

Avances y Futuros Desarrollos del Hidrógeno Verde en Argentina

Webinar: “Panorama Regional del Hidrógeno Verde en Latinoamérica y el Caribe”

Griselda Lambertini

Directora Académica

CEARE - UBA



Argentina

- 1 **Política y regulación de H2 Verde y PtX**
- 2 **Proyectos anunciados y en operación**
- 3 ***Key players*: ¿quién está impulsando el desarrollo de proyectos de H2V y PtX?**
- 4 **Principales barreras y brechas en el país**

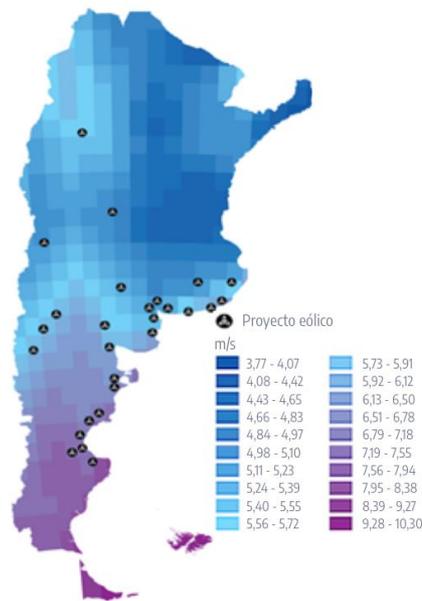
1) Política y regulación de H2 Verde y PtX: ¿por qué hablamos de H2V en Argentina?

- ✓ Factores de utilización eólica + solar
- ✓ Grandes superficies disponibles
- ✓ Agua para electrólisis
- ✓ Capacidad industrial existente
- ✓ Litoral marítimo + infraestructura puertos
- ✓ Permisos

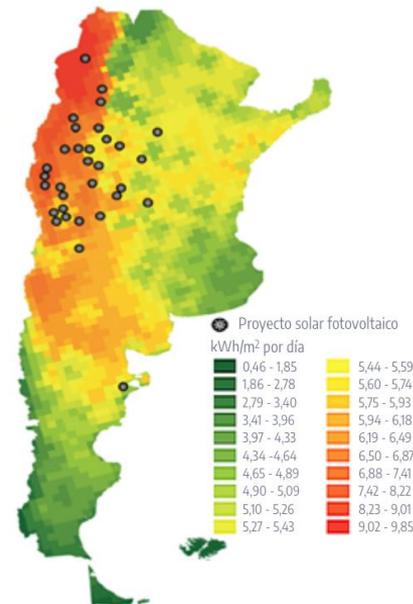
- Producción y consumo de H2 gris: aprox. 400.000 ton/año
- (i) proceso de refinación de petróleo para reducir el contenido de sulfuro de los combustibles diésel;
- (ii) industria química, especialmente para la producción de fertilizantes.

Energía eólica y solar

Intensidad de vientos y distribución de proyectos



Radiación solar y distribución de proyectos

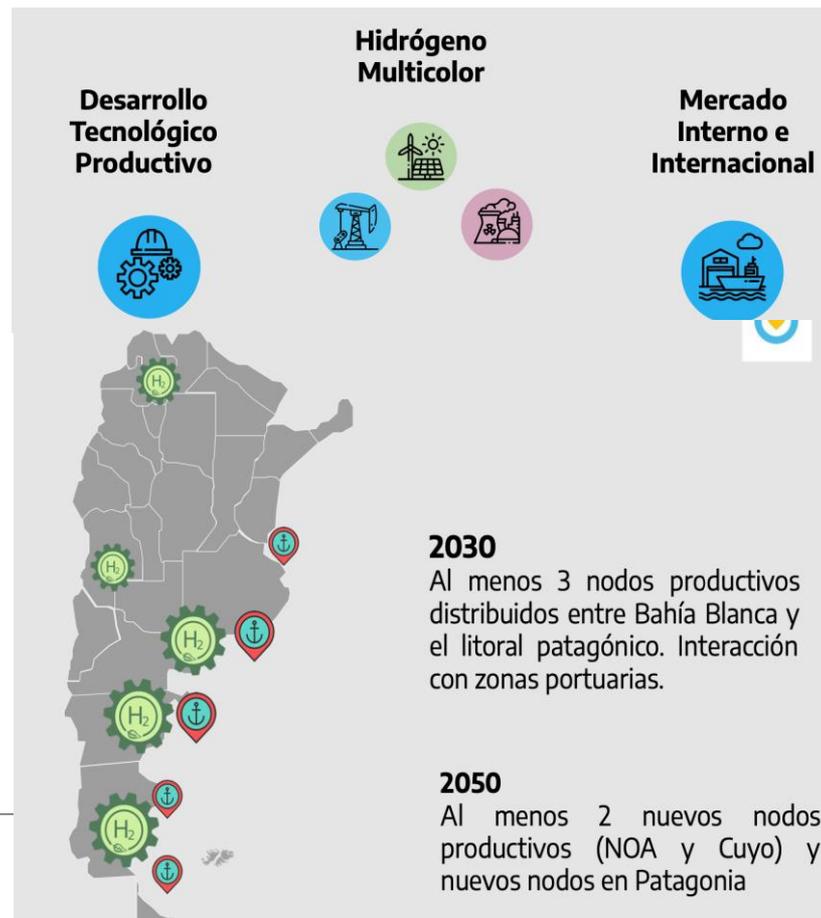


Fuente: Secretaría de Energía

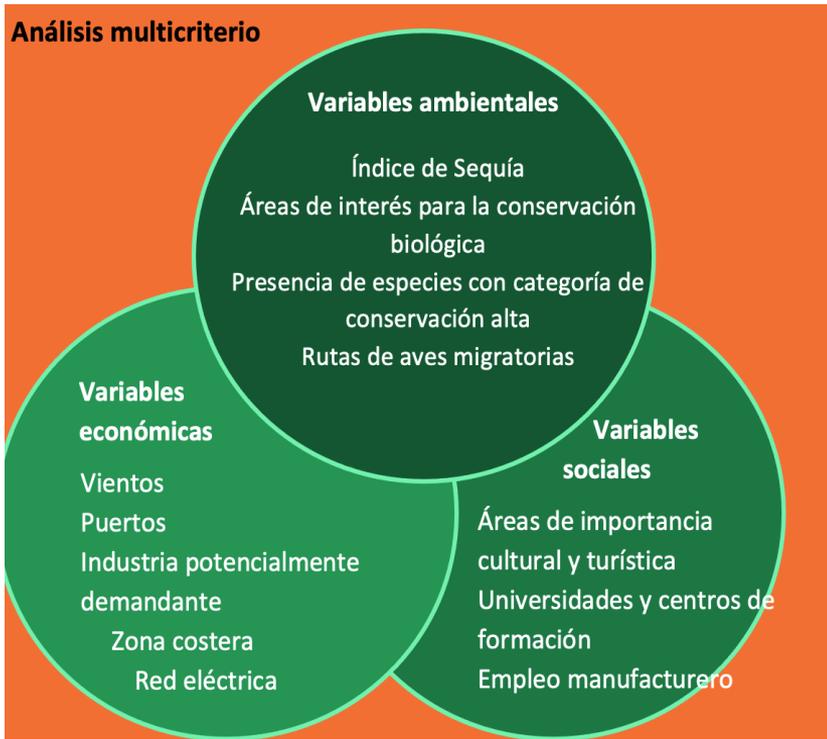
1) Política y regulación: Estrategia Nacional de Hidrógeno de Bajas Emisiones - ARGENTINA

Metas a 2050

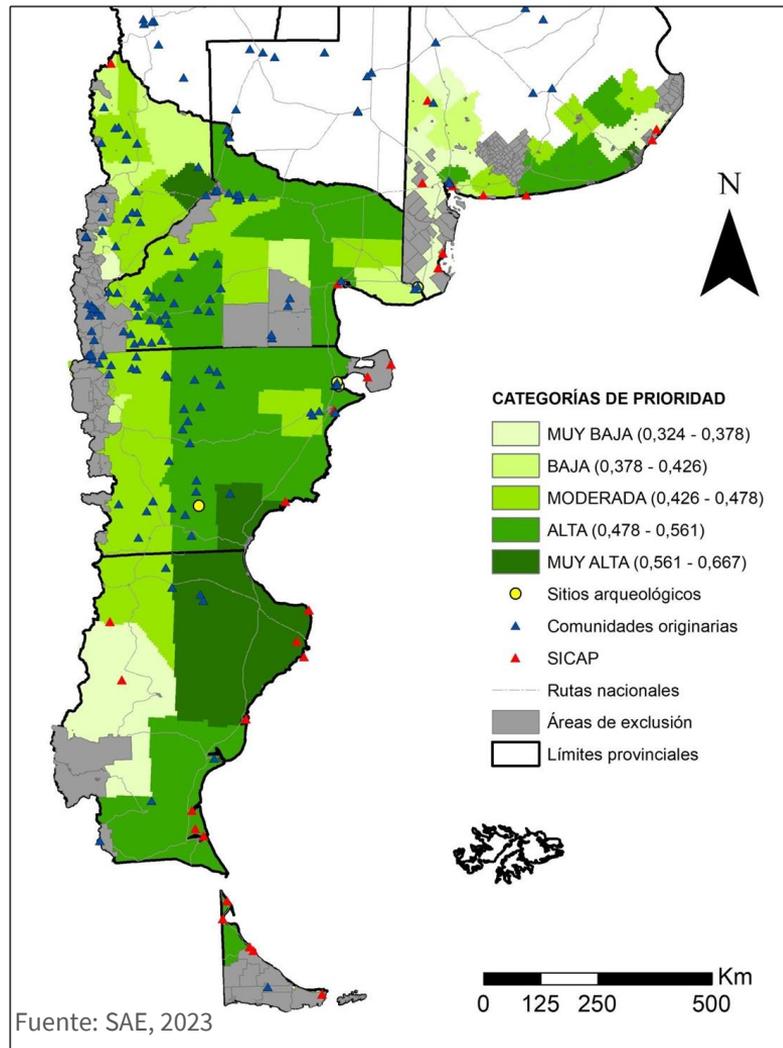
- ✓ 5 MM ton/año producción H₂
- ✓ Costos H₂V 1,4 USD/kg
- ✓ 55 GW EERR y 30 GW electrólisis
- ✓ 82,000 empleos de calidad
- ✓ USD 90.000 millones de inversiones
- ✓ 5 polos productivos
- ✓ 2 a 5 puertos



1) Política y regulación: Evaluación Ambiental Estratégica



Fuente: SAE, 2023



2) Proyectos anunciados y en operación - ARGENTINA

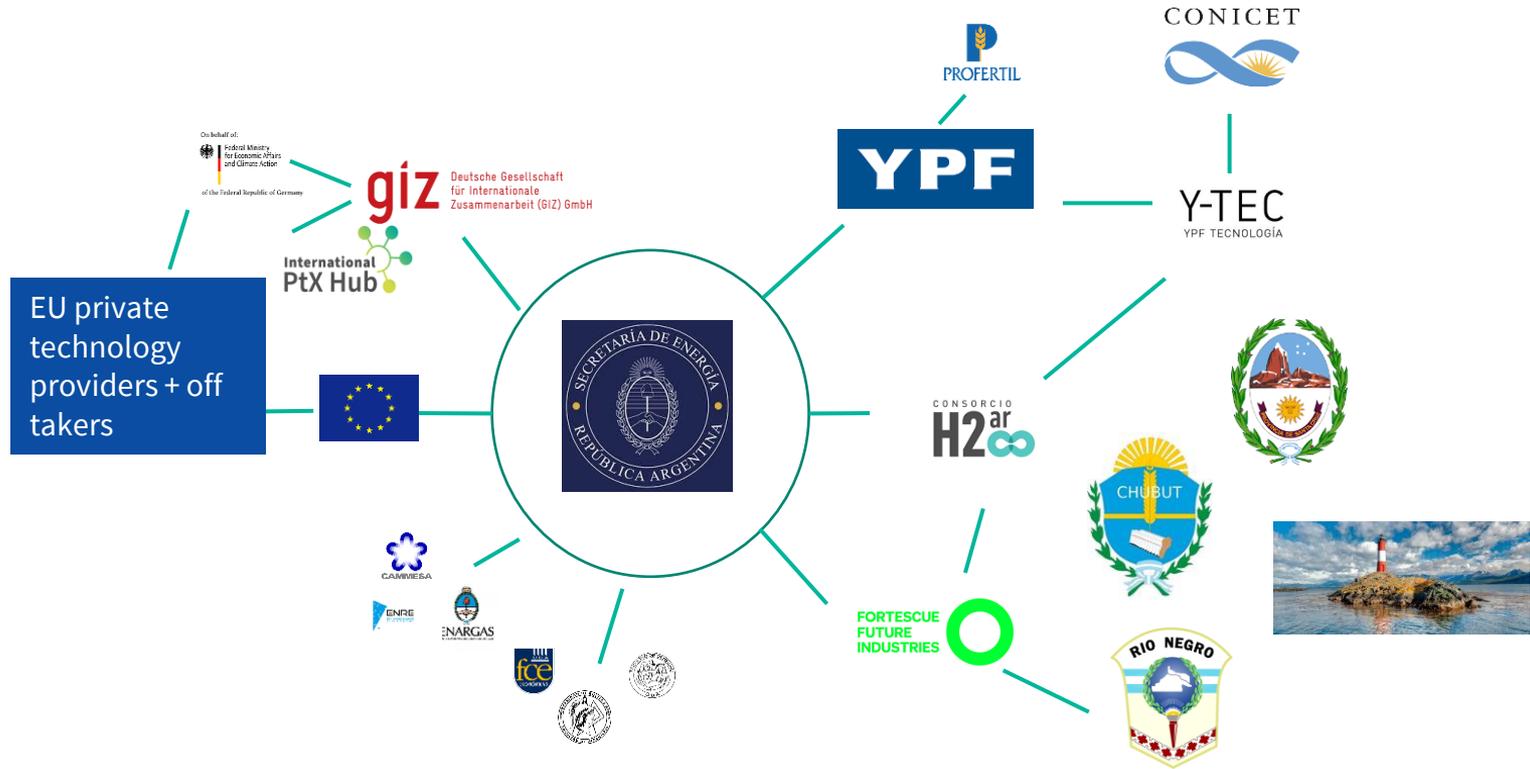
ORGANISATION	ORIGIN	DESCRIPTION	EU & GT117 RELEVANCE	STATUS	LOCATION
PLANNED PROJECTS					
Fortescue Future Industries	Australia	Announced investment of USD 8.4 billion (November 2021) to produce 2.2 million tonnes of green H2 (derivatives) by 2030. Approved by provincial legislators in April 2022. Planned 25 GW wind farm plus 9.6 GW electrolyser. Contracts for 500,000 Ha of land signed (target for 2023: 1 million Ha). Investment decision to be made in 2024. Preliminary and pre-feasibility studies have been completed. Export-oriented project.	EU technology providers & off-takers (global agreement with E.ON).	Feasibility to be completed in 2023, final investment decision in 2024	Sierra Grande, Rio Negro
MMEX Resources Corporation	USA	Announced investment of USD 500 million (April 2022) including wind farm, electrolyser and ammonia plant. Aims at producing 300 tonnes/day of ammonia and methanol. Global MOU signed with Siemens Energy and Siemens Gamesa. Potential European off-takers. Export-oriented project.	EU technology providers (Siemens) & off-takers (Maersk, Uniper, etc.).	Seeking land for project & EPC company (December 2022)	Rio Grande, Tierra del Fuego
Enarsa & Port of Rotterdam	Argentina	Green H2 project to be powered by a 200 MW wind farm. Fraunhofer Institute has conducted the feasibility study. Export-oriented project.	EU technology providers & off-takers.	Tender for wind farm launched (December 2022)	Bahia Blanca, Buenos Aires
JEMSE, Jujuy	Argentina	Planned 100 MW solar PV plant with a 20 MW battery capacity aimed at the production of green H2. The final plant will reach 300 MW. The required investment in the first stage of development is expected to be approximately USD 150 million. Potential off-takers will be lithium mining corporations, other options are being analysed.	EU technology providers & investors.	Seeking investors (December 2022)	Puna, Jujuy
Total Eren	EU	Planned 10 GW wind farm in Santa Cruz. Export-oriented project focused on maritime transport (and possibly, eFuels). Contracts for 180,000 Ha signed, MOUs with off-takers in Europe and Asia signed. Export-oriented project.	EU producer, technology providers & off-takers.	MOU signed (2022)	Santa Cruz
Genneia	Argentina	Planned 20 GW wind farm project for green H2 production under preliminary analysis with European partners in southern Patagonia. Export-oriented project.	EU technology providers, investors & off-takers.	Under analysis (December 2022)	Southern Patagonia
Hive Energy	UK	Planned project of 2.4 GW (a maximum of 5 GW is under consideration) combining wind and solar PV power with capacity factors of 50% and 24% respectively. 1.1 GW electrolyser with a 70% capacity factor. It will be connected to a 500 kilovolt substation. Construction to begin in 2026. End product: green ammonia & other unspecified derivatives. Contracts for 30,000 Ha of land signed. Export-oriented project.	EU technology providers & off-takers.	Pre-feasibility conducted (2022)	N/A
Pan American Energy	Argentina	150 MW wind park in Cerro Dragón (first phase), aimed at green H2 and green ammonia production.	EU technology providers	To be commissioned in 2023 or 2024	Chubut
YPF Luz	Argentina	Currently looking for land for 1 - 2 GW wind farm projects. Analysing potential projects/consortiums for green H2 and derivatives.	EU technology providers & off-takers.	Under analysis (February 2022)	Patagonia
Abo Wind	EU	Planned project of 2.5 GW combining solar PV & wind energy for green H2/derivatives production. Abo Wind is likely to sell it to a third party. Export-oriented project.	EU producer, technology providers & investors.	Under analysis (December 2022)	N/A
EXISTING PILOTS					
Hychico, CAPSA-CAPEX	Argentina	Diadema wind farm (6.3 MW) provides RE for 2 alkaline Hydrogenics electrolysers, with a total capacity of 120 m3/h of H2 and 60 m3/h of oxygen. High purity H2 is mixed with NG to feed a 1.4 MW genset equipped with an internal combustion engine especially adapted to operate with rich and/or poor gas mixed with hydrogen. Main results since 2009: hydrogen production: 2.900.000 Nm3; generated electricity: 110.000 MWh; oxygen sales: +1.200.000 Nm3.	EU & Argentine stakeholders	Commissioned in 2006	Diadema, Chubut
Pico Truncado Municipality, provincial govt	Argentina	Public R&D pilot plant powered by local wind farm with a production capacity of 100 m3 of green H2/day destined as fuel for hybrid transportation (CNG/H2). After being idle for 5 years, the government of Santa Cruz presented a study of economic pre-feasibility to upgrade it to a pre-industrial phase (July 2021), adding oxygen as a by-product for the health sector.	Argentine stakeholders	Commissioned in 2005	Pico Truncado, Santa Cruz
H2 Misiones	Argentina	Pilot PPP project supported by the EU's Low Carbon and Circular Economy Business Action (LCBA). It counts with a production capacity of 24 kg of H2/day with a storage capacity of 40 kg, it's powered by a solar PV installation. Tests have been carried out to mix up to 70% green H2 in butane cylinders. The second phase of the pilot will test its use in gasoline vehicles. The third phase will focus on the production of green ammonia at a commercial scale.	EU & Argentine stakeholders	Commissioned in 2021	Posadas, Misiones
PLANNED PILOTS					
H2Armonia, H2AR	Argentina	Pilot of H2AR consortium: SMR/ATR with carbon capture and electrolysis to produce 176 kg of H2 per annum, destined to ammonia production.	EU stakeholders	Announced in 2021	Berisso, Buenos Aires
FEM Mendoza	Argentina	Federación Económica de Mendoza (FEM) coordinates the project (announced in December 2021), aimed at using green H2 in heavy transport.	Argentine stakeholders	Announced in 2021	Mendoza

+55 GW de energía renovable adicional

+30 GW de capacidad de electrólisis



3) Key players: ¿quién está impulsando el desarrollo de proyectos de H2V y PtX en Argentina?



4) Principales barreras y brechas en el país - ARGENTINA

- Falta de **contratos** de largo plazo con *off takers*
- Falta de **marco legal específico y sistemas de certificación**
- Falta de **financiamiento y esquemas de garantías** para los inversores
- Falta de **proyectos piloto** que demuestren la viabilidad técnica y económica
- Falta de **licencia ambiental y social**

Gracias!

griseldalambertini@gmail.com



Gefördert durch:



aufgrund eines Beschlusses
des Deutschen Bundestages



Durchgeführt von:

