# GREEN HYDROGEN

## OPPORTUNITIES IN LATIN AMERICA AND THE CARIBBEAN

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IDB

# WHY NOW?

1

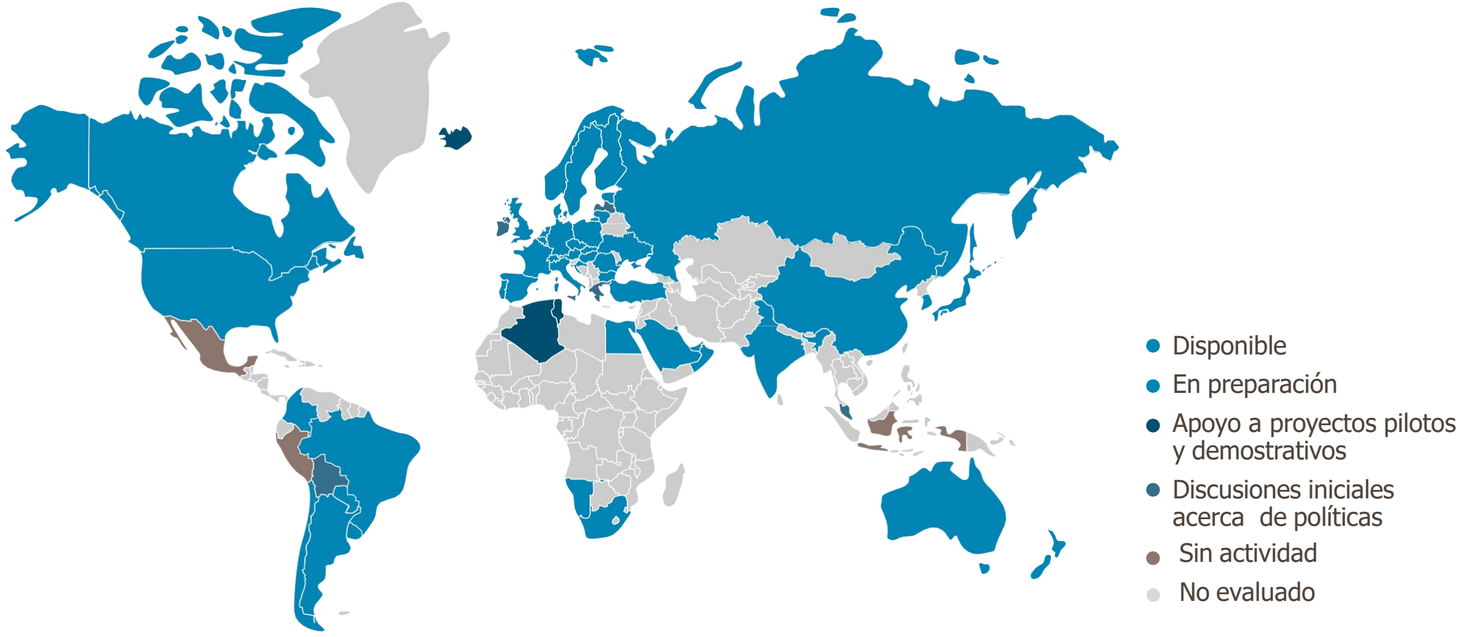
Increasing **climate ambition** to reach net zero emissions by 2050 and limit global temperature increase to 1.5 degrees Celsius

2

Last decade:
**reduction in costs** of solar and wind worldwide, by 85 and 56% respectivily

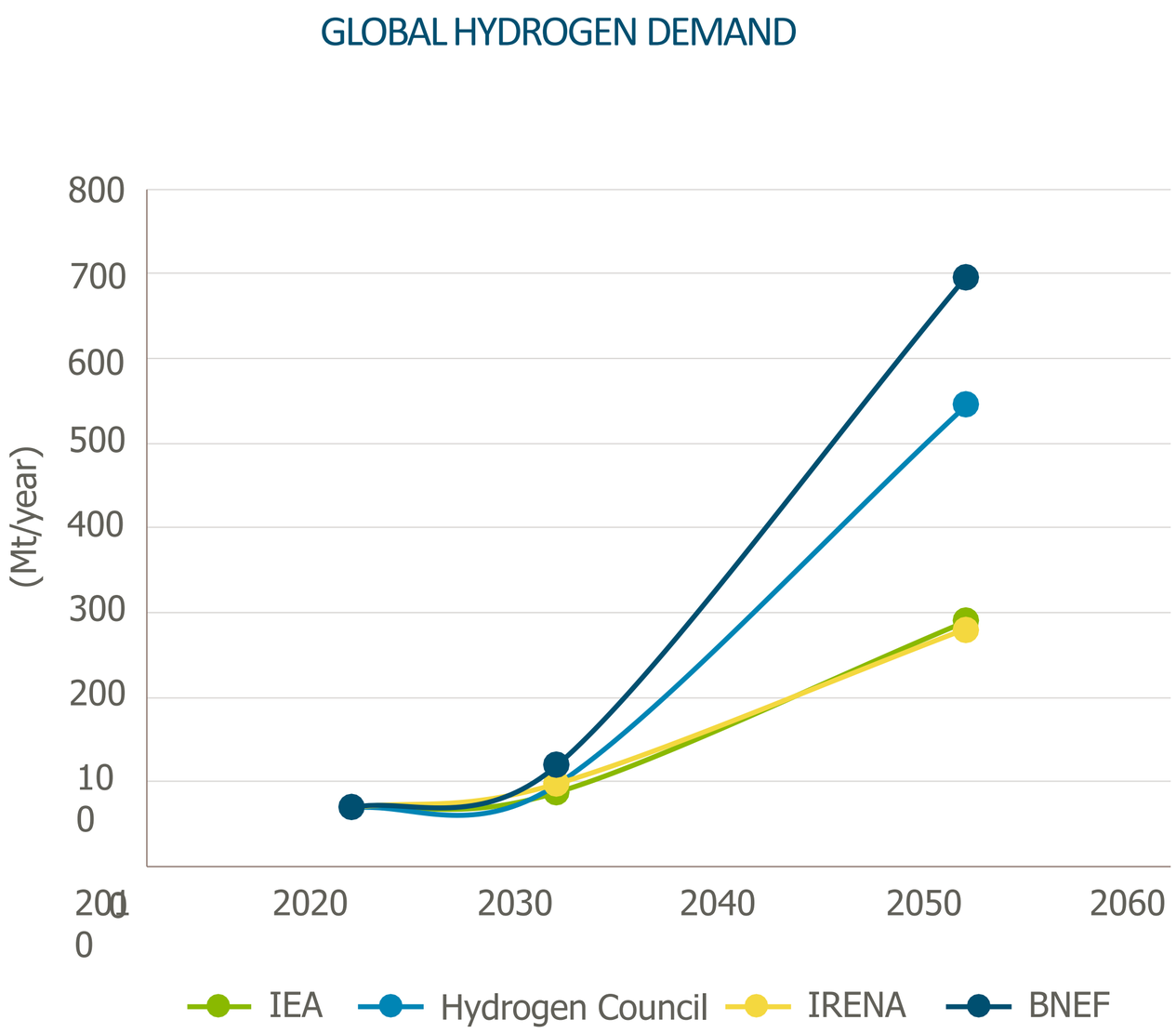
3

International movement to invest in **R&D and innovation** in major markets, supported by roadmaps and national strategies



# WHY NOW?

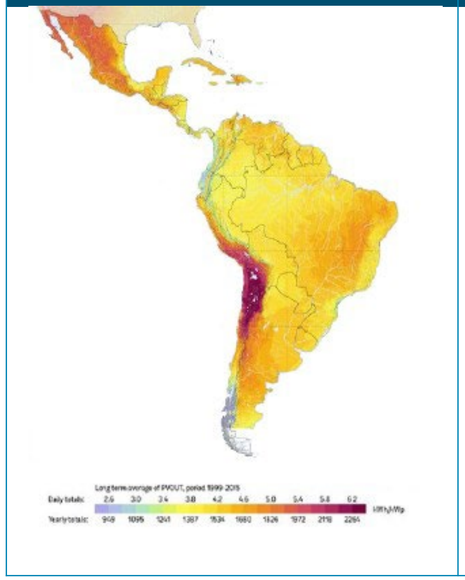
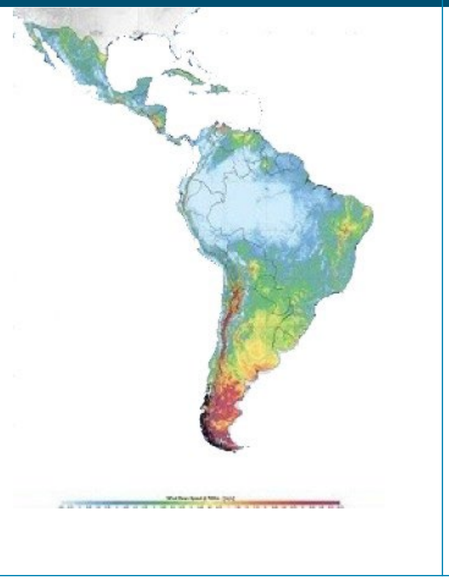
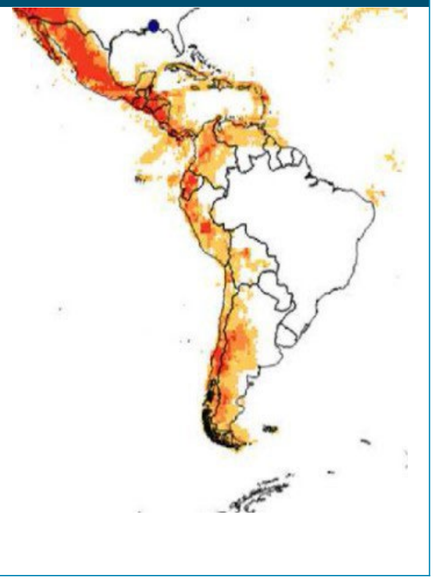
Demand per year in 2050 is expected to be between 4 and 10 times the demand registered in 2020



# WHY LATIN AMERICA & THE CARIBBEAN?

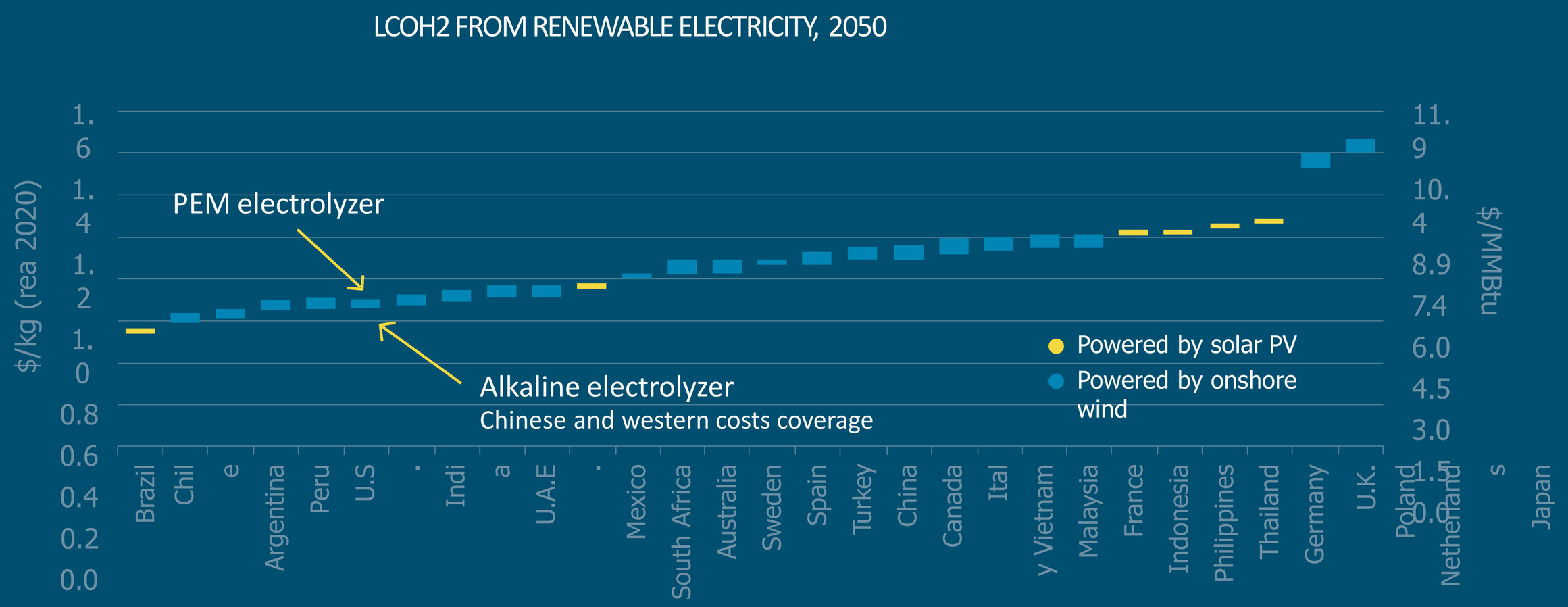
LAC has abundant availability of renewable energy sources (hydroelectric, solar, wind, and geothermal) to produce and export $H_2$

In Latin America and the Caribbean, 56% of energy generation comes from renewable sources

| SOLAR | WIND | GEOTHERMAL |
|---|---|---|
|  |  |  |

Source: ESMAP

# WHY LATIN AMERICA & THE CARIBBEAN?

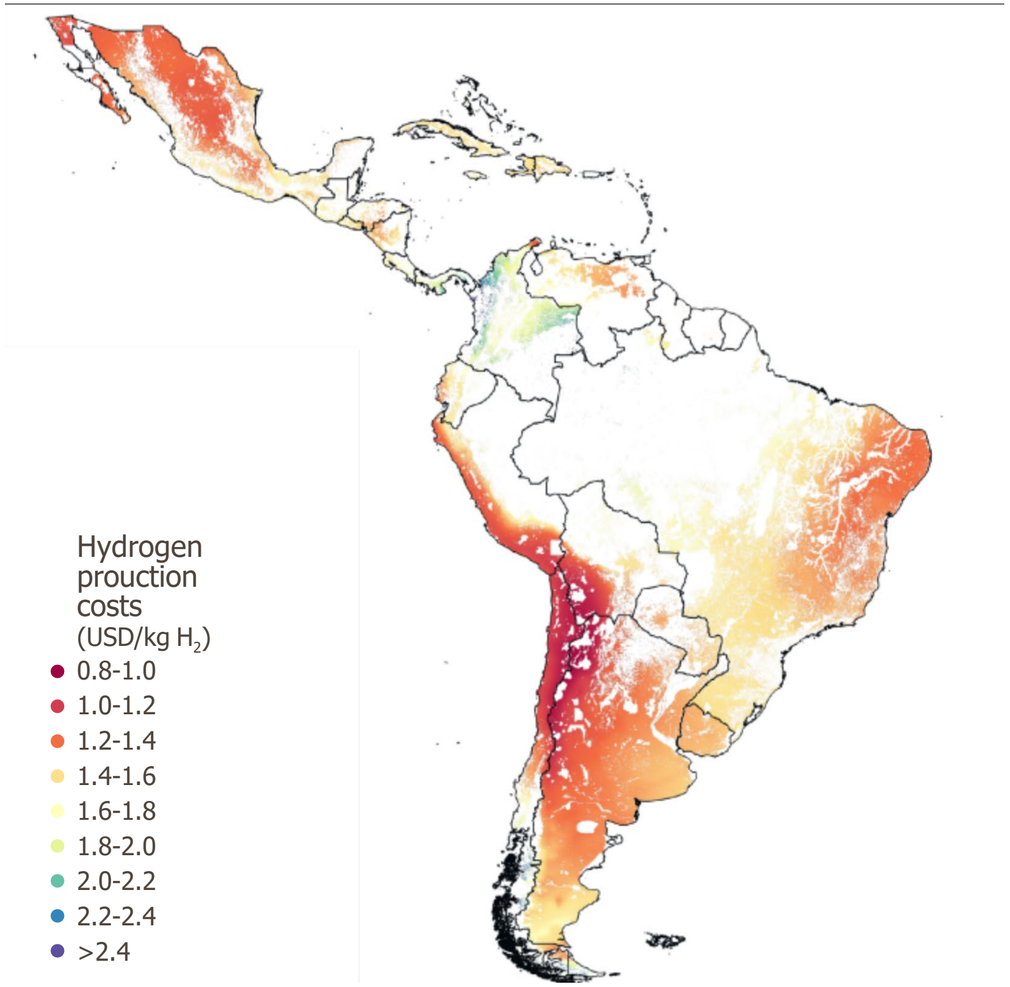



Source: BloombergNEF

# WHY LATIN AMERICA & THE CARIBBEAN?

- 66 initiatives (projects of interest) with diferent degrees of progress
- 4 country strategies published (CH, CO, UR, BR) and several in development:
- Public-private interest
- Motivation:
  - Energy transition goals (NDCs, RELAC, etc)
  - Energy security
  - Export potential

LCOH VIA ELECTROLYSIS POWERED BY HYBRID SOLAR PV AND ONSHORE WIND, LATIN AMERICA, 2050




Source: IEA

# OPPORTUNITIES FOR LAC

## DECARBONIZATION IMPACT

600% potential of H2 demand growth to decarbonize hard-to-abate energy uses

17% reduction in CO2 emissions up to 2050 may be considered plausible by H2 adoption in an optimist scenariovv

## SOCIO-ECONOMIC IMPACT

Quality jobs creation with gender diversity and inclusion

## ECONOMIC IMPACT

New commodity for export in almost all countries

Transition from oil-based jobs to decarbonized industries

Creating new value chains

# LAC NEEDS SUPPORT TO UNLOCK THE $H_2$ POTENTIAL

ENABLING CONDITIONS

## NATIONAL STRATEGIES

- Research and development program
- Value chain promotion
- Vision and goals
- Road map
- Strategy

## ECONOMIC REGULATION

- Economic incentives and coordination with the electricity and transport sectors
- Certification: guarantees of origin, social and environmental criterium

## TECHNICAL REGULATION

- Safety, standards for transportation, storage and final uses.

## GOVERNANCE

- Training, institutional coordination and strengthening.

# WHAT IS IDB DOING?

Regional initiatives:
11+ countries

National initiatives:
15+ countries

| IN EXECUTION 5 COUNTRIES | INITIAL TC DEMAND TO BE ATTENDED 10 COUNTRIES |
|---|---|
|  |  |
| $2.1 MILLION | $6 MILLION |

FUNDS REACHED TO FINANCE $H_2$ LAC ACTIVITIES

CIF CLIMATE INVESTMENT FUNDS · REGIONAL PUBLIC GOODS · NAMA Facility · GREEN CLIMATE FUND · SIP UK Sustainable Infrastructure Program · NDC PARTNERSHIP · Japan Special Fund

# WHAT IS IDB DOING?

## 4 FIELDS FOR ACTION IN LAC COUNTRIES

### TECHNICAL SUPPORT

National GH2 strategies

Roadmaps

NDCs

Regulations and certifications

### PRE-FEASIBILITY

Pre-Feasibility studies for new projects and infrastructure

Facility Preparation

### DEMONSTRATIVES

Mostly grant funds

Technological assessments

Private sector participation

Demonstration/Dissemination

### FINANCING

Financial leverage: grants and reimbursable funds

Transport & Industry

Commercially viable

Private sector investments (IDB Invest)

# IDB'S INITIATIVES

**Mexico**
Regional Public Good

**El Salvador**
Roadmap in preparation
Regional Public Good

**Costa Rica**
Roadmap
Pre-feasibility study
1 Pilot

**Ecuador**
Roadmap in preparation
Regional Public Good

**Peru**
Roadmap in preparation
re-feasibility study

**Paraguay**
Roadmap in preparation 1
Pre-feasibility study
1 Pilot
Regional Public Good

**Bolivia**
Roadmap in preparation
Pre-feasibility study
Analysis of the value chain
Regional Public Good

**Chile**
Pre-feasibility study
Analysis of the value
chain Safety regulations
Policy-Based Loans Under Review

**Honduras**
Regional Public Good

**Trinidad and Tobago**
RoadMap
Pre-feasibility study
Regional Public Good

**Panama**
Roadmap
Pre-feasibility study
Regional Public Good

**Colombia**
Roadmap
Regulatory Sandbox
Policy-Based Loans Under Review
Regional Public Good

**Brazil**
Analysis of the value chain

**Uruguay**
Roadmap
Pre-feasibility study
Analysis of the value chain
1 Pilot
Policy-Based Loans Under Review
Regional Public Good

**Argentina**
Policy-Based Loans Under Review

# ACTIVITIES

| ROADMAPS | PRE-FEASIBILITY STUDIES | VALUE CHAIN | REGULATION AND SAFETY CONDITIONS | PILOTS | POLICY-BASED LOANS |
|---|---|---|---|---|---|
| Colombia | Uruguay | Bolivia | Chile | Costa Rica | Chile |
| Uruguay | Panamá | Brazil | Colombia | Uruguay | Argentina |
| Panamá | Paraguay | Chile | Bolivia | Paraguay | Uruguay |
| Bolivia | Peru | Uruguay | Uruguay | | Colombia |
| El Salvador | Bolivia | | | | |
| Paraguay | Trinidad and Tobago | | | | |
| Costa Rica | Chile | | | | |
| Peru | Costa Rica | | | | |

# REGIONAL PUBLIC GOOD

HARMONIZED HYDROGEN CERTIFICATION

HARMONIZED ENVIRONMENT & SOCIAL GUIDELINES (ESG) IN HYDROGEN

HYDROGEN INFORMATION *HUB*

# HYDROGEN CERTIFICATION

HARMONIZED GREEN HYDROGEN CERTIFICATION GUIDE FOR LAC

BENEFITS FOR LAC

## FINANCIAL

- Access tax incentives, subsidies, or financing
- CO2 emission certificates

## COMPLIANCE

- Obligations to buy, use or sell energy from renewable or low-carbon sources
- Obligations to reduce GHG emissions

## MARKET ACCESS

- Possibility of selling in markets where it is not allowed to sell hydrogen from fossil or gray fuels

## REPUTATION

- Contribute to ESG criteria
- Traceability, transparency, and confidence of the final consumer

# ESG IN HYDROGEN

HARMONIZED GREEN HYDROGEN CERTIFICATION GUIDE FOR LAC

- ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS
- LABOR AND WORKING CONDITIONS
- RESOURCE EFFICIENCY AND POLLUTION REVENTION
- COMMUNITY HEALTH, SAFETY, AND SECURITY
- LAND ACQUISITION AND INVOLUNTARY RESETTLEMENT
- BIODIVERSITY CONSERVATION AND MANAGEMENT OF LIVING NATURAL RESOURCES
- INDIGENOUS PEOPLES
- CULTURAL HERITAGE
- GENDER EQUALITY
- STAKEHOLDER ENGAGEMENT AND INFORMATION DISCLOSURE

# HYDROGEN INFORMATION HUB

CONSOLIDATE INFORMATION

## TECNICHAL

- Potential supply and demand
- Existing infrastructures

## REGULATORY

- Current status of the general regulations
- Current status of the specific regulations

## ECONOMIC

- Cost Estimates (LCOH, LCOE, Electrolyze)
- Financing
- Market prices

## INSTITUTIONAL

- Ownership of assets
- Key players
- Governance

# FINANCIAL CHALLENGES

## PROJECTS

*GRANTS* TO FINANCE PROJECTS

FINANCING TECHNICAL ASSISTANCE

CONCESSIONAL AND BLENDED FUNDS TO ENABLE INFRASTRUCTURE

AGREEMENTS TO GUARANTEE DEMAND

# CONCESSIONAL AND BLENDED FINANCE

**Green Climate Fund (GCF)**

Electromobility fund: Promotes the deployment of EVs and low carbon urban development while increasing the resilience of the system to the impacts of climate change

9 countries in LAC are beneficiaries

| PROJECT TYPE | MAX. GCF LOAN SHARE | MAX. GCF GRANT SHARE | MIN. CO-FINANCE SHARE |
|---|---|---|---|
| Component 1: Increase climate resilience of urban transport infrastructure | 90% | 50% | 10% |
| **Component 2: Increase climate resilience of grid with H2** | 80% | 30% | 20% |
| Component 3: Electrified integrated urban mobility Public transport | 50% | 25% | 50% |
| Component 3: Electrified integrated urban mobility Buses and others | 40% | 0% | 60% |
| Component 3: Electrified integrated urban mobility Electric vessels | 70% | 30% | 30% |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