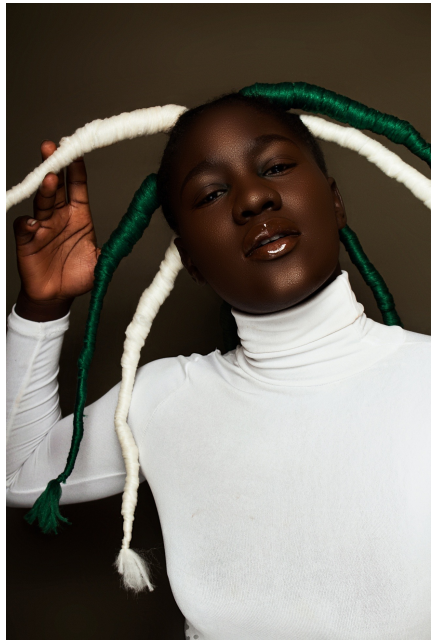
EAUXWELL

Upscaling Large Scale Solar in Nigeria:

The conference on upscaling large scale solar in Nigeria is an important step towards a more sustainable future. With the right strategies and investments, Nigeria can become a leader in renewable energy.

Electricity access by country (Egypt, Nigeria and South Africa)



Nigeria

45%

Egypt

99.6%

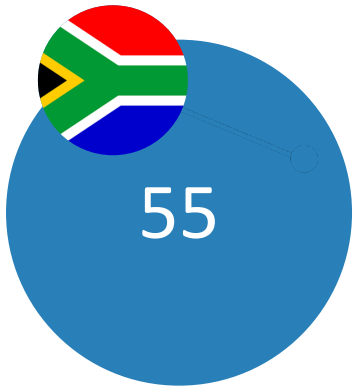
South Africa

85%

A.K. Aliyu et al. 2020

Base Load Capacity GW

Grid capacity and base load play important roles in increasing the penetration of large-scale solar power



Egypt's base load capacity is primarily supported by its thermal power plants, which rely on natural gas as the primary fuel.

South Africa's base load capacity is primarily supported by Coal power plants. Others are hydro and nuclear

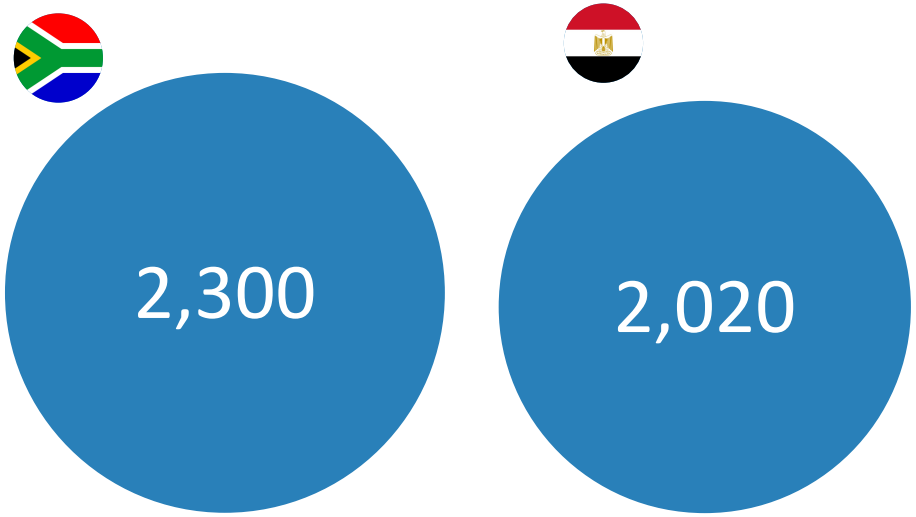
Nigeria's base load is mainly supported by thermal power plant and hydro.

EERE, NERSA, NERC 2021

on-Grid PV MW

Grid tied Solar Plant development (Post FID)

EAUXWELL



The De Aar Solar Power Plant is one of the flag ship grid tied PV plant in SA. It has a total capacity of 175 megawatts (MW) and consists of a vast array of solar panels spread across a large area of land.

One of the largest grid-tied photovoltaic (PV) projects in Egypt is the Benban Solar Park. Located in the Aswan Governorate, the Benban Solar Park is 1.8 GW and it is one of the largest in the world

The NSIA with technical partners Eauxwell Greencells has just finished construction if a 11.5 MW grid tied PV project in Kano State Nigeria. This is the first of its kind and is the biggest in Nigeria.

EERE, NERSA, NERC 2021

EAUXWELL

525

MW

INSTALLED SOLAR CAPACITY 2021*

1.8

percent

SOLAR ENERGY CONTRIBUTION TO NIGERIA ELECTRICITY

30

Percent

RENEWABLE ENERGY PENETRATION IN THE NATIONAL ENERGY MIX BY 2030.

UPSCALE

EAUXWELL

Policy, Framework

Nigeria Electricity Road Map 2019

National Energy Efficiency Action Plan

Nigeria Electrification Program

Electricity Act 2023

Business Model

Value Chain

Site and Client Focus

System Configuration

Tariff Structure

Operational Organization

FInancing

Grant ;DFI Gov AID

Debt; Banks, VC PE

Equity; PE, VC, Export Banks, Commercial Banks, Investment Banks, Funds

Construction

Tender

Supply Chain

Local Content

Logistics

Capacity

Connections

Monthly PPA

Pay as you go

National grid tied

Isolated grid tied

Sustenance

Operational and Maintenance

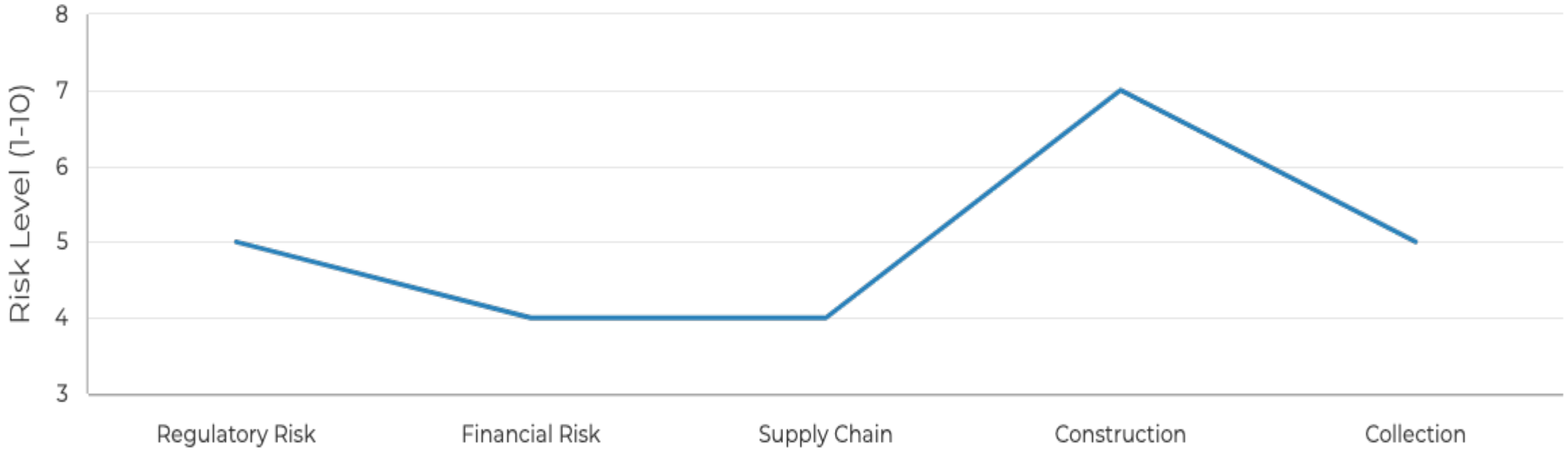
Steady Collections

FX repartration

Expansion

Understanding Construction Risk in Large Scale Solar Value Chain

EAUXWELL



Large scale solar value chain is exposed to a moderate level of risk.

*Data sourced from Solar Energy Industries Association

Construction

Project Numbers

- 21,465 PV Modules
- 52 Nos of 200 kw PV inverter
- Balance of Plant system
- LT & HT panels
- 2 No. 6.5MVA, 800/33 kv Step-up Transformers
- 1 x 15 MVA, 33/11 kV power transformer
- 1 x 100 k kVA, 33/0.400kV auxiliary transformer
- 12 km of 33 kV overhead power lines
- Ownership: FG Nigeria with 80%, Kano State Government with 15%, and Kumbotso LGA with 5%
- Duration: 15 Months
- Labour: 250 workers on site

RECOMMENDATION

EAUXWELL

1. Supportive Policy
   - Framework: Clear regulations and incentives
   - Long-term power purchase agreements (PPAs)
2. Enhanced Grid Infrastructure
   - Upgrade and expand transmission and distribution networks
   - Improve grid stability and reliability
3. Financial Mechanism & Incentives
   - Affordable financing options (low-interest loans)
   - Fiscal incentives (tax breaks, customs duty exemptions)

4. Capacity Building & Skill development
   - Training programs for local workforce
   - Technical training on installation and maintenance
5. Research and Development (R&D):
   - Invest in solar PV technology, energy storage, and grid integration
   - R&D Partnerships with academic institutions and research centers
6. Community Engagement and Awareness
   - Engage local communities and address concerns
   - Share benefits through job creation and social programs