

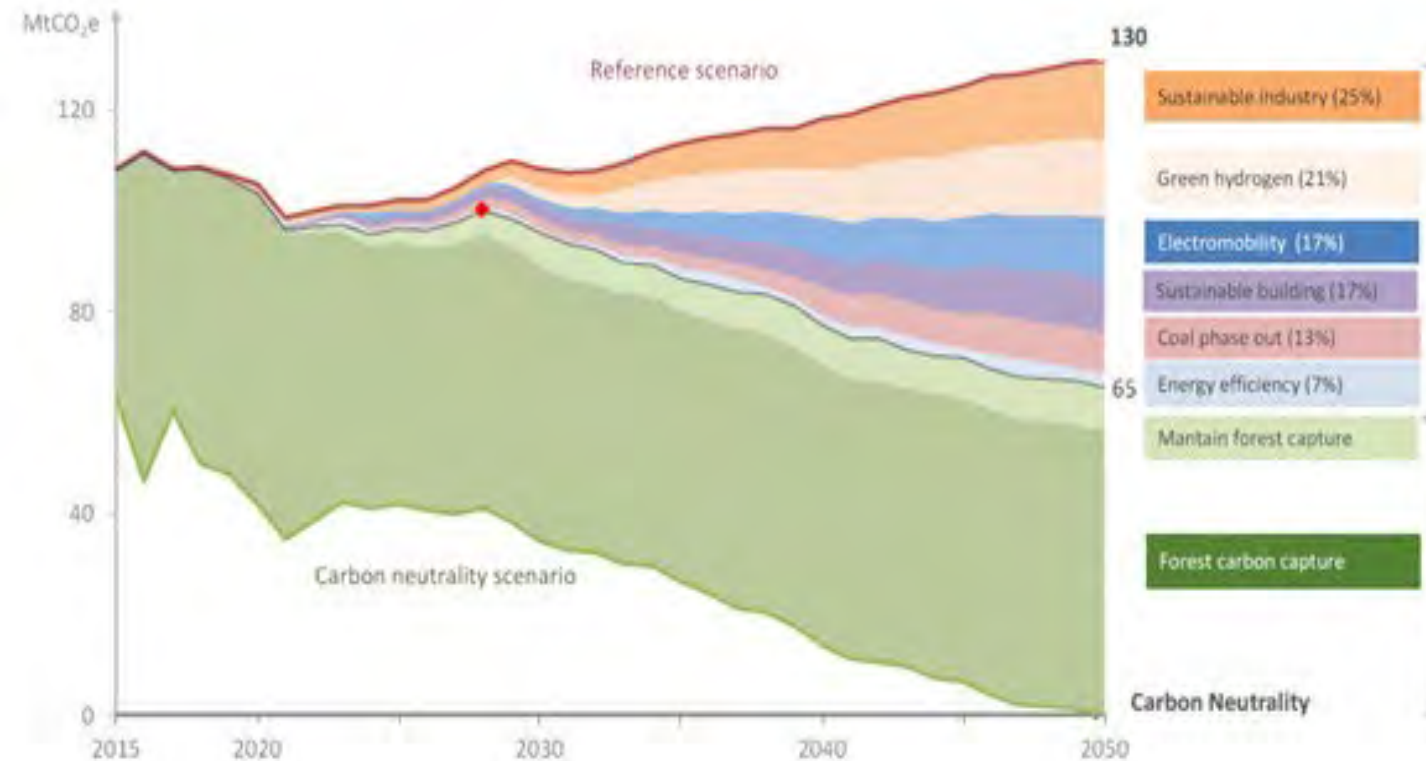
Chile Green Hydrogen Facility

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May 9th, 2024



Chile is committed to achieving carbon neutrality by 2050. New policies, business models, technologies are required; and green hydrogen is key.

- 78% of Chile's GHG emissions generated from fossil fuel consumption in energy, transport and industrial sectors
- Green hydrogen could help decarbonize hard to abate industrial sector/transport subsectors
- 21% of national GHG emissions could be mitigated by hydrogen and Chile has the potential to be a global exporter (ammonia, methanol, e-fuels)
- Bridging the cost gap is essential. Currently, green hydrogen (\$6/kg) is more expensive but could compete with diesel at a cost of US\$4 to 5/kg. and with grey hydrogen at US\$2/kg.



Chile's strategy to develop Green Hydrogen is 3-pronged, starting with a solid domestic market and moving towards becoming a global exporter.

Objectives:

5 GW of electrolysis capacity by 2025

Produce the cheapest green hydrogen globally by 2030

Among the top 3 exporters by 2040

Wave 1

Existing local hydrogen & green ammonia demand

- Replace imported ammonia with local production
- Replace grey hydrogen used in oil refineries
- Replace diesel in transport (long-haul & heavy-duty)

Wave 2

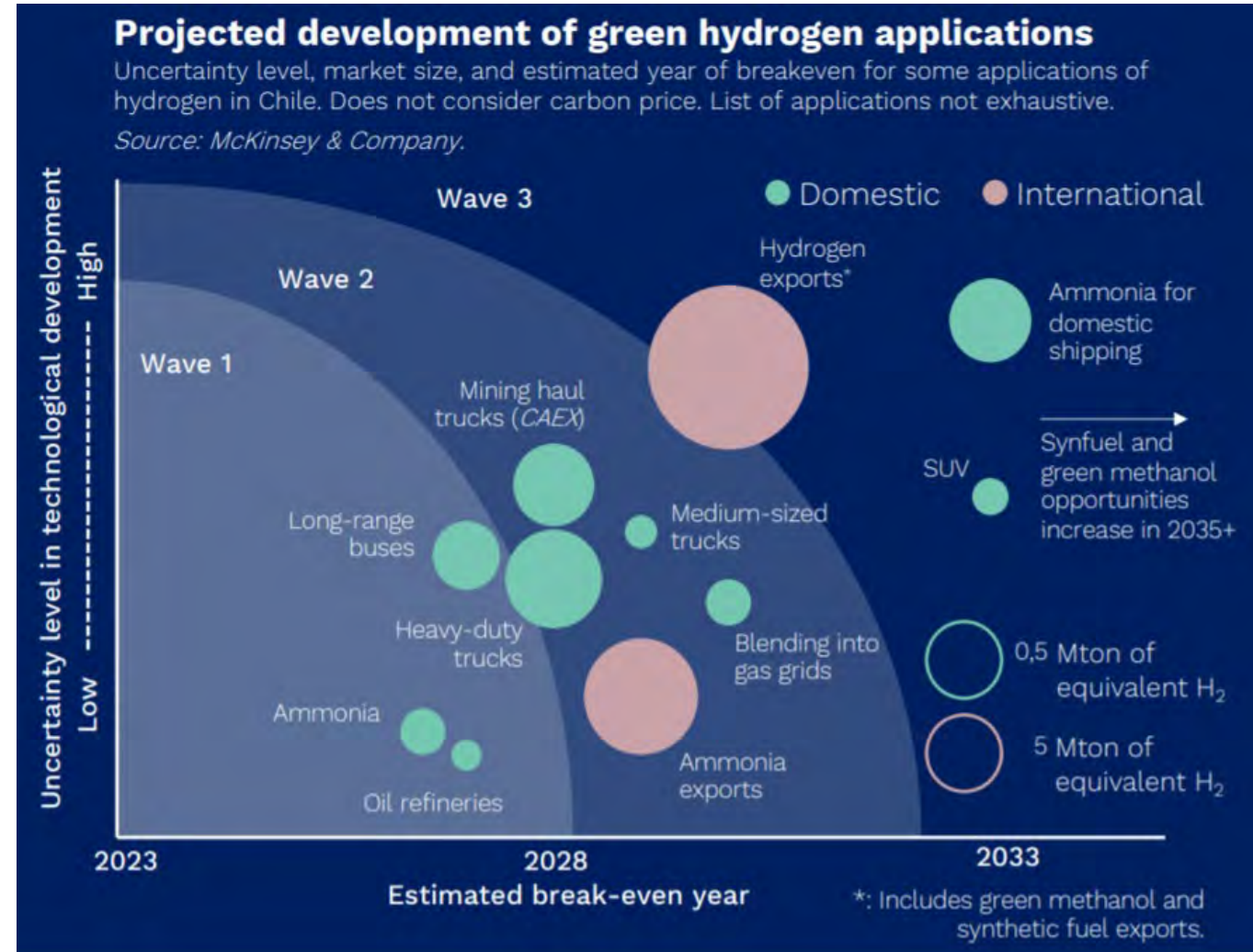
Extended local uses & export activities

- Green ammonia exports
- Green hydrogen blending
- Green liquid fuels for local consumption

Wave 3

Export markets & massive scale-up

- Green hydrogen exports
- Green liquid fuels exports

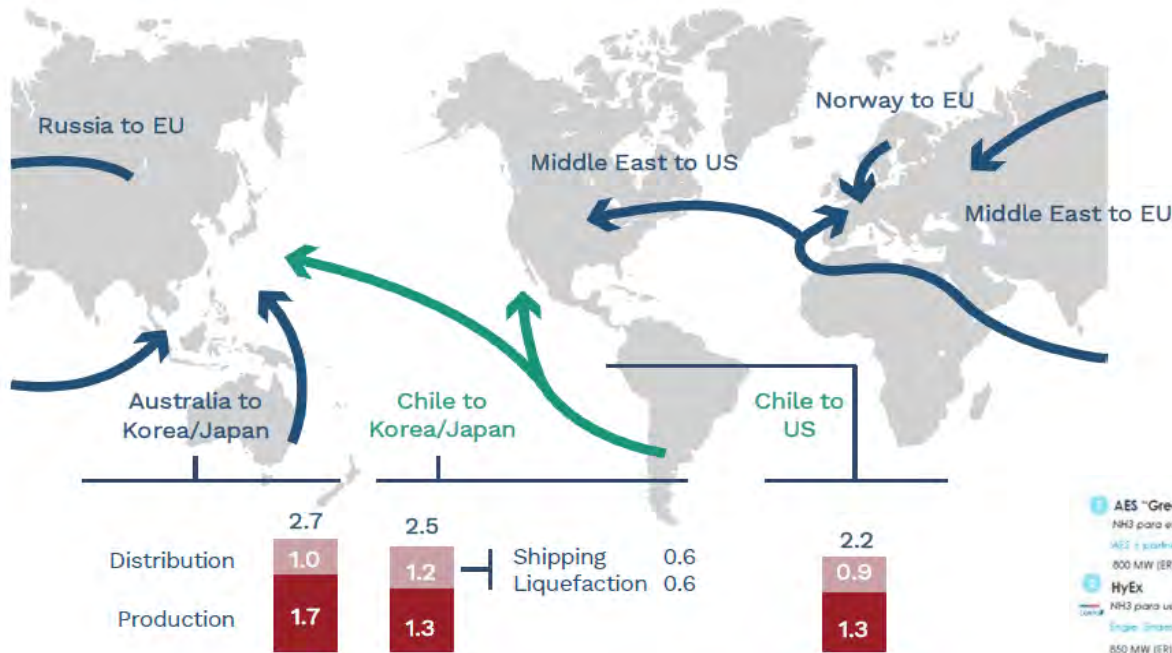


Chile is well positioned to become a major global player in the green hydrogen industry due to its unparalleled and cost-competitive renewables.

Cost of liquid H₂ at port of destination, 2030

(USD/kg H₂)

(Source: McKinsey & Co)



- It is already developing hydrogen facilities for the export market (green ammonia) and domestic market where mining is a critical off-taker.
- Strong pipeline with 20+ projects
- 2 strong hydrogen hubs in the country (Antofagasta and Magallanes)

- The exceptionally low cost of its renewables
- Despite the transport costs
- Its reputation for good governance and regulation.



A robust market sounding...

Private Sector

- Indura (AIR PRODUCTS Group)
- ARUP
- Infrata
- AES Andes
- HDF (Hydrogene de France)
- Porsche
- Engie
- Geostock/Vinci group
- Siemens

Financial Institutions

- BNP Paribas
- Société General
- Hudson Bankers
- Natixis
- Infrared Capital Partners
- Brookfield
- Aberdeen
- Sumitomo
- MUFG

Hydrogen Associations

- Hydrogen Council of Australia
- California Hydrogen Business Council

Government Representatives

- Delegation of EU Brussels and Chile
- Ministry of Energy, Germany
- Ministry of Energy, UK

Development Agencies

- GIZ
- KfW
- UN Industrial Development Organization (UNIDO)

Chilean Institutions

- Desarrollo País
- CORFO
- Fundación Chile
- Coordinador Eléctrico Nacional (CNE)
- Universidad Santa Maria

...Identified the main risks perceived by developers, financial institutions and other stakeholders when developing Green Hydrogen projects in Chile

High Cost of Electrolyzers

Increased Total Project Cost (TPC) & production costs. Expected to decrease 50% by 2030. Deter investors who may prefer to hold investments until prices stabilize at lower end.

Uncertainty of technical performance

Results in reduced level of performance guarantees with higher risk to investors & financing costs; or increase total cost of contract → higher TPC.

Novelty of Industry

Triggers high-risk perception from equity and debt investors. Results in higher cost impact in terms of Returns to Equity (RoE) and cost debt (interest rates).

High cost of transport infrastructure & logistics

Potentially a major post-production cost component in Chile affecting competitive advantage.

Scarcity of specialized staff & cost of int'l experts

Restricted availability of skilled experts → potentially higher than projected operating costs.

A Green Hydrogen Facility (GHF) can help Chile accelerate the development of its national industry and achieve a global competitive advantage.

Objective

Promote the development of green hydrogen production by designing and establishing a **risk sharing mechanism**, **mobilizing commercial finance** and contributing to **strengthening the enabling environment**.

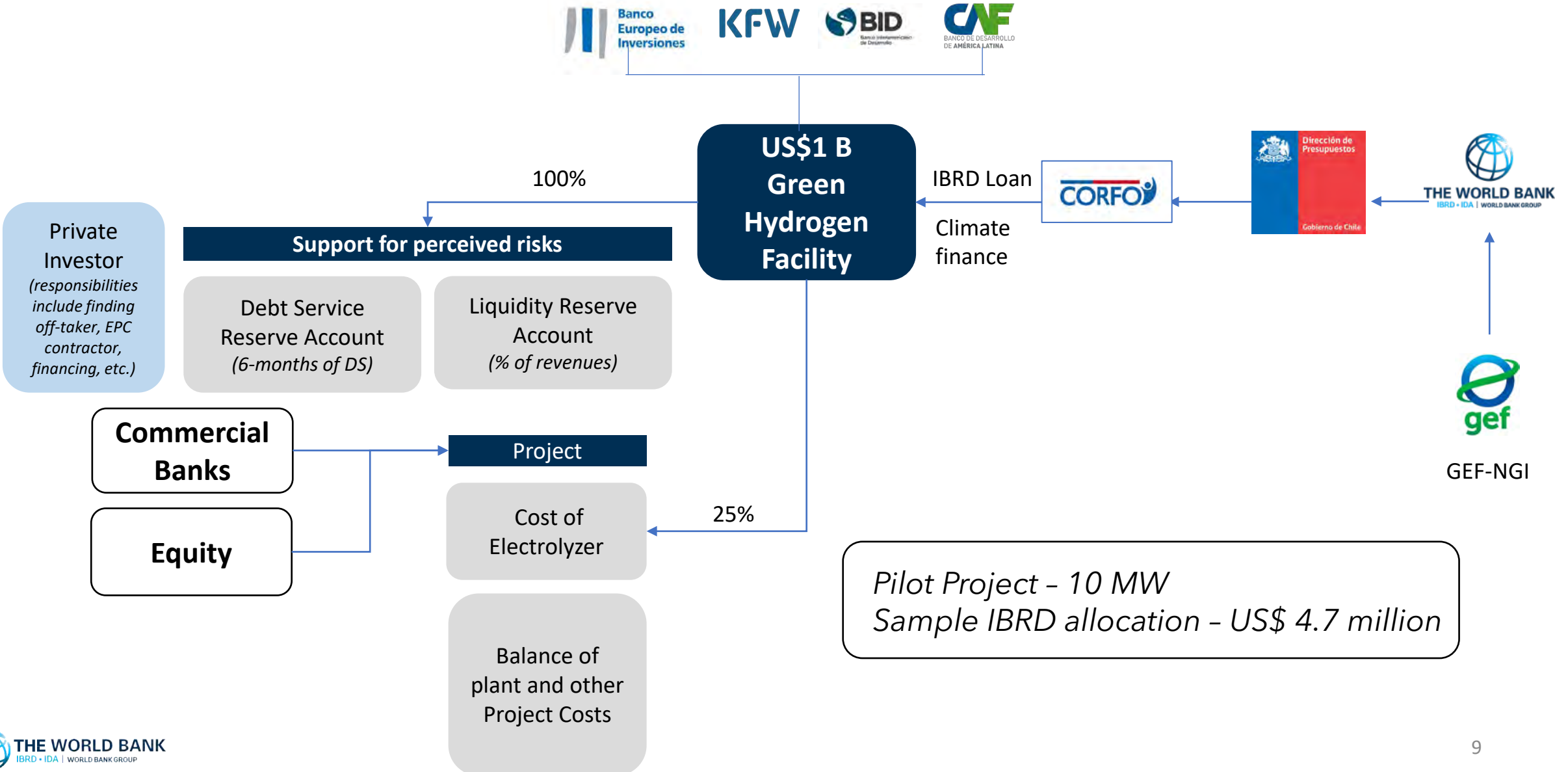
Specific Goals

- Reduction of **Total Project Cost (TPC)** to support transition from pilot projects to **commercial scale production** and avoid transferring early technology costs (over costs) to the end-user
- Support steady **increase in demand**, equipment production platforms, **economies of scale**, and enable **fast industrialization and adoption of the new technology** across sectors.
- Build national **technical capacity** and skilled labor (**green jobs**), including the set up of a **robust green hydrogen certification system**.

WB proposes an instrument to mitigate these specific risks, taking into account the WB's global experience in project finance.

Risks	Mitigation with WB Funds
High cost of electrolyzer.	Finance a percentage (e.g., 40%) of the cost of the electrolyzer. Balance of project debt would be provided by other lenders on commercial terms.
Uncertainty of technical performance.	Fund a Liquidity Reserve Account (LRA) intended to cover unexpected or untimely cash needs.
Novelty of industry.	Fund a 6-month Debt Service Reserve Account (DSRA) for the benefit of commercial lenders.
Scarcity of specialized personnel & cost of int'l experts.	Finance technical assistance component to support institutional and industrial capacity building. Access to network of experts at WB & through partners (e.g., Mission Innovation).

IBRD loan of US\$150M, GEF-NGI \$15M, channeled through CORFO for a US\$1B Green Hydrogen Facility (GHF).



A GHF can help achieve a competitive cost of GH2 to support Chile's NGHS vision

Instrument


US\$ 150 million IBRD loan to be channeled through CORFO for a US\$1B Green Hydrogen GHF.

Purpose

Investment Component

Provide concessional funding to individual projects to:

- ✓ Reduce TPC and/or other post-production costs
- ✓ Mitigate performance risks, and
- ✓ Provide high quality and fully liquid risk mitigation instruments

 Increased attraction of equity investors, commercial lenders, insurance providers

Technical Assistance (TA) Component

Support institutional / industrial capacity building, key to accelerate domestic market penetration and achieve wide economic impact.

Support the implementation of a robust Green Hydrogen Certification Scheme

Potential Results

- ~ 240 MW financed
- Projects supported: multiple pilot-size projects (~50MW and over) or one commercial-size project (~100MW)
- Lower price of final product (kg of hydrogen) resulting from improved risk perception, concessional debt and overall lower cost of debt
- Enable the creation of ~7,000 new jobs

A large, stylized graphic of a palm tree in shades of blue, positioned on the left side of the slide. The trunk is a thick vertical line, and the fronds are represented by several curved, overlapping lines that fan out to the right.

Thank you!

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Annex 5. Haru Oni Project in Patagonia (Magallanes Region, South of Chile)



Annex 6. HyEx Project in Antofagasta (North of Chile)

