



## Potential of Clean Energy and Raw Materials: case of Tunisia

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### Abstract

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Tunisia has embarked on an ambitious clean energy plan aimed at reducing its reliance on fossil fuels and enhancing energy security. The country targets increasing the share of renewables in its energy mix to 30% by 2030, and may be 100% by 2050 with significant investments in solar, wind, and hydrogen projects. This strategy is aligned with global sustainability goals and Tunisia's commitment to the Paris Agreement. The plan emphasizes not only energy generation but also the development of infrastructure and regulatory frameworks to support the transition to a low-carbon economy. To achieve its clean energy targets, Tunisia requires substantial quantities of raw materials and particularly silicium, which are essential for solar panel production. The demand for high-purity silicium is expected to rise as solar capacity expands, necessitating investments in both local development units and importation. Additionally, the country must secure other critical materials such as rare earth elements for energy storage systems. Ensuring a stable supply chain and developing local industries for solar panel production are crucial to meet the quantitative and qualitative demands of the clean energy sector.

Tunisia is also exploring the potential of green hydrogen as a key component of its clean energy strategy. The hydrogen plan focuses on leveraging the countries to produce hydrogen through electrolysis, with the aim of becoming a regional hub for green hydrogen export. This initiative could significantly contribute to decarbonizing industries, enhancing energy independence, and creating new economic opportunities. The plan includes developing pilot projects, establishing partnerships with international stakeholders, and investing in research and development to scale up hydrogen production.

One of the most promising applications of clean energy in Tunisia is in the extraction and processing of phosphates, a critical industry for the country's economy. By integrating clean energy into phosphate mining operations, Tunisia can reduce its carbon footprint and lower operational costs. Not only renewable energy can power the extraction processes and facilitate the electrification of transportation within mines but additionally, the use of green hydrogen produced from renewable sources can be employed in the transformation of phosphate rock into fertilizers, further enhancing the sustainability of the industry.

**Keywords:** Clean energy, green hydrogen, phosphate, raw materials, sustainability, industry, renewable sources.