

H₂ POWER-AFRICA – Atlas of Green Hydrogen Generation Potentials in Africa

Go green Go Africa: German-African Partnership for sustainable energy solution through green hydrogen

Africa has a growing population of nearly 1.3 billion, which has been increasing at an average annual rate of 2.5% for the last 10 years. The growing population directly implies growing demand for energy and expanded infrastructure to match the growth. The overall sustainable development of Africa and indeed the global effort to reduce climate degradation will stem from a holistic energy system driven by renewable energy. This challenge of reaching 100% renewable based energy systems will require joint effort and partnership across borders in order to find feasible climate-friendly solutions. In a new initiative, Germany is collaborating with African countries to explore the utilization of green hydrogen and hydrogen derivatives as an energy option in a joint effort. H₂ POWER-AFRICA project is the first-phase of a joint initiative of the German Federal Ministry of Education and Research (BMBF) and African partners in the Sub-Saharan region (SADC and ECOWAS countries) to explore the potentials of green hydrogen production from the enormous renewable energy sources within the sub-regions. The aim is to support sustainable and economic development through a viable hydrogen economy with a high potential to make Africa an exporter of green hydrogen, hence gaining even more relevance in international energy markets.

1. Project main objectives

Sub-Saharan Africa in general is faced with the threat of an energy crisis primarily due to the growing population. Therefore, there is an urgent need to find sustainable and climate-smart ways of generating energy for the growing population. The H₂ POWER-AFRICA project is focused on assessing the potential of generating hydrogen in sub-Saharan Africa from the renewable energy resources in the region. It will focus on detailed technological, environmental, economic and social feasibility assessment taking local energy demands into consideration. It will assess the availability and suitability of land and water resources while taking into account land use for agriculture and local demand for water. .

2. Method

Realizing that such initiative as the H₂ POWER-AFRICA will only thrive in true partnership, the project is designed to rely on the involvement and strong commitment of all partners. Conscious effort is made to galvanize stakeholders support at all levels through constant engagement via workshops, seminars and consultations. The relevant renewable energy centres of the regional government agencies (ECREEE and SACREEE) and their corresponding climate service centres (WASCAL and SASSCAL) are involved in the project.

The project will employ both theoretical analysis and field data collection. It will begin with assessing renewable energy potentials and energy utilization in the different countries. This parameter is key as green hydrogen can only be obtained if sufficient renewable energy can be harnessed. It will extend to land eligibility and water resources assessment necessary for the hydrogen infrastructure. Based on these information and other local preferences and conditions, the green hydrogen potential is estimated with the applied modeling tools.



Sunrise in the Africa Savanna. Source: www.pinterest.de

The project technical teams for Western and Southern Africa work hand in hand with the technical team in Forschungszentrum Jülich to ensure that the relevant data need for each region are obtained. Validation workshops are planned to ensure that all project partners and stakeholders agree to results.

3. Expected results and impact

The project result will be presented in form of an interactive atlas, which will show the “locations of interest”, serving as decision support tool for the concept and design of pilot hydrogen plants to be taken up in the next phase of the project. The atlas can contribute towards a clear roadmap for enabling a green hydrogen-based economy in sub-Saharan Africa thus can be of great relevance for policy makers, investors, researchers and indeed all stakeholders in both Germany and Africa. The project is designed to support capacity building in Africa in the field of green hydrogen technology through exchange visits of German and African students/researchers, joint workshops and establishment of hydrogen graduate programs in partnership with WASCAL, Forschungszentrum Jülich GmbH and RWTH Aachen.

4. Project partners

H₂ POWER-AFRICA is a joint project that is being implemented by Forschungszentrum Jülich GmbH (lead German partner and project coordinator), West African Science Service Centre on Climate change and Adapted Land use (WASCAL), and Southern Africa Science Service Centre for Climate change and Adaptive Land Management (SASSCAL). Other associate partners include relevant German industries, the SADC Centre for Renewable Energy and Energy Efficiency (SACREEE) and the ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE).

Project title

H₂ POWER-AFRICA – Atlas of Green Hydrogen Generation Potentials in Africa: A technological, environmental and socioeconomic feasibility assessment

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