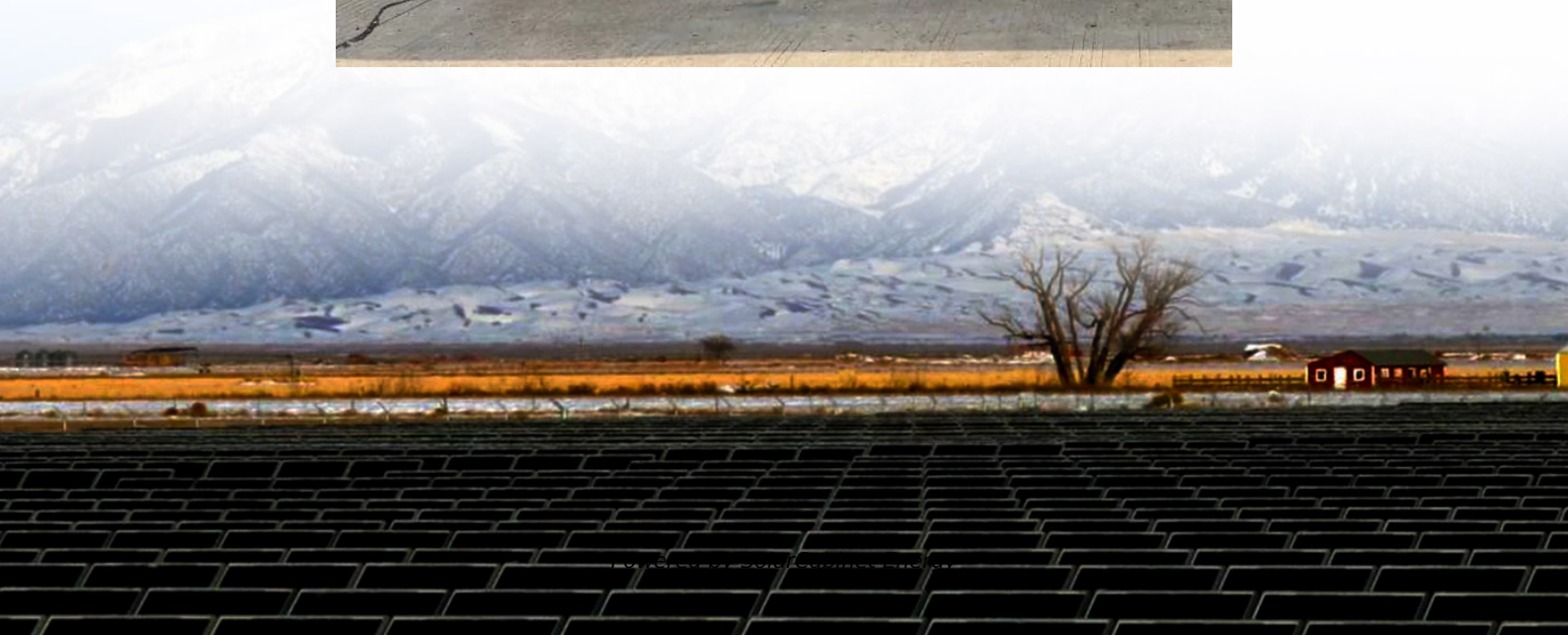


# Tunisia Hybrid Energy Storage Project





## Overview

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What is hybrid optimization of multiple energy resources?

Employing Hybrid Optimization of Multiple Energy Resources based on different scenarios includes grid-connected and stand-alone configurations with pumped storage hydropower and lead acid battery storage while minimizing the levelized cost of energy, the net present cost, and greenhouse gas emissions.

How much does electricity cost in Tunisia?

In Thala, Tunisia, the cost of purchasing electricity from the grid is measured in euros per kilowatt-hour (€/kWh). For households with a monthly consumption ranging from 300 to 500 kWh, the cost per unit of electricity is approximately 0.063 US\$. This price reflects the tariff structure set by the local utility or energy provider.

What is the energy landscape like in Tunisia?

The Tunisian energy landscape is marked by a contested evolution between the stagnation of natural resources and the sustained increase in demand. During the last two decades, the production of hydrocarbons has fluctuated between 6 and 7 million tons/year (Bettaieb 2018), while primary energy demand has grown at a rate of 3% per year on average.

What is a hybrid energy system?

The proposed system includes wind turbines, batteries, a hydro-pumped storage system, and a biogas generator. In the hybrid system, the electrical demand is coupled at the alternating current (AC) bus side.

Can biogas be used for organic waste treatment in Tunisia?

The Organic waste treatment using biogas technology is in line with the Tunisian government's energy transition strategy, with 100 MW of biogas power planned to be installed by 2030 (GIZ. 2018) under the Paris Agreement



commitment.

How much CO2 does a hybrid energy system produce?

Notably, 7% of electricity is generated from olive mill waste, 69% from wind turbines, and 24% is purchased from the grid. This hybrid system emits 342 tons/year of CO2, 76% less than a grid-alone system, contributing to an annual CO2 reduction of 1000 tons.



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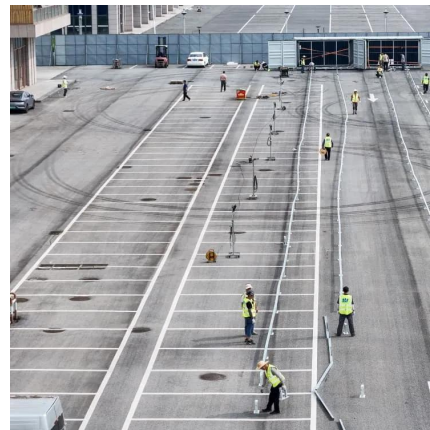


### [Deploying Battery Energy Storage Solutions in Tunisia](#)

ed their renewable energy potential, such as Tunisia. The objective of this report is to look into the potential of Battery Energy Storage System (BESS) development in Tunisia, in line with ...

### [Latest Progress of Tunisia Energy Storage Power Station ...](#)

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### **Optimal design and techno-economic analysis of hybrid renewable energy**

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 ...

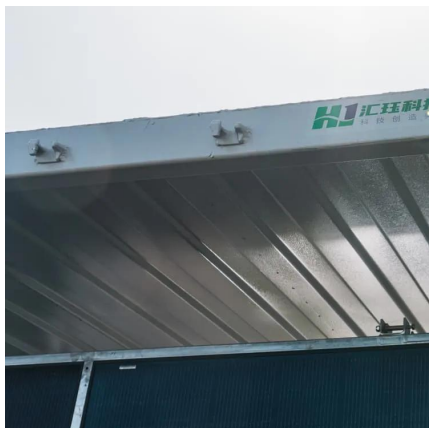
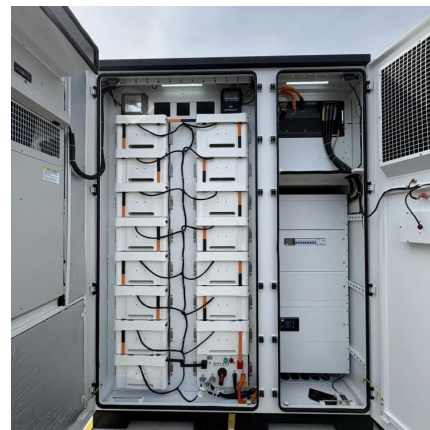


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