CICSA
CLEAN CAPTIVE INSTALLATIONS FOR INDUSTRIAL CLIENTS IN SUB-SAHARA AFRICA

Clean Captive Installations in sub-Sahara Africa

Focus: Industrial clients in South Africa

Kick-off meeting presentation

FS-UNEP Collaborating Centre

November, 2019

Supported by:
Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
based on a decision of the German Bundestag

Frankfurt School
FS-UNEP Collaborating Centre
for Climate & Sustainable Energy Finance

UN environment
United Nations Environment Programme

Overview of project

Snapshot of the various stages in the project

Initiating the project

1

Desk study
- through research
- in-house & consultative expertise

2

Stakeholder consultation
- scoping missions
- relationship building

Assistance from FS-UNEP

3

Development of tools
- identifying business models
- selecting financing mechanisms

4

Identifying relevant & key partners

5

Selection of replicable designs (best model); designing selection criteria for national showcase project

Expected outcomes

6

Implementing the best chosen showcase project and replicating the model

- ✓ Awareness creation within both public and private stakeholders, whose feedback will be integrated into project design
- ✓ Design process to monitor and verify performance of chosen model and showcase viability of said model for easy access to public
- ✓ Understanding best practices & replicability by increasing uptakes
- ✓ Help countries meet climate and development goals of the Paris Agreement

Preliminary findings from the desk study

What have we understood so far

1. **South Africa has an acute undersupply of electricity and its national power utility faces financial crisis**

- The national power utility Eskom has over **R440 billion of debt** due to **problems in bill collection** from customers in recent years and **ageing infrastructure**
- >85% of the country's electricity is generated by coal power plants which are nearing the end of their lifetimes

2. **Growth in local RE markets crucial to achieving its NDC targets for 2030**

- Since 2011, capacity totalling 6GW has been procured from 92 utility-scale projects
- Implementing the proposed 2018 IRP will bring South Africa closer to it the upper-end of its 2030 NDC targets

3. **Municipal support for SSEG fosters commercial and industrial sectors (<1MW)**

- As of 2018, there were **165 municipal electricity distributors** with own tariff structure
- Under REIPPPP, c. 6GW from IPPs has been successfully procured

4. **RE financing is well-established for some market segments**

- Many of the major commercial banks have funded large utility-scale solar PV projects as part of REIPPPP; variety of financing mechanisms offered for rooftop-scale installations, loan products for RE projects by four main retail banks;
- Nonetheless, **scalable financing solutions** that lower the upfront costs for most captive customers **are still lacking**.

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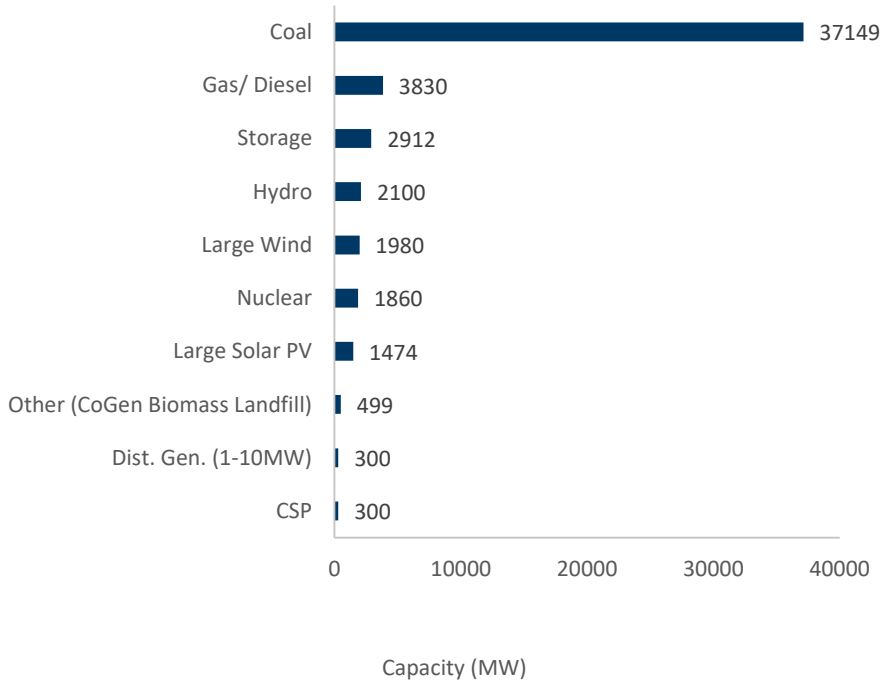
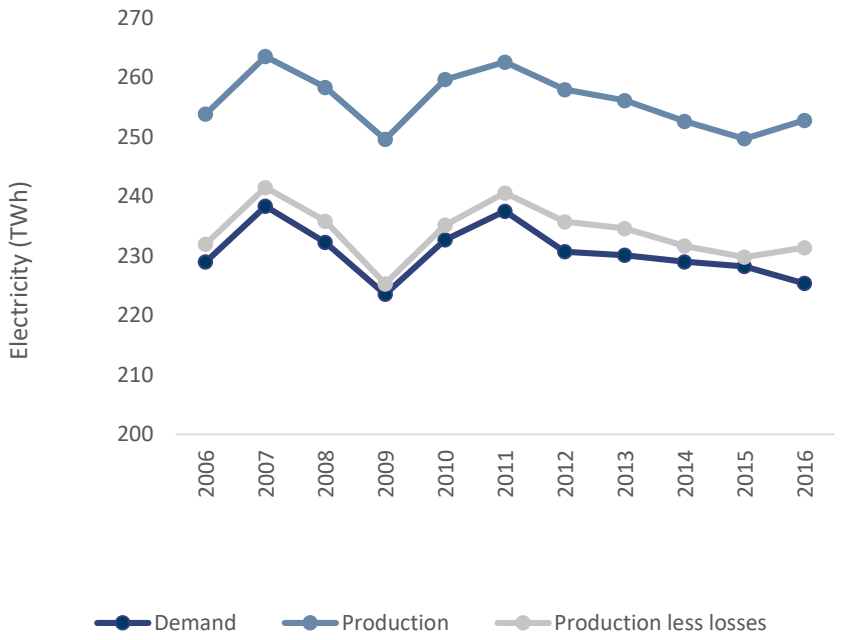
The power situation

- Electricity market is **dependent on the state-owned utility Eskom**
- Eskom's government bailout - plans to **restructure it by 2021,** by **separating Eskom into Generation, Transmission and Distribution operations**
- South Africa still depends **mostly on coal plants** which do not comply with environmental regulations and are nearing the **end of their lifetimes**
- **Electricity demand has steadily decreased** in recent years, among other factors, mainly due to low economic growth and rising electricity tariffs

South Africa's installed capacity as of 2018 (totaling 52,404 MW)



South Africa's electricity supply & demand balance without imports or exports



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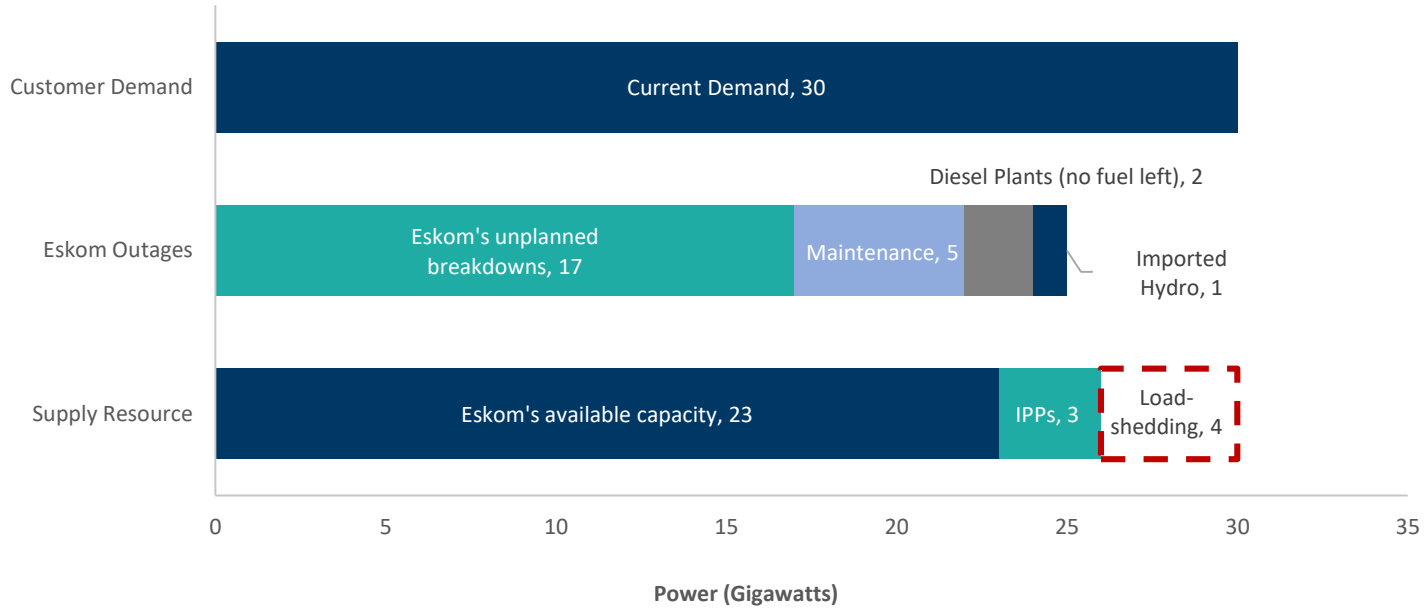
Is there a need for captive RE?

- In South Africa there are still cases of **multiple load shedding** with Eskom's unplanned breakdowns being the main contributor
- The ageing infrastructure calls for new build ups soon: RE as part of this build up
- South Africa has both, the need as well as the demand for captive solar. **Regulatory uncertainty**, however, holds back implementation of large-scale projects >1MW.

Eskom's installed capacity and available capacity



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Role of municipalities in increasing RE uptake

- Transmission networks are fully owned and operated by Eskom; distribution is partially owned by Eskom in some locations and in other areas, municipalities with a distribution license own and operate the network
- **FiT:** Many municipalities have taken steps to enable distributed generation installations (small-scale embedded generation) by their on-grid customers – i.e. municipalities buy electricity from customers with installed generation capacity <1MW at rates below the sales tariff
- As a result of municipal support for SSEG and rising electricity tariffs, C&I sector (30kW-1MW) have the highest installed capacity for distributed solar PV (60% of 280MW of SSEG installed)
- However, national rules suggest Eskom has single buyer responsibility to procure from IPPs (usually with over 1MW installed capacity)

Licensing for captive solar PV

- Licensing under the **Electricity Regulation Act (ERA)** state that activities that require a license include: Generation, Transmission, Distribution, Import/Export of electricity and Trading of electricity
- Generation facilities operating for **back-up generation or have <1MW are exempt from a license** if they have an agreement in place with a local municipality
- **Wheeling** is currently **allowed** for medium to high voltage connections (>1kV) under various licensing and agreement conditions

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RE financing is well-established for some market segments

- Many of the major commercial banks have funded large utility-scale solar PV projects as part of REIPPPP; variety of financing mechanisms offered for rooftop-scale installations, loan products for RE projects by four main retail banks
- Nonetheless, **scalable financing solutions** that lower the upfront costs for most captive customers **are still lacking**

Industry sectors and power consumption

- RE financing sector is well-established with major commercial banks funding large utility-scale projects as part of REIPPPP. Moreover there are five commercial banks (Nedbank, FNB/RMB, Standard Bank, Absa, Investec) as well as public banks which include local development finance institutions such as the IDC an the DBSA
- South Africa's five main commercial banks have **multiple loan products to assist with financing RE projects**. Though, rates tend to be fairly high relative to international standards as they are typically tied to the local prime lending rate (e.g. 10.25% in July 2019)
- With the help of international development finance institutions a number of donor and development agency programs for RE have been introduced. AFD targeted the private EE and RE sectors and KfW, as well as RMB, launched South Africa's first debt-fund focused on small RE-projects (<10MW)
- However, solar PV industry is still characterized by **high upfront costs** and scalable financing solutions are still missing

Stakeholder consultations

What information do we need to streamline the process of installing captive PVs

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Bridge gap in data and information…

… through customised and tailored approach in reaching out to potential stakeholders

Energy policy

- What the government's general policy or position is in regards to clean captive systems?

Energy laws and regulations

- We are aware of various laws and regulations that apply to captive power systems, e.g. in the energy sector

Captive power licencing and approvals

- For a captive system <1 MW for self consumption only, even if the power was distributed around a commonly

Private financiers/ESCOs

- Please give us a brief overview of your business

SUNREF going into the future

- We are aware AFD secured GCF financing under Transforming Financial Systems for Climate Project, which is

EPCs/suppliers

- Please give us a brief overview of your business
  - When was it established and for how long have you have been operating in Kenya?
  - Are you a Kenyan company or an international business with operations in Kenya? Other countries of operations if any?
  - Who are usually your target customers?
  - If an EPC, what types of systems do you work on, e.g. hybrid (diesel/solar), battery storage, other RE technologies
  - If an EPC please give us your record of accomplishment in terms of number of projects you have done, size and if possible client and plus the projects you have in the pipeline.

Streamlining the process

How does the FS-UNEP collaborating centre help?

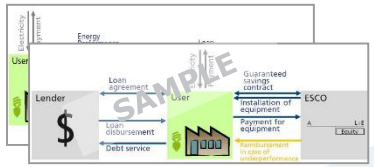
1

Development of tools

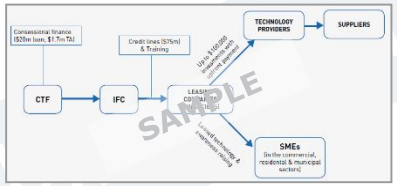
- identifying business models
- selecting financing mechanisms

A. Ownership model

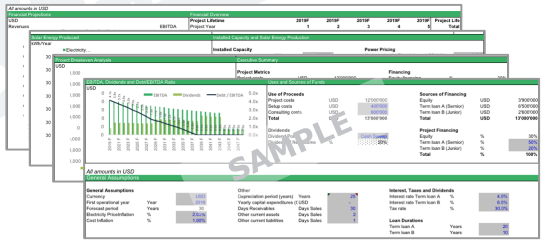
B. ESCO financing model



C. Equipment leasing model



Financing mechanisms



2

Identifying relevant & key partners

Associations/Public Sector

BUSA · SAREC · EIUG Energy Intensive Users Group of Southern Africa Established 1999 · SAPVIA South African Photovoltaic Industry Association

Banking sector

NEDBANK · DBSA · Standard Bank

Financial Institutions

IDC Industrial Development Corporation · GET.invest

RE private sector

SOLA juwi · EP ENERGY PARTNERS FUEL · mettle

Power sector

exxaro POWERING POSSIBILITY · SASOL

Private Renewable Sector

mpact plastic containers · PAPER MANUFACTURERS ASSOCIATION OF SOUTH AFRICA (PAMSA)

3

Selection of replicable designs (best model); designing selection criteria for national showcase project

- Currently, there is a **lack of monitoring and verification of installed captive PV projects**
- There is also **not enough publicly available information** explaining the advantages of captive solar PV and potential risks that exist (e.g. for industrial users: payback period of installations, savings per year, etc.)
- Implementing one project to **showcase it as a replicable model** will **improve transparency** in this captive PV market. **Monitoring performance** of the selected model will **prove it to be used as a viable design** for other industrial users

Final expected outcomes and timeline

Project will run from 2019 - 2023

2019
Component 1: Baseline studies and awareness raising

2019 - 2020
Component 2: Economic and financial tools and assessments

2020 - 2023
Component 3: Realisation of one showcase project per country

2019 – 2023
Component 4: Knowledge dissemination and outreach

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Thank you for your patience!

For further information please visit:

www.captiverenewables-africa.org

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