



## **IPHE Country Update Mar 2024 – Nov 2024: Brazil**

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### **1. New Initiatives, Programs, and Policies on Hydrogen and Fuel Cells**

- Hydrogen legal framework approved in Brazil: Laws 14948 and 14990. Among others, the laws define:
  - Rehidro
    - Rehidro establishes a framework to promote technological and industrial development for low-carbon hydrogen production in Brazil. Qualified companies must meet national content and R&D investment requirements, and will receive tax incentives valid for five years from January 2025. These incentives encourage collaboration between industries focused on hydrogen production, storage, and renewable energy integration. Companies benefiting from Rehidro are expected to contribute to Brazil's energy transition by investing in sustainable energy projects.
  - PHBC
    - The PHBC promotes low-emission and renewable hydrogen for Brazil's energy transition. Objectives include market development, support for hard-to-decarbonize industries, and the use of hydrogen in heavy transport. It offers tax credits on domestic hydrogen based on emissions. Credits are valid from 2028 to 2032, with priority for projects contributing to regional development, climate adaptation, and technology diffusion.
  - SBCH – Brazilian Hydrogen Certification Scheme
    - The Brazilian Hydrogen Certification Scheme will be based on greenhouse gas (GHG) emissions intensity in the life-cycle analysis as a key attribute for defining the produced hydrogen as low-emission.
- Fuels of the Future: Law 14993/2024
  - Low-carbon sustainable mobility and the geological capture and storage of carbon dioxide; establishes the National Program for Sustainable Aviation Fuel (ProBioQAV), the National Green Diesel Program (PNDV), and the National Decarbonization Program for Natural Gas Producers and Importers, as well as an Incentive for Biomethane.
- Carbon Market: Bill of Law 2148/2015:
  - Approved by the congress, waiting sanction or veto.



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- National Hydrogen Program (PNH2): Hydrogen Hubs
  - The Ministry of Mines and Energy (MME) launched a public call with the Ministry of Finance and Ministry of Development, Industry, Trade, and Services (MDIC) to establish low-emission hydrogen hubs aimed at decarbonizing Brazil's industry. This initiative, part of the National Hydrogen Program, seeks proposals to promote sustainable hydrogen infrastructure development by 2035.
- Global Pact for a Just and Inclusive Energy Transition
  - At COP 29, Brazil's Ministry of Mines and Energy (MME) introduced a Global Pact aimed at fostering a fair and inclusive energy transition. This initiative promotes collaboration among nations to address energy access disparities, prioritize clean energy, and create equitable economic opportunities. It seeks to drive sustainable energy projects that consider social justice, aiming to ensure that all countries, especially developing ones, are included in the global energy transition.
- MCTI Ordinance No. 7,678/2023: Brazilian Hydrogen Initiative (IBH2)
  - Ordinance No. 7,678 establishes the Brazilian Hydrogen Initiative (IBH2), aimed at advancing science, technology, and innovation in hydrogen applications. Its goals include governance, innovation, and energy transition, fostering partnerships among academia, the public, and private sectors. It emphasizes hydrogen production, storage, transport, safety, and use across industries like steel, transport, and energy, promoting skill-building and infrastructure development.
- MCTI Ordinance No. 7,679/2023: Brazilian Hydrogen Laboratory System (SisH2-MCTI)
  - Ordinance No. 7,679 establishes the Brazilian Hydrogen Laboratory System (SisH2-MCTI), an MCTI initiative supporting technological advancement, innovation, and entrepreneurship in hydrogen. It aims to promote scientific progress, specialized workforce development, and knowledge dissemination, fostering collaborations between research institutions and industry. SisH2-MCTI also prioritizes internationalization, intellectual property transfer, and universal access to infrastructure aligned with the Brazilian Hydrogen Initiative (IBH2).
- EPE's Database on Hydrogen Production and Technical Potential in Brazil
  - <https://gisepeprd2.epe.gov.br/arcgisportal/apps/storymaps/stories/68332aaa3fc64524a656583e1367daa3>

## 2. Hydrogen and Fuel Cell R&D Update

- Mapping of the Brazilian R&DI sector in Brazil
  - The Brazilian Hydrogen Association, along with the Netherlands Government, developed a mapping study of the hydrogen R&DI



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sector in Brazil, which is available at: <https://abh2.org/abh2-nin-rdi-mapping-study>

- Natural hydrogen sources were recently identified in Maricá, Brazil. Maricá's municipal government is exploring partnerships and research opportunities to assess the viability of harnessing these natural hydrogen reserves for commercial use.

### 3. Demonstration, Deployments, and Workforce Developments Update

- Petrobras, in partnership with the 'Senai Institute of Innovation in Renewable Energies (Senai ISI-ER),' has initiated the development of its first pilot plant for the production of renewable hydrogen at the Vale do Açu Thermoelectric Plant in Rio Grande do Norte state.
  - The plant will consist of 2.5MW of photovoltaic panels, 500kW of energy storage, powering a 2MW PEM electrolyzer. This hydrogen will be used both for power generation in fuel cells and to evaluate methodologies for controlling the mixing of hydrogen and natural gas to feed microturbines, thereby assessing the performance and degradation of these equipment operating with this mixture. The Brazilian company WEG will be responsible for the construction of the plant for testing, which is expected to start operation in the first quarter of 2026.
- PETROBRAS became one of the sponsors of the Joint Industry Project named "GeoH2", proposed by the Bureau of Economic Geology (Texas, USA). The consortium conducts geoscience, engineering, and economic research to facilitate and advance the development of a hydrogen economy at scale. At the same time, the company is investing on its own research, and starts to evaluate the possibility of efficient onshore storage in Brazil, associating these efforts with the development of the conception of hydrogen hubs.

### 4. Events and Solicitations

- March – 2024: Brazil-UK Technical Mission for Hydrogen Hubs
  - In March 2024, Brazil's Ministry of Mines and Energy (MME) led a mission to the United Kingdom focused on developing low-emission hydrogen hubs. The Brazilian delegation, which included representatives from the National Agency of Petroleum, Natural Gas, and Biofuels (ANP) and the Brazilian Hydrogen Association participated in technical meetings with various UK government departments and industry experts. In addition to meetings, the mission included visits to research and innovation centers, providing a comprehensive understanding for implementing hydrogen hubs from the British point of view.
- WORKSHOP: Transmission planning for hydrogen projects
  - The Brazilian Ministry of Mines and Energy (MME), along with the Energy Research Company (EPE), the National System Operator (ONS), and the National Electric Energy Agency



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(ANEEL), held discussions on transmission planning to support hydrogen projects. This collaborative effort aims to ensure that Brazil's energy transmission infrastructure – including the SIM (National Interconnected System) – can meet the demands of emerging hydrogen initiatives, facilitating the integration of low-carbon hydrogen into the national energy grid. By aligning transmission planning with the growth of hydrogen projects, the agencies seek to support Brazil's energy transition and strengthen the nation's commitment to sustainable energy development.

- Webinar: Call for Hydrogen Hubs in Brazil
  - On October 3rd, the MME (Ministry of Mines and Energy), in partnership with the Ministry of Finance (MF) and the Ministry of Development, Industry, Trade, and Services (MDIC), launched a Public Call to identify proposals for low-carbon industrial hydrogen hubs in Brazil.
  - The Call is part of the National Hydrogen Program (PNH2), which, through its 2023-2025 Three-Year Work Plan, has set a goal for Brazil's hydrogen strategy to establish low-emission hydrogen hubs in Brazil by 2035.
  - This initiative is supported by the Brazil-UK Hydrogen HUB (HUB H2) – part of the Brazil-UK cooperation launched in 2023 at COP28, implemented by the MME and the UK Department for Energy Security and Net Zero (DESNZ). The HUB H2 Secretariat is coordinated by the United Nations Industrial Development Organization (UNIDO).

### 5. Investments: Government and Collaborative Hydrogen and Fuel Cell Funding

- Public Call for the Selection of Low-Emission Hydrogen Hubs for the Decarbonization of Brazilian Industry
  - The Brazilian Ministry of Mines and Energy (MME), in partnership with the Brazil-UK Hydrogen Hub and UNIDO, has launched a public call to identify proposals for developing low-emission hydrogen hubs to support the decarbonization of Brazilian industry. This initiative aligns with the goals of the National Hydrogen Program (PNH2), aiming to establish hydrogen hubs in Brazil by 2035. The call seeks proposals that leverage synergies in energy generation, infrastructure for low-emission hydrogen production, storage, and transport, fostering industrial competitiveness and enhancing national production chains.
- Strategic R&D Call on Hydrogen in the Brazilian Electricity Sector
  - ANEEL (Brazilian Electricity Regulatory Agency) has launched Strategic R&D Call No. 023/2024 to promote research and development projects focused on hydrogen within Brazil's electricity sector. This initiative seeks to advance the role of hydrogen as a clean energy vector, exploring its potential for electricity generation, storage, and integration into the national grid. The call encourages projects that address technical, economic, and environmental aspects of hydrogen



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technologies, aiming to support Brazil's energy transition by reducing carbon emissions and enhancing energy security.

- Finep Public Call for Hydrogen Projects 2024
  - Finep opened a public call to support hydrogen-related research and development projects, aiming to strengthen Brazil's hydrogen technology sector. This initiative focuses on advancing technologies in hydrogen production, storage, and transportation, targeting partnerships between research institutions and companies. The call seeks to promote innovation in low-emission hydrogen solutions.

### 6. Regulations, Codes & Standards, and Safety Update

- Technical standards under work in ABNT CEE 067 – Hydrogen Technologies

Code	Title
067:000.000-003-7-1	Fuel Cell Technology - Part 7-1: Test Methods - Single Cell Performance Tests for Polymer Electrolyte Fuel Cells (PEFC)
067:000.000-007	Hydrogen Detection Equipment - Stationary Applications
067:000.000-008-8	Gaseous Hydrogen — Refueling Stations — Part 8: Fuel Quality Control
067:000.000-010	Hydrogen Technologies — Methodology for Determining Greenhouse Gas Emissions Associated with Production, Conditioning, and Transportation of Hydrogen to the Consumer Gate
ABNT IEC/TS 62282-7-2	Fuel Cell Technologies - Part 7-2: Test Methods - Single Cell and Stack Performance Testing for Solid Oxide Fuel Cells (SOFC)
ABNT ISO/TR 15916	Basic Considerations for Hydrogen Systems Safety