

NATIONAL  
**GREEN HYDROGEN**  
STRATEGY

Chile, a clean energy provider for a carbon neutral planet

**WE ARE A LONG AND  
NARROW COUNTRY WITH  
WIDE GEOGRAPHIC  
CONTRASTS**



**AS LONG AS THE  
WIDTH OF THE  
UNITED STATES**



**4,300 km**



**AS LONG AS  
WESTERN  
EUROPE**

*Bolero solar photovoltaic plant, Antofagasta Region*



1

## **Time for action**

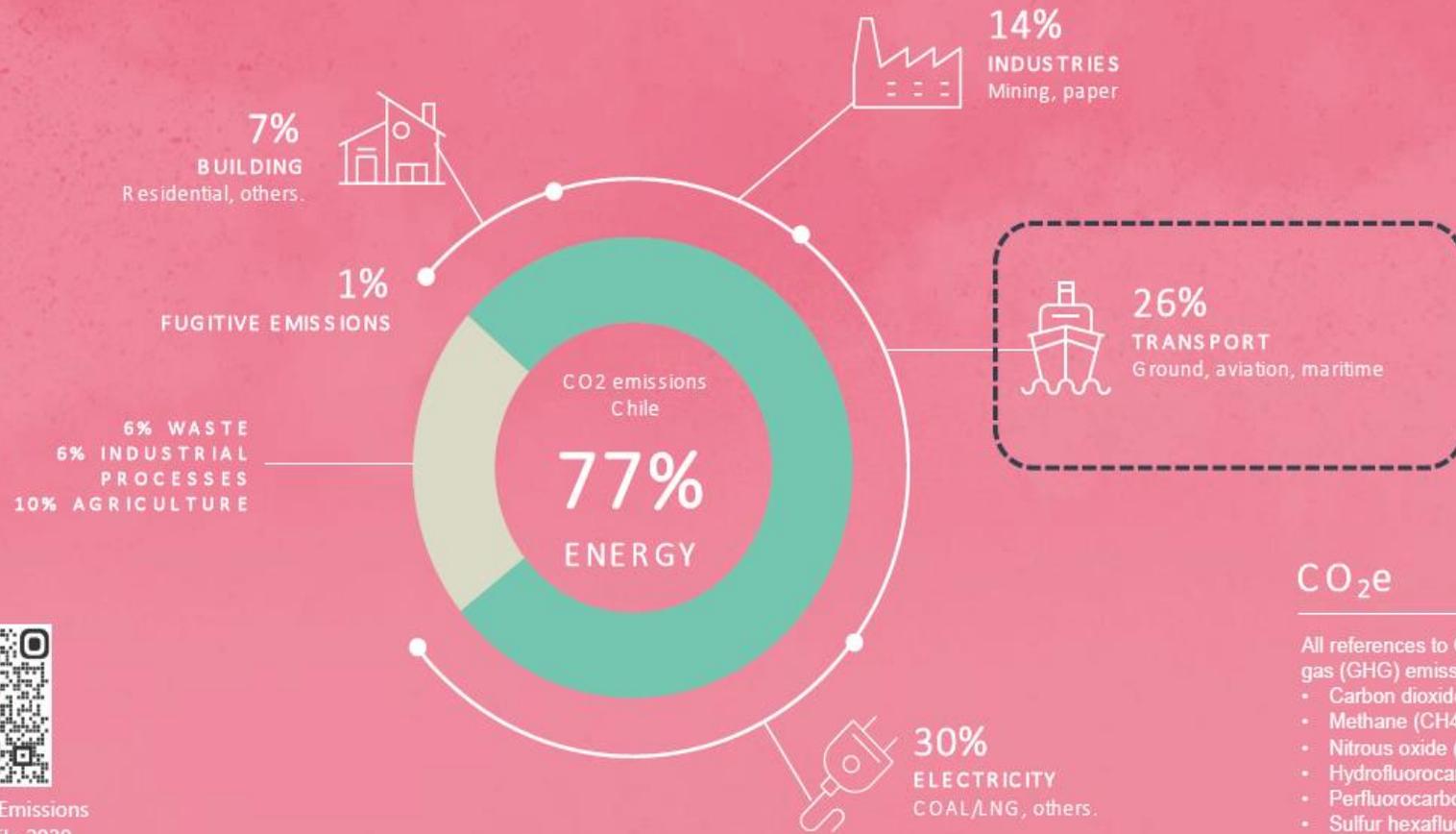
The simplest molecule to confront  
the most complex challenge

# We are facing a climate crisis

## Chile's commitment



**Pledged to  
become a  
net-zero  
emission  
country by  
2050**



National GHG Emissions  
Inventory Chile 2020  
Ministry of  
Environment

Punta Sierra wind power plant, Coquimbo Region



# 2

## **An opportunity for Chile**

Clean energy for a  
global transition

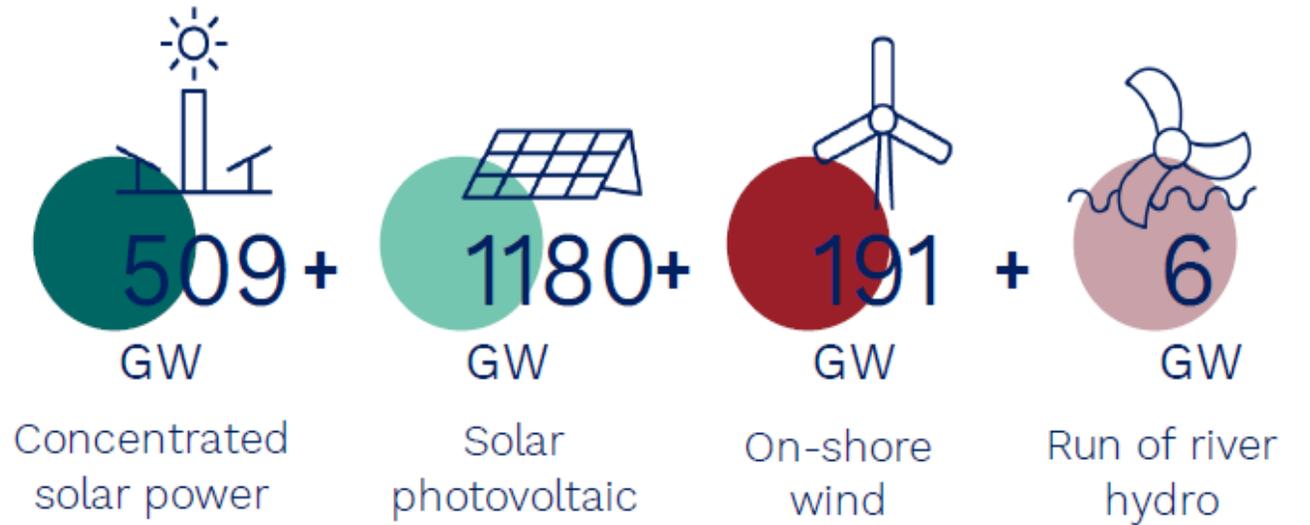
# A country rich in the energies of the future



The most powerful solar radiation on the planet is found in northern Chile

Solar generation in the central part of Chile is already more competitive than fossil- powered electricity generation

Winds in the far south end of the country are as strong inland as they are off-shore



## 1.800+ GW

of renewable energy potential

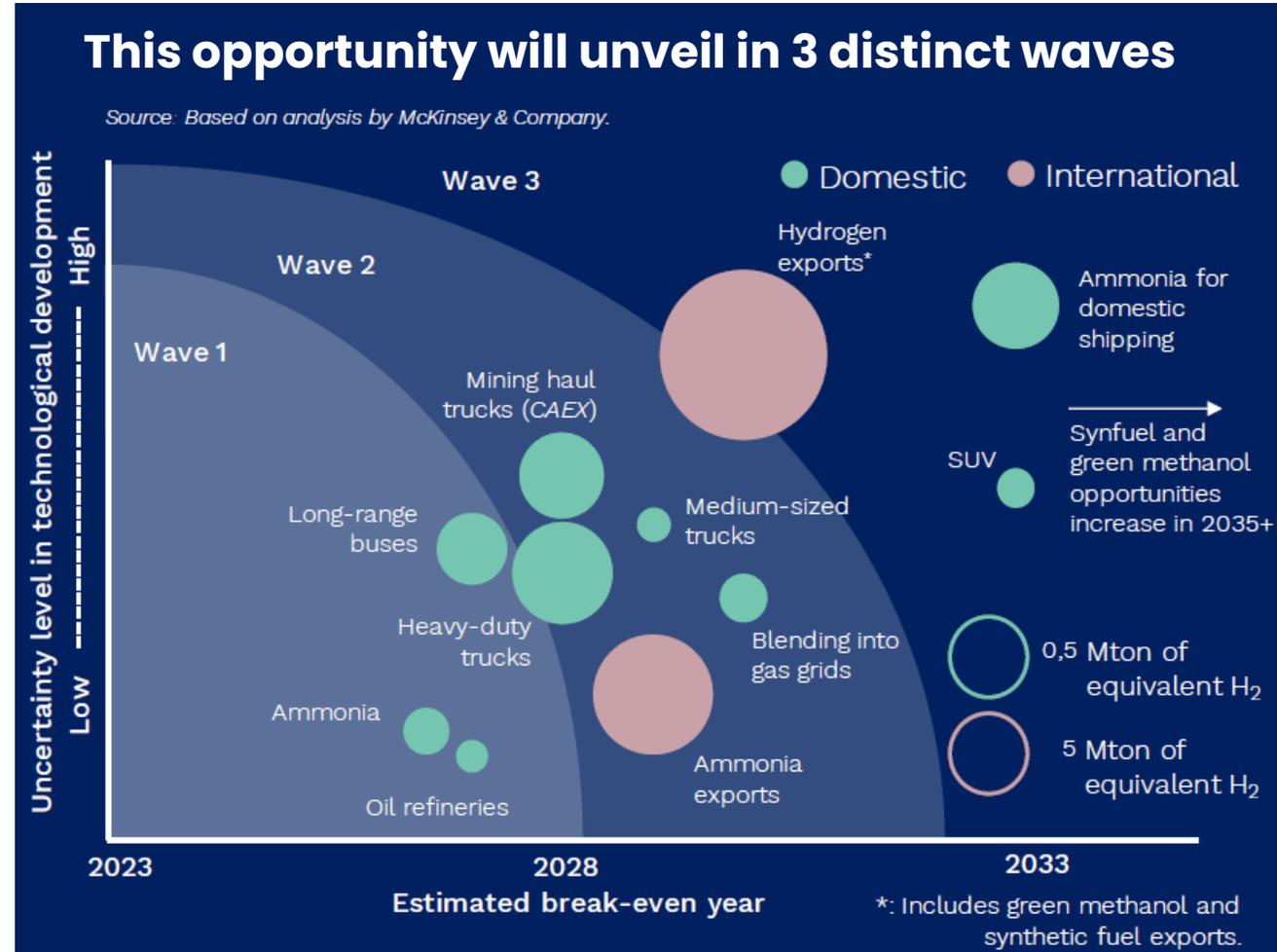
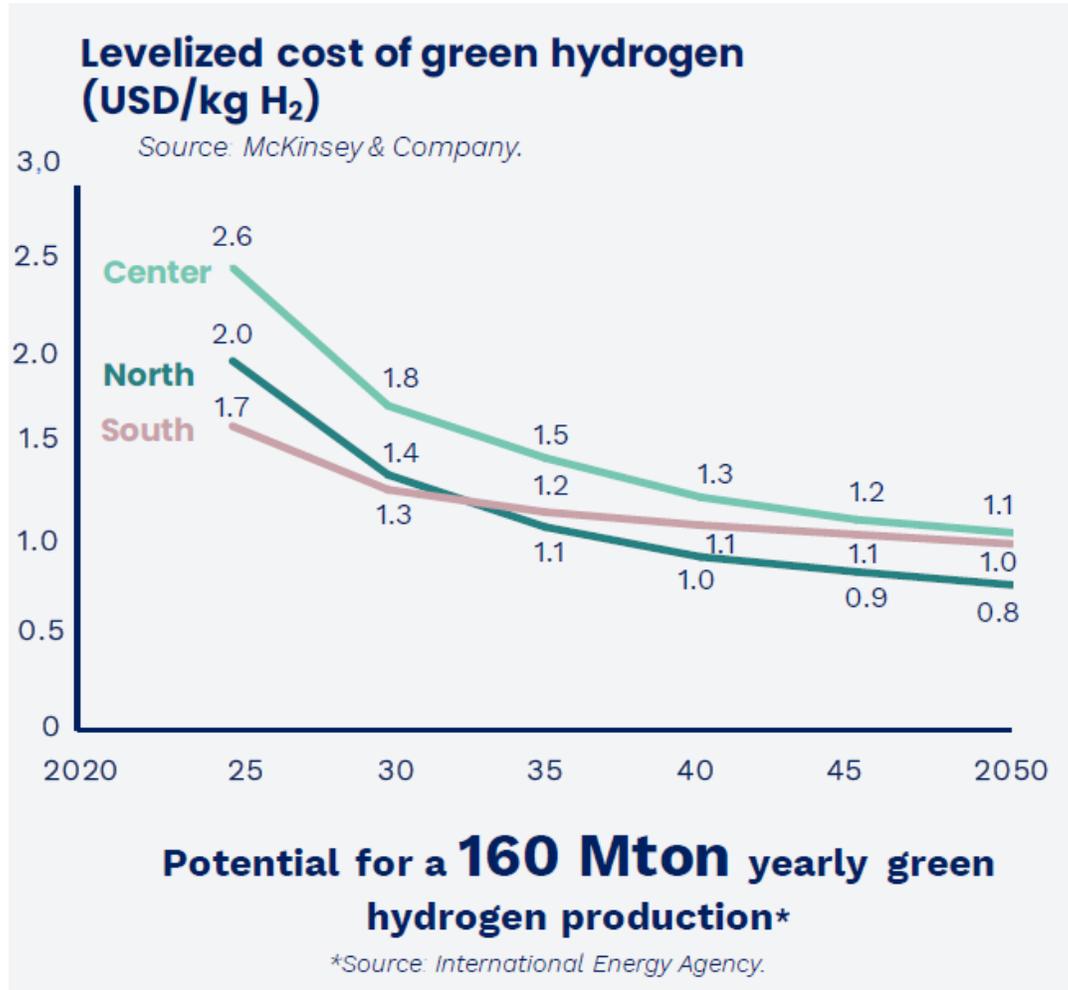
amounts to 70 times current installed capacity

3

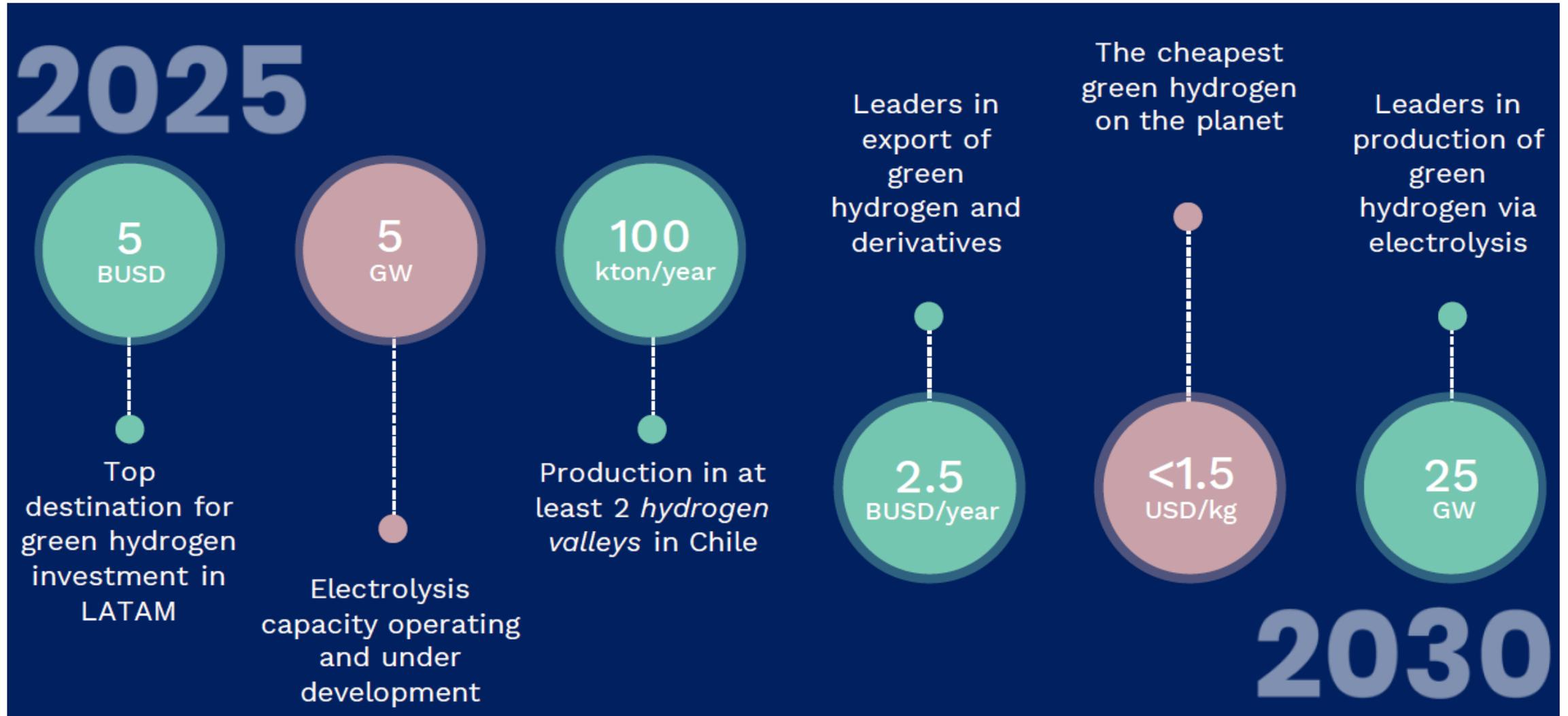
## **Our Strategy**

Ambitions for clean industry

# The cheapest green hydrogen on the planet



# Our Ambition



# 4

## Pillars and Achievements

# A state policy with private and public collaborations



# Green Hydrogen Council – Corfo

Created on may 2022, for accelerate the development of green hydrogen sustainable industry

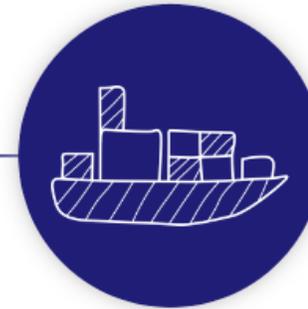
Led by the minister of energy Diego Pardow, with participation of 11 ministers and Corfo's Vicepresident with Corfo's competences



Green hydrogen local offer development for national decarbonization, new companies and jobs



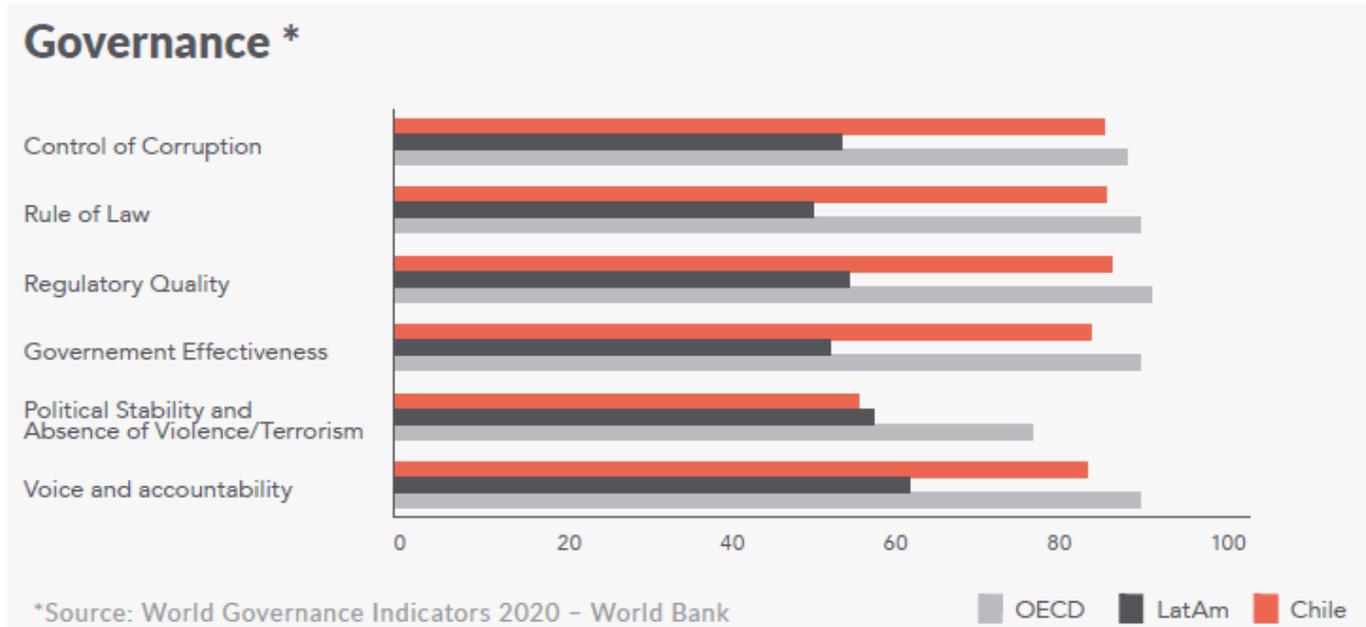
Reconversion to renewables fuels and raw materials of large productive industrial and energy sectors



Exporting Green hydrogen and derivatives

# Why Chile?

✓ When it comes to Foreign Direct Investment, we are leaders in Latin America



## Chile in the Región

#1 Business Environment Ranking EIU 2000 - 2021

#1 Most Competitive Country IDM 1997-2021

#1 Economic Freedom Heritage Foundation 2022



**2022 Bloomberg NEF  
Climatescope as an  
attractive market for  
clean energy  
investments**

# Milestones

- ✓ **MoUs already signed for collaboration and co-leadership of H2 with Singapur, Ports of Rotterdam, Antwerp-Brugges and Hamburg. Joint statements with UK, DE, FR, NE**
- ✓ **50 MUSD distributed by the Chilean Economic Development Agency, CORFO, financing green hydrogen projects for 10+ MW electrolyser facilities**
- ✓ **Launched Green H2 Venture Capital fund with a target size of 300 MUDS and a presence in the UK, US and Chile (1<sup>st</sup> in LATAM)**

5

Projects

# Green Hydrogen Projects

50MMUSD subsidy by Corfo

Reimbursement scheme  
Operation or commissioning  
by dec 2025



**HYEX**

Antofagasta Region

Green ammonia for explosives and exports

24 MW electrolysis capacity

3,200-ton H2V/year -  **Enaex**

Source: [link](#)



**AMER emethanol**

Antofagasta Region

80 MW electrolysis capacity

60,000-ton emethanol/year → Export



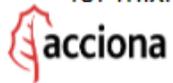
GNL Quintero

**Green Hydrogen Bahía Quintero**

Valparaíso Region

430 ton H2V/year

10 MW H2 electrolysis capacity  
for mixing in natural gas networks



Source: [link](#)



**Hydro Aconcagua**

Valparaíso Region

20 MW electrolysis capacity

3,000 ton/year → ENAP



**CAP H2V**

Biobío Region

12 MW electrolysis capacity

1,550-ton H2V/year → Siderúrgica  
Huachipato



**Faro del Sur**

Magallanes Region

240 MW electrolysis capacity

# Green Hydrogen Projects

## Fund development in transition Chile-EU

Pre-investment studies 0.3 MMEuros



**Green hydrogen production from  
CSP +FV plants**  
María Elena, Antofagasta



**Green hydrogen for thermal  
power generation plants**  
Port of Mejillones  
Antofagasta



**Green ammonia for export**  
María Elena, Port of Tocopilla  
Antofagasta



**Green hydrogen from PV plants (PMGD)**  
Energy curtailment for H2V production  
Caimanes, Coquimbo

**RWE**

**Ammonia from wind energy for  
export**  
Riesco Island  
Magallanes



**Ammonia from wind power for  
export**  
Seno Otway, Magallanes

**MOWI®**

**Replacement of diesel in salmon farming**  
Aysen Fjord Pisciculture  
Aysen

# Green Hydrogen Projects

In Operation or Close To



## CICITEM

Mobil system for testing in different locations and altitude

Source: [link](#)

**In Operation**



## AES ANDES

Green ammonia for export

Source: [link](#)



## ENEL GREEN POWER

Hybrid microgrid  
Cerro Pabellon  
Geothermal Plant

Source: [link](#)

**In Operation**



## Gasvalpo & Busso Group

Hydrogen for blending in Natural Gas networks

Source: [link](#)

**In Operation**



## AngloAmerican

AngloAmerican

Forklift cranes with fuel cells

Source: [link](#)

**In Operation**



## Walmart-Engie

Fork cranes with fuel cells in distribution center

Source: [link](#)

**In Operation**



## HIF/Siemens

E combustibles for export.

Source: [link](#)



Copenhagen Infrastructure Partners



AustriaEnergy

## HNH/AustriaEnergy

Ammonia production for export

Source: [link](#)



## Total EREN

Ammonia production for export

Source: [link](#)

# POWER TO LIQUIDS HIF PROJECT

GREEN HYDROGEN PROJECT

HIF is expected to yield the world's first industrial-scale plant that will produce synthetic climate-neutral fuels for export.

## PRODUCTION

A wind plant will power an electrolyzer which will produce green hydrogen. This will be combined with captured carbon dioxide to produce synthetic methanol. A portion of this methanol will be converted into synthetic gasoline (eGasoline).

## PROJECT OWNER AND PARTNERS

PROJECT OWNER



Team of Companies



**SIEMENS ENERGY** : Co-developer and technology provider.

**ENEL** : Renewable power developer.

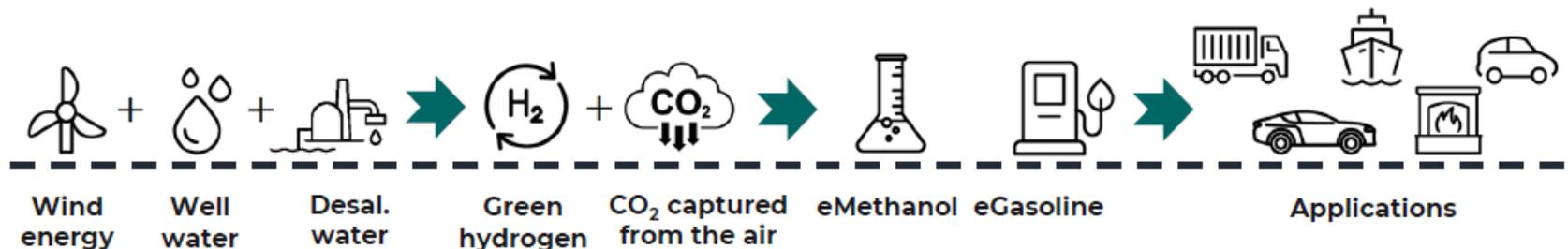
**ENAP** : Chilean National Oil company. Infrastructure provider.

**GASCO** : Co-developer and offtaker.

**PORSCHE** : Co-developer and offtaker.

Siemens received an **8 million euros grant** from the *German Federal Ministry for Economic Affairs and Energy* to develop this project.

## HOW IT WORKS



## STATUS

Pilot phase started construction and is expected to enter operations by May 2022.

Phase I is currently in development and the environmental assessment is being prepared.

## PROJECTIONS

### Pilot



**131**  
m<sup>3</sup> eGasoline  
per year



**51 million**  
USD investment



**3.4 MW**  
wind energy

**2022**  
expected year for  
operation start

### Phase I



**70,000**  
m<sup>3</sup> eGasoline  
per year



**755 million**  
USD investment



**300 MW**  
wind energy

**2024**  
expected year for  
operation start

## OFFTAKE

**PORSCHE** is planning to use the eFuels from Chile in pilot projects. These include using eFuels in Porsche's Experience Centers and sports cars.



**MABANAFT**, the Marquard & Bahls trading division which focuses on oil, announced an MoU highlighting the purchase of up to **500 million liters of carbon neutral eGasoline per year** from this project.



## LOCATION



H<sub>2</sub>GN will be the first project in Chile and Latin America to blend green hydrogen into a natural gas distribution network

### PRODUCTION

An electrolyzer will produce green hydrogen powered by renewable energy from the grid and by a 9 KW photovoltaic power supply system installed on the same site.

The green hydrogen will be stored and then injected into the natural gas network in the cities of Coquimbo and La Serena.

The hydrogen content will be progressively increased from 5% up to 20% in volume. A reduction of 340 tons of carbon dioxide per year is expected.

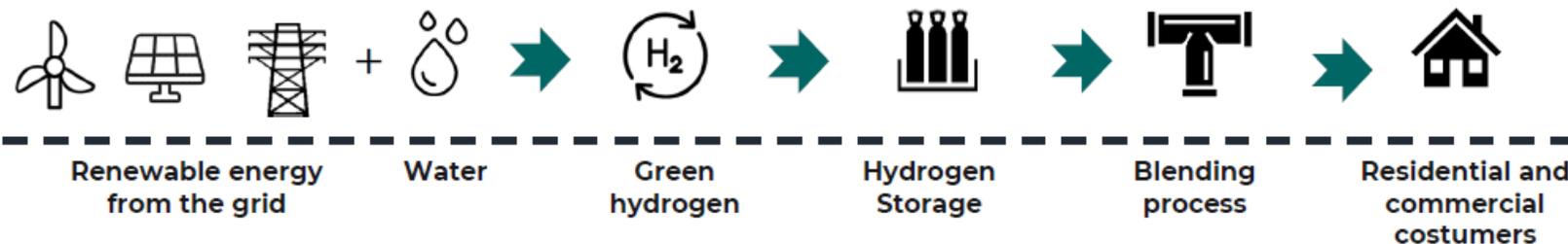
### PROJECT OWNER

PROJECT OWNER



**GasValpo** is the oldest natural gas distribution company in Chile. Along its subsidiary **Energas**, Gasvalpo supplies over **100,000** residential, commercial and industrial **customers** through its more than 1,800 kilometers of network.

### HOW IT WORKS



### STATUS

The projects is currently in its **third phase**, meaning the project design is ready and the equipment's are currently being purchased and installed.

**1 million USD** total investment, starting operation in **2022**

### PROJECT IMPLEMENTATION

#### Phase 1

Project design and permit application for the green hydrogen production and blending.

#### Phase 2

Mapping of customers' appliances and definition of procedures.

#### Phase 3

Deployment of the 0.15 MW electrolyzer for the green hydrogen production and injection system.

#### Phase 4

Incremental blending of hydrogen into the network

### OFFTAKE

**GasValpo** through its subsidiary **Energas**, operates a 60 km low-pressure polyethylene network in the Chilean cities of Coquimbo and La Serena. Green hydrogen will be injected to this network, supplying approximately 1,800 residential and commercial customers with blend of natural gas and green hydrogen.

### LOCATION





Thanks