

Promoting value chains for CRM and GH₂ and derivatives in South Africa (H2.SA II / BVC)

Capacity building and technical support for strengthened green hydrogen (GH₂) and critical raw materials (CRM)/batteries value chains in South Africa

The challenge

Global demand for green hydrogen (GH₂), its derivatives (Power-to-X, PtX) and battery value chains is increasing as **countries seek to defossilise hard-to-abate sectors and strengthen energy security**. The European Union and other major economies prioritise hydrogen and secure access to critical raw materials (CRM) as key components for the energy transition. **South Africa** is well positioned to participate in these emerging markets. The country has strong renewable energy potential, significant reserves of platinum group metals and manganese, an established industrial and mining sector, and deep industrial expertise. These advantages create a solid foundation for South Africa **to become a competitive producer of GH₂ and PtX products, while also developing local CRM and battery value chains**, unlocking opportunities for export growth, industrial transformation and a just energy transition.

Despite this potential, moving from planned initiatives to bankable projects remains challenging. Key challenges projects face include

- difficulties securing offtake agreements and financing,
- infrastructure constraints,
- regulatory and coordination gaps,
- skills shortages,
- market uncertainties.

South African stakeholders are building the capacity, coordination, and tools required to develop a dynamic CRM/battery and green hydrogen ecosystem. As a result, progress in establishing private sector-led energy value chains in these areas has been gradual.

H2.SA II / BVC aims to strengthen the enabling environment for green hydrogen and battery value chains through policy support, investment facilitation and capacity development.



Project name	Promoting value chains for CRM and GH ₂ and derivatives in South Africa (H2.SA II / BVC)
Commissioned by	Federal Ministry for Economic Cooperation and Development (BMZ)
Co-financed by	European Union (EU)
Project region	South Africa
Political Partner	Department of Electricity and Energy
Duration	11/2025 – 10/2030
Financial volume	27.5 Mio. EUR

Our approach

H2.SA II / BVC support its partners from Government, private sector, and civil society, with expertise, resources, and expanded capacity to promote South African sustainable battery and green hydrogen value chains. The project is structured around the following areas of intervention (1) Strategy, policy and regulatory framework, (2) Private sector cooperation & finance, (3) Capacity strengthening, Research & Development, (4) Sustainability and Just Transition.

How it works

PtX products refer to synthetic fuels, such as carbon neutral synthetic kerosene, raw materials for the chemical industry or synthetic ammonia. To make PtX products, H₂ is obtained from water and power through electrolysis. For the H₂ to be green, the power must come from RE sources. By adding CO₂ or other carbon compounds, synthetic fuel resources and chemical materials such as methanol or kerosene can be produced.



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Photo left: Battery Energy Storage System
©Renewables First: 2009 – 2025/renewablesfirst.co.uk
Photo middle: Hydrogen Tank for storage as compressed gas or cryogenic liquid
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Page 2
Photo left: Liquid hydrogen in vessel for clean sea transportation on container ship with composite cryotank for cryogenic gases.
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Photo middle: Future of sustainable aviation fuels (Power to Liquid, PtL) which uses clean energy, hydrogen and carbon dioxide to chemically synthesise aviation fuel.
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Green Hydrogen and derivatives

H2.SA II / BVC supports the transition from strategic planning (initiated under the predecessor project H2.SA) to the **concrete implementation of green hydrogen and PtX initiatives**.

H2.SA II / BVC works with the public sector to refine **policies, regulatory frameworks and coordination mechanisms** to better align with industry needs and respond to rapidly evolving global markets. This includes clear standards, certification approaches and transparent procedures that reduce uncertainty, streamline project development and lower risks for public and private investors.

A focus is placed on translating existing project pipelines into bankable projects. H2.SA II / BVC collaborates closely with project developers, financial institutions and intermediaries such as the Industrial Development Corporation (IDC) to **improve the commercial maturity of projects by the private sector**, facilitate access to suitable financing instruments and strengthen capacities for project preparation and implementation. This way the project helps unlock investments and accelerate the realisation of GH₂ production and PtX applications for both domestic use and export.

H2.SA II / BVC promotes **practice-oriented skills development, research and innovation** to ensure that the emerging sector is supported by a qualified workforce and relevant technological solutions. Training programmes, partnerships between academia and industry, and applied research activities are designed to respond to private-sector demand and to embed knowledge and capacities within South African institutions. This contributes to building local expertise across technical, managerial and regulatory fields while fostering innovation tailored to South Africa's industrial context.

Sustainability and inclusivity are key cross-cutting elements. The project strengthens the integration of **environmental, social and governance (ESG) standards**, supports participatory approaches with communities and civil society, and promotes gender-responsive measures to increase the participation of women in technical and leadership roles. In doing so, it aims to ensure that the development of a green hydrogen economy contributes not only to decarbonisation, but also to **socio-economic development, job creation and a just energy transition**.

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Critical Raw Materials and Battery Value Chains

H2.SA II / BVC supports the development of a **South African CRM/battery value chain**, encompassing the refinement of critical raw materials, local battery assembly, and recycling of batteries.

The project seeks to **strengthen the institutional framework** by promoting effective governance, strategic and regulatory mechanisms, and certification systems. Regional cooperation within Southern Africa and dialogue with international actors and stakeholders, such as the European Union, are central to ensuring a coordinated and sustainable development of the value chain.

H2.SA II / BVC focuses on **private sector engagement, supporting project development, business models, and partnerships across the CRM/battery value chain**. It facilitates **market linkages** and promotes the **development of offtake opportunities for South African products**. It promotes **skills development, applied research, and needs-based training formats** to build capacities for battery precursor material production, assembly, and recycling.

Targeted technical and commercial collaboration with European companies, academic institutions, and professional associations aims to accelerate operationalisation and deliver tangible, visible results during the project lifetime. Through these interventions, the initiative seeks to **create a robust, competitive, and sustainable local battery ecosystem**.

Potential impacts

The markets for GH₂, PtX, and CRM are expanding rapidly. H2.SA II / BVC supports South Africa to capitalise on its exceptional renewable energy resources, strong industrial base, mineral endowment, and existing expertise to position itself as a competitive global partner in sustainable energy carriers and CRM-based technologies, including batteries. Developing these interconnected value chains will **contribute to the country's energy transition and enable decarbonised local manufacturing**. Enhanced trade, investment, skills, research, and innovation will help **unlock new economic opportunities, support industrial diversification, and create much-needed jobs** while advancing a **just and energy transition**.

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