

## Hydrogen energy storage sudan

A new International Solar Alliance (ISA) study [Readiness Assessment of Green Hydrogen in African Countries](#) is an in-depth analysis of the four African countries that have strong developing trends and considerable potential to become major green hydrogen hubs.

The ISA report said that many countries have announced government-to-government (G2G) partnerships between the EU and other nations for the development of green hydrogen ecosystems, covering functions such as partial project financing, project construction, research and development, skilling, manufacturing, commodity offtake, etc.

"For example, Morocco aims to strengthen its "privileged partnership" with the European Union (EU) for green hydrogen/green ammonia exports, thereby partially securing commodity offtake. All shortlisted countries are offering significant non-financial enablers to project developers to promote green hydrogen projects."

Also, the land auctions in Egypt and Morocco are significant, as these countries are not only providing land near ports to facilitate ammonia exports but have also committed to contributing equity to projects.

"Green hydrogen production may therefore need the usage of seawater desalination facilities. This has a limited impact on the levelised cost of hydrogen or LCoH (about 1%-2%). However, there is a need for focus on developing such projects."

Egypt and Morocco have a strong industrial base that can potentially offtake a significant quantum of domestically produced green hydrogen, thereby providing market de-risking mechanism.

"All the countries can however develop core downstream industries domestically to help offtake green hydrogen and produce value-added commodities, such as green chemicals, fertilisers, steel, etc. Such industries may help reduce the burden of imports as well as offer export opportunities."

The study says that large-scale electrolyser manufacturing projects play a crucial role in reducing import dependency for critical equipment needed in green hydrogen initiatives.

"There are several important examples of various financial instruments--such as tax credits, Contracts for Difference (CfDs), Viability Gap Funding (VGFs) and demand aggregation--being adopted by some countries such as the US, Japan, and India.

Sources like concentrated solar power (CSP), hydro, offshore wind and geothermal energy need to be studied in detail as almost all the countries have one or a combination of such high CUF renewable energy resources.

"The development of a green hydrogen ecosystem offers a significant opportunity for several African countries to grow their economies in a sustainable and "future-proof" manner. Many of these nations possess substantial renewable energy potential including solar, wind, hydroelectric and geothermal resources," the report says.

Namibia &#8211; Well positioned for developing renewable energy and hydrogen projects due to its favourable geographic location with abundant renewable resources and low population density. It has one of the highest solar irradiance in Africa, with an average GHI of 6.43 kWh/m<sup>2</sup> (ranging between 5.88 and 6.71 kWh/m<sup>2</sup>) and an average DNI of 7.6kWh/m<sup>2</sup> (ranging between 5.97 and 8.61kWh/m<sup>2</sup>). Namibia has an excellent potential for CSP projects with around 85.7% of its land area receiving a high DNI of 6.6kWh/m<sup>2</sup> or more.

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