

Energy storage for backup power tunisia

To support the ambitious plans for decarbonizing the Tunisian power system, GET.transform teamed up with GIZ's program, Support for an Accelerated Energy Transition in Tunisia (TETA) through a Leveraged Partnership and contracted Energynautics to do an assessment on Battery Energy Storage Systems (BESS) for the integration of Variable Renewable Energy to the grid. The main BESS applications studied were backup generation and energy shifting.

The project kicked off in October 2022 and concluded in June 2023. Dr. Eckehard Tröster and Rabea Sandherr travelled to Tunisia to present the results and findings of the project. The event was held on June, 26th in Tunis for representatives of the Energy Ministry (MIME), the utility company STEG and university researchers.

The presentations included an overview of BESS technologies and applications, considerations for and types of BESS contracts as well as international examples, and finally the findings of the case studies. These show that BESS can be operated in combination with wind and solar PV power plants to follow the load profile and provide benefits to the Tunisian system.

Law 2015-12: Tunisia also put in place, in 2015, a regulatory and institutional framework to promote investment in self-generation projects and independent production of electricity from renewable sources, with Law 2015-12 on electricity production from renewable energy as a reference text. This law established a legal framework governing the implementation of electricity production projects from renewable energies through three regulatory regimes:

This law provides three possibilities for electricity production from renewable energies: self-consumption; total and exclusive sale of power to the Tunisian Electricity and Gas Company (STEG) for national consumption; and export.

Tunisia has significant renewable energy resources, mainly solar and wind energy. The exploitable potential of PV energy is estimated by the National Agency for Energy Management (ANME) at several hundred gigawatts. The overall average horizontal radiation (GHI) is about 1850 kWh/m², which translates into an average annual production of solar PV systems of about 1650 kWh/kWp.

Currently, Tunisia is in the process of launching its first generation renewable energy projects. As part of this process, the state plans to build renewable energy projects with a capacity of 500 MW. Annual investment for these projects is estimated at USD400 million, which will improve Tunisia's energy autonomy, reduce production costs and create jobs. In addition, a call for tenders regarding the installation of a wind farm with a production capacity of 300 MW in Jebel Sidi Abderamane (governorate of Nabeul) and Jebel Tabeka (governorate of Kebili) has been launched in 2021.

The Energy Transition Fund (ETF) also needs to be made fully operational, as the main financing tool for activities related to energy efficiency and renewables in Tunisia. The application of new taxes on energy products (Law No. 2013-54 art. 68) will help strengthen its resources, and the ETF will allow the granting of credits and support for energy management projects in the form of refundable grants or equity participation (as provided by Decree No. 2017-983).

Given the multiplicity of ministries and public institutions involved in renewable energy projects, investors are sometimes faced with slow administrative procedures that delay the start of their projects. To overcome this, the government will need to simplify the procedures for granting authorizations and employ qualified staff able to study the various requests in a shorter time span. The Tunisian Investment Authority, whose mission is to accompany investors in all stages of their projects, can be a one-stop-shop to facilitate the process.

Reducing carbon emissions: Tunisia is a signatory of the 2015 Paris Agreement on climate change. The state has thus committed itself in the Nationally Determined Contribution (NDC) to reduce its greenhouse gas emissions in all sectors (energy, industry, agriculture, forestry and other land uses, waste) so as to reduce its carbon footprint by 41% in 2030 compared to the base year 2010. The energy sector is specifically targeted for a 46% reduction by 2030. This reduction in carbon intensity will be achieved through renewable energy projects.

To honor its international and national commitments, it is essential to involve all sectors in the energy transition. It is within this framework that ANME launched a national program for the energy transition of public institutions and ministries in April 2021. This initiative will be spread over four years (2021-2024) and will result in the installation of self-generating PV systems. The ministries of health, education, higher education and youth and sports will be equipped as a priority, resulting in a 26% reduction in electricity consumption.

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