

How can Cape Verde meet its goal of 50% renewables?

Cape Verde can meet its goal of 50% renewables today by integrating energy storage. A 100% Renewable System is achieved from 2026, with a 20 year cost from 68 to 107 MEUR. Current paradigm doubles emissions in 20 years and costs ranges from 71 to 107 MEUR. The optimal configuration achieves 90% renewable shares with a cost from 50 to 75 MEUR.

Does seasonality characterize the renewable resource of Cape Verde?

All the analysed scenarios until this point rely fundamentally on HPS to deal with the seasonality characterizing the renewable resource of Cape Verde. As aforementioned, the sizing limit has been established based on current estimates of the total resource of the island.

Does Cape Verde have a wave energy potential?

In the case of Cape Verde, there is one study evaluating the wave energy potential which highlights the resource available, particularly for the northern islands, such as S#227;o Vicente . Unfortunately, the study identifies the wave resource to match that of the wind.

What is the Cape Verde reference system (CVRs)?

The recently published Cape Verde Reference System (CVRs) has been used as the baseline for the present study. It details the topology and components of the networks of both Santiago and S#227;o Vicente islands, including load and renewable profiles.

## 2.1. Energy mix, challenges, and future plans

Is Cape Verde a developing state?

The archipelago of Cape Verde is a developing state in West Africa with extreme external energy dependency on refined oil imports despite their available solar and wind resources. Aligned with the global energy transition, the local government established goals in 2011 aiming at 50 and 100% RES.

Which Island in Cape Verde is a study case?

We have selected the island of Santiago in Cape Verde as the study case given the available Open Access dataset, and the current goals of the local government of reaching 100% RES-based system by 2050, the ongoing direct and indirect electrification of road and maritime transport via EVs and hydrogen vessels, respectively.

2. Cape Verde Energy System Cape Verde's energy sector is characterized by the use of fossil fuels (petroleum products), biomass (firewood) and small expressive use of other ...

Cape Verde can meet its goal of 50% renewables today by integrating energy storage. A 100% Renewable System is achieved from 2026, with a 20 year cost from 68 to ...

Renewable Energy, 2000. Cape Verde Islands have important energy and water problems that limit their social

and economic development. A field study will be performed focused on Cape Verde Islands to describe the present and future regional power market and to give a clear indication of the best strategies for the optimization of the power energy supply mix in Cape ...

This article analyses the way to increase the penetration of renewable energy sources in the Island of S. Vicente, in Cape Verde, coupling the energy and water supply systems. ... Technical-economic analysis of wind-powered pumped hydro storage systems. Part II: model application to the Island of El Hierro. Sol Energy, 78 (3) (2005), pp. 396-405.

In particular, the island of Santiago, Cape Verde is selected as study case given its existing targets regarding reaching 50 and 100% renewable shares in 2030 and 2040, its data ...

Off-stream Pumped Storage Hydropower plant to increase renewable energy penetration in Santiago Island, Cape Verde April 2017 Journal of Physics Conference Series 813(1):012011

In this article different scenarios are analysed with the objective of increasing the penetration of renewable energies in the energy system of S. Vicente Island in Cape Verde. An integrated ...

Target: 100% renewable energy by 2020, become a model for zero emissions on a global scale and a knowledge hub for several sub-regions. Status: In progress RES: Windpower Implementation: Cape Verde is an island country spanning ...

to meet the growing trend in energy consumption, Cape Verde government launched an ambitious action program that aims to make 50% of Cape Verde's electricity consumption, by 2020, renewable-based. One of the main axis of the program relies on promoting the investment in renewable energy by independent power producers and public-private ...

Energy Storage provides a unique platform for innovative research results and findings in all areas of energy storage, including the various methods of energy storage and their incorporation into and integration with both conventional and ...

1 Off-stream Pumped Storage Hydropower plant to increase renewable energy penetration in Santiago Island, Cape Verde In's Barreira, Department of Electrical and Computer Engineering (DEEC), Instituto Superior Tcnico March 2017 Abstract--In order to reduce the high dependence on imported fuels and to meet the ongoing growth of electricity ...

CONTEXT. In 2010 the Government of Cape Verde had the vision of achieving 50% penetration of renewable energy by 2020. In order to be able to realize this vision it was necessary to create renewable energy storage capacity, being ...

In addition, lack of investments in technologies for efficient renewable energy storage and insufficient

metering equipment also contributes to high losses (estimated at 23% in 2018). ... DL No. 14/2006 (which revises the DL No. 54/99 sets ...

Cape Verde's Renewable Energy Initiatives and Their ImpactIntroductionCape Verde (Cabo Verde), a small archipelago of 10 islands off the west coast of Africa, has long been recognized for its geographical isolation, limited natural resources, and dependence on imported fossil fuels. However, in recent years, the nation has emerged as a pioneer in renewable ...

This work proposes a generation expansion planning model for Cape Verde considering a 20 years" period. Different scenarios were analysed, each one representing a possible RES

Cape Verde""s renewables account for 20% of the total installed capacity in the country, according to ALER, the renewables association of Portuguese-speaking African countries. Cabeolica""s ...

Climate change represents an opportunity to realign the development model, making it climate-resilient and based on low greenhouse gas emissions, while fully leveraging a regenerative economy. ... Santiago Pumped Storage will ...

Spanish Innovative Hybrid Tender for renewable-plus-storage projects. Eligible energy storage systems must be larger than 1MW or 1MWh with a minimum discharge duration of 2 hours. The storage-to-plant capacity ratio ...

This operation follows up project 2008-0226 CAPE VERDE WIND POWER PPP. This new project will finance the expansion of promoter"s existing windfarm in Santiago island and the installation of at least two Battery Energy Storage Systems (BESS) in Cabo Verde. In detail: i) a 13.5 MW expansion of the Santiago windfarm ii) battery systems (BESS) of approximately 10 MW at ...

Cape Verde"s Ministry of Energy and Commerce has inaugurated a 5 MW solar plant - the country"s largest to date in terms of capacity and efficiency.. The project is located in the town of ...

Good energy storage is still lacking to directly expand capacity. Sun and wind are the most important elements for Cape Verde to generate sustainable energy. The geographical location of Cape Verde in relation to the equator is a guarantee ...

In 2010 the Government of Cape Verde had the vision of achieving 50% penetration of renewable energy by 2020. In order to be able to realize this vision it was necessary to create renewable energy storage capacity, being pumped ...

This is a remote locality in Cape Verde"s Santo Ant&#227;o island, known for its challenging terrain and geographic isolation and previously faced energy access issues. That project features a renewable energy system, including solar power installations and energy storage solutions.

Second life energy storage involves deploying used electric vehicle (EV) batteries into stationary battery energy storage systems (BESS) and German company Fenecon announced last week (3 April) that its ...

In 2012 Cape Verde had an installed electricity generation capacity of around 300 MW, of which about 24% from wind power plants and 3% from photovoltaic stations. While solar power has an enormous potential as a source of ...

One research team suggested that a system based on solar, wind and energy storage (as batteries and pumped hydropower) could meet Cape Verde's goals. It certainly has a wide range of options for ...

Cape Verde is undertaking a pilot project on batteries energy storage for Renewable Integration. System and Grid Modelling and dynamic studies of the distribution network of Cape Verde. Identification of integration ...

During the presentation of the project, Cape Verde's National Director for Industry, Trade and Energy, Rito &#201;vora, announced that the energy storage centre is scheduled to be operational ...

The Islands of Cape Verde as a Reference System for 100 % Renewable Deployment ... energy storage, demand response, etc. In addition, the majority of studies are focused on the micro-grid ...

Cape Verde has inaugurated a 5 MW solar array on Sal Island - its largest PV plant to date, according to the Ministry of Energy and Commerce. September 20, 2024 Patrick Jowett

Vivo Energy supplies marine services in eleven markets across Africa. Our marine bunkering operations (fuels and Shell marine lubricants) are located in Cape Verde, Guinea, Madagascar, Mauritius, Morocco, Namibia and Senegal. We also sell Shell marine lubricants (but not fuel) in C&#244;te d'Ivoire, Ghana, Kenya and Mozambique.

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