From the Legal Framework to Implementation

PRODUCE IN BRAZIL, DECARBONIZE IN BRAZIL, AND EXPORT FROM BRAZIL

ABIHV
Associação Brasileira da Indústria do Hidrogênio Verde

1. Low-emission hydrogen: what it is and why it matters

Low-emission hydrogen is an energy carrier and an industrial feedstock produced with low carbon intensity. It enables the conversion of renewable resources (through water electrolysis) into feedstocks and fuels for activities that still rely on fossil-based pathways or are more difficult to electrify directly.

Renewable resources → **Low-emission hydrogen** → **Fertilizers | Industry Sustainable fuels**

Brazil's opportunity is to turn its energy advantage into industrial competitiveness, reduce dependence on fossil-based inputs, and produce lower-carbon goods. Low-emission hydrogen can be used as a feedstock for the production of fertilizers and chemicals, as a reducing agent in the production of low-emission iron and steel, and as the foundation for sustainable fuels, including synthetic sustainable aviation fuel (e-SAF), as well as e-methanol and ammonia for maritime transport.

Among ABIHV members, the project pipeline under development exceeds BRL 115 billion in planned investments through 2030 and represents 10.4 GW of electrolysis capacity, with projects located in the states of Ceará, Pernambuco, Rio Grande do Norte, Bahia, Maranhão, Minas Gerais, São Paulo, and the Federal District. A complete list of ABIHV members' projects is provided at the end of this document.

2. Brazil has already built a strong foundation

Brazil combines competitive renewable resources, a low-carbon electricity mix, industrial capacity, a strong agribusiness sector, mining, port infrastructure, and a proven track record of public policies that have successfully fostered new markets and value chains, such as biofuels and renewable energy.

The Legal Framework for Low-Carbon Hydrogen, PHBC, Rehidro, the certification system, and their linkages to the Fuel of the Future Program provide a starting point. The next step is to implement these instruments in a coordinated manner, with regulation, criteria, timelines, and predictability that are compatible with long-term investments.

3. The challenge is to move projects to Final Investment Decision (FID)

Brazil already has a diversified pipeline of hydrogen, ammonia, e-methanol, and lower-emission fertilizer projects located near industrial hubs, ports, and renewable energy resources. The challenge is not a lack of projects, but the absence of the integrated conditions required for them to reach Final Investment Decision (FID) and progress to commercial operation.

Three priorities must advance in parallel



Demand and market development.

Exports are essential: they attract capital, enable hubs to achieve scale, and connect Brazil to new value chains. However, relying solely on external markets increases exposure to factors beyond the country's control. The strategy should therefore combine exports with the development of long-term domestic demand.



PHBC and Rehidro must be translated into clear rules.

PHBC and Rehidro must be translated into clear rules, well-defined criteria, implementation timelines, certification, and links to financing. This is how the existing policy instruments can effectively support the first wave of projects.



Power system integration and infrastructure.

Electrolyzers are large electrical loads and require predictable access to transmission infrastructure and competitively priced renewable electricity, as well as appropriate rules for self-generation and consumption and a risk-allocation framework compatible with long-term contracts. Renewable energy expansion, transmission network development, and new industrial loads must be planned in an integrated manner.

4. The next step: an implementation agenda

This is not about reopening the legal framework or introducing additional subsidies. It is about translating the existing foundation into an implementation agenda focused on market creation and reducing risk for private capital.

Four pillars can structure this implementation agenda



1. Create domestic demand.

Establish gradual and realistic targets and mandates, subject to periodic review, for the use of low-carbon hydrogen and its derivatives across strategic sectors. Fertilizers represent a natural entry point, but the policy should also encompass the chemicals industry, refining, steelmaking, lower-emission iron production, aviation, shipping, e-methanol, and ammonia.



2. Operationalize PHBC and Rehidro.

Establish guidelines for coordinated implementation, with clear eligibility criteria, regulatory predictability, certification, and alignment with financing instruments.



3. Integrate energy and infrastructure.

Incorporate large flexible loads into power system planning, including under the PNAST, and coordinate the development of transmission, grid connections, ports, logistics, storage, and industrial hubs. The flexibility of electrolyzers should be recognized through appropriate regulatory frameworks and infrastructure, without imposing disproportionate risks on projects.



4. Strengthen international integration and exports.

Support interoperable certification, mutual recognition agreements, port infrastructure, export financing, and integration with carbon and sustainable fuels markets. Exports should enhance scale and competitiveness without undermining the creation of domestic value and long-term demand in Brazil.

5. ABIHV's Contribution

ABIHV brings together producers, consumers, energy companies, equipment suppliers, investors, and development institutions. The Association serves as a bridge between public policy and project realities, providing technical input to the government, Congress, regulatory agencies, and planning institutions.

Its work spans the legal framework and its implementing regulations, the Climate Plan, the Brazilian Sustainable Taxonomy, certification, incentives, financing, transmission, grid access, infrastructure, international trade, and demand creation.

Brazil has already established the legal framework.
The next step is to put it into practice to create markets, strengthen competitiveness, and enable the production of lower-emission goods:
produce in Brazil, decarbonize in Brazil, and export from Brazil.

From the legal framework to implementation: the path to turning potential into projects, industry, and exports

What Brazil already has



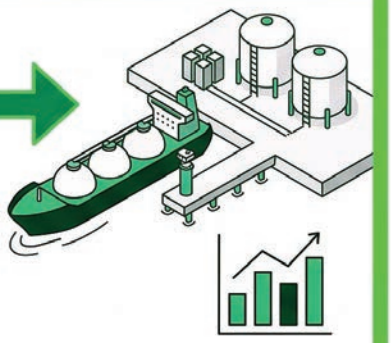
- **Legal framework and incentives**
- Projects and industrial capacity
- Renewable energy potential

What is needed to unlock investment



- **Predictable demand**
- Implementation of PHBC and Rehidro
- Competitive and predictable access to power and infrastructure

What policy should deliver



- **Gradual consumption mandates**
- Integration and improvement of power-sector policies
- Certification, exports, and financing

ABIHV
Associação Brasileira da Indústria do Hidrogênio Verde

The projects of ABIHV member companies

ABIHV brings together companies operating across different segments of the low-carbon hydrogen value chain in Brazil, connecting industry, innovation, infrastructure, and the energy transition. Its members' project portfolio already includes operational plants, such as those inaugurated by White Martins in Jacareí and Neoenergia in Brasília, as well as projects under development focused on green hydrogen, green ammonia, e-methanol, and other strategic derivatives. Together, these initiatives demonstrate that the sector is advancing both through the implementation of concrete solutions and the development of new investments capable of positioning Brazil as a global benchmark in clean energy, sustainable industrialization, and decarbonization. Explore the plants already in operation and the next major projects that will shape the future, including those expected to reach Final Investment Decision (FID) by 2030 and their respective Commercial Operation Dates (COD).

Projects for the coming years: FID by 2030

The planned investments for these projects exceed USD 22 billion[1], with a combined electrolysis capacity of 10.4 GW. Several projects have also been selected through different public support and incentive mechanisms.

FID is a crucial project-development milestone, marking the transition from planning to implementation. At this stage, financial resources are committed to equipment purchases, engineering contracts, and other obligations.

acciona / NORDEX

- **Location:** Macau, Pendências and Guamaré, Rio Grande do Norte
- **Jobs (Construction):** 4,640
- **Investment:** USD 2.06 billion[2]
- **Product:** Green Ammonia
- **Electrolysis capacity:** 500 MW
- **Annual production:** 430,000 tonnes
- **COD:** 2032

ATLAS AGRO

- **Location:** Uberaba, Minas Gerais
- **Jobs (Construction):** 2,000
- **Investment:** USD 1.12 billion
- **Product:** Green Ammonium Nitrate
- **Electrolysis capacity:** 300 MW
- **Annual production:** 530,000 tonnes
- **The project is listed on the Brazil Climate and Ecological Transformation Investment Platform (BIP) and was selected by the ITA**
- **Milestones achieved:** 22% of the offtake volume is covered by binding agreements; more than 30% is under advanced negotiation; FEED began in December 2025
  FEED[3] began in August 2026

casadosventos

- **Location:** Complexo do Pecém, Ceará
- **Jobs (Construction):** 4,600
- **Investment:** USD 2.3 billion
- **Product:** Green Ammonia
- **Electrolysis capacity:** 1.2 GW
- **Annual production:** 400,000 tonnes (phase 1) + 400,000 tonnes (phase 2)
- **Pending approval under the New PAC**
- **The project is listed on the Brazil Climate and Ecological Transformation Investment Platform (BIP)**
- **Investment in renewable energy:** USD 2.5 billion

EDF

- **Location:** Bahia
- **Jobs (Construction):** 1,000
- **Product:** e-Methanol
- **Electrolysis capacity:** 100 MW
- **Annual production:** 80,000 tonnes
- **Current phase:** The engineering and electrical studies completed
  COD 2031

EDF

- **Location:** Complexo do Pecém, Ceará
- **Jobs (Construction):** 650
- **Product:** Green Ammonia
- **Electrolysis capacity:** 200 MW
- **Annual production:** 170,000 tonnes
- **Current phase:** Site reservation at the Port of Pecém, with engineering, electrical, and environmental studies in progress. COD: 2031

1 - Original values in BRL were converted at an exchange rate of USD 1 = BRL 5.19. Values in USD are approximate. Information provided by member companies (January 2026 and updated in June 2026). 2 - The announced investment amount includes a wind farm, a solar power plant, and a dedicated port terminal. 3 - FEED: Front-End Engineering Design.

EUROPEAN ENERGY

- **Location:** Porto de Suape, Pernambuco
- **Jobs (Construction):** 300
- **Investment:** USD 0.38 billion
- **Product:** e-Methanol
- **Electrolysis capacity:** 150 MW
- **Annual production:** 100,000 tonnes
- **The project was selected by the Industrial Transition Accelerator (ITA)**
- **Milestones achieved:** preliminary environmental license and water abstraction permit obtained
- **COD:** 2028

Fortescue

- **Location:** Complexo do Pecém, Ceará
- **Jobs (Construction):** 8,920
- **Investment:** USD 3.37 billion
- **Product:** Green Hydrogen
- **Electrolysis capacity:** 1.2 GW
- **Annual production:** 170,000 tonnes
- **Pending approval under the New PAC program**
- **The project is listed on the Brazil Climate and Ecological Transformation Investment Platform (BIP) and was selected by the ITA**
- **Milestones achieved:** feasibility studies; licensing and authorizations; fieldwork

frv

- **Location:** Complexo do Pecém, Ceará
- **Jobs (Construction):** 5,000
- **Investment:** USD 3.47 billion
- **Product:** Green Ammonia
- **Electrolysis capacity:** 500 MW
- **Annual production:** 400,000 tonnes

frv

- **Location:** Complexo do Pecém, Ceará
- **Jobs (Construction):** 650
- **Investment:** USD 1.12 billion
- **Product:** Green Ammonia
- **Electrolysis capacity:** 1.5 GW
- **Annual production:** 1,200,000 tonnes

Qair

- **Location:** Complexo do Pecém, Ceará
- **Jobs (Construction):** 5,700
- **Investment:** USD 3.32 billion
- **Product:** Green Hydrogen, Ammonia, and Oxygen
- **Electrolysis capacity:** 2.52 GW
- **Annual production:** Liberté – 1,680,000 tonnes of Green Ammonia, 296,000 tonnes of Green Hydrogen, and 2,353,000 tonnes of Oxygen
- **COD:** COD Fraternité: 2031
- **Projects:** Fraternité and Liberté

Qair

- **Location:** Porto de Suape, Pernambuco
- **Jobs (Construction):** 5,000
- **Investment:** USD 2.94 billion
- **Product:** Green Hydrogen, Ammonia, and Oxygen
- **Electrolysis capacity:** 2.24 GW
- **Annual production:** 1,680,000 tonnes of Green Ammonia, 296,000 tonnes of Green Hydrogen and 2,353,000 tonnes of Oxygen
- **Project:** Suape

VALE

- **Location:** Maranhão, Brazil
- **Investment:** USD 2.00 billion
- **Product:** HBI (Hot Briquetted Iron)
- **Annual production:** 1.35 million tonnes
- **BIP and Global Gateway**
- **Estimated emissions reduction of approximately 80% compared to the conventional production route**
- **Milestones Achieved:** Feasibility studies and conceptual design completed
- **Project name:** Hydeas

The Brazil Climate and Ecological Transformation Investment Platform (BIP) is an initiative of the Brazilian government that aims to attract international investment in energy-transition and decarbonization projects. **The Industrial Transition Accelerator (ITA)**, launched by the Government of the United Arab Emirates and Bloomberg Philanthropies, focuses on promoting global industrial decarbonization. **The New PAC** is a Brazilian federal investment program designed to drive development nationwide, including through energy-transition and energy-security projects. **The Brazilian Development Bank (BNDES)** and the **Funding Authority for Studies and Projects (FINEP)** are responsible for selected support mechanisms for national development.