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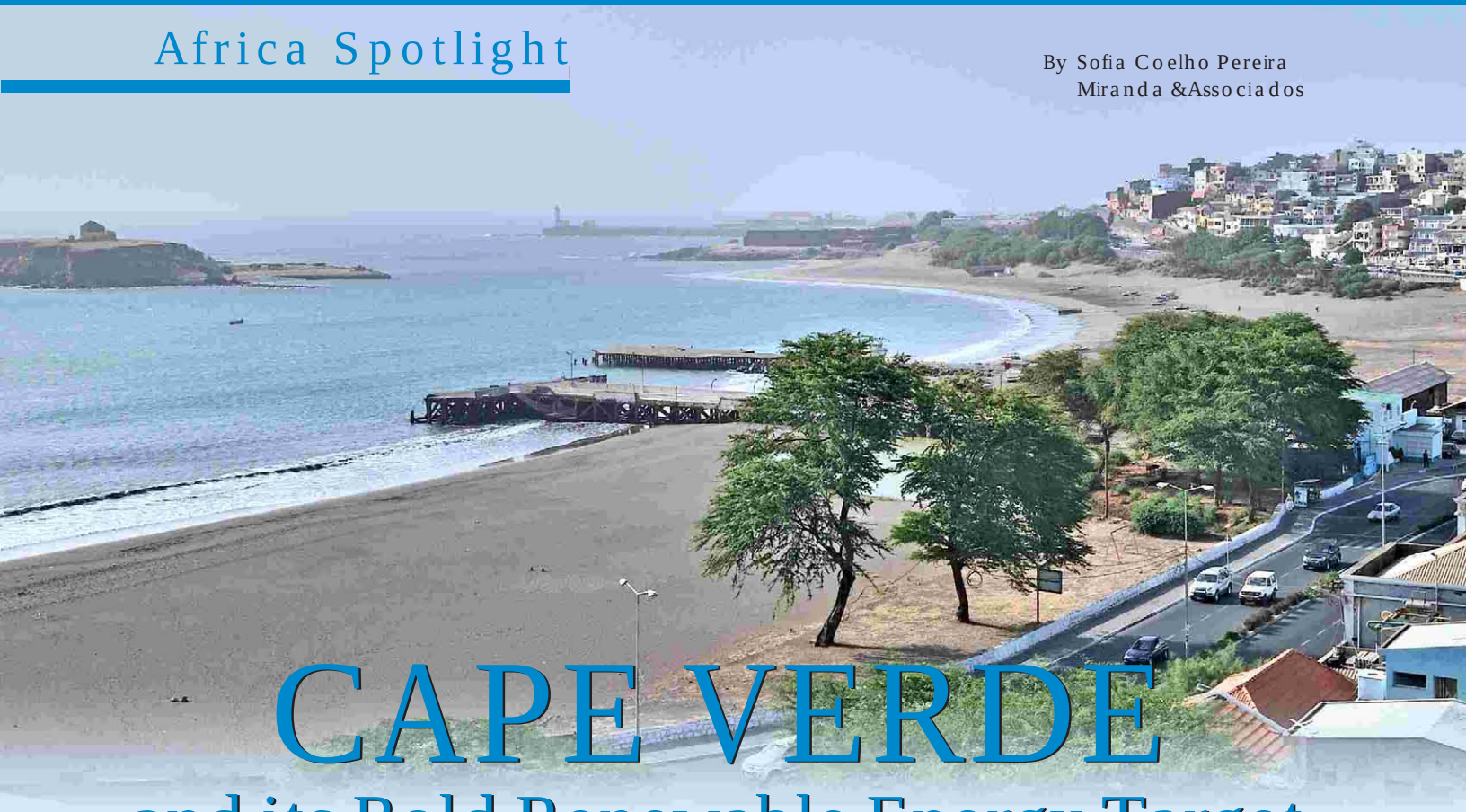

CAPE VERDE
and its Bold Renewable Energy Target

Island chains that do not possess fossil fuel reserves, like the Cape Verde archipelago, are often faced with an excruciating dilemma: spend important foreign exchange reserves on importing fuel to generate power, thus negatively affecting their balance of trade statistics and becoming dependent and/or indebted to foreign suppliers; or leave their populations with limited electrical power, with all the negative consequences arising therefrom. Another option, which is often forgotten or ignored, is to adopt a renewable energy-based strategy. This has been Cape Verde's vision over the years.

> "Those who know Cape Verde well know that the wind is a constant. When compared to solar power, there is an immediate advantage in wind: it can blow 24 hours a day."

The Target

Cape Verde has set itself a very audacious renewable energy target. As part of its "sustainable energy for all" agenda, it has pledged to obtain 100% of all electricity produced in the country from renewable resources by 2020, either through the main grid, isolated micro-grids or privategrids.

Cape Verde is an archipelago made up of 10 islandswith almost all of the islands' 550,000 residents currently having access to electricity. Cape Verde's per capita electricity consumption of 727 kWh per person per year is substantially higher than the sub-Saharan Africa average of 488 kWh per person per year. Although most of its electricity is still produced by generators, which run on imported petroleum products, Cape Verde has in recent years started to diversify its energy portfolio and currently roughly a quarter is provided by renewable sources.

Considering the lack of large hydropower resources, the absence of non-renewable natural resources and because of the insularity, Cape Verde has no way of getting energy cheaply, with the cost of electricity production still strongly linked to fluctuations in the international oil market. The country may, however, aim to achieve 100% renewable energy with a diverse resource mix, with a system based on solar, wind and energy storage (such as batteries and pumped hydropower).

Wind Power – the Cape Verdean Experience

Wind power is a natural resource for Cape Verde, which lies in the path of the northeasterly trade winds and consistently experiences high-speed winds. Cape Verde has a strong and mono-directional wind, which is great for constant and reliable wind energy production. Those who know Cape Verde well know that the wind is a constant. When compared to solar power, there is an immediate advantage in wind: it can blow 24 hours a day. Wind is converted into energy through wind turbines, used either to drive electrical generators or to directly power pumps and other machinery.

Recent studies proved that: (i) wind projects are the most competitive compared to other technologies, with an average levelized cost (the net cost to install a renewable energy system divided by its expected life-time energy output) of about € 100/Mwh; (ii) the majority of wind projects are economically competitive compared to the production cost of electricity using heavy fuel.

The first grid-connected wind turbines were introduced in Cape Verde in 1994, but they produced no more than 2% of the country's energy needs. In 2009 more than 95% of electricity was still produced from fossil fuels. However, in 2010 a new player entered Cape Verde's energy chess board with view to changing the status quo: the company Cabeólica, S.A., currently owned by the State of Cape Verde, Electra (Cape Verde's national electric utility), Edison Energy Asset Company(held in equal parts by Africa Finance Corporation and Aldwych Holdings Limited) and the Finnish Fund for Industrial Cooperation. Cabeólica implemented four wind farms, totaling 25.5 megawatts of installed capacity, generated more than 20% of the electricity used on the four islands with the highest demand: Santiago, where the capital Praia and the main commercial areas are located, São Vicente, the second biggest city and with the main port, and Sal and Boa Vista, the main tourist destinations.

Construction of the first wind farm began in 2010 and the farm started generating electricity in 2011. The last farm was completed in mid-2012. According to the 2016 Annual Report (the 2017 report is still not publicly available), the four wind farms have produced 370,297 MWh in their first five years of operation, with an annual average of 74,000 MWh, which varied annually more as a function of the limitations imposed by the off-taker (Electra) than due to oscillations in wind speed or wind turbine availability, which remained over 98%. A slight decrease in production has been registered in the past two years, due essentially to these same limitations.

Regulatory Framework for Renewable Energy

The electricity regulatory framework in Cape Verde comprises several legal statutes as well as a number of policy instruments, being the most important related to production of electricity using renewable energy sources the following:

(a) Decree-Law No. 54/99, of 30 August 1999 (amended in 2006 and 2013), which established the framework of the Cape Verde Electric System;

(b) Decree-Law No. 26/2003, of 25 August 2003, which creates the Economic Regulatory Agency (ERA). ERA is an independent administrative authority that regulates the water, energy and transport sectors. Its mission is to provide economic efficiency and the financial balance of the regulated sectors under its supervision, to ensure that services of public interest and with benefits to society are offered. Its main responsibilities include regulating the access to the activities in the sectors in which it acts, notably the electricity sector, setting forth the prices at which electricity from renewable energy projects is acquired by the national grid, regulating electricity tariffs, and supervising and applying sanctions for breaches of the legal and regulatory framework;

Source: Cabeólica S.A.

Boa Vista

(c) Decree-Law No. 1/2011, of 3 January 2011 (as amended in 2013 and 2014) on promotion and incentives for the use of renewable energy, which establishes the rules concerning the promotion, incentives, access to licences, and independent production of electricity using renewable energy sources, with the aim of promoting and incentivising the use of renewable energy in Cape Verde;

(d) Resolution No. 33/2011, of 5 September 2011, which approved the first Strategy and Action Plan "Cape Verde 50% Renewable by 2020";

(e) Resolution No. 7/2012, of 3 February 2012, which approved the Strategic Plan for the Renewable Energy Sector (PESER) and the Renewable Energy Development Zones (ZDER); and

(f) Resolution No. 100/2015, of 15 October 2015, which approved the National Action Plan for Renewable Energy (PNAER)and the National Action Plan for Energy Efficiency for the term 2015-2020/2030.

The framework and action plans were all designed to attract new players to the renewable electricity production market.

The Key Statute

Decree-Law No. 1/2011 is the key statute providing the legal regime on independent production and self-production of electricity from renewable sources. In general terms, electricity production is subject to a license, while electricity transport and distribution requires the granting of a concession by the Ministry in charge of the energy sector.

There are three regimes of electricity production, all open to private initiative and to the accumulation of licenses:

(i) The general regime, including independent production and self-production: in which a license granted by the General Directorate of Energy is required, following ERA's opinion;
(ii) Micro generation(self-production with connection power up to 100kVA): although no license is required, the registration of the producer in the self-production Registry system is mandatory; and
(iii) The simplified regime for decentralized rural electrification: for which a license granted by the relevant Ministry is required.

As to the remuneration of power production, the general regime is as follows:

- The producer is entitled to receive a fixed amount set by ERA for each kWh injected in the grid, which is stabilized for a 15-year term, as of the date of connection to the grid;
- No inflation rate updates and no amendments apply during the 15-year period; and
- After the15-year period there is a reduction of the initial fixed amount, between 20% and 35% (set by ERA), depending on the applicable technology.

The payment is received by the producer in one of two ways: (i) a monthly payment made by the Concessionaire; or (ii) through credits of renewable production, always within 30 days of the issuance of the invoice by the producer. In turn, the renewable electricity producer must pay a fee to the relevant Municipality or to the State, as the case may be, in the amount corresponding to 0.5% of the received remuneration. If the renewable production plant covers the territory of several municipalities, the estimated fee is distributed proportionally to the area covered by each municipality. Finally, Projects within ZDERs do not require an environmental impact assessment procedure or studies.

Conclusion

Cape Verde has had significant success in integrating wind (and other renewable sources) into its energy mix. Although 100% could be a difficult goal to achieve by 2020, the political and social decision in this regard has been taken and appears to be irreversible. The implementation of the renewable energy program will require an important investment in the electric grid to ensure the security and operability of the system. By adopting cutting-edge technologies and innovative business practices, Cape Verde can achieve its 100% renewable energy goal in a way that is cost-effective and realistic. Considering the generalized political will, public support, and investment opportunities, we expect more international players to increasingly look to the "*green*" (in Portuguese, "*verde*") archipelago.

About the Author

Sofia Coelho Pereira is a Principal Associate at Miranda & Associados, being a member of the Energy and Natural Resources Practice Team and co-head of the Cape Verdean Jurisdiction Team.