Africa GreenCo Overview

14 March 2017

AFRICA GREENCO

Africa Green **R**egional **E**nergy: **E**fficient, **N**ew and **C**reditworthy **O**fftaker

What is Africa GreenCo?

- An implementation tool for SDG7
- A catalyst to unlock private sector investment in renewable energy generation projects
- An efficient structure for the development community to enter into partnership and cooperation with Africa

Intermediary Creditworthy Offtaker

AND

Power Pool Participant (Trader)

- *Reduce transaction time and cost*
- *Make more projects bankable*
- *Improve project finance terms*
- *Increase financial capacity for utilities and sovereigns*
- *Access point for better risk management*

- *Grow competition in markets*
- *Facilitate growth of cross-border and inter-regional power trading*
- *Increase market liquidity*
- *Reduce default and outage risk*
- *Regional resource optimisation*

Overview of Need and Reality

- Generation need: AfDB: **160 GW by 2025** for universal access
- Generation Goals: COP 21 – AREI: **300 GW by 2030** of clean energy additions
- Current Reality: **1990 to 2013**, only **24.85 GW** in SSA (South Africa accounted for 9.2 GW)
- SSA funding need: AfDB: An additional **USD 40-70 bn** per year to achieve universal access
- Current Funding: estimated at **USD 4.6 billio**n a year, 50% public funding
- IPP/PPP Projects to date: Only **59 IPP projects >5MW in SSA** (excluding South Africa), totalling **$11.12 bn** in investments and **6.8 GW** of installed generation capacity, of which only **7 IPPs in SADC** (excluding South Africa) (Eberhard 2015).
- SAPP: **USD 90bn** over next 2 decades (Deloitte)
- Private sector investment required as neither the regional utilities nor governments have sufficient budgetary resources to fund

Current context

- Many utilities are cash constrained / dependent on central government for budgetary support and customer bases are small
- The shift towards cost-reflective tariffs and improvements in collection rates will take time
- Without a creditworthy counterparty, developers and lenders require credit enhancement through sovereign and/or DFI/MFI guarantees
- The current project-by-project approach to electrification is unsustainable:
  - Support through existing instruments is not sufficient to address funding gap
  - Credit enhancement of projects on a one-off basis adds cost and delays
  - No single project is able to shift the attitude of commercial investors to bankability – a systemic/structural change is required
  - Putting the burden on governments to provide explicit and implicit guarantees or counter-guarantees shifts the creditworthiness issue to the sovereign level

Africa GreenCo Pan-African Vision

- Support and complement global and continent wide drive towards universal access, green energy initiatives and programmes (NEPAD, PIDA, AfDB's New Deal on Energy for Africa, Africa Renewable Energy Initiative, COP22, Power Africa)
- Catalyse investment in generation by providing a creditworthy intermediary offtaker
- Promote competitive electricity trade in regional markets by increasing liquidity
- Foster regional integration, share benefits and improve security of supply
- Start in one region/power pool and grow to cover the continent
- Operate through an African led organisation to align interests and promote regional cooperation
- Harness strong political, institutional and investor support
- What has succeeded in other parts of the world can succeed in Africa

Precedent: Power Trading Corporation of India

- Created a power market in India and the neighbouring countries to optimally utilize the resources available to generate power and encourage private investments into the power sector
- Initial equity participation by Power Grid Corporation of India Ltd (POWERGRID), NTPC, Power Finance Corporation (PFC), with NHPC joining later
- Purchased power from private projects and sold to the State Electricity Boards, regional utilities and industrial consumers
- Enable large-projects to negotiate with a single creditworthy buyer to eliminate payment risks for large (mega) projects and substantially reduce the tariff from such projects
- Attract viable investments in the power sector on the strength of a multi-buyer model
- Multi buyer model facilitates route to market for surplus power and in case of default

Design Principles

Africa GreenCo structure driven by nine key priorities:

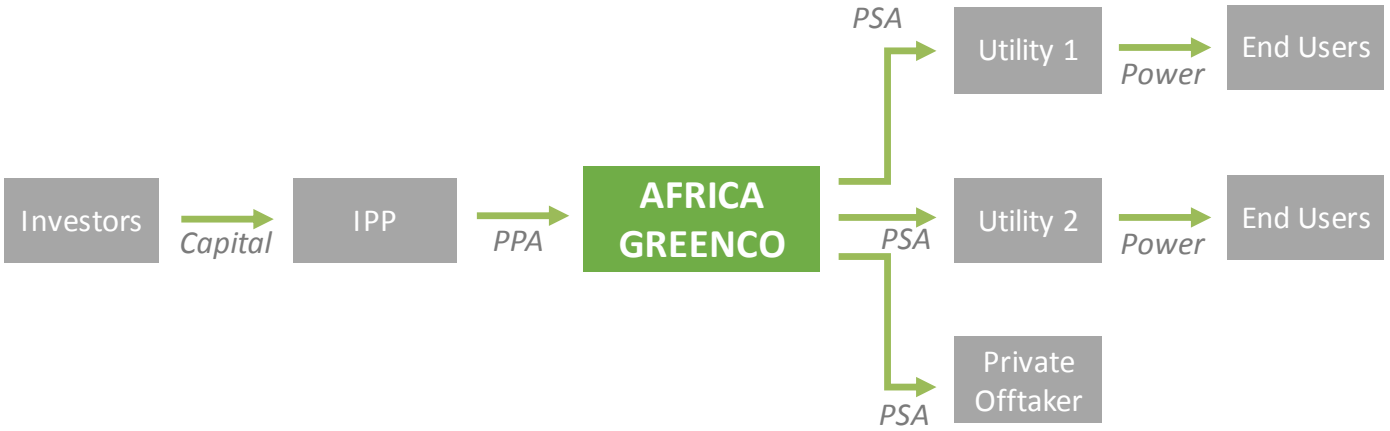
1. Legally and financially creditworthy
2. African owned and led
3. Complementing and collaborating with existing initiatives
4. Scalable
5. Operating at a regional level
6. Benefiting utilities and sovereigns
7. Benefiting project developers and investors
8. Incorporating blended capital from concessional and commercial sources
9. Financially sustainable

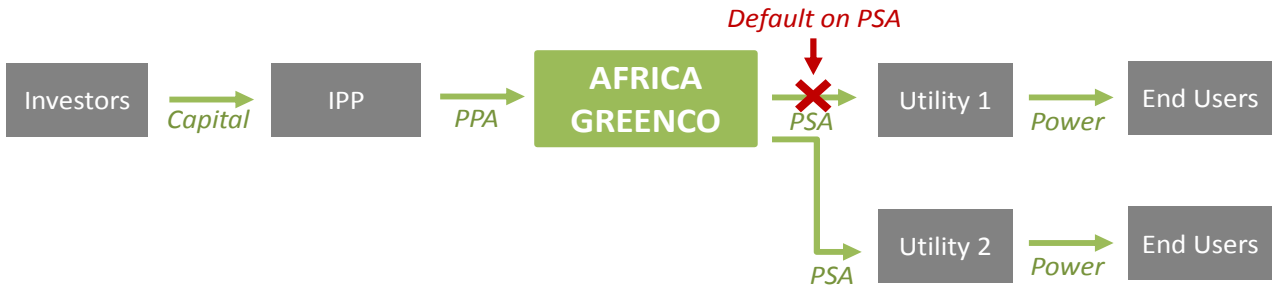
Intermediary & Creditworthy Offtaker

- Creditworthy offtaker under the PPA
- Reduces the perceived risk of the project for investors
- Improves the quantum and cost of capital
- Has technical and legal capacity and framework to execute transactions more efficiently

Intermediary & Creditworthy Offtaker

For more complex transactions, AGC will also act as an aggregator and diversifier of risks.





AGC reduces dependence on individual offtakers and attracts investment on the back of a multi-buyer model

Power Trader

In addition to its role as an offtaker, AGC will also participate in the regional power markets, promoting cross border power transactions and a more dynamic and liquid short term power market.

Impact potential

AGC's primary aim is to make more projects bankable and increase access to reliable, affordable electricity – but its secondary impacts include enhancing value for money, improving market efficiency and promoting sustainable economic development

- Project level impacts
  - Reducing cost of capital
  - Simplifying and accelerating transaction execution
  - Broadening the pool of investors for both new projects and refinancings
  - Providing an efficient route to market for smaller projects through aggregation
  - Cushioning investors from regulatory change / power market unbundling
  - Acting as an entry point for third party credit mitigation on a portfolio basis
- Utility level impacts
  - Increasing installed capacity
  - Reducing average cost of power through lower tariffs and reduced reliance on expensive short term emergency power
  - Increasing revenues through more efficient use of existing assets
  - Releasing resources to focus on institutional capacity building, operational efficiency and improvements to transmission infrastructure
  - Facilitating the move towards local currency denominated PPAs

Impact potential

AGC's primary aim is to make more projects bankable and increase access to reliable, affordable electricity – but its secondary impacts include enhancing value for money, improving market efficiency and promoting sustainable economic development

- Sovereign level impacts
  - Reduce the probability of sovereign PPA-related contingent liabilities crystalising
  - Help avoid the economic impact of outages and stimulate economic development
- Regional impacts
  - Support efforts to harmonise regional regulations
  - Catalyse more active regional trade and help develop the regional power pools
  - Promote regional resource optimisation
  - Help build the case for more investment in regional transmission, interconnection and grid management by increasing traded volumes
- Socio-economic impacts
  - Avoid emissions
  - Create employment
  - Improve access to basic services including health and education

Impacts overview

Impact Per USD Invested in AGC by yr 10			Total USD Impact		Investment	Contingent Liabilities			Tariff Savings		Trade	Power	Additional Impacts	
			Low	High	Total	Total	Low	High	Mid	High	Total	Inst. Capacity	Power Output	
					1,310	1,186	297	890	133	310	258	605	9,535,260	GWh
100% Equity	Investment				USDm	USDm	USDm	USDm	USDm	USDm	USDm	MW		
Total	1,360	USDm	1.5	2.0	1.0	0.9	0.2	0.7	0.1	0.2	0.2	0.4	Power Traded	
Donor	680	USDm	2.9	4.1	1.9	1.7	0.4	1.3	0.2	0.5	0.4	0.7	2,943,374	MWh
African Gov't	408	USDm	4.9	6.8	3.2	2.9	0.7	2.2	0.3	0.8	0.6	1.2		
DFI/Private	272	USDm	7.3	10.2	4.8	4.4	1.1	3.3	0.5	1.1	0.9	1.8	Electricity Access	
50% Equity													970,000	Hholds
Total	680	USDm	2.9	4.1	1.9	1.7	0.4	1.3	0.2	0.5	0.4	0.7		
Donor	340	USDm	5.9	8.1	3.9	3.5	0.9	2.6	0.4	0.9	0.8	1.4	Carbon Emissions	
African Gov't	204	USDm	9.8	13.6	6.4	5.8	1.5	4.4	0.7	1.5	1.3	2.4	7,800,087	tCOe
DFI/Private	136	USDm	14.7	20.3	9.6	8.7	2.2	6.5	1.0	2.3	1.9	3.6		
33% Equity													ST Employment	
Total	449	USDm	4.4	6.2	2.9	2.6	0.7	2.0	0.3	0.7	0.6	1.1	22,655	Jobs
Donor	224	USDm	8.9	12.3	5.8	5.3	1.3	4.0	0.6	1.4	1.1	2.2		
African Gov't	135	USDm	14.8	20.6	9.7	8.8	2.2	6.6	1.0	2.3	1.9	3.6	LT Employment	
DFI/Private	90	USDm	22.2	30.8	14.6	13.2	3.3	9.9	1.5	3.5	2.9	5.4	1,014	Jobs

Legal & Governance Structuring Options

- Legal entity, shareholding and/or membership in the company, will be structured:
  - for sovereign African countries to be members and have ownership;
  - to attract capital from the donor/DFIs and the private sector;
  - to allow different classes of investors with different risk appetites;
  - to minimise political interference in governance and operations;
  - to provide adequate international status and immunity
  - to ensure the business can be operated efficiently
- Four principal legal structure options

		Example
1	Independent International Organization	*AFC*
2	An international treaty organisation	*ATI*
3	AU special agency / subsidiary with separate corporate entity	*ARC*
4	National company with potential for regional expansion via an intergovernmental agreement.	*AGF*

National, international or a combination?

National

- Established under national law
- Quick to establish
- Recognisable legal form
- Fits within existing frameworks (e.g. SAPP)
- Subject to national laws/regulations
- Closely identified with host country
- Possible to sell/float

International

- Established under treaty
- Lengthy establishment process
- Flexible structure – determined by signatories
- May operate above national laws/regulation
- Privileges and immunities
- Independent/regional/scalable
- May attract ODA/IDA

- Founder member(s)
- Subsequent members
- Entry / exit rules

Market Options

Africa GreenCo's mandate is pan-African, but getting started requires focusing on a manageable area and selecting this starting point is critical to AGC's success.

- Main criteria for selection:
  - Capacity for regional transmission and cross-border trading
  - Enabling environment for IPPs
  - Local political support for Renewable Energy
- Coordination with parallel regional initiatives
- Complementarity with wider power sector reforms

	East Africa	West Africa	Southern Africa	Southern Africa Ex RSA
Power Pool	EAPP	WAPP	SAPP	SAPP
Data Year	2014/15	2013/14	2014/15	2014/2015
Installed capacity (MW)	53,296	9,912	**61,363**	**14,876**
Hydropower Share (%)	20%	34%	21%	78%
Thermal Share (%)	72.4%	66%	62%	22%
Other RE Share (%)	7%	0%	17%	0%
Target RE Share	N/A	N/A	32% (2020) 35% (2030)	N/A
Grid Interconnection	Medium	Low	**High**	**Medium**
Trading platform	Medium	Low	**High**	**High**
Current IPPs	**44 / High**	24 / Low	74/ High	7 / Low
IPP Environment	**High**	**High**	**High**	**Medium**
RE Policy Support	**High**	Medium	**High**	**Medium**

SADC as initial focus market

After considering the market dynamics in the 3 key African power pools, SADC / SAPP was determined to be the most appropriate region for proof of concept

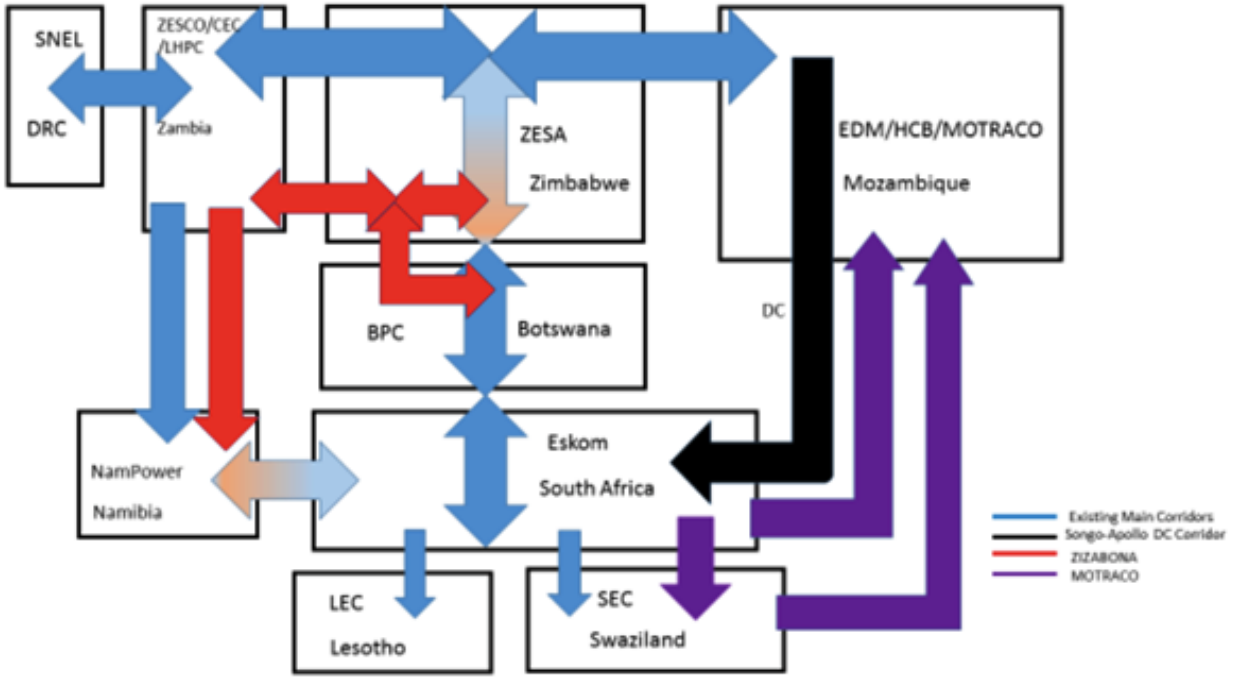
- SADC market features:
  - Capacity for regional transmission and cross-border trading
  - Enabling environment for IPPs
  - Local political support for Renewable Energy
- Alignment with regional initiatives
  - RERA IPP Framework
  - REEESAP
  - RIDMP
  - SACREEE
- Complementarity with wider power sector structures and reforms
  - SAPP provides for 'Service Provider' members
  - Market unbundling

AGC will continue to engage with the the other RECs and power pools with a view to subsequent rollout.

SAPP Cross-Border Power Flow Corridors

SAPP has sufficiently robust interconnections and plans for greater grid integration that creates a suitable context for AGC implementation

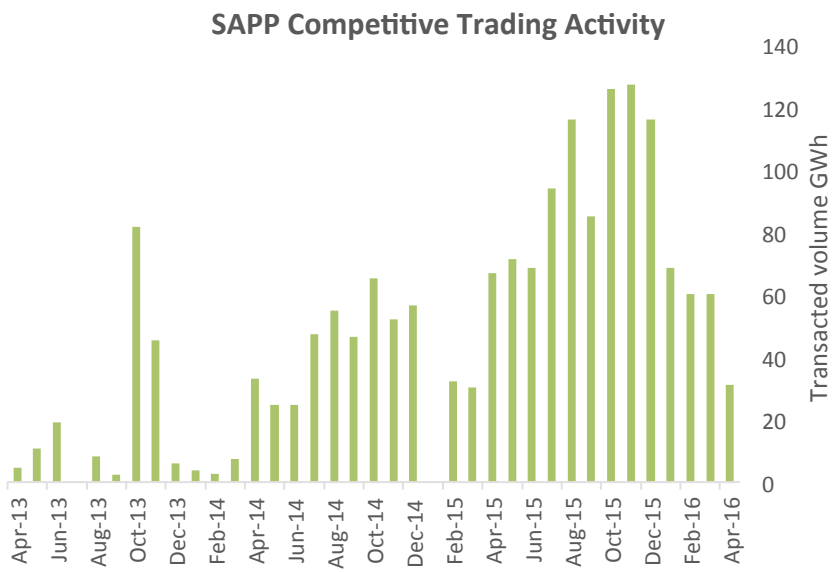
- 20 active cross-border grid interconnections
- 11 planned additions – at least 6 may come online by 2020
- Congestion can be addressed through market splitting, counter flow trade / radial mode transactions



SAPP Regional Market

There is already substantial cross-border power trading activity through long term fixed contracts and short term competitive power markets

No.	Supplier	Buyer	Capacity (MW)
1	HCB	Eskom	1600
2	Eskom	MOTRACO	950
3	ZESA	NamPower	150-80
4	Aggreko	ZESCO	148-40
5	Aggreko	NamPower	108
6	APR	BPC	70 + 35
7	Eskom	BPC	300
8	Eskom	NamPower	As required
9	EDM	BPC	50
10	HCB	ZESA	150
11	Eskom	LEC	As required
12	Eskom	SEC	As required
13	EDM	SEC	As required
14	EDM	ZESCO	150
15	HCB	Eskom	250
16	Eskom	ZESCO	300
17	Karpowership	ZESCO	100 + 300
18	ZESCO	NamPower	50



- Bilateral contracts dominate
  - 18+ contracts in 2015
  - 8 TWh traded in 2015
  - 94% market share in 2014-15, falling to 80-85% market share in 2016
- Active competitive market
  - DAM, IDM and now FPM
  - 50-100 GWh / $3.5-5m traded per month
  - Deficit: only 20% of buy orders, and 70% of supply orders transacted
  - SAPP forecast 10% growth y-o-y

Project Pipeline

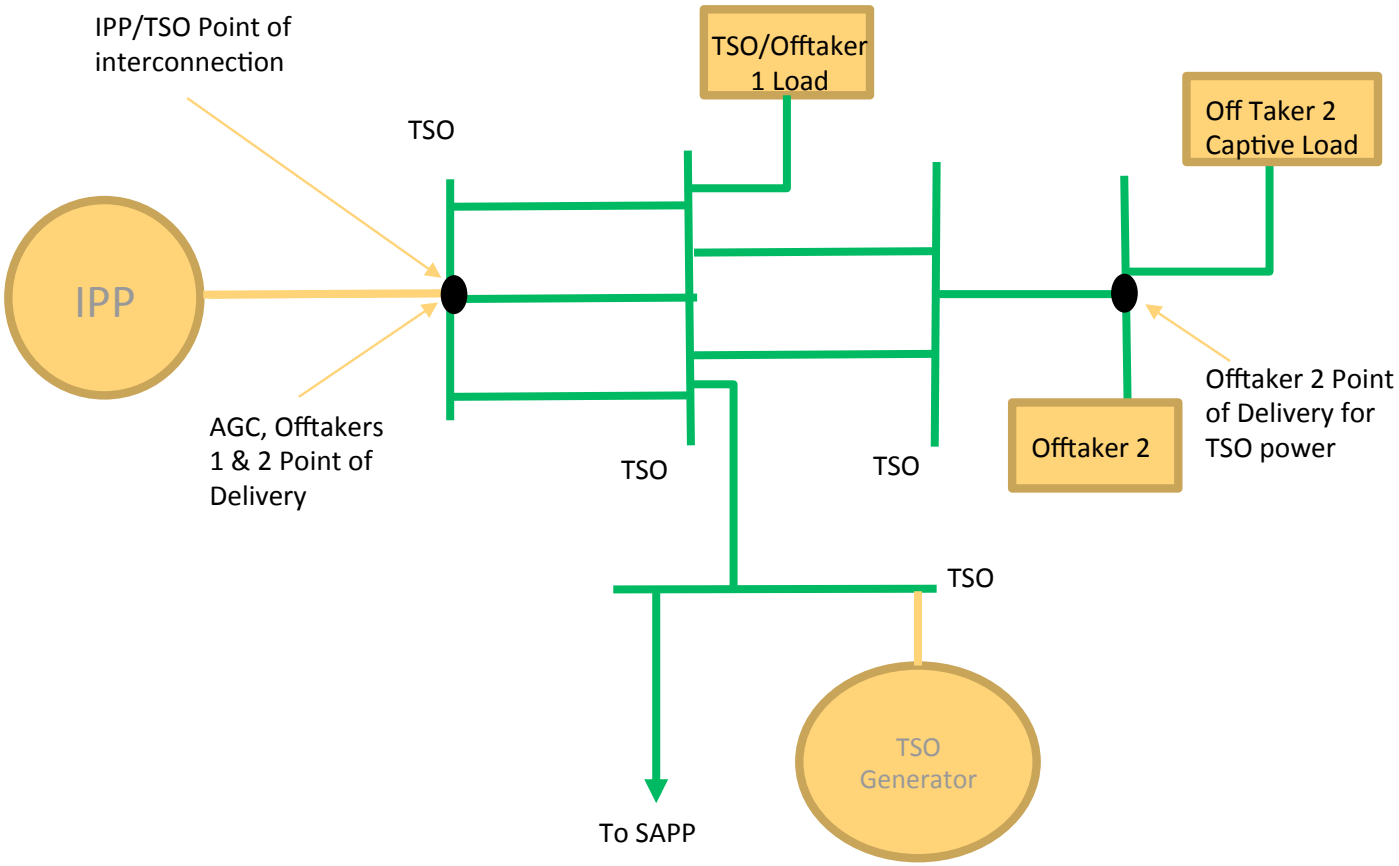
- Renewable energy IPPs a core element of SADC energy plans
- Botswana, Zambia, Mozambique, Namibia proposed pilot countries for Africa GreenCo due to:
  - Active trading partners in SAPP
  - RE potential
  - Investor friendliness
- Botswana, Zambia, Namibia also pilot countries for RERA IPP Framework – collaboration to facility implementation
- Near term focus on financial pragmatism: small-medium projects in order to build a diversified portfolio
- Initial target project size 5MW – 100MW
- Scalable – once concept proven, can support larger projects

Africa GreenCo Operating Mode Risks

- Risk: Offtaker default
- Objective: Keep IPP whole and prevent PPA termination
- Mitigation: Ability to secure alternative purchaser
- Technical constraint: Wheeling capacity
- Regulatory support

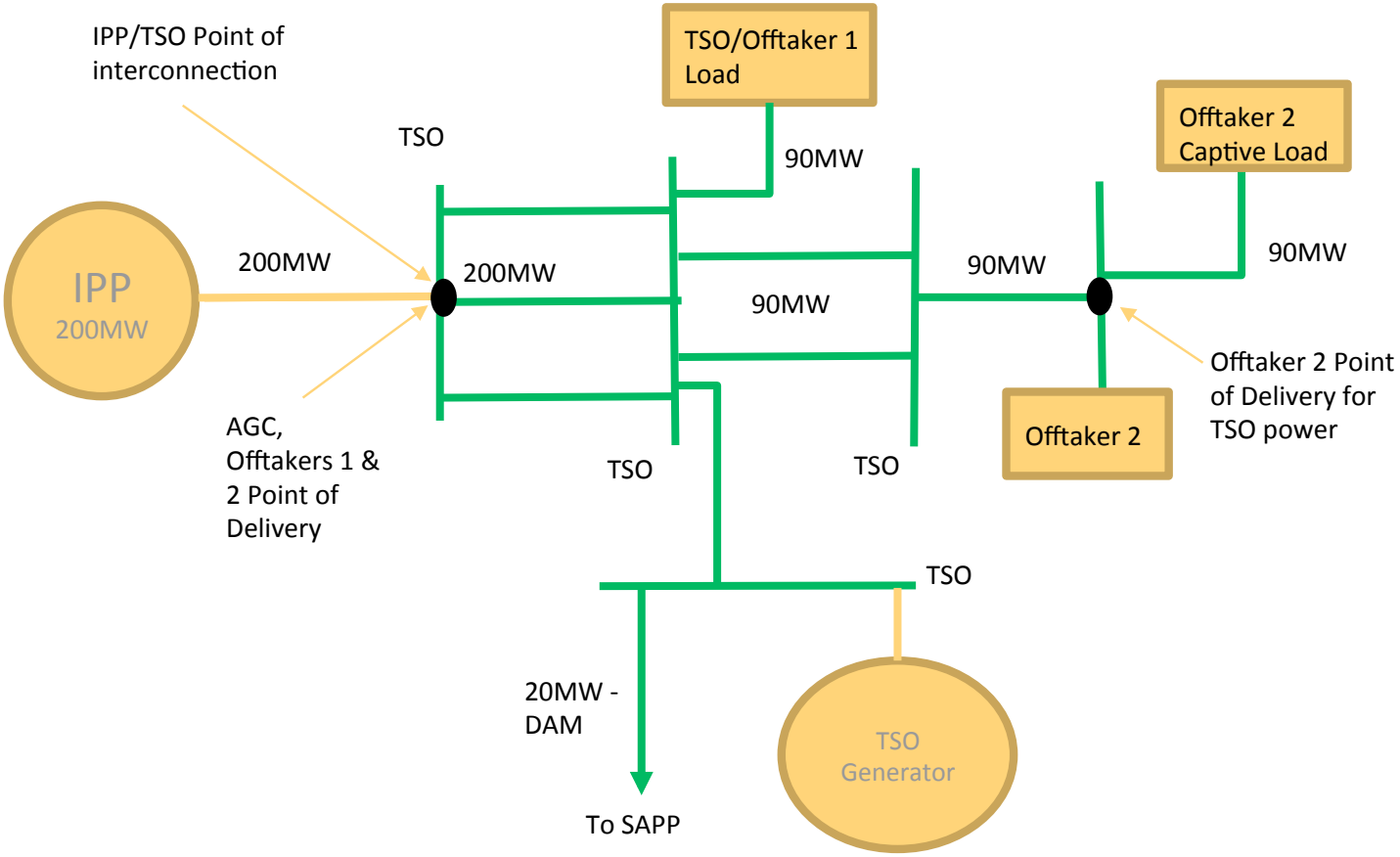
Offtaker Default and Wheeling Rights

Example – Project with 2 offtakers and some capacity sold on DAM



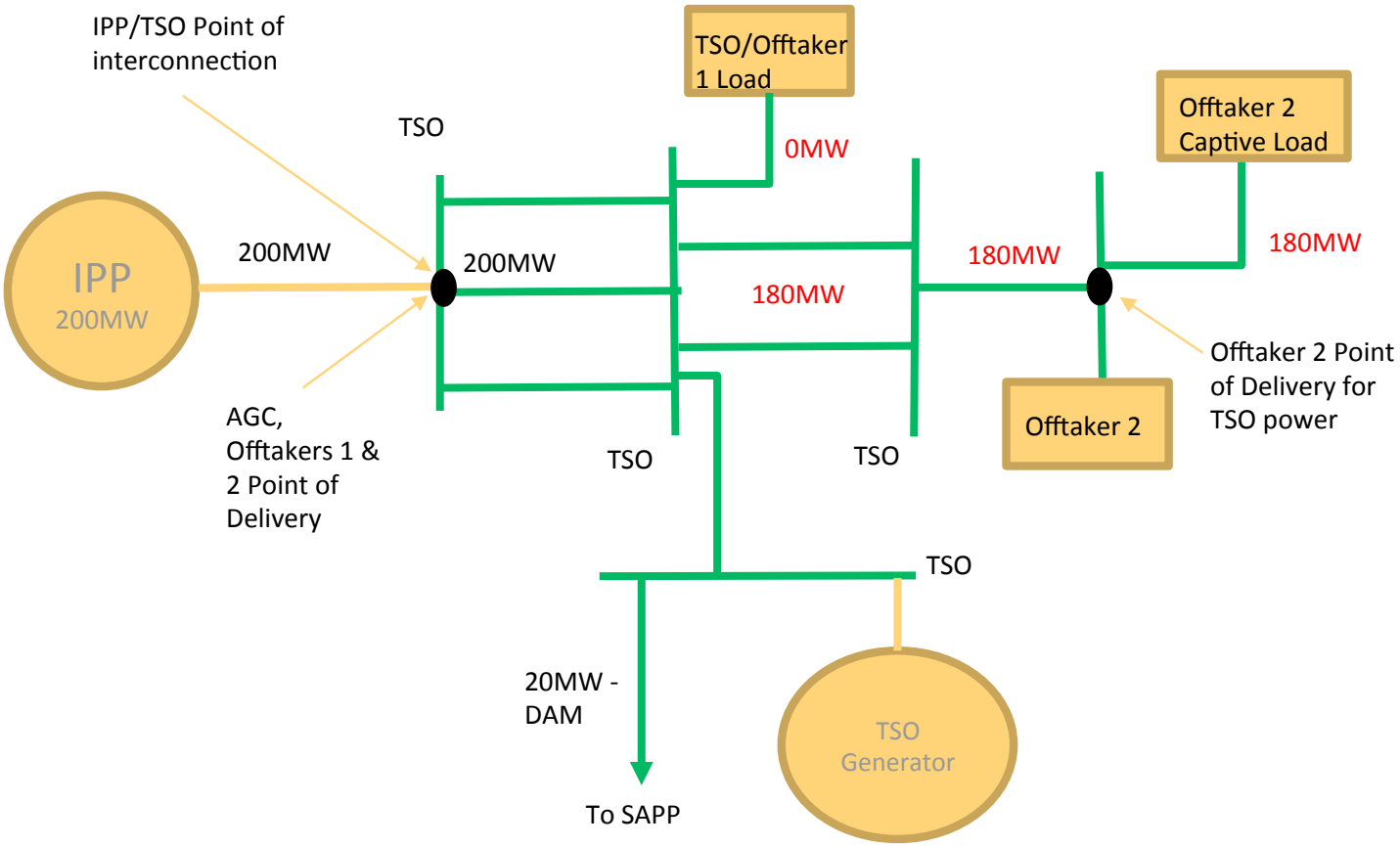
Offtaker Default and Wheeling Rights

Example – Project with 2 offtakers and some capacity sold on DAM
Business as usual - NO DEFAULT



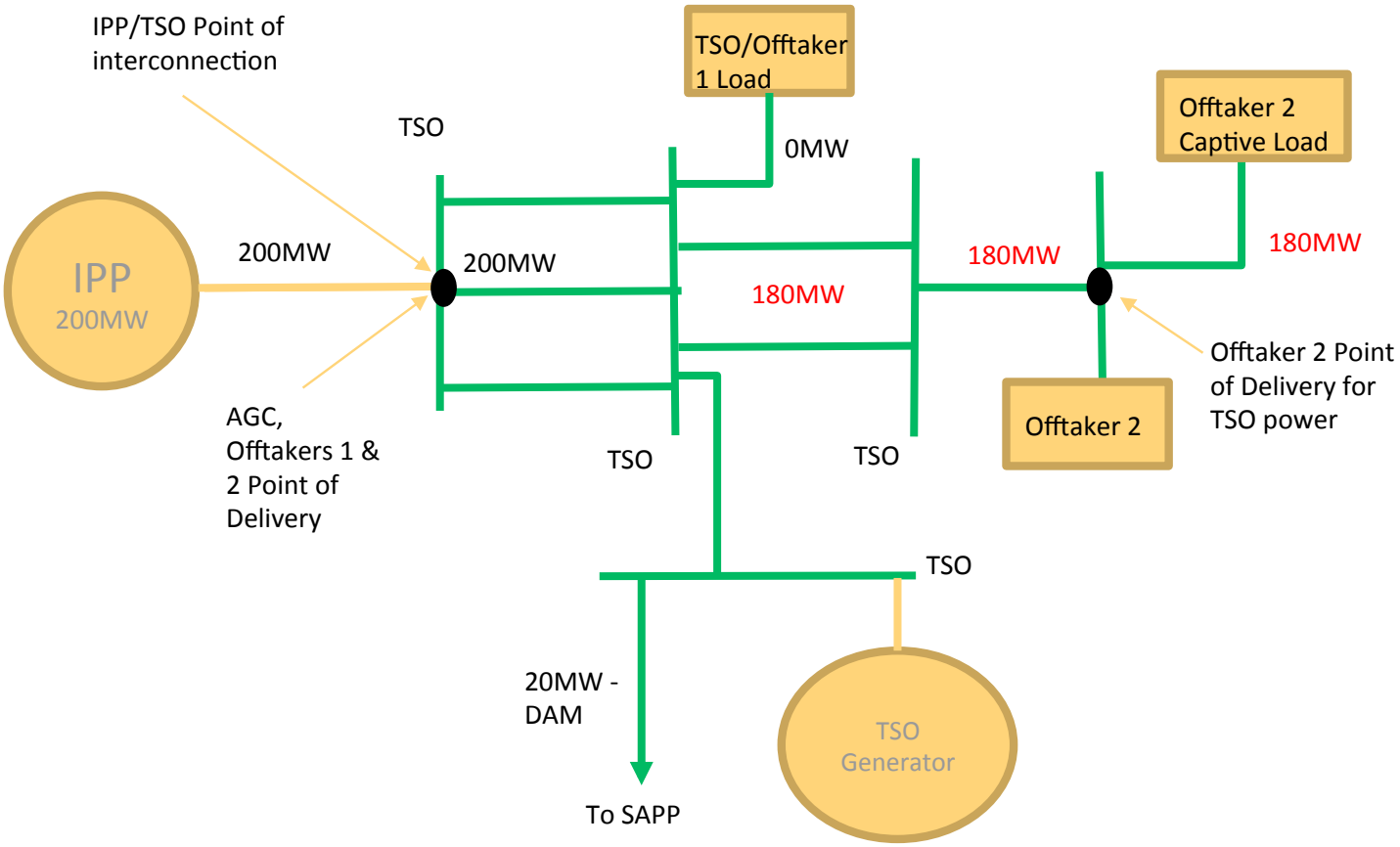
Offtaker Default and Wheeling Rights

Example – Project with 2 offtakers and some capacity sold on DAM
Business as usual – OFFTAKER 1 DEFAULT



Offtaker Default and Wheeling Rights

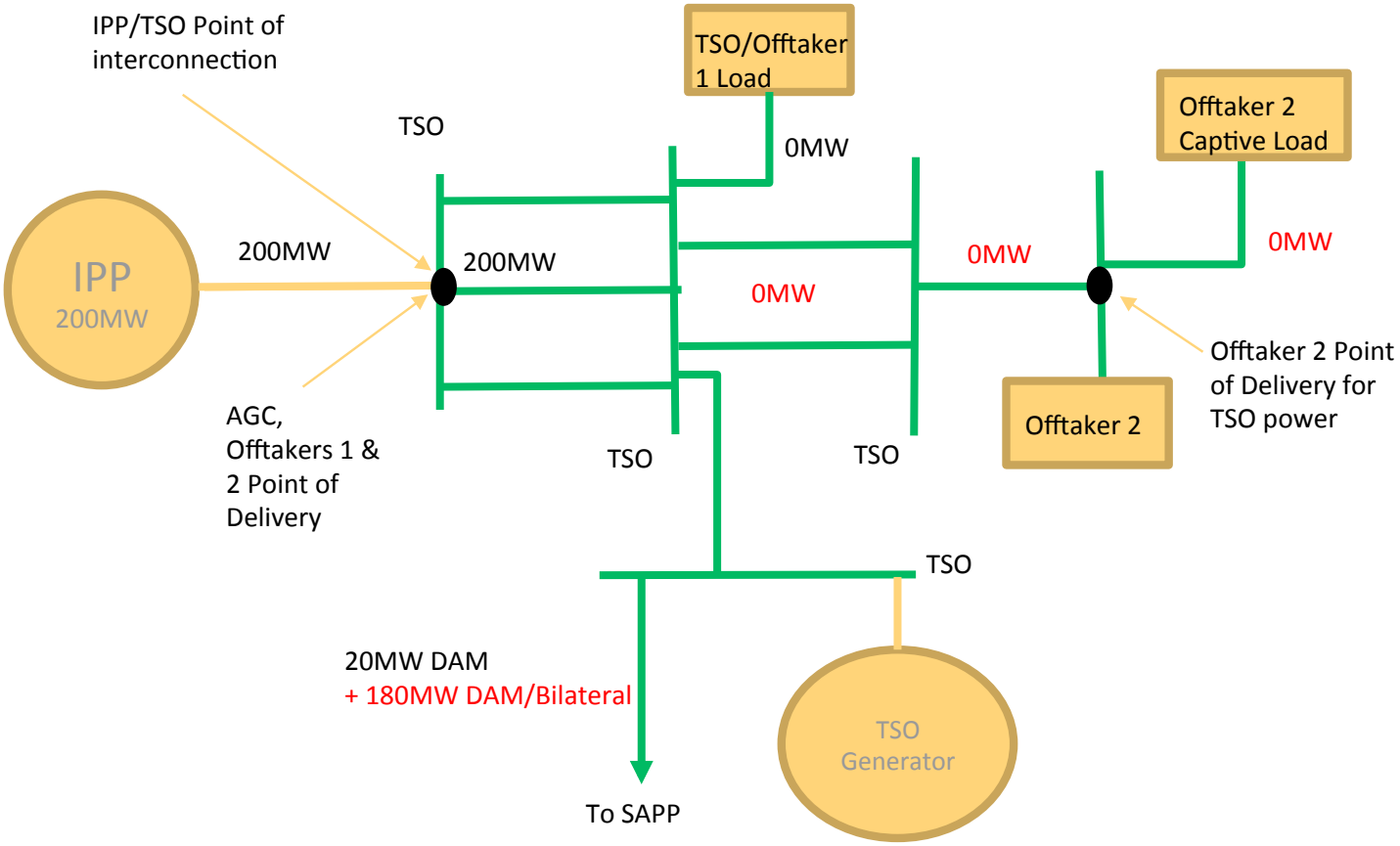
Example – Project with 2 offtakers and some capacity sold on DAM
Business as usual – OFFTAKER 1 and 2 DEFAULT



AGC to supply nominated captive load (with price incentive) – i.e. same end user supplied direct by AGC
Offtakers 1 & 2 to guarantee wheeling to nominated captive load
May need ESCROW account

Offtaker Default and Wheeling Rights

Example – Project with 2 offtakers and some capacity sold on DAM
Business as usual – OFFTAKER 1 and 2 DEFAULT and NO CAPTIVE LOAD OFFTAKE



AGC to find bilateral offtaker(s) in SAPP or sell on DAM in the interim
Wheeling based on SAPP Rules (Prioritisation)
DAM trades paid according to SAPP rules, Bilateral trades paid as negotiated

Current Status

Feasibility Study

- **COMPLETE**
- Based upon hypothetical portfolio of projects
- Incorporates technical analysis
- Includes financial structuring
- Broad industry support obtained (including SAPP, RERA, KfW, DBSA)

Implementation Plan

- Establish a concrete pipeline of projects within SADC
- Detailed technical and regulatory review
- Further develop legal and regulatory structure
- Prepare financial structure & business plan

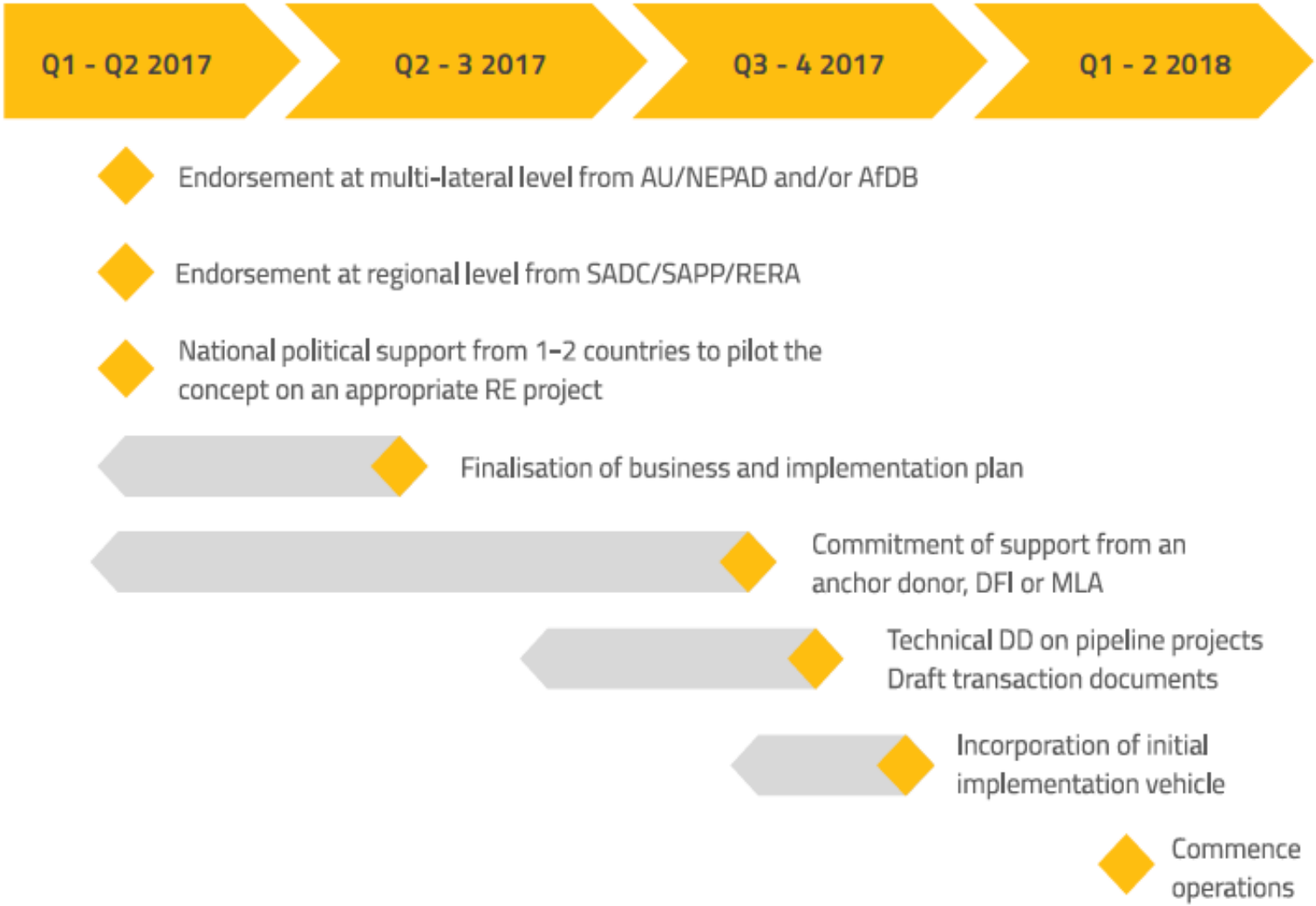
Proof of Concept

- Proof of concept expected in Zambia
- Leverage existing market infrastructure
- Complement parallel initiatives

Scale

- Expand capital base to support growing portfolio
- Replicate initial transaction, tailoring strategy to new markets

Next Steps Timeline



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Thank You