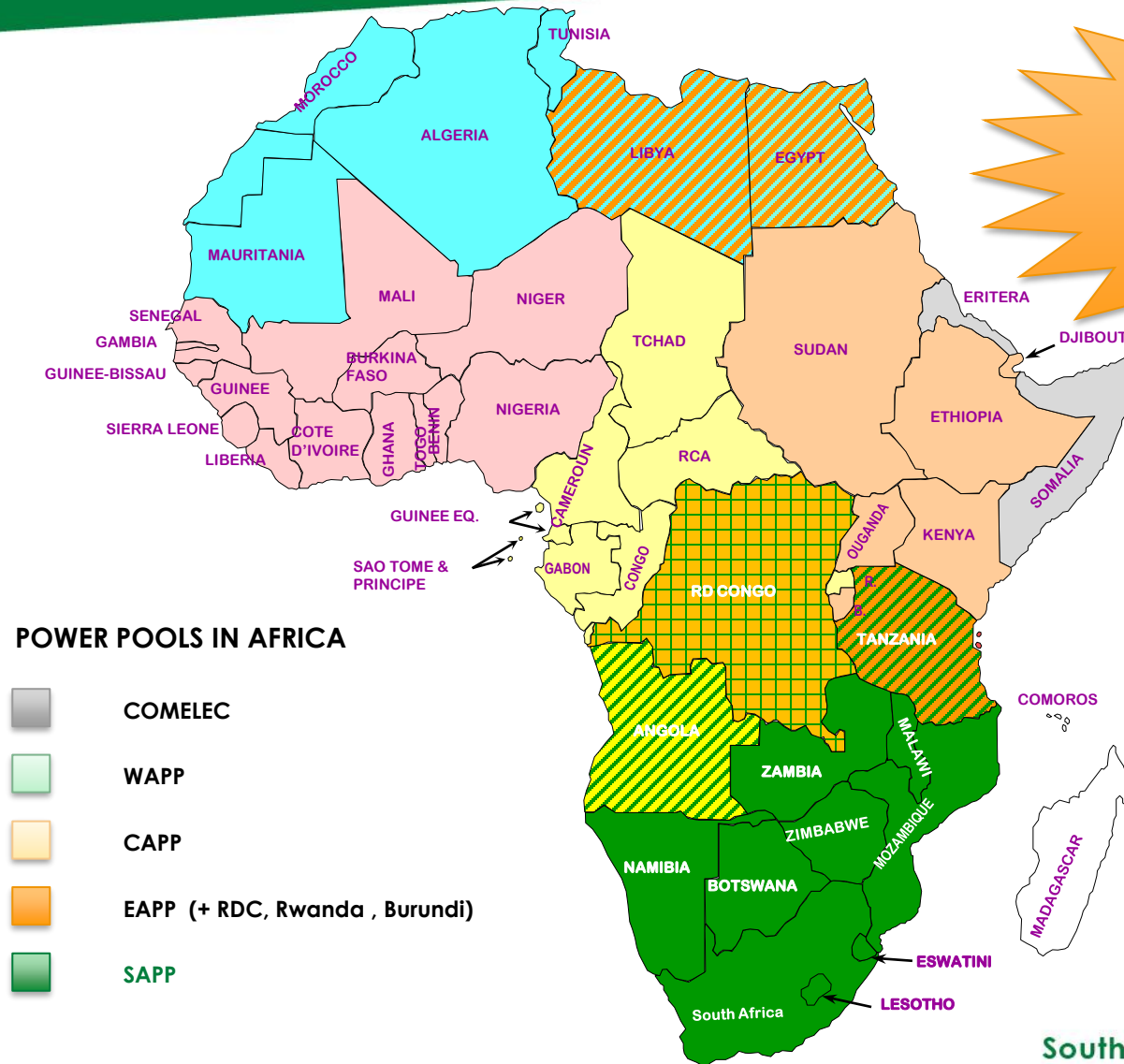


# Future Outlook

- **Achievement of adequate Transmission Infrastructure**
  - Completion of SAPP Regional Transmission Financing Facility Study
  - Improved Transmission Pricing Methodology
- **Increased electricity market liquidity:**
  - through addition of members
  - Efficient transmission capacity allocation
  - Improved trading portfolios
- **Improved system operations:**
  - Utilising the balancing market to reduce energy imbalances
  - Development of Ancillary Services Market
  - Reducing vandalism
  - Improved system performance
- **SAPP – EAPP Integration preparedness**
- **Be part of the African continental power integration**
  - Continental Transmission Master Plan – study ongoing
  - African Single Electricity Market – study ongoing

# Towards an African Single Electricity Market (AfSEM)

Continental  
Master Plan in  
progress under  
AUDA-NEPAD



Please note that RNT (Angola) is also a member of CAPP, SNEL (DRC) is also a member of CAPP and EAPP and TANESCO (Tanzania) is also a member of EAPP



# CONCLUSION

- i. SAPP is the oldest Power Pool in Africa and we believe the leading power pool in Africa
- ii. Electricity trading on the SAPP competitive market is gaining momentum
- iii. SAPP is exploring other aspects of improving electricity trading and financing regional projects
- iv. SAPP priority actions are guided by the identified 4 key areas:
  - 1. Increase electricity trading in the region – *Market Roadshows, introduce more portfolios, admit more members*
  - 2. Unlocking transmission constraints - *RTIFF*
  - 3. Addressing power generation deficit by including use of renewables
  - 4. Enhancing capacity in the power sector at policy and operation levels



**Thank you!**

