

Experience with Grid-Connected Utility-Scale RE Projects in the ECOWAS Region

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Renewable Energy and public and private financing mechanisms - West Africa
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Current Status of Utility Scale RE Capacity

Total installed grid-connected RE capacity stands at 4,781 MW (as of Dec 2016)

- 4,745 MW of hydro (of which 225 MW is small hydro)
- 27 MW of wind
- 75 MW of solar PV
- 0.375 MW of biomass

ECREEE Activities on Grid-Connected RE

- West Africa Clean Energy Corridors
- Technical assistance for improving the legal and regulatory framework for grid-connected RE in selected ECOWAS member states (upon request from national institutions)
- Technical assistance for project development
- Documentation and analysis of experiences with RE flagship projects
- Regional knowledge exchange and capacity building

RE Flagship Projects in the ECOWAS Region Covered in this Presentation

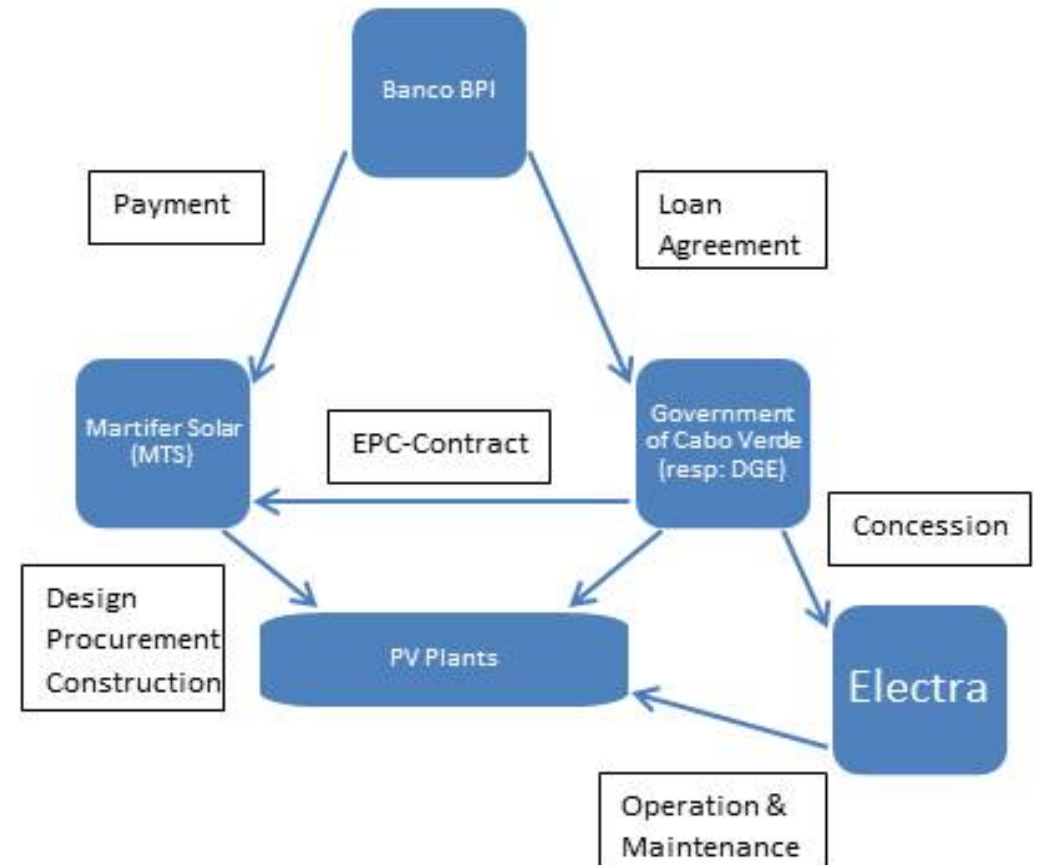
- Santiago and Sal solar PV plants in Cabo Verde (2010)
- Cabeólica wind project in Cabo Verde (2012)
- Navrongo Solar PV project in Ghana (2013)
- Faso Biogas project in Burkina Faso (2015)

Utility-Scale Solar PV Plants in Cabo Verde – Key Facts

- Two utility-scale solar PV parks on Santiago (4.3 MWp) and Sal (2.2MWp) constructed and commissioned in 2010
- Santiago : 8,000 MWhh/year (3% of power generation)
- Sal : 1,800 MWh/year (2% of power generation)
- Investment cost of 25 M Euro
- EPC contract with Martifer Solar



Utility-Scale Solar PV Plants in Cabo Verde – Structure



The Cabeólica Wind Project in Cabo Verde – Key Facts

- 25.5 MW: 30 Vestas turbines in top wind regime feeding into the grids of 4 islands since 2011/2012
- 20% of Cape Verde's annual power demand
- 25-45% Capacity Factor
- 9 m/s average wind speed
- 80 GWh per year
- 50 kt CO₂ = 15M l fuel



The Cabeólica Project – Deal Structure

- Cabeolica SA is a „classic“ SPV project financing, formed exclusively for the 4 windfarms
- SPV created in 2009 by GoCV, Electra SARL (national utility) and EleQtra (owned by Infracore)
- Deal structure
 - 30% Equity (EleQtra, FinnFund, Africa Finance Corporation)
 - 70% Debt (AfDB and EIB)
- Investment cost: 65M € (ranging from 56 to 85 M € depending on sources)
- 10M € annual income @ 130€/MWh tariff (20 year PPA)

The Cabeólica Project – Selected Experiences

- Developer had to achieve a minimum project size to increase interest of DFIs and contractors
- Challenges during construction: trucks and cranes had to be imported
- However curtailed by 25% on average



Navrongo Solar PV Project in Ghana – Key Facts

- 2.5 MWp solar PV project developed by the state-owned Volta River Authority (VRA) in the Upper East region
- First project under VRA's Renewable Energy Development Programme
- Competitive process for selecting EPC contractor incl. O&M during first 6 months
- International consultancy firm was hired to supervise O&M contractor
- Development in phases:
 - 1.9MWp commissioned in February 2013
 - Additional 600kWp commissioned in July 2013
- Owned and Operated by VRA

Navrongo Solar PV Project in Ghana – Selected Experiences

- Competitive procurement allowed to minimize CAPEX
- Need for timely planning and construction of transmission infrastructure to avoid delays
- Need for adequate security during construction and operation to avoid theft of solar modules



Photo: VRA

The FasoBiogaz project in Burkina Faso

- First grid-connected biogaz power plant in West Africa, commissioned in 2015
- Installed capacity of 275 kW, located in Ouagadougou
- Currently expanding to 550 kW and Expected to reach 1,375 MW by 2018
- Founded by Dutch entrepreneurs but fully operated by a local team
- Waste from the nearby slaughterhouse and brewery used as sources of biomass.
- Organic fertilizer produced as byproduct



ECREEE/GIZ Support for Development of Potential RE Flagship Projects

Since April 2015 a team of ECREEE and GIZ staff with assistance from a pool of international short-term experts is providing technical assistance for the development of potential RE flagship projects, e.g.

- Support to national utility in the Gambia for improving draft PPA and network connection agreement for utility-scale PV project
- Support to MoE in Burkina Faso for improving draft legal documents to be signed with winners of restricted solar PV IPP tender
- Support to MoE in Mali in the evaluation of bids for solar PV power plants

How to Apply

- Letter of request to ECREEE specifying required scope of support
- Filled-in Project Information Sheet
- Draft ToR (optional)

More information:

www.ecreee.org/TA-flagship-projects (English)

www.ecreee.org/fr/AT-projets-phares (French)

AwNiChe
KeALeboga
Siyabonga Murakoze
Ndatenda AwNiChe Jarajeuf
Shukran MeDaaSi Webale Jarajeuf Nagode
Misaoitra Tangi Unene Tenkey
Asante Dankie Misaoitra MeDaaSi
Obrigado Nagode Amesegénallô
Shukran AwNiChe Barka
Imena Siyabonga Asante Enkosi Enkosi
Jarajeuf ESe
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Obrigado Dankie
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