

Low-Carbon Hydrogen Regulatory Framework in Brazil



Key Regulatory Developments

- **National Hydrogen Program (PNH2):** Launched in 2021 and established in 2022, under Resolution CNPE no. 06, this program sets strategic guidelines for hydrogen development, fostering research, infrastructure, and market growth.

- **Law no. 14.948/2024:** Establishes the regulatory framework for low-carbon hydrogen in Brazil, defining hydrogen classifications and implementing policy instruments. It also introduces incentives for the low-carbon hydrogen industry, creates the Special Incentives Regime for Low-Carbon Hydrogen Production (Rehidro) and establishes the Brazilian Hydrogen Certification System (SBCH2), which defines the structure, governance, and competencies, as well as a voluntary certification based on emission intensity through life-cycle analysis. Furthermore, it designates the National Agency of Petroleum, Natural Gas, and Biofuels (ANP) as the regulator of the low-carbon hydrogen market.

- **Law no. 14.990/2024:** Establishes the Low-Carbon Hydrogen Development Program (PHBC) and introduces financial incentives, including tax credits to support the development and commercialization of low-carbon hydrogen.



Certification System (SBCH2) Criteria

- **Life Cycle-Assessment:** The certification must evaluate GHG emissions across all production stages.

- **Hydrogen Certificate:** Issued by authorized certifiers, this document must detail the inputs used, production location, life cycle, and carbon dioxide equivalent emissions.

- **Compliance Seal:** A label that verifies compliance with established hydrogen production requirements.

- **Certification Boundaries:** Define the production stages covered by the certification process.

- **Governance Rules:** Established by SBCH2, these rules must be followed by all companies seeking hydrogen certification.



Hydrogen Classification

- **Low-Carbon Hydrogen:** hydrogen fuel or industrial input collected or obtained from diverse sources with GHG emissions, according to life-cycle analysis, with an initial threshold of ≤ 7 kgCO₂eq/kgH₂ (seven kilograms of carbon dioxide equivalent per kilogram of hydrogen produced).

- **Renewable Hydrogen:** low-carbon hydrogen, fuel or industrial input sourced from natural hydrogen or produced from renewable sources, including hydrogen derived from biomass, ethanol and other biofuels, as well as electrolytic hydrogen, generated by electrolysis of water, using renewable sources, such as solar, wind, hydropower, biomass, ethanol, biogas, biomethane, landfill gases and geothermal, among others to be defined by the government.

- **Green Hydrogen:** hydrogen produced by electrolysis of water, using renewable energy sources.



Financial and Fiscal Incentives

- **Rehidro:** Tax benefits for infrastructure and production projects, including federal tax exemptions and special tax incentives for debentures.

- **PHBC Tax Credits:** Progressive allocation of fiscal credits from 2028 to 2032, prioritizing projects with lower emissions and greater national supply chain integration. The granting of the tax credit will be preceded by a competitive procedure to be detailed in future regulations.



Main aspects pending of regulation

- A detailed regulatory framework is under discussion to define the requirements for allocating tax credits, particularly regarding minimum local content obligation and R&D investment.

- Certification rules and their compatibility with international standards;

- Transmission Connection rules: the rules to prioritise consumer connection access are currently under regulatory revision to adapt to increased demand from hydrogen projects.



Future Outlook

Brazil is expected to refine its regulatory framework in the coming years, aligning with international best practices and fostering a competitive hydrogen economy. New legislative measures and market mechanisms will play a crucial role in accelerating the sector's growth. Demand side measures such as mandates are also being considered to accelerate the low-carbon hydrogen industry development. Additionally, Export Processing Zones (ZPE) regulations are also under review to integrate new low-carbon hydrogen legislation and promote the development of hydrogen hubs and port-based industrial models along Brazil's extensive coastline.

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Roadmap to Structure the Hydrogen Economy in Brazil

2005

- Identifies key technological pathways where Brazil could gain a competitive edge.
- Highlights the role of natural gas as a transition fuel until green hydrogen predominates.
- Promotes hydrogen adoption in distributed generation, isolated regions, and urban bus networks.

2020

December 6th, 2020
PNE 2050

Developed around key issues shaping the future, exploring various aspects of the sector's evolution through scenario analysis, considering multiple transformations in energy production and consumption, commonly referred to as the energy transition.

June 23th, 2022
Resolution CNPE no. 6

2022

Creates the National Hydrogen Program - PNH2.

2023

June 26th, 2023 - **Hydrogen Certification Manual**

- Launched by CCEE.
- Seeks to meet national and international requirements.
- Allows hydrogen producers to enter the market and enhancing the safety and credibility of their products.
- Lays down the rules for transferring the certificate to another producer.

January 9th, 2024
Law no. 14.801

Regulates incentivized infrastructure debentures

2024

March 26th, 2024
Decree no. 11.964/2024

- Regulates incentivized infrastructure debentures, establishing criteria for classification and monitoring of priority investment projects.
- Includes low-carbon hydrogen among the sectors that can issue debentures.

June 27th, 2024
Law no. 14.902

- Establishes the Green Mobility and Innovation Program (Programa Mover).
- Introduces incentives to renew and decarbonize the automobile fleet with engines powered by alternative fuels (which could include hydrogen).

August 2nd, 2024
Law no. 14.948

Establishes the Legal Framework for Low Carbon Hydrogen.

August 26th, 2024 -
Resolution CNPE No. 5

- Establishes the National Energy Transition Policy - PNTE.
- Establishes the Energy Transition Plan - Plante.
- Establishes the National Energy Transition Forum - FONTE.

September 27th, 2024
Law no. 14.990

- Establishes the Low Carbon Hydrogen Development Program (PHBC)
- The Program allocates R\$18 billion in tax credits over a five-year period, starting in 2028.

October 8th, 2024
Law no. 14.993

- Establishes the Fuel for the Future Program (Programa Combustível do Futuro)
- Establishes demand mandates for clean fuels such as biogas and biomethane, but no specific ones for green hydrogen.

November 13th, 2024 -
Brazil's Nationally Determined Contribution (NDC)

Brazil presented its NDC¹ and established priorities, such as expanding energy efficiency actions, developing markets for low-carbon hydrogen as an alternative to fossil fuel use, and enabling advanced technologies for CO₂ removal from the atmosphere.

December 11th, 2024 - **Law no. 15.042/2024**

- Establishes the Brazilian Greenhouse Gas Emissions Trading System (SBCE in Portuguese) - the Brazilian Regulated Carbon Market.
- Creates opportunities for the demand of green hydrogen.

2025

January 10th, 2025
Law no. 15.097

- Brazilian legal framework for Offshore Wind
- Establishes as a principle that the exploration of offshore areas for energy production shall enable and promote the development of new technologies including the promotion of low-carbon technologies, such as the hydrogen utilization.

January 16th, 2025 -
Complementary Law 214/2025

- Amends Brazil's tax legislation, being the first regulation of the country's ongoing tax reform.
- Establishes a Favourable Tax Regime for renewable fuels.
- Article 175 allows biofuels and low-carbon hydrogen to be taxed at a lower rate than fossil fuels to maintain competitiveness.
- Includes renewable energies among exempt raw materials for Export Processing Zones (ZPE) projects.

January 23th, 2025 -
Law no. 15.103

- Establishes the Energy Transition Acceleration Program (Paten in Portuguese), which aims to drive the development of sustainable projects in Brazil, focusing on the implementation, modernization, and expansion of energy infrastructure, explicitly including low-carbon hydrogen.
- Creates the Sustainable Development Guarantee Fund (Green Fund), which aims to secure financing for projects classified under Paten.
- Amends Oil Act No. 9.478/1997, providing incentives for the development of the low-carbon hydrogen industry and strengthening ANP's role in regulating this sector.

¹ Brazil's NDC was presented with two alternative trajectories: a less ambitious target, which would reduce emissions to 1.05 billion tons of CO₂ equivalent (GtCO₂e) by 2035, representing a 59% reduction, and a more ambitious target of 0.85 GtCO₂e, equivalent to a 67% reduction. Under either trajectory, Brazil's commitment will focus on five key and interrelated priorities: combating deforestation and restoring degraded lands; advancing the energy transition by reducing fossil fuel use; expanding agricultural production sustainably; financing the transition, including structuring carbon markets; and promoting adaptation and sustainable development.