Tunisia optimizing energy system

Is OSeMOSYS a long-term model for electricity production in Tunisia?
This paper presents a long-term model of Tunisia electricity system,based on OSeMOSYS (Open Source energy MOdelling SYStem),aimed at unveiling potential benefits of increasing RES in electricity production.

What is the energy system in Tunisia?
In BAU,the Tunisian energy system is based on the continuation of already legislated policies,current trends,existing plans and cost improvements in low-carbon technologies,without considering additional climate targets,with fossil fuels remaining the prime forms of energy until 2050 (Table 1). Table 1.

Does Tunisia need a restructured energy supply system?
Comparison of scenarios: Electricity production and discounted cost of electricity. The electricity mix in Tunisia mainly relied on conventional energy sources for over 50 years. Recently,due to fossil fuel prices oscillations and national reserves shortage,the need arose for restructuring the energy supply system.

How will the Tunisian energy system evolve?
The evolution of the Tunisian energy system in the next few decades will highly depend on the implementation of its Nationally Determined Contribution by 2030and its potential long-term low-emission strategies.

How will energy conservation impact Tunisia?
According to the revised Tunisian NDC, over the period of 2021-2030, the implementation of energy conservation programs will result in an average of 3.6% reduction in primary energy intensity and a 12% share of renewable energy in primary energy consumption until 2030 [8].

How is Tunisia promoting the diversification of its energy supply?
Despite its increasing energy consumption needed to meet growing mobility,industrial and residential requirements,Tunisia is promoting the diversification of its energy supply through the deployment of renewable energiesbased on the exploitation of domestic hydro,wind and solar resources [8].

This paper is based on the technical and economic analysis of the optimization model of the hybrid energy system. The analysis of the hybrid system is based on logistic type numerical models implemented in the software package HOMER (Hybrid Optimization Model for Electric Renewable). This software package is used to analyze wind and solar data from an ...

The findings demonstrate the technical and economic feasibility of powering large-scale desalination plants with hybrid renewable energy systems, reducing their environmental impact and energy costs. The optimal system proposed in this study can serve as a model for future desalination projects in Tunisia and other water-scarce regions.

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The objective of this study was to optimize a hybrid renewable energy system for an existing RO-based seawater desalination unit on Djerba Island, Tunisia. Through an analysis of the national renewable energy market and a focus on major energy sources available in Tunisia, we utilized HOMER software to model the system while considering various ...

This paper presents a long-term model of Tunisia electricity system, based on OSeMOSYS (Open Source energy MOdelling SYStem), aimed at unveiling potential benefits of increasing RES in electricity production.

A spatial perspective on renewable energy optimization: case study of southern Tunisia using GIS and multicriteria decision making. S Rekik, S El Alimi. Energy ... Prioritizing sustainable renewable energy systems in Tunisia: An integrated approach using hybrid multi-criteria decision analysis. S Rekik, S El Alimi. Energy Exploration ...

This paper scrutinizes the techno-economic feasibility of a solar hybrid off-grid power system, in a rural area in Tunisia. Hybrid Optimization of Multiple Energy Resources (homer) is used for the design and the optimization of a hybrid photovoltaic (PV)/diesel power system consisting of photovoltaic panels, a diesel generator, a converter, and a battery bank. A sensitivity analysis ...

The Government of Tunisia is taking steps to diversify its energy generation mix by bringing on hydropower and solar energy. As one of the most climate vulnerable Mediterranean countries, Tunisia"s electrical system is expecting increased demand resulting from expanding peak-hour demand patterns, intensifying cooling needs stemming from greater ...

renewable energy optimization: Case study of southern Tunisia Using GIS and multicriteria decision making Sassi Rekik and Souheil El Alimi Abstract Renewable energy systems have emerged as a viable option to mitigate the environmental impacts of traditional fossil fuels. However, the intermittent nature of these renewables, such as solar and

Optimization of a Hybrid Photovoltaic-Wind Energy System: this paper aims to develop and optimize a hybrid energy system for the Kerkennah desalination plant in Tunisia combines solar and wind power with the national grid to supply a cost-efficient source of energy.

In recent years, renewable energy technologies (RETs) have become increasingly popular worldwide to achieve energy sufficiency, reduce reliance on conventional fuels, and mitigate their devastating...

In the second part, a mathematical model is developed to optimize water production and energy system usage. The proposed hybrid energy system demonstrates significant reductions in energy consumption, leading to a remarkable 50.2 %, from 0.319 TND to 0.159 TND, decrease in the energy consumption cost to produce 1 m 3 of desalinated water. ...

Ambitious climate policies would induce deep transformations in Tunisia"s energy system, based on four inter-connected pillars: uptake of renewable energy, electrification of end-uses, energy efficiency improvements and the reduced carbon intensity of the fuel mix.

Energy System Models (ESMs) can be a tool for Tunisian decision makers to draw feasible and optimal long-term pathways towards energy independence, matching the increasing demand, the availability of local resources, the variability of prices and the intrinsic constraints of the Tunisian energy system.

Results indicate that increased economic efficiency associated with significant (but limited) injections of energy efficiency and renewable energy reduce gas imports, reduce emissions and increase local jobs.

Semantic Scholar extracted view of "Optimizing Green Hydrogen Strategies in Tunisia: A Combined SWOT-MCDM Approach" by Sassi Rekik ... Prioritizing sustainable renewable energy systems in Tunisia: An integrated approach using hybrid multi-criteria decision analysis. Sassi Rekik Souheil El Alimi. Environmental Science, Engineering.

FRIEDRICH-EBERT-STIFTUNG - SUSTAINABLE TRANSFORMATION OF TUNISIA"S ENERGY SYSTEM 2.1 THE ORIGINAL PHASE MODELS1 The phase model for energy transitions towards renewa-bles-based low-carbon energy systems in the MENA coun-tries was developed by Fischedick et al. (2020). It builds on the phase models for the German energy system transfor-

and reverse osmosis unit and a dynamic simulator of the proposed energy-water system with its energy management loop is developed using climatology year data of southern Tunisia. In optimization loop, the methodology with one-year dynamic simulation necessarily leads to very long convergence times of several days.

Tunisia, as a net importer of energy, is grappling with a multitude of challenges in its energy system. The country faces a persistent deficit due to high demand and limited local reserves. Currently, the energy mix heavily relies on natural gas (97%), while renewable sources contribute less than 3%, which includes solar, wind, and hydropower ...

This study explores the techno-economic feasibility of, both off-grid and on-grid, hybrid renewable energy systems for remote rural electrification in Thala City, located in the highest region of Tunisia, using wind and biomass ...

Assessment viability for hybrid energy system (PV/wind/diesel) with storage in the northernmost city in Africa, Bizerte, Tunisia ... Bizerte, Tunisia. T Maatallah, N Ghodhbane, SB Nasrallah. Renewable and Sustainable Energy Reviews 59, 1639-1652, 2016. 133: 2016: ... Modeling and optimization of a solar system based on concentrating ...

This paper investigated the potential operation of Hybrid Energy System (photovoltaic (PV)/wind

turbine/diesel system with batteries storage in the northernmost city in Africa, city of Bizerte in Tunisia. ... city of Bizerte in Tunisia. The Hybrid Optimization Model for Electric Renewable simulation software was used to simulate and optimize ...

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Since the use of the renewable energy sources requires an accurate evaluation and plan-ning, an optimization procedure has been adopted: the protocol exploits data -such as solar radiation and ...

Javed et al. [40], used a genetic algorithm and HOMER to optimize a hybrid PV/wind/energy storage system for a remote island under different case studies. Aberilla et al. [41], undertaken the design optimization and sustainability evaluation of stand-alone PV/diesel/wind/battery energy systems for remote homes and communities in rural areas.