The Gaucho Project

Comprehensive Studies for Large-Scale Green Hydrogen and Ammonia Production and Export in Argentina

The challenge

Green hydrogen represents a transformative opportunity for Argentina, allowing it to address energy challenges while contributing to global sustainability. The country's abundant renewable energy resources, such as strong winds in the south and high solar irradiance in the north, position it favorably to produce green hydrogen at competitive costs. By leveraging these natural advantages, Argentina can decarbonise industries, attract investment, and establish itself as a key player in the global energy transition.

To achieve a low-emission economy, Argentina has implemented policies and strategies that promote green hydrogen as a fuel, industrial input, and energy carrier. These initiatives aim to optimise energy resources, reduce emissions, and create economic and social opportunities through sustainable development.

Despite this potential, challenges remain. Access to financing, technical expertise, and the need for environmental and social assessments are key hurdles. Territorial planning and a clear regulatory framework are also essential for success.

The development of green hydrogen in Argentina holds significant benefits, such as job creation, strengthened supply chains, and access to international markets seeking clean energy. Overcoming these challenges will enable Argentina to position itself as a leader in green hydrogen production, contributing to a sustainable and resilient future.

The Gaucho project

Gaucho Wind to Hydrogen & Green Ammonia is a project being developed by RP Global in Argentina. Located in the province of Santa Cruz, this pioneering project leverages the exceptional wind potential of the Patagonian region to produce green ammonia, marking a significant step forward in the development of clean energy in the country.

As one of the first projects of its kind in Argentina, it faces important challenges, such as the need for appropriate infrastructure, specialised financing, and technical expertise in hydrogen and ammonia technologies. Additionally, comprehensive socio-environmental assessments are essential to ensure balanced and sustainable development.

The green ammonia produced holds great potential for international markets committed to decarbonisation, while also creating opportunities to support the energy transition domestically. This project highlights Argentina's commitment and potential to become a leader in renewable energy and green hydrogen production.

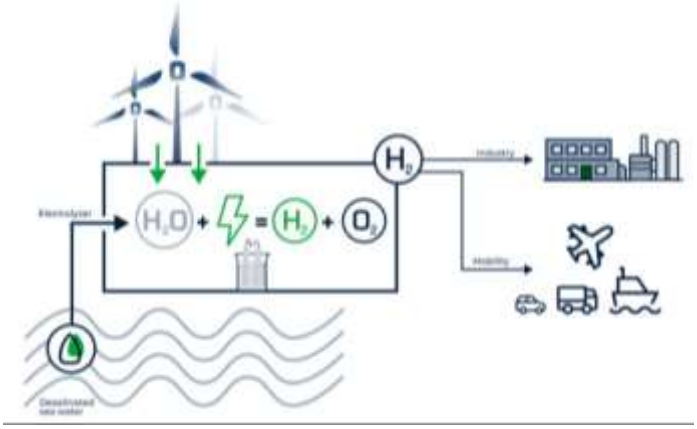

Figure 1: Conceptual Diagram of the Gaucho Project

The solution

A public-private partnership between RP Global and GIZ is driving the development of Argentina's green hydrogen industry, a sector that holds significant promise for the country's decarbonisation efforts. However, as the industry is still in its early stages, several challenges must be addressed before projects like the Gaucho initiative can be fully realized. These challenges include certification, external demand, storage solutions, social acceptance, regulatory hurdles, and safety concerns.

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In this context, the partnership between H2Uppp and RP Global is tackling critical issues through a series of studies and initiatives. Focused on the Santa Cruz region, these efforts will look at key environmental factors such as water resources, biodiversity, and social acceptance, as well as the regulatory landscape for hydrogen production. Additionally, the partnership will assess the infrastructure needed to support sustainable development in the region. The findings from these studies are expected to provide crucial insights that will help shape the future of the hydrogen ecosystem in Santa Cruz and beyond.

How it will be done

During the public-private collaboration, efforts will focus on four key pillars to support the development of the green ammonia production project in Santa Cruz. The first pillar involves a techno-economic analysis, divided into two parts: an assessment of the entire production chain to determine plant dimensions and product prices, and an evaluation of existing infrastructure to identify its potential for shared use, particularly focusing on regional ports. The second pillar focuses on an environmental analysis, which includes a risk assessment with mitigation strategies, primarily addressing bird protection, and a water resource evaluation, followed by an analysis of desalination plants to determine optimal locations and their capacity to supply the project.

The third pillar addresses regulation and permitting, comprising an analysis of national and regional regulatory frameworks and a mapping of environmental permits required for project implementation. Finally, the fourth pillar is focused on communication, including capacity-building programs to strengthen local expertise in Santa Cruz and the dissemination of findings and results, women engagement and gender equality topics. This pillar aims to share knowledge and learnings with stakeholders, contributing to Argentina's hydrogen ecosystem and fostering sustainable long-term development.

The International Hydrogen Ramp-up Programme (H2Uppp) of the German Federal Ministry for Economic Affairs and Climate Action (BMWK) promotes projects and market development for green hydrogen in selected developing and emerging countries as part of the National Hydrogen Strategy.

RP Global is a leading developer, operator, and investor in the renewable energy sector with over 40 years of experience. RP Global focuses on developing and managing solar PV, wind, green hydrogen, and storage projects. Currently, the company is advancing a development pipeline exceeding 14 GW(p).

Expected outcome

As a pioneering project in the green hydrogen industry, this collaboration will play a crucial role in shaping the sector's future in the region. The studies and analyses conducted will address key issues such as water resource management, biodiversity, social acceptance, and regulatory frameworks, offering valuable insights to overcome the challenges of this emerging industry. Beyond publishing and disseminating the results, the partnership will actively engage stakeholders through workshops, seminars, and conferences, ensuring that the findings are widely accessible. These outreach efforts will also foster collaboration and create synergies with other stakeholders, potentially enabling the shared use of infrastructure. Moreover, the results will be made available to other project developers, providing a foundation for scaling up similar initiatives and promoting the growth of the hydrogen ecosystem. This pioneering approach is expected to have a significant impact, not only in the Santa Cruz region but across the broader hydrogen sector.

The project at a glance	
Duration	December 2024 – September 2026
Country	Argentina
Objective	Support Argentina in developing green hydrogen and green ammonia projects that could be used for domestic demand and be exported to Europe and Germany.
Partners	GIZ, RP Global
Expected Results	• Techno-economic analysis on the Green Hydrogen and Ammonia production chain and suitability of existing infrastructure for shared use. • Environmental analysis on critical environmental aspects, biodiversity risks and recommendations for preventive actions, and on water resources impact and potential desalination sites. • Regulation and permitting process roadmap for the production of green hydrogen and ammonia. • Outreach activities and stakeholder engagement

Published by:
Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

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Bonn and Eschborn, Germany

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Buenos Aires, March 2025

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Design:
Peppermint Werbung Berlin GmbH, Berlin

Illustration credits:
RP Global

URL links:
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