

# ECREEE - International Workshop on Renewable Energy Development in Macaronesia and West Africa

## Cabeólica – Challenges, Impacts and Lessons learned

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Investors



AFC EQUITY INVESTMENTS LTD



Lenders





## Cabo Verde Background:

- African SIDS (10 islands).
- Population of 500,000. Largest sector in the country is tourism.
- GDP per capita of 3.800 USD (2014 - World Bank).
- Electricity coverage above 95%.
- Exceptional conditions for wind energy production (constant and predominantly mono-directional winds with average of aprox. 10m/s).
- Prior to Cabeólica only 2.4 MW wind capacity connected to national grids – about 2% of installed capacity (1% penetration).
- Government sought expansion of wind energy capacity for over 10 years (first grid connected wind farm 1994).
- Ambitions plans for 100% renewable energy penetration 2020/2030



Source: <http://www.noscasacv.com/page/3.aspx>



## Investors



Africa Finance Corporation (AFC) is a multilateral development finance institution established by an international agreement between sovereign states. AFC's shareholders principally comprise African States and corporate entities, such as major commercial banks, other financial institutions and other private sector commercial entities.



Finnish Fund for Industrial Cooperation (Finnfund), a development finance institution supporting industrial development, based in Finland and having as its main shareholder the State of Finland;



InfraCo Africa Limited, a privately-managed, donor-funded infrastructure development company based in the United Kingdom. It has as shareholders and members several European Union countries;



## Main Partners



VESTAS, manufacturer of wind turbines and maintenance service provider;



Electra, SARL, the commercial and operational partner in the management of the wind farms.

## Lenders



European Investment Bank (EIB), long-term lender of the project;



African Development Bank (AfDB), long-term lender of the project;



## Key Financial Aspects:

- Project Finance Structure
  - Investment based on a Project Finance scheme: 30% equity and 70% debt, in a total project amount of +/- 60 M €
- Public Private Partnership
  - Experienced developers, High profile Institutional Investors with financial resources and specific business knowhow, Political will and utility as key technical/commercial partner
- Essential Instruments (institutional investors and debt providers).
  - BOO
  - 20 years PPA - Take or Pay.
  - SA, Escrow Account, DSRA, MA
  - Development and Investment Agreement between Investors.
  - Common Terms Agreement with the Lenders (requirements).
  - EPC and SAA contracts with Vestas
  - Insurance and MIGA coverage



# Main Challenges



## Main Challenges:

- **Development phase:** time necessary to finalize all preliminary studies; agreements; land concessions; permits and licenses; and contractual and legal documentation.
- **Conceptual design:** a dynamic power analysis of four completely different power grids, each with its own complex issues, had to be conducted to assess the limitations and evaluate wind energy integration.
- **Implementation phase:** transportation of 30 turbines to different islands with logistic limitations and equipment and personnel for in land specialized works.
- **Operating phase:** sudden transition from almost 100% diesel to a diesel-wind grid connected system posed challenges related to grid stability, dispatching of power generated by different sources and personnel capacitation.



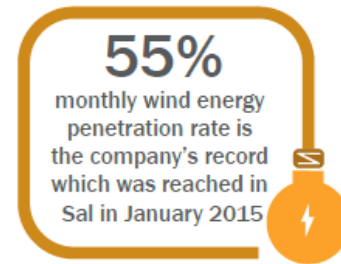


# Relevant Impacts

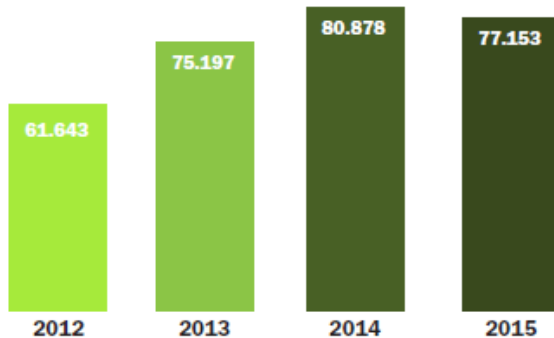


## Impacts – Operation Data

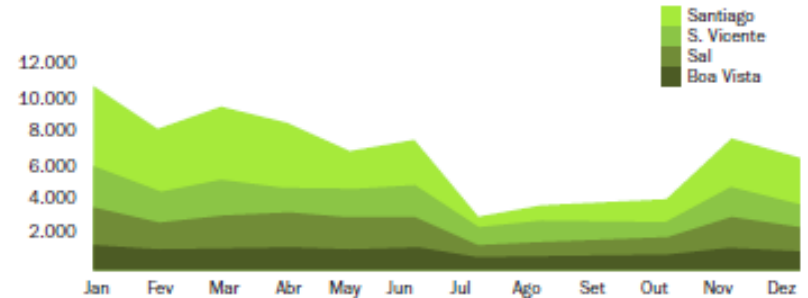
- In operation since 2011, currently contributing with more than 20% of energy consumption in the country.



Annually Produced Energy (MWh)



Monthly Energy Produced (MWh)







## Impacts - Economic Benefits:

- Tariffs stable, lower than current conventional production costs 2011 – 2015 and predictable for 20 years.
- Reduced oil imports for energy production reduces the Country's sensitivity to commodity prices and improves the trade balance.
- EUR 60 million of investment made with no public funding thus avoiding additional public debt.

### Employment Created (number of people)

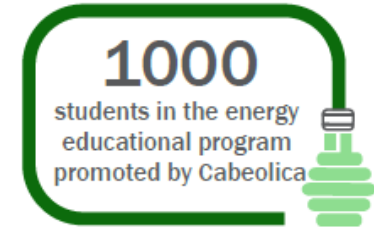




## Impacts - Environmental and Social Benefits:

Avoids over 50,000 tonnes of CO<sub>2</sub>e emissions yearly, thus aiding in achieving environmental obligations.

- Project is staffed entirely by locals
- Environmental education work in schools.
- Various studies financed by Cabeólica on relevant endemic species.
- Clean Development Mechanism:  
First CDM project in CV –structure is set which is an attraction for other CER and VER Projects.





**Lessons learned**



## Lessons learned:

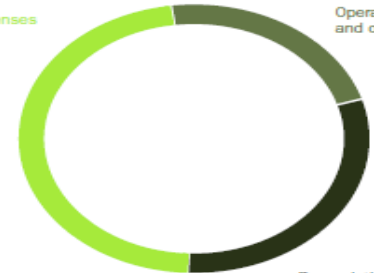
- A pioneer in large scale wind energy PPP in sub-Saharan Africa it has an important role in encouraging other countries
- An actual proof of 30%-40% penetration with existing conditions
- The key ingredients for the success of the Cabeólica PPP are:
  - Participation of solid, transparent and high profile partners;
  - Government support and Stable regulatory framework;
  - Contractual Instruments including long term PPA to ensure predictable and transparent cost planning and cash flow projections;
  - Other instruments to de-risk the project
- Issues to be considered for future projects:
  - Wind Technology – trend to continuous increase in turbine size
  - Scale up to attract institutional investors and lenders
  - Development costs - technical studies and legal/regulatory framework
  - Demand forecast
  - Financial structure critical to tariffs – interest rates currently



### Total Expenses

Financial Expenses

Operation, Maintenance,  
and other Expenses



Depreciation

# Obrigado / Thank you

## Investors



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## Lenders

