

SOUTH AFRICA ESKOM BATTERY STORAGE PROGRAM

ESMAP Solar Learning Event 2019

February 04, 2019

(2) Eskom

Eskom

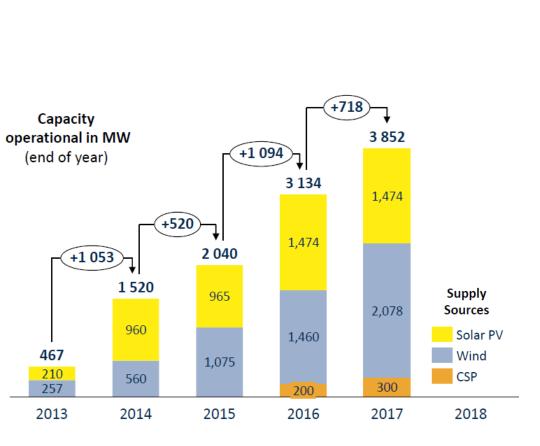
Kevin Chetty

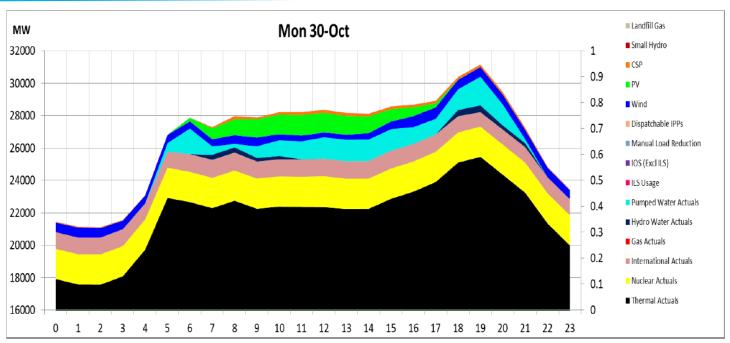
World Bank

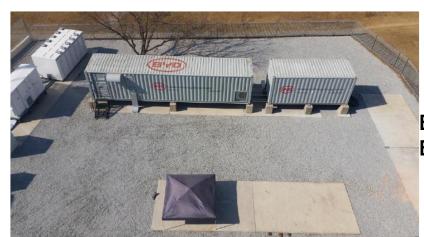
Frederic Verdol



Eskom Early on Management of Increased Renewable Energy Capacity





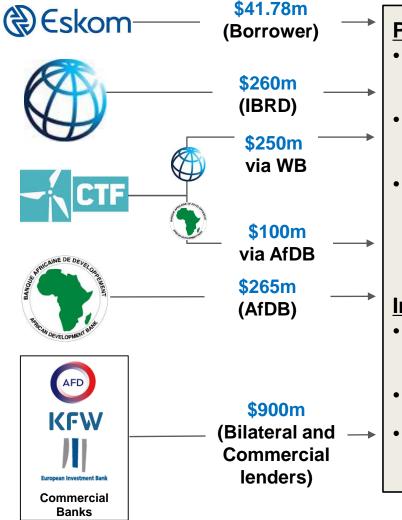


Eskom 5x200kW / 1,2MWh
Experimentation Battery Site

Eskom Renewables Support Project

From CSP To Battery Storage

2011

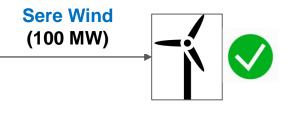


Project Objective

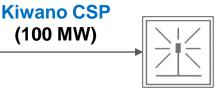
- Enabling RE Development
- Demonstration Technology
- Contribute to CO2/kWh Reduction.

Indicators

- GHG emissions avoided
- RE Supply
- Leveraged financing

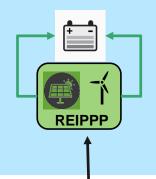


- 100 MW wind farm Operational since March 2015
 - Performance above target
 - 260 GWh/y generated
 - 0.238 MtCO₂ eq. offset



- Non-responsive bids (Jan 2017)
- End of CSP plant procurement (Aug 2017)
- Eskom proposed alternative (Oct 2017)
- 6 month joint due diligence (Mar 2017)
- Eskom signed REIPPP PPAs (Mar 2018)

Selected Alternative: Eskom Battery Storage Pilot Program

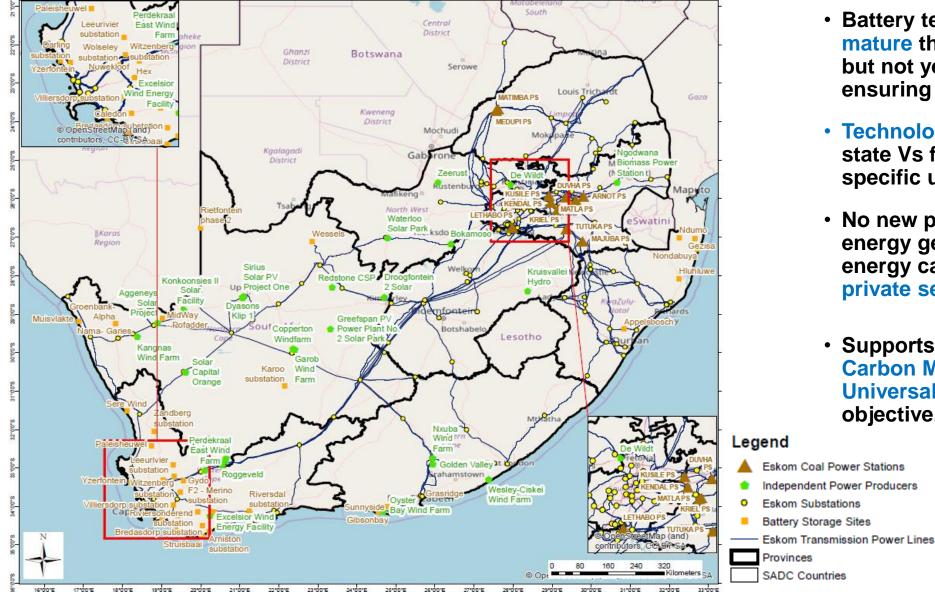


- Financiers Endorsed Program
- Same Development Objectives
- √ Same Target Values
- ✓ Clean Energy Integration
- Private Sector Investment Leverage
- High Transformational Potential

\$4,500m / 2,300 MW

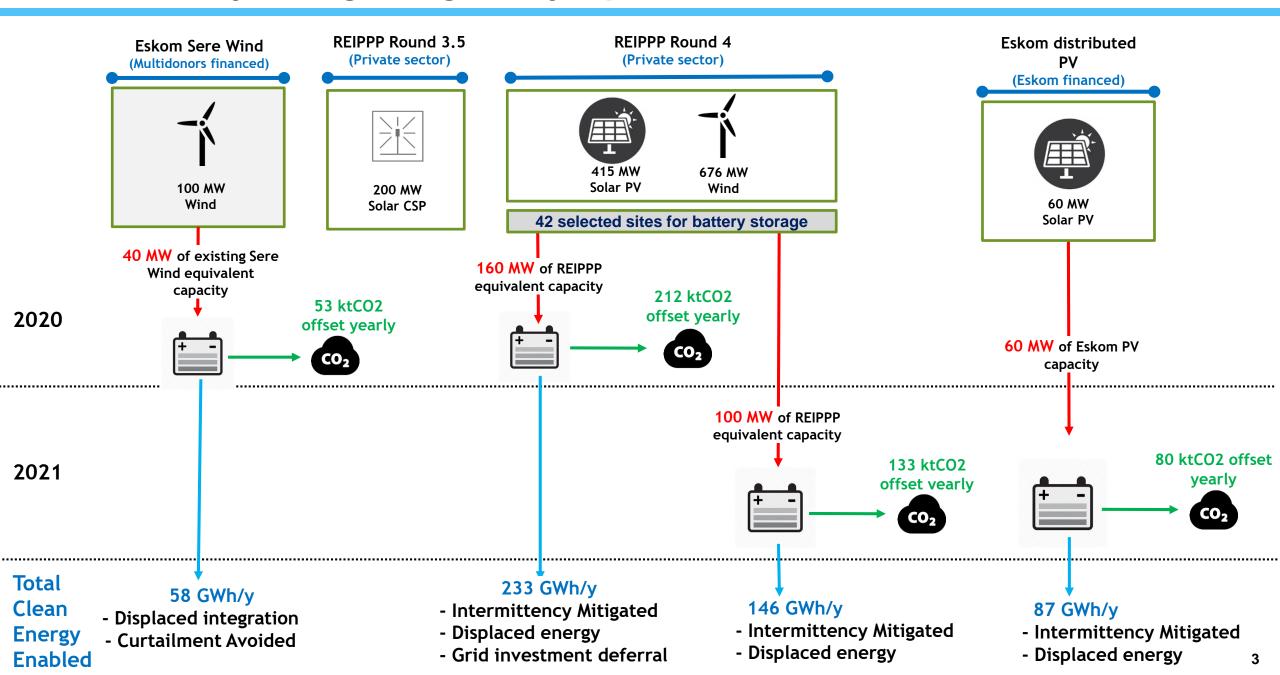
(Private Sector Investment, REIPP rounds 3.5 and 4)

A Multi-Site / Multi-Purpose Battery Storage Demonstration Program



- Battery technology (in 2018) more mature than CSP technology (in 2011), but not yet at commercial scale ensuring viability
- Technology agnostic approach (solidstate Vs flow battery), function of the specific use and need.
- No new public investment in clean energy generation*: added renewable energy capacity is financed by the private sector.
- Supports South Africa's long term **Carbon Mitigation strategy and Universal Electricity Access by 2025** objective.

Eskom Battery Storage Program Synopsis



South Africa Battery Program Transformational Potential

Demonstration effect of battery technology as THE tool for countries in Energy Transition

Eskom perspective

- From a conservative electricity producer to a modern energy manager
- Conjectural supply surplus, good timing to acquire tools and skills for SA's energy transition to a cleaner mix
- Replication of large-scale battery program at low voltage level to better integrate future municipal rooftop solar capacity is expected
- More flexibility and more dispatchable clean energy thanks to the batteries, allowing to decommission old coal plants

South Africa perspective

- In a period of economy recovery, reliability of electricity supply is critical to attract private investment (industry, manufacturing)
- Scale up of battery technology in power sector to complement rapid expansion of variable renewable energy
- Vertical integration in the battery storage value chain (mining, manufacturing, operation) feasible in South Africa

Africa region and Global perspective

- 5,000MW electrochemical batteries in operation worldwide, But NO battery connected to the grid in all Africa
- Demonstration effect in South Africa will enable variable renewable energy to expand faster in Africa, and in low income countries.
- Largest WB and AfDB operation on battery storage, mostly funded by CTF, this flagship project could serve as reference for many others.



Ngiyabonga!

(Thank You!)