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H_2ATLAS-AFRICA – Atlas of Green Hydrogen Generation Potentials in Africa

Analysing the production and export of green hydrogen in Sub-Saharan Africa

In Germany, wind and sun do not provide sufficient energy to cover the demand for green hydrogen in future. Within its National Hydrogen Strategy, the German Federal Government is therefore promoting cooperation with Africa: An atlas of potential helps researchers to assess the opportunities for producing and exporting green hydrogen in Africa. They investigate the technological, ecological, economic, and social feasibility in detail, taking into account the current and future local energy demand. The goal is to support a sustainable and economical development of the African continent by means of a sustainable hydrogen economy, helping Africa to become a successful exporter of green hydrogen and thereby increasing its importance on the international energy markets.

It is still unclear just how high the demand for green hydrogen will be in Germany in 2050. However, it is certain that Germany will have to rely on exports from abroad since its energy demand is higher than the quantity of energy it is able to produce domestically. Currently, the Max Planck Institute for Chemical Energy Conversion assumes that Germany will need to import approximately 45 million tons of hydrogen by 2050.

In Africa, for example, there is enough wind and sun to produce green hydrogen out of renewable energy on a large scale. The Federal Ministry of Education and Research therefore aims to establish strategic partnerships with countries in Western and Southern Africa which have enough undeveloped spaces to not only cover the local energy demand but also to export energy in the form of green hydrogen.

The “Atlas of Green Hydrogen Generation Potentials in Africa” focuses on assessing the opportunities in Sub-Saharan Africa of producing and exporting green hydrogen. Moreover, it examines how producing green hydrogen can support the sustainable development of the African continent. In more than 30 countries, the project analyses the following:

- the available renewable energy and water resources
- the available space for producing green hydrogen
- the cost-efficiency of producing green hydrogen
- the local energy requirements and infrastructure
- the social and sociopolitical conditions

The objective is to finalize the atlas of potential for Western and Southern Africa by 2021.

The project has two major goals: Firstly, it aims to show on an interactive map which sites are suitable for setting up infrastructure for producing green hydrogen. The result will be an interactive atlas, showing

the potential of producing green hydrogen in Sub-Saharan Africa.

Secondly, pilot projects as part of the project aim to point out how to realize the economically efficient production, export, and distribution of green hydrogen. The pilot concepts should be set up in such a way that they improve the local situation on the one hand, while demonstrating how to realize an economically feasible supply chain for green hydrogen on the other hand.

Also, the atlas of potential can be used as a pioneering project for realizing a green hydrogen-based economy and sustainable development in the region, providing assistance to political decision makers, investors, and researchers.

The atlas helps to create a green hydrogen-based economy.

In the joint project, Forschungszentrum Jülich GmbH co operates with researchers from the centres for renewable energy of the regional governmental bodies ECOWAS Regional Centre for Renewable Energy and Energy Efficiency (ECREEE) and SADC Centre for Renewable Energy and Energy Efficiency (SACREEE), as well as their respective Science Service Centres for Climate Change and Adapted Land Use (WASCAL and SASSCAL).

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