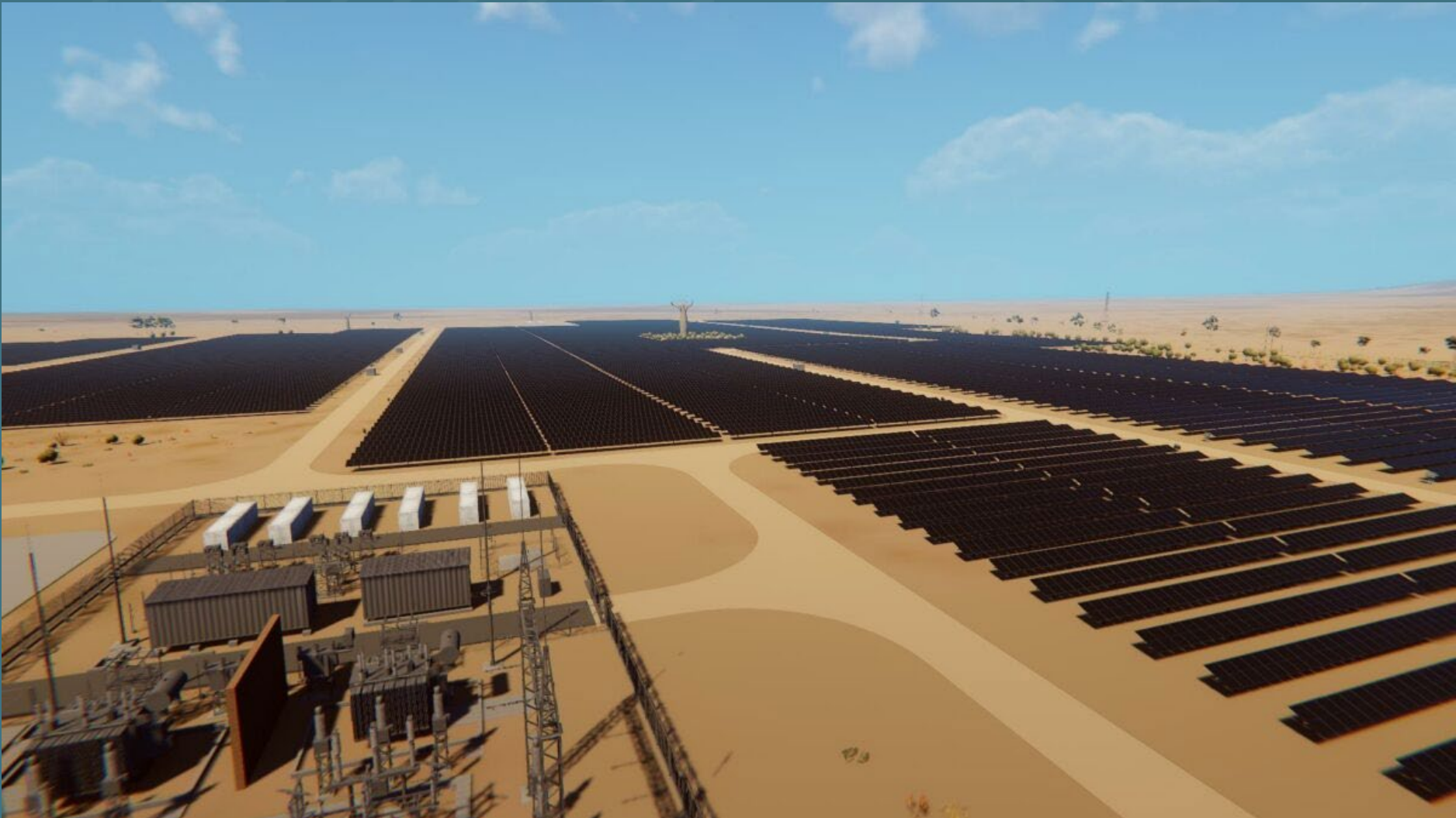


Financing Energy Storage (across SSA)

GESP Workshop – 14 December 2021



InfraCo Africa is part of
the Private Infrastructure
Development Group

Background and some Facts

- Energy Storage is poised to play a **key role globally** in decarbonisation and energy transition
- **Different types** of technologies:
 - Pumped Hydro
 - Compressed (air, CO₂)
 - Molten salt (thermal), specifically CSP plants)
 - Lithium-ion battery
 - Lead acid battery
 - Flow battery
 - Hydrogen
 - Flywheel
- **Most common** and **fastest-growing** technology is electrochemical, with Lithium-ion the current dominant
- **Falling prices**, still not there (Li-ion prices dropped >75% from \$1,100/kWh in 2010 to \$140-150/Wh in 2020, similar trends in other mature technologies)
- Technical factors to make BESS a **game-changer**: spinning reserves/stored capacity, stability, cost/demand control, resilience, voltage/frequency control and regulation
- Other “**unique**” elements versus conventional grid-tied projects (PPA, alongside availability and efficiency guarantees from seller, while offtaker holds dispatch rights):
 - Viability of fixed, index-linked (local currency?) **capacity payment**
 - Determination of **variable utilisation payment** (more frequent than agreed discharges) by Capacity Maintenance Agreement

Challenges, Risks, Opportunities (SSA)

- **Electrification vs. Decarbonisation:** Very low base as starting point, unsophisticated or non-existent power systems (control, planning, metering), gradual decommissioning of fossil fuel generation?

Leapfrogging to 100% Renewable Energy + Energy Storage will not happen

- We believe in a **transition** starting with **Mini-Grids** / Distributed Energy and Energy Access models, **hybridisation** of conventional RE plants and **e-mobility** Infrastructure
- Energy Storage is **Institutionally and Operationally demanding:** models must recognise battery charging while RE output is high relative to demand and discharging when low; difficult to overcome present conditions in many countries' power sectors
- **Key market drivers:** Cost and performance improvements, grid modernisation, global movement towards renewables, participation in wholesale electricity markets, financial incentives, phase-outs of FITs or net metering, goals towards self-sufficiency, national policies
- **Major challenges:**
 - Sector-related: Perception of high prices, lack of standardisation, outdated regulatory Policies, incomplete definition of Energy Storage, life cycle estimation, disposal/recycling, second-life applications
 - Regional Power Trade-related: Enabling environment
 - Funding: securing of financing sources for various stages, challenges in proving bankability, regional T&D complex transactions, limited private Investments, project implementation

Financing Energy Storage Projects: key elements and barriers

- **What type** of ES project?: large/small scale, on-grid/off-grid, behind-the-meter or front-of meter
- How to achieve a **cost-reflective tariff** (or a pathway to it): government buy-in, incentive programs
- **Key aspects, and how to monetise them?:**
 - (for utility-scale): spinning reserves, frequency regulation, voltage support, ancillary services
 - (for distributed energy): understanding demand stimulation, scale-up businesses, productive use of energy
- Understanding of the **business model**, assumptions, services and revenue streams (capacity payments and payments for demand charge management/variable utilisation)
- **Pass-through covenants** and requirements from OEMs
- Distributed energy storage systems financed by non-recourse instruments in developed markets have largely been able in the mid-term to demonstrate acceptable rate of returns. **How to make this model work in Emerging and Frontier markets?**
- Uncertainty around **regulatory regime and framework**: Technical requirements, integration in the existing model/grid, remuneration model (economics of charging/discharging at day versus night, and its duration)
- **Environmental permitting**, specially in small-scale: **Is Energy Storage a RE?**: depends on the charging source, footprint, and others
- **Capacity building** opportunities: local content, battery manufacturing facilities?

InfraCo Africa's footprint in the space



Golomoti Solar Malawi: PV + BESS, others in the pipeline



Mini-Grids: RVE.SOL in Kenya, PowerGen in Sierra Leone, more to come



E-mobility: EkoRent-Nopea (Kenya) and Zembo (Uganda)

Thank you

www.infracoafrica.com



InfraCo Africa is supported by

