The Africa-EU-China Hydrogen Industry Circle

EVENT REPORT

On 26 October 2023, the European Institute for Asian Studies (EIAS) together with the Institute for China-Europe Studies (ICES) held an expert discussion on “The Africa-EU-China Hydrogen Industry Cycle”. The expert discussion delved into Africa’s hydrogen potential, as well as the Chinese solar panel and electrolyser industry to identify opportunities for cooperation between the EU, Africa, and China. The expert discussion started with welcome addresses by delegates from Morocco, South Africa and China, followed by two presentations and two workshops that united a number of highly distinguished speakers.

During the opening remarks, Hakima El Haite, former Minister of Environment of Morocco and UN Adviser for Zero Waste, highlighted that the EU is currently not on track to meet their climate objectives, but that African countries can play an essential role in supporting the European energy transition via hydrogen production. She emphasized that the African continent, due to its rich renewable energy resources, can become a hub for the development of hydrogen. Similarly, a representative of the Embassy of the Republic of South Africa, outlined South Africa’s blueprint for developing a local hydrogen economy, including a special economic zone for hydrogen. Lastly, Changlin Gao, Minister Counsellor for Science and Technology Affairs from the Chinese Mission to the EU gave some final remarks on China’s role in making key technologies such as hydrogen electrolysers more affordable.

Through a presentation on “Africa’s extraordinary green hydrogen potential” by Matthieu Crest, partner at Corporate Value Associates, different ways to tap into Africa’s hydrogen potential were outlined. The project, financed by the European Investment Bank, emphasised Morocco, Mauritania, Egypt, Namibia, and South Africa as the most promising countries for hydrogen development. Based on a case study of Mauritania, it was outlined how a solar energy-focused approach to hydrogen could supply sufficient amounts of renewable hydrogen to cover both domestic and international demand. To facilitate hydrogen export from Mauritania to Europe, a pipeline to the south of Spain could pose a promising solution. Furthermore, a positive side effect of the hydrogen production process would be fresh water production for the local Mauritanian communities. However, key to a successful implementation of hypothetical pilot projects such as the Mauritania case study are three factors. Namely, active national planning; successful pilot projects; and aggregate mass-scale will be essential to tap into Africa’s hydrogen potential.

Building on Matthieu Crest’s evaluation of Africa’s hydrogen potential, Thierry Lepercq, President of HyDeal, outlined the role of the Chinese industry in achieving competitive green hydrogen. According to his analysis, solar energy is the starting point for creating affordable renewable hydrogen, given that it is an infinite resource with potential for exponential growth. Especially on the African continent, there is high potential for expanding the production of

solar energy. Referencing the Chinese solar panel industry, Lepercq showcased that the Chinese industry was the key driver for creating a global, competitive solar panel market. As such, the Chinese industry will be needed to achieve the same regarding hydrogen. As the EU is aiming to produce up to 10 million MG of renewable hydrogen by the end of 2030, there is a promising synergy between the European aspirations, the African potential, and Chinese industrial capabilities.

Moderated by Lin Goethals, Director of the European Institute for Asian Studies, a workshop on Africa's hydrogen resources and potential for production was held with three prestigious speakers. Moundir Zniber, CEO of Gaia energy; Wim Damme, Head of green hydrogen and green ammonia trading at Envision; and Gabrielle Gauthey, Senior Vice-President for European Public Affairs at Total Energies, took the panel. Representing the industry, the respective representatives of Gaia energy, total energies and envision outlined their involvement in the renewable hydrogen industry. Gaia energy, a Moroccan company focusing on the export of hydrogen to Europe specifically highlighted Morocco's hydrogen potential. Morocco as a hydrogen production location is attractive given its high onshore wind and strong solar radiation, its large territory available for hydrogen production, and its close proximity to Europe. Currently, Gaia energy has hydrogen production projects in 7 different areas of Morocco and is planning to export a total of 1 million tonnes of green hydrogen to Europe over the next ten years. Despite Morocco's potential for hydrogen export to the EU, the transport of hydrogen from Morocco to Europe currently poses a challenge that has to be overcome.

Having recently joined the market for renewable hydrogen, Envision, a Chinese private company is now involved in the entire value chain of renewable hydrogen production. Having previously focused on the construction of wind turbines for renewable energy, Envision now expanded to produce alkaline- and PEM electrolysers. Currently, Envision is constructing the first ever net zero industrial park for green hydrogen in inner Mongolia. While mainly active in China and Africa, Envision is open to the European market as well.

Representing the European hydrogen industry, Total Energies currently has hydrogen production units in Europe, the middle east, as well as Africa, the majority being in Mauritania. With a particular focus on hydrogen in the heavy duty vehicle sector, Total Energies is heavily relying on Chinese solar panels to meet the high input required for hydrogen production. However, Total Energies representative Gauthey pointed out that the European certification chain for Hydrogen, as well as the recent Carbon Border Adjustment Mechanism (CBAM) pose a challenge for collaboration with international exporters of hydrogen to Europe. Nevertheless, Total Energies regards the African continent as essential for hydrogen production.

The key takeaway from the first workshop is that when it comes to renewable hydrogen production, Africa has the space and resources, the EU has the market, and China the manufacturing capabilities, making it a promising area for trilateral collaboration.

The second workshop, on the industry and finance of renewable hydrogen, was moderated by Thierry Lepercq of Hydeal. Speakers included Mohamed El Hamed, Senior Advisor to the President of the Islamic Republic of Mauritania; Hugues Seutin, hyfinity director at Vinci

Construction; and Christopher Tan, Vice-President at Power China. Mauritania is regarded as particularly attractive for hydrogen production given its large resources in solar and wind power. Thus, collaboration between European companies and Mauritania is already developing, with several memorandums of understanding signed. The French business Vinci Construction with its long history in Africa, confirmed the hydrogen potential of African countries. However, it was emphasised that political and financial stability in Africa are essential to drive European companies to invest in Africa's hydrogen potential. Furthermore, China's leading role in electrolyser capabilities was highlighted, underlining that EU-China-Africa collaboration can be a promising endeavour in the hydrogen sector.

Power China, a Chinese construction company involved in energy projects throughout Europe, Africa, and South America emphasised the importance of levelizing the cost of electricity in order to achieve competitive renewable hydrogen. According to Power China, the Chinese industry is likely to play a large role in levelizing costs. Approximately 70% of new start-up companies in China are constructing alkaline electrolysers with a rising trajectory. Thus, with a large quantity of electrolysers entering the markets, prices are set to drop making the technology more accessible. Furthermore, Christopher Tan, vice president of Power China, stated that he believes that Europe with its strong financial system will be the first area where hydrogen will be commercialised.

The event's key takeaway is summarised in the analogy of the golden triangle, referencing Africa's, China's, and the EU's collaborative renewable hydrogen potential. While acknowledging existing challenges when it comes to renewable hydrogen production, trilateral collaboration is likely to overcome these. Recognising Africa's potential for renewable hydrogen, the EU market's demand for it, and China's capacity to upscale production to achieve levelized prices, constitutes a valuable step towards the green energy transition.