

The background of the slide features a composite image. On the left, there is a detailed, artistic rendering of the Earth's globe, showing continents and oceans. The right side of the slide is a faded, light-green overlay of a group of four business professionals (two men and two women) in a meeting setting, smiling and engaged in discussion.

Renewable and Low-Carbon Energy Projects

ENERGY TRANSITION AT PETROBRAS

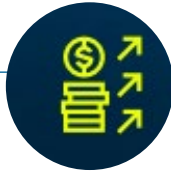
Jair Toledo
May/2025

PETROBRAS OF THE FUTURE

Our key choices



Focus on oil and gas, with economic and environmental resilience



Replacement of oil and gas reserves, creating value for society and shareholders



Expansion of industrial facilities, monetizing domestic oil and with **increased supply of low-carbon products**



Ambition to achieve operational **net zero transition**



Leadership in just energy transition

PETROBRAS AMBITION: To maintain our relevance in the Brazilian energy supply

Brazil's primary energy supply



*Petrobras volumes represent sales of products to its customers and do not include its own consumption and inefficiencies.
Exports gradually phase out; by 2050 all oil and oil products will be placed on the domestic market.*

Our Operations

Low-Carbon value chain

Tailored business models for each segment, aimed at integrating Petrobras' expertise and assets with Brazil's competitiveness in bioproducts, renewable energy, CCUS, and low-carbon hydrogen.



Bioproducts

Production and commercialization of low-carbon bioproducts (ethanol, biodiesel, biomethane), ensuring feedstock access to meet market demand



Low-Carbon Hydrogen

Production of low-carbon hydrogen and derivatives to decarbonize operations and develop market-driven business opportunities



Renewable Power Generation

Partnerships with major players to drive operational decarbonization, integrate low-carbon solutions, and seize market opportunities in Brazil



CCUS

Integrated decarbonization of operations, leveraging company assets and offering profitable services to third parties

ETHANOL, BIODIESEL & BIOMETHANE: PROVEN SOLUTIONS FOR BRAZIL'S ENERGY TRANSITION

Evolving regulations are creating scalable market opportunities for these low-carbon fuels.



Market entry into these segments is prioritized through strategic partnerships with key industry players

ETHANOL



Current mandate at 27%, increasing to 30% with potential to reach 35%.

Synergies: Feedstock synergies for SAF production via ATJ pathway and synthetic fuels.

BIODIESEL



Market share growth aligned with the progressive blending mandate, reaching 20% by 2030.

Synergies: Biodiesel-blended bunker fuel and feedstock optimization initiatives.

BIOMETHANE



Regulatory framework establishing annual emission reduction targets for natural gas producers, starting at 1% in 2026 and potentially reaching 10% by 2034 (decadal average).

Applies to total gas volume: commercialized, self-produced, and self-imported.

COMPETITIVE ADVANTAGES

- **First-mover** renewables play in expanding sectors
- **A favorable regulatory environment** is accelerating implementation.
- **Synergies** with existing fossil operations and carbon emission reduction initiatives

ELECTRICITY DEMAND WILL CONTINUE ITS GROWTH TRAJECTORY

Electrification across multiple sectors will accelerate demand growth, particularly in the second decade.



LOW-CARBON HYDROGEN

+ decarbonization of Hard-to-Abate Sectors



BUILDINGS

+ electrification trend
+ digital transformation
- efficiency gains



TRANSPORTATION

+ Vehicle electrification



INDUSTRY

+ direct & indirect electrification (via green H₂)
- efficiency gains



DATA CENTERS

+ clean energy demand

RENEWABLE ELECTRICITY CAPACITY EXPANSION TIED TO RISING DEMAND

POTENTIAL



PHOTOVOLTAIC

Installed capacity: 34 GW
Developable potential: 28,000 GW



ONSHORE WIND POWER

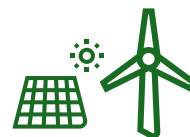
Installed capacity: 27 GW
Developable potential: 800 GW



OFFSHORE WIND POWER

Greenfield opportunity Developable potential: 700 GW

PRESENT



M&A and Project Development Investments in Brazil's Solar PV & Onshore Wind Sectors
Total Investment Volume:
US\$ 4.3 Billion

FUTURE



PROJECTS UNDER EVALUATION



PILOT PROJECTS IN OFFSHORE WIND



OFFSHORE WIND NE

CAP: 18 MW
ID: 01/26

OFFSHORE WIND RJ

CAP: 18 MW
FID: 01/26



OFFSHORE WIND AND PHOTOVOLTAIC PLANTS

Onshore Wind and Solar
Segment - M&A with key
industry players

GENERAL INFORMATION – RJ PILOT PROJECT

WIND GENERATOR

- Quantity: 01 un
- Nominal Capacity: 18 MW
- Foundation type: monopile

ELECTRIC INTEGRATION

- Lithium-ion Battery
- Control System

INSTRUMENTATION

- 1 Offshore anemometric tower
- LIDARs
- R&D Package

SCHEDULE

- Operations Start: 4Q 2028

EXPORT SYSTEM

1

Grid connection

- Rating Voltage: 66 kV
- Cable length : 25 km

2

O&G integration

- Water Injection Pump or other O&G equipments

RFI

- | | |
|-------------------------|-------------------------|
| • Full EPCI | • Foundations |
| • Wind Turbines | • Electrical Cables |
| • Meteorological Towers | • Installation Services |

Estimated water depth: 16m

Business Opportunities for Energy Companies



- Turbines and Foundations
- Substation
- Power Transmission
- Monitoring system
- Specific purpose Vessels

- Maintenance management
- Wind turbines and BOP O&M
- Onshore substation and TL
- Inspections
- Socio-Environmental Monitoring

PRE-DEVELOPMENT AND CONCESSION

- Project management
- Legal Authorizations
- Socio-Environmental Studies
- Metocean Studies
- Engineering Activities

PRODUCTION AND ACQUISITION

INSTALLATION AND COMMISSIONING

- Maritime Transportation
- Port pre-assembly
- Component Installation
- Commissioning

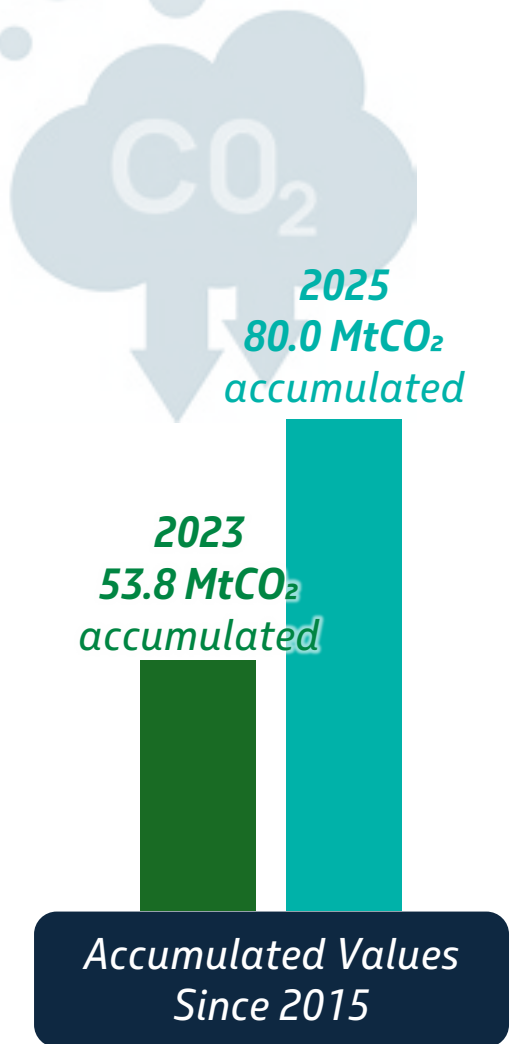
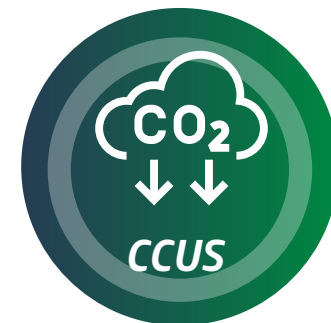
OPERATION AND MAINTENANCE

DECOMMISSIONING AND SALE

- Decommissioning
- Waste Management
- Site Cleaning
- Post-Decommissioning Monitoring

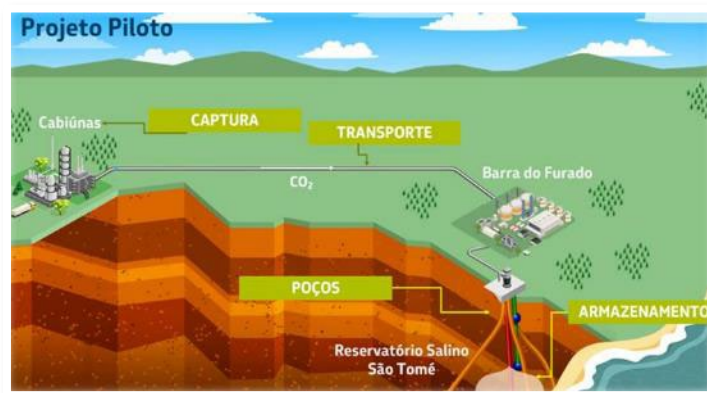
ADVANCING CARBON CAPTURE INVESTMENTS

Our operation captures approximately 13 MtCO₂ per year



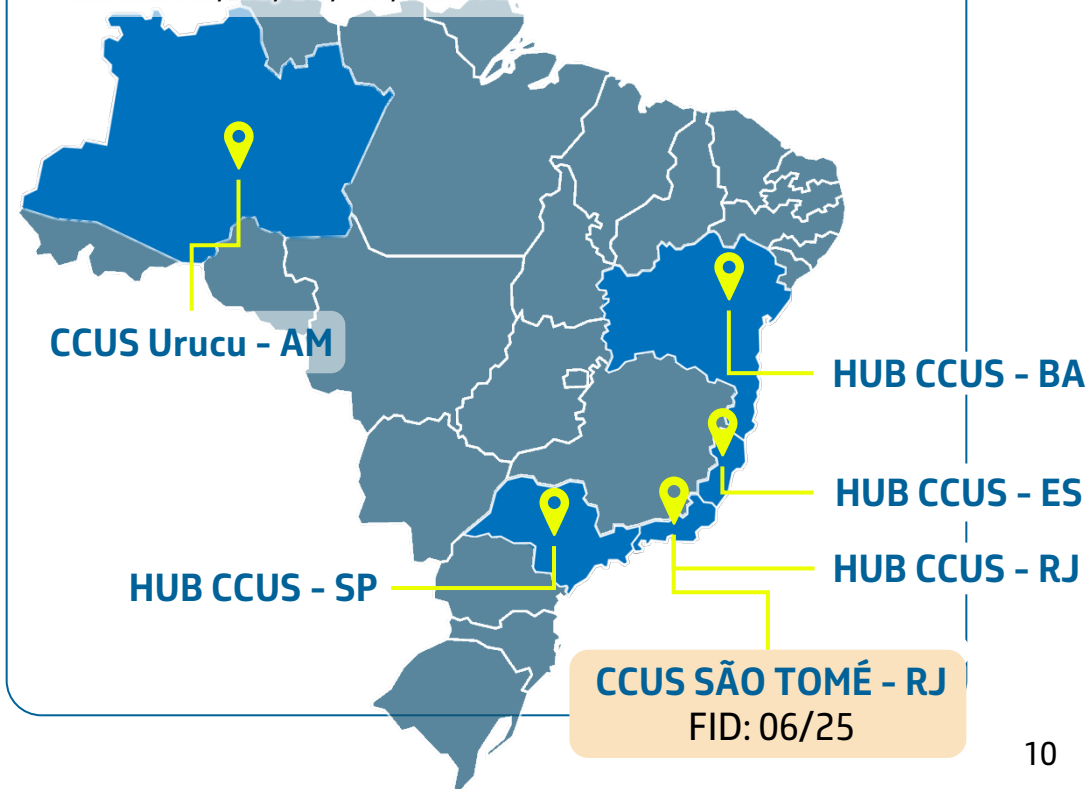
Rio de Janeiro CCS Pilot

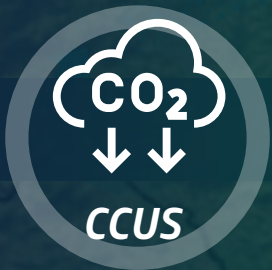
- First CCS pilot project in Brazil
- Injection of 100,000 tCO₂/year into a saline reservoir
- Technology validation focused on cost reduction and process safety for enabling commercial-scale projects



Opportunities Under Evaluation

The total potential of projects under study amounts to 14.19 MtCO₂/year across RJ, ES, SP, BA, and AM





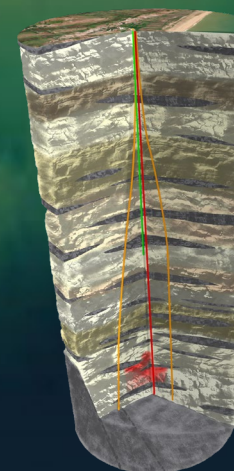
SÃO TOMÉ CCS PILOT PROJECT



Barra do Furado

GASCAB II

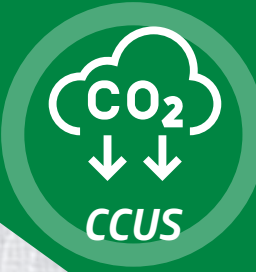
UTGCAB



GENERAL INFORMATION

- CO2 stream from UTGCAB
- CO2 transport for 68 km via existing pipeline
- Injection of 100 ktCO2/y for a maximum of 3 years
- Storage in a hypersaline reservoir
- Robust monitoring strategy

Business Opportunities for CCUS



- CO₂ capture units' equipment
- Compressions units' equipment
- Pipelines
- Well materials

- Capture O&M
- Pipeline Inspection
- MMV
- Well Maintenance

PRE-DEVELOPMENT AND CONCESSION



ACQUISITION



INSTALLATION AND COMMISSIONING



OPERATION AND MAINTENANCE



DECOMMISSIONING AND SALE

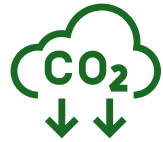
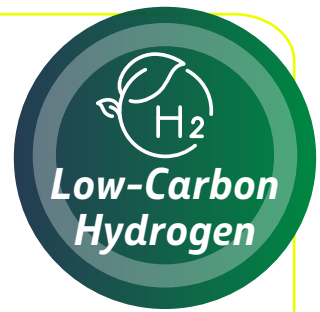
- Carbon Capture Technology Studies
- Engineering projects
- Socio-Environmental Studies

- EPC for process units
- EPC for pipelines
- Pipeline cleaning and commissioning
- Well rigs
- Well constructions services
- Vessels for offshore installation

- Pos-injection MMV
- Well abandonment
- Capture units decommissioning

LOW-CARBON HYDROGEN

Pursue Low-Carbon Hydrogen and its derivatives through strategic partnerships, focusing on internal decarbonization and evolving market demand.



Operations Decarbonization

As Brazil's leading hydrogen producer and consumer, Petrobras is positioned to expand its low-carbon hydrogen leadership in the energy transition.

Current steam reforming output: ~400,000 tonnes/year



LOW-CARBON PRODUCTS

Cornerstone for Net Zero

Competitive Advantages of Brazilian HBEC:

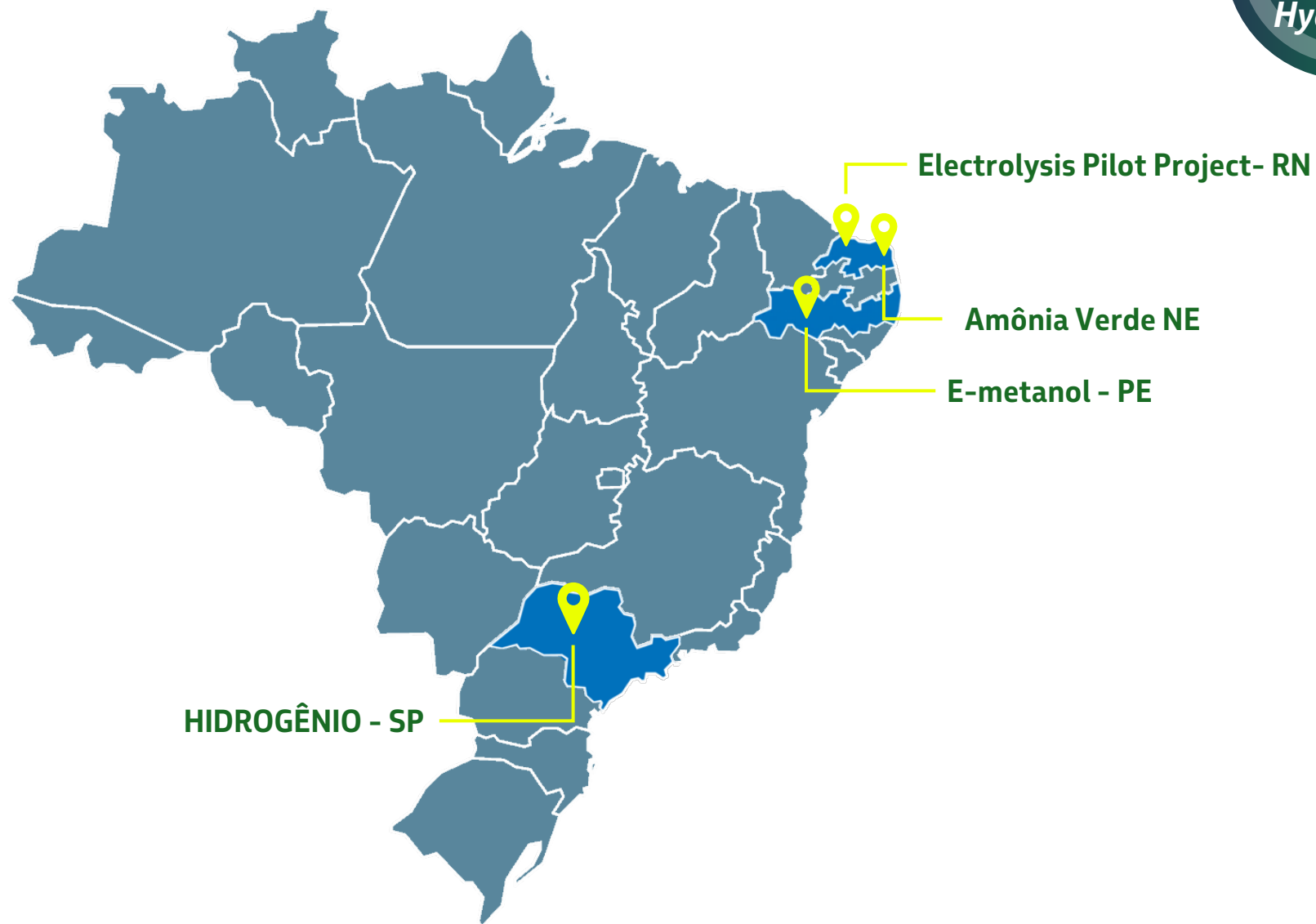
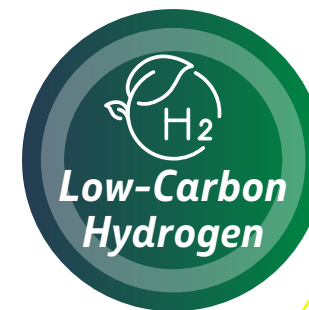
Global Cost Leadership: Positioned to be among the world's most competitive

Abundant Renewable Feedstock: Unparalleled access to sustainable raw materials

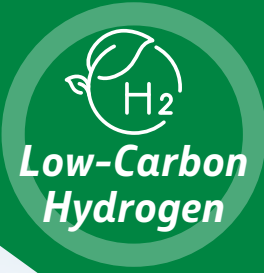
Future Fuels Bridge: Critical pathway for e-fuels production

Sectoral Decarbonization: Essential for industrial, aviation, and maritime emissions reduction

PROJECTS UNDER EVALUATION



Business Opportunities for Low-Carbon Hydrogen



- Electrolyzers
- Methanol Reactor
- Power Transmission
- Water Handling Facilities
- PPA – Power Purchase Agreement

- Maintenance management
- E-Methanol Plant O&M
- Inspections
- Socio-Environmental Monitoring

PRE-DEVELOPMENT AND CONCESSION

- Project management
- Legal Authorizations
- Socio-Environmental Studies
- Consultancies
- Engineering Activities

PRODUCTION AND ACQUISITION

INSTALLATION AND COMMISSIONING

- CO₂ and Methanol Storage Tanks
- Civil works
- Component Installation
- Commissioning

OPERATION AND MAINTENANCE

DECOMMISSIONING AND SALE

- Decommissioning
- Waste Management
- Site Cleaning
- Post-Decommissioning Monitoring

INTEGRATED STRATEGY ACROSS BUSINESS UNITS



UPSTREAM

Maximize the value of the portfolio with a focus on profitable assets, replenish oil and gas reserves including exploration of new frontiers, increase the supply of natural gas, and **promote the decarbonization of operations**



DOWNSTREAM MIDSTREAM

Act in a competitive and integrated manner in the **operation and commercialization of gas and energy**, optimizing the portfolio and **acting in the insertion of renewable sources**



SUSTAINABILITY

Act in low-carbon businesses, diversifying the portfolio in a profitable way and promoting the perpetuation of Petrobras

Investments of US\$ 16.3 billion in energy transition

15% of total CAPEX and 7 % of CAPEX Under Implementation

DESCARBONIZATION

Operational Emissions



US\$ 5.3 billion

INVESTMENTS IN EMISSIONS MITIGATION

(Scope 1 & 2)

E&P, RTM and G&E

US\$ 4.0 billion

Decarbonization Fund

US\$ 1.3 billion

PROFITABLE DIVERSIFICATION

Providing sustainable products



US\$ 5.7 billion

LOW-CARBON ENERGY SOLUTIONS

Onshore Wind Energy and Photovoltaic Solar Energy

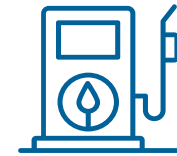
US\$ 4.3 billion

Hydrogen and CCUS

US\$ 1.1 billion

Offshore Wind and Corporate Venture Capital

US\$ 0.3 billion



US\$ 4.3 billion

BIOPRODUCTS

Ethanol

US\$ 2.2 billion

Biorefining

US\$ 1.5 billion

Biodiesel

and Biogas

US\$ 0.6 billion

R&D

In low-carbon



US\$ 1.0 billion

GROWING IN THE FIVE-YEAR PERIOD

15% of the total budget in 2025, reaching 30% by the end of the period

THANK YOU!

Jair Toledo

General Manager of Renewable Energy Project Design and
Implementation

jair_toledo@petrobras.com.br

May/2025