

# A brief on Petrobras' CCUS Projects: São Tomé Pilot

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R&D and Innovation in Carbon Capture and Storage (CCS)



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# PRE-SALT: THE WORLD'S LARGEST CCUS PROJECT

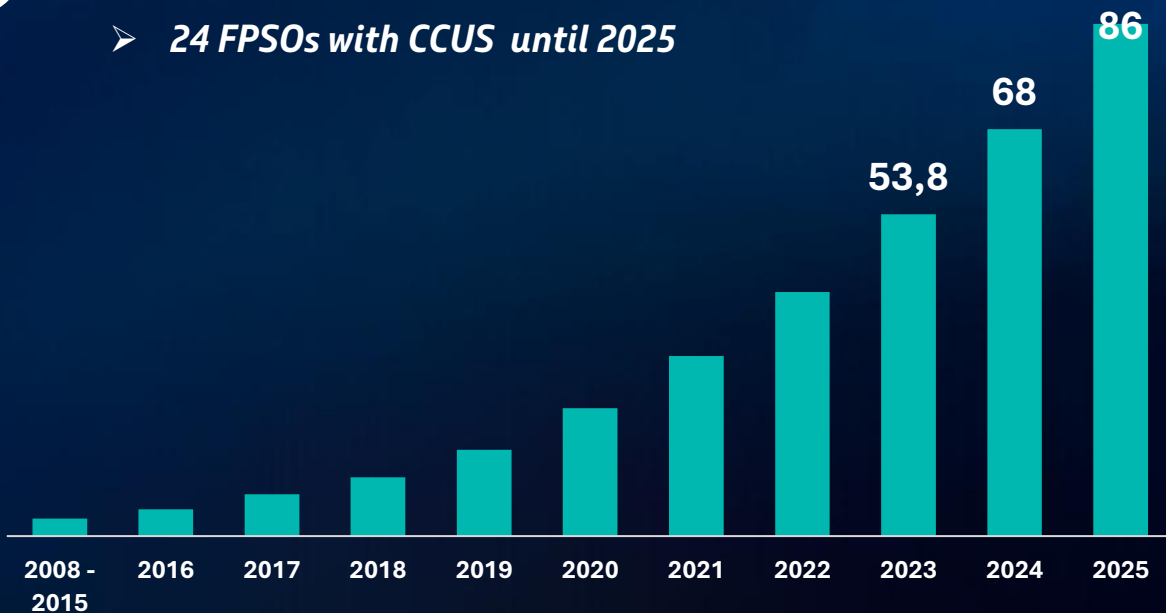


- 2025: record 17.6 MM tons of CO<sub>2</sub> injected
- > Over 25% of the CO<sub>2</sub> injected worldwide\*

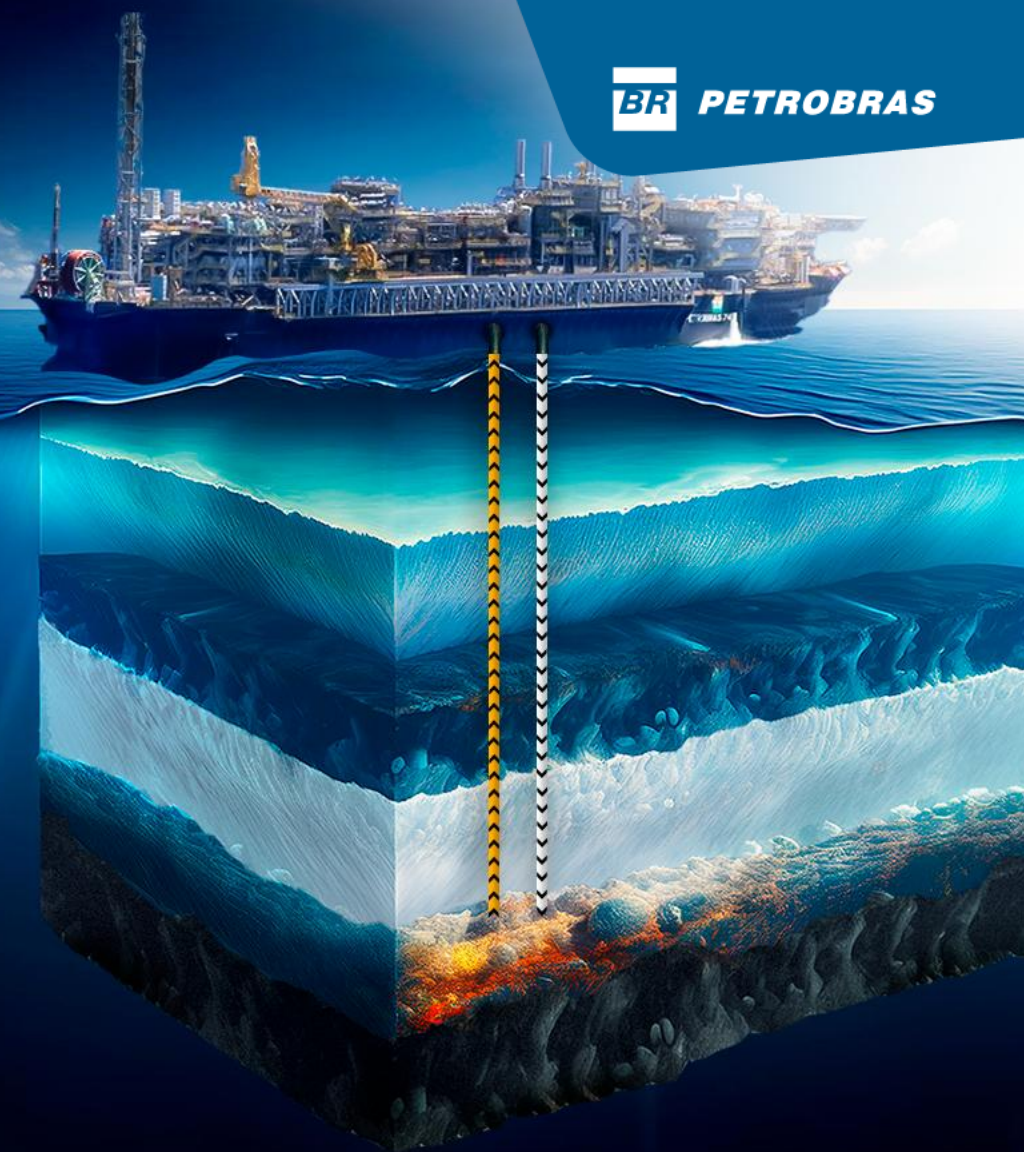


"Accumulated CO<sub>2</sub> Reinjection (million tons of CO<sub>2</sub>)

- 24 FPSOs with CCUS until 2025



\* According to the Global CCS Institute, the total stored in CCUS projects in operation worldwide in 2024 was 49 million tCO<sub>2</sub> per year. The injection into pre-salt reservoirs in 2024 corresponds to more than a quarter of the reported global injection.



# Typical Offshore GHG Sources<sup>1</sup>



**CO<sub>2</sub> capture from flue gas streams:  
a pathway for offshore  
decarbonization.**

- **Significant reduction in Scope 1 emissions**
- **Potential incremental oil gain through EOR**

# CCUS R&D Portfolio

MMV & Storage TS

Wells TS

CO<sub>2</sub> Transport TS

CO<sub>2</sub> Capture TS

Post Combustion Carbon Capture (PCCC)

Sea monitoring Technology

Well safety and integrity (corrosion, cementing, elastomers)

Well monitoring technology

Characterization of storage potential, injectivity, and reservoir security

New modalities for CO<sub>2</sub> transportation and logistics optimization

Contaminants: chemical reactions & material impacts on flow and materials

Non-metallic materials, composition meters, and sensors

CO<sub>2</sub> flow-modeling and simulation, and leak-detection systems

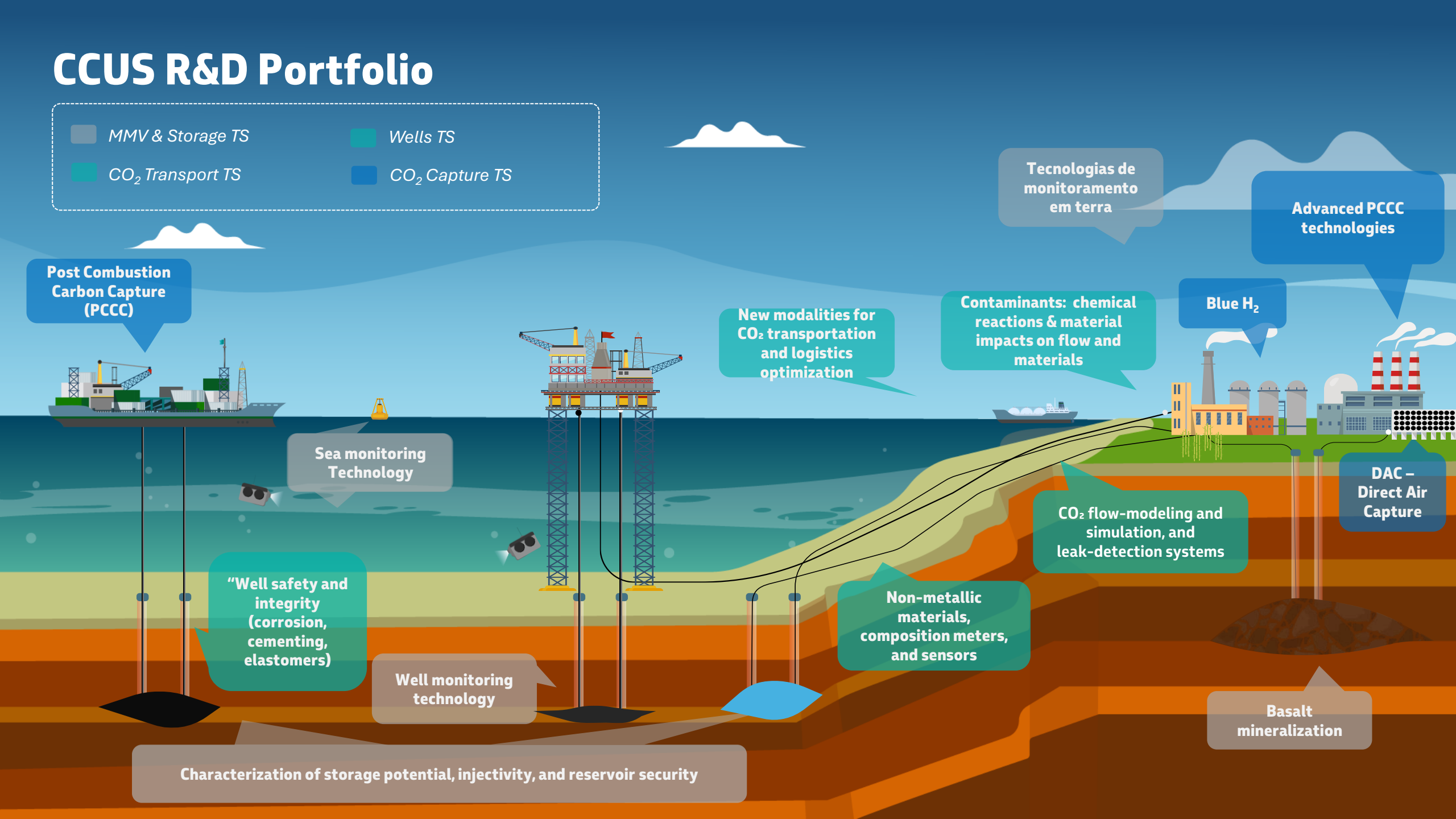
Basalt mineralization

Tecnologias de monitoramento em terra


















Advanced PCCC technologies

Blue H<sub>2</sub>

DAC – Direct Air Capture



# Projects currently under study at PETROBRAS

<b>Pilot São Tomé*</b> 0.1 MtCO <sub>2</sub> /year	 *FID in 2025
<b>Hub RJ</b> 1.8 MtCO <sub>2</sub> /year	<b>Wave 1</b>     <b>Wave 2+</b>  
<b>Hub ES</b> 7.0 MtCO <sub>2</sub> /year	<b>Wave 1</b>    <b>Wave 2+</b>  
<b>Hub SP</b> TBD	<b>Wave 1</b>     <b>Wave 2+</b>   
<b>Hub BA</b> 1.5 MtCO <sub>2</sub> /year	<b>Wave 1</b>     <b>Wave 2+</b>  







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Wave 1:  

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**Hub ES**  
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Wave 1: 



Wave 2+:  



**Hub SP**  
TBD

Wave 1:  

Wave 2+:   

**Hub BA**  
1.5 MtCO<sub>2</sub>/year

Wave 1:  

Wave 2+:  

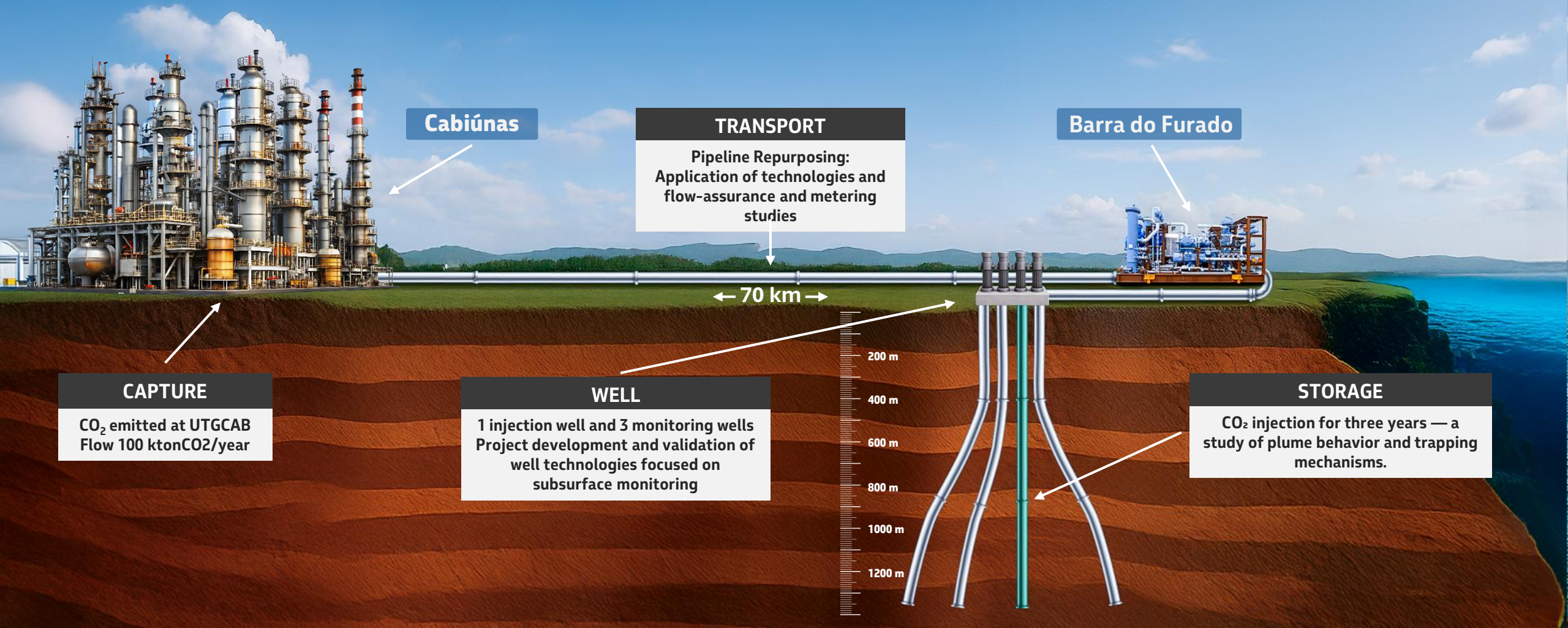
- Metals
- Hydrogen
- Fuels
- Ethanol
- Fertilizers
- Cement
- Chemicals



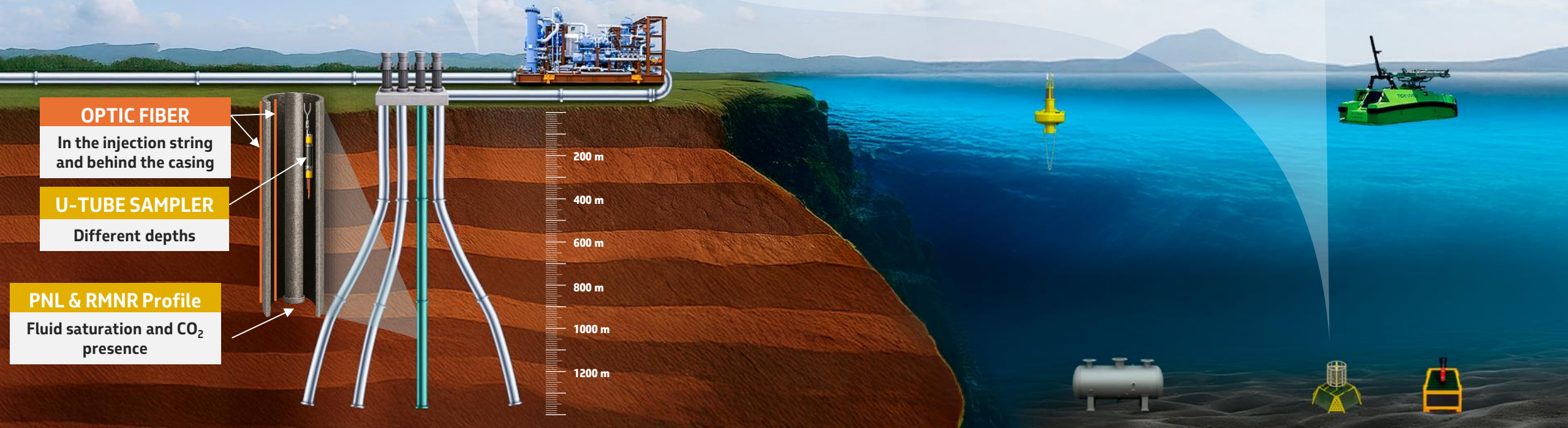
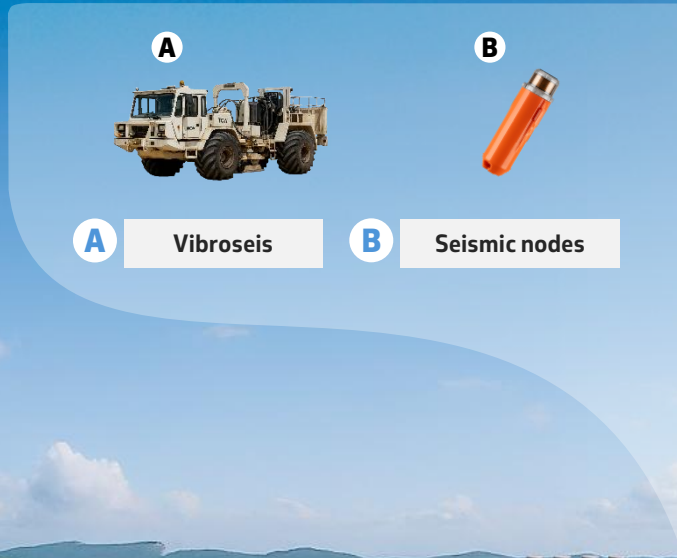
Pilot from São Tomé

# Cabiúnas CCS Pilot

R&D Project – as the first CO<sub>2</sub> injection initiative in a saline reservoir, it will enable the testing of monitoring models (MMV) and technologies, serving as a laboratory for future value-adding applications, as well as supporting the development of CCUS regulation in Brazil.



# Monitoring plan: CCS Cabiúnas Pilot - São Tomé



# Piloto CCS Cabiúnas

Projeto de P&D – será o primeiro a  
testar modelos e tecnologias de  
de outras entregas de valor, bem



- Descarbonização – redução de IGE
- Produtos de baixo carbono

## GOALS



**CO<sub>2</sub> injection starting at 2028**



**Understanding CO<sub>2</sub> behavior in deep saline formations**



**Test various CO<sub>2</sub> monitoring techniques**



**Develop several well project requirements**



**Acquire knowledge in pipeline repurposing**



**“Operation of CO<sub>2</sub> treatment and transportation systems**

### CAPTURA

CO<sub>2</sub> emitido na UTGCAB  
Vazão 100mil tonCO<sub>2</sub>/ano

### Barra do Furado

### ARMAZENAMENTO

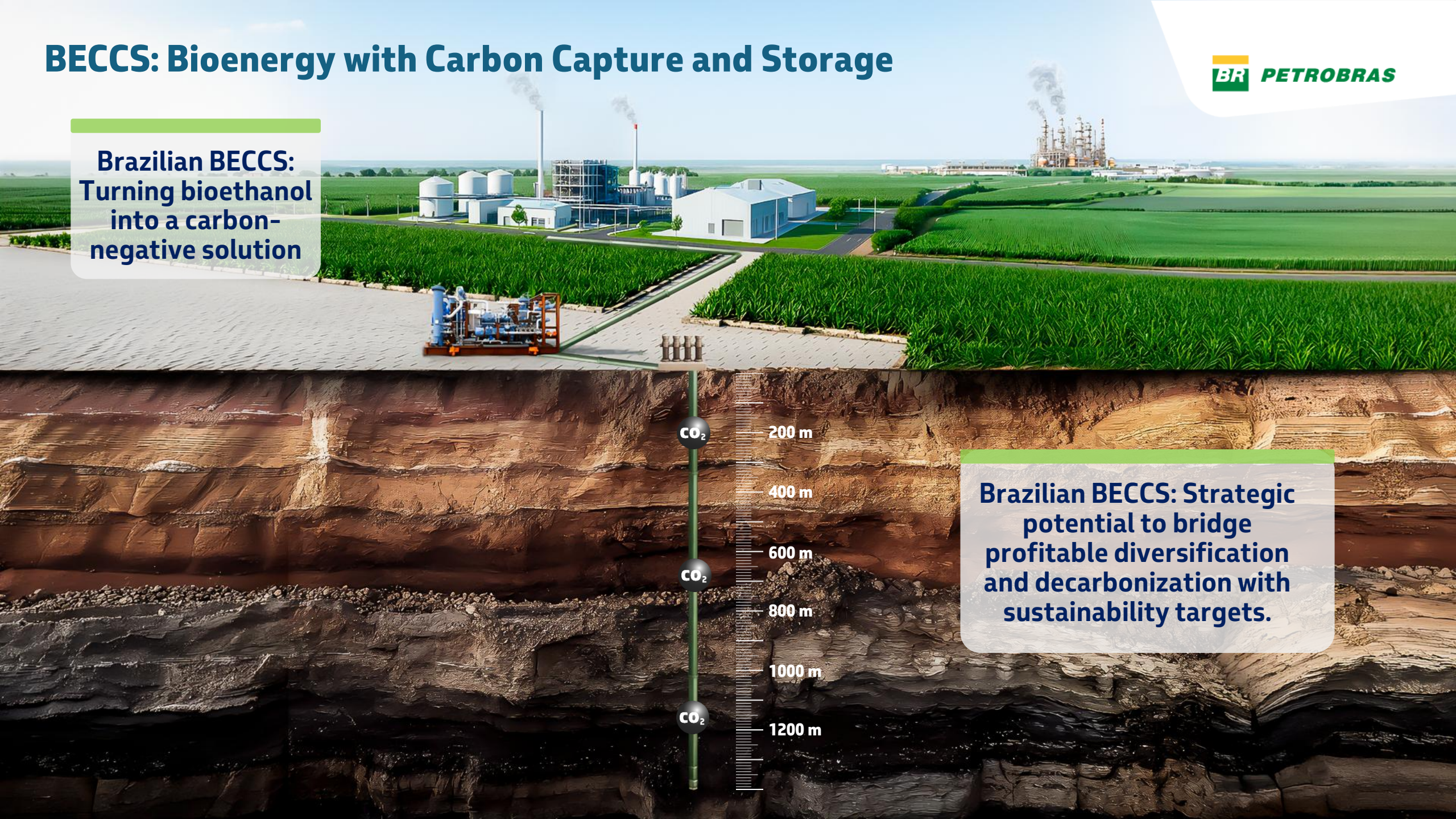
Injeção do CO<sub>2</sub> por três anos - estudo do comportamento da pluma e dos mecanismos de aprisionamento.

By addressing monitoring, containment, and well integrity together, this pilot generates the evidence required to strengthen confidence in storage security, inform regulatory frameworks, and support the scaling of CCUS from isolated projects to integrated systems, onshore and offshore



# BECCS: Bioenergy with Carbon Capture and Storage

**Brazilian BECCS:  
Turning bioethanol  
into a carbon-  
negative solution**



**Brazilian BECCS: Strategic  
potential to bridge  
profitable diversification  
and decarbonization with  
sustainability targets.**

# Thank you

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