

THE EMERGENCE OF GREEN HYDROGEN IN AFRICA



A. Introduction

A consensus is fast emerging that hydrogen will play a key role as an energy vector and a pillar in the ongoing energy transition. It promises to accelerate transformative changes across many sectors, including energy. According to the International Renewable Energy Agency (IRENA), increasing production of green hydrogen and its derivatives can cut carbon dioxide emissions by 10% in the period up to 2050.

To be considered green hydrogen, the electricity required for its production should mostly come from renewable power sources such as solar, wind and geothermal.

Green hydrogen would act like a battery that allows the storage of excess energy created by renewables like solar and wind during their peak cycles. It would reduce the intermittency of renewables that cannot generate power at all hours of the day, ensuring a sufficient and continuous supply of power for grids. This is **what makes green hydrogen attractive** on the frontiers of decarbonization – the promise of significant usable energy without contributing to climate change.

The green hydrogen sector is still in its infancy in Africa but with its phased expansion, the continent could reduce reliance on fossil fuels, lower carbon emissions and address long-standing energy deficits. Recent deals signed could serve to catalyse the advancement of the African green hydrogen market.

There are a number of upcoming Green Hydrogen Projects in Africa including projects proposed in Mauritania; Egypt; Namibia, Kenya, Morocco and Nigeria. Further, six African countries including Egypt, Kenya, Mauritania, Morocco, Namibia and South Africa launched the Africa Green Hydrogen Alliance ("**AGHA**") in Barcelona in May 2022. The AGHA aims to be at the forefront of developing Africa's green hydrogen economy.



B. Legal and Commercial Challenges

One of the greatest challenges faced by low carbon hydrogen production is that it remains (for the most part) commercially nascent, resulting in the following challenges:

(a) Uncertainty of Demand:

Granted that there is very little commercial scale of low carbon hydrogen production at present, the demand from consumers remains unknown. Given demand uncertainty, a long-term offtake strategy to provide revenue stability will be key for investors of green hydrogen projects in order to cover the significant production costs, financing costs and capital and operational expenditure needed to establish the infrastructure required to produce, store and transport green hydrogen. Such offtake agreement will likely require the enhancement of government to support price and volume risk as well as protections for political risk events in order to make such projects bankable.

(b) A Lack of a Dedicated Regulatory and Policy Structure:

The consequence is that the elements of the hydrogen production, transport, storage and distribution process often fall within the remit of various different rules and regulations, whereas other aspects remain without clear regulation. It is also noted that perceived risks around leakage and flammability mean that it is also subject to a host of safety regulations applicable to major hazards.

(c) A Lack of a Physical Infrastructure for Distribution and Storage:

For one to fully capitalise on low carbon hydrogen's ability to decarbonize the energy system, one would require effective infrastructure for distribution and storage. Green hydrogen can be generated at times of excess renewable energy and then stored until needed (legislation permitting), i.e.

as and when energy demand spikes. Effective distribution infrastructure is required in order to ensure that low carbon hydrogen can be used to meet energy demands outside of its geographic location.



C. Closing Remarks

The vision of green hydrogen is very much on the global agenda, as highlighted at the COP26 summit with the signing of a multi-lateral agreement to accelerate the development of green hydrogen as part of one of the five "*Glasgow Breakthroughs*". Economic viability and ensuring robust legal and regulatory frameworks supported by long agreements that are bankable are key from a legal perspective. This of course must go hand in hand with the investment in the technologies to support green hydrogen production and efficient storage, transport and refuelling facilities.

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