

# Session 12: **Green Hydrogen's Applications to Transform LATAM's Economic Landscape**




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**anp**  
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-  **Forward-looking data, information, projections and opinions expressed during the presentation are subject to change without prior notice.**

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## **Outline**

**Institutional Framework**

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**Brazilian position in the energy transition**

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**Hydrogen in Brazil: A Brief Timeline**

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**Green H2**

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**R, D & I Perspective**

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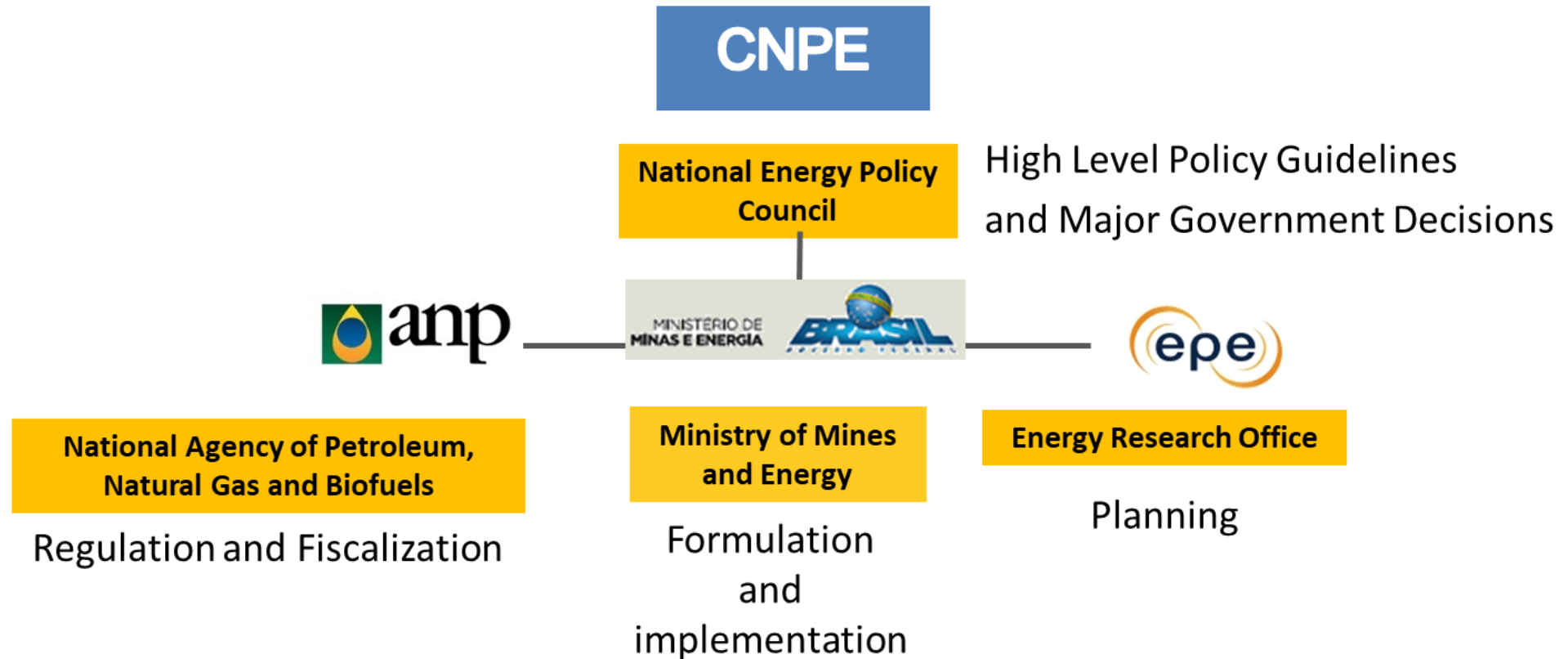
**Hydrogen Projects - RD&I Clause resource**

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**Final Remarks**

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## Who does what?





## TO CONTRACT

To organize auctions and sign contracts on behalf of the Brazilian State with the concessionaires in the exploration, development and production.



## TO REGULATE

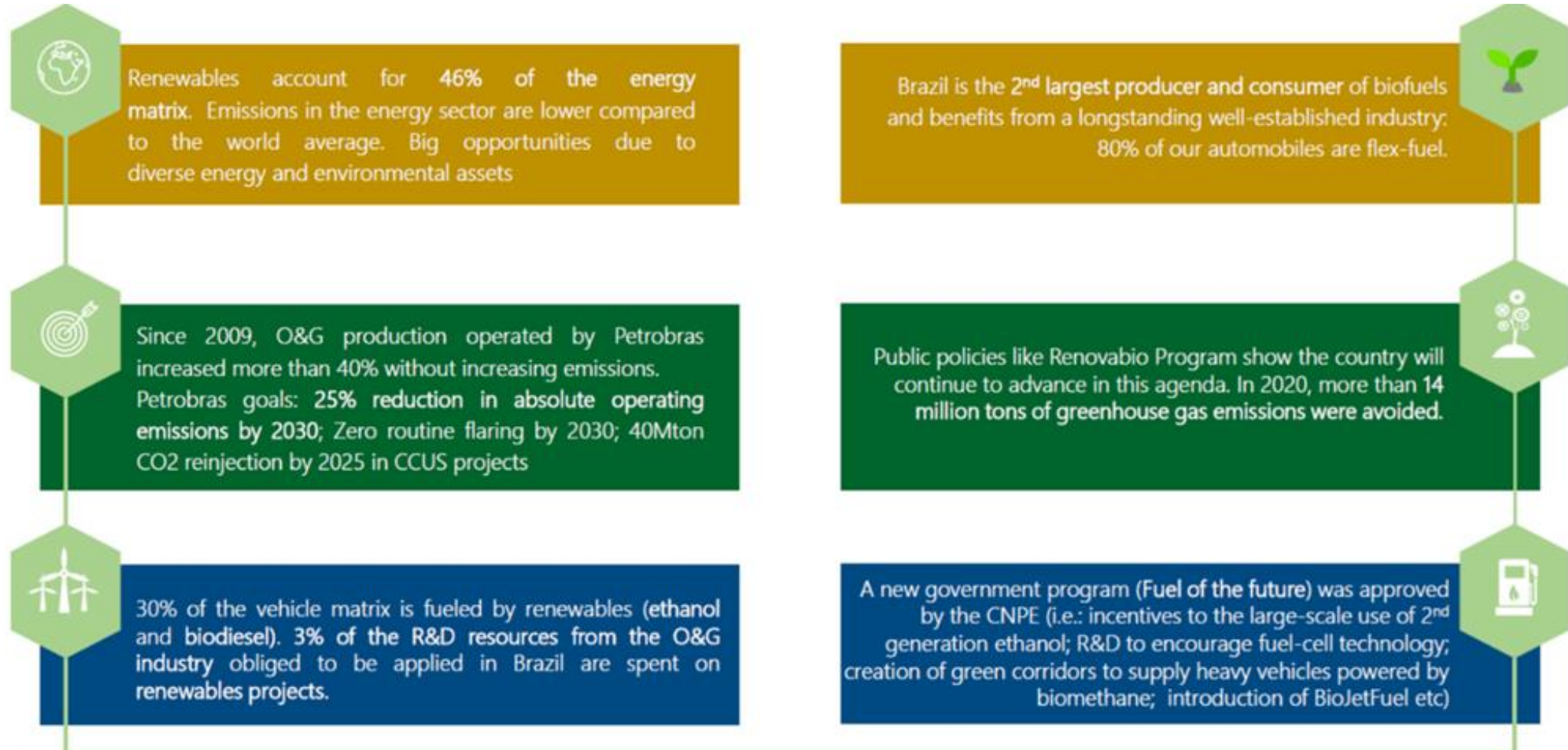
To establish the rules (resolutions, instructions) for the operation of the oil, gas and biofuel industries



## TO SUPERVISE

To ensure compliance with the rules in the regulated industry activities, directly or by agreements with other public authorities.

## Brazil is in a privileged position in the energy transition



# Hydrogen in Brazil: A Brief Timeline

- Successful Brazilian biofuels policy **RenovaBio Program**
- ICAO - Carbon Offsetting and Reduction Scheme for International Aviation, CORSIA. (2016)
- IMO - Initial IMO GHG Strategy (2018)



RCNPE 07/2021 (May 2021)

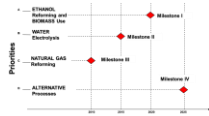


- synthetic biofuels: Diesel Verde (HVO/HEFA) and bioQAV (SAF)
- open path for efuels
- biofuels sustainability improvements



*BRAZILIAN FUEL CELL BUS:  
RENEWABLE TECHNOLOGIES  
FOR THE URBAN TRANSPORT  
IN BRAZIL 2002 - 2015*

Brazilian Roadmap  
(beta\_version), 2005



2021

NEW GAS MARKET  
2019



RCNPE 02/2021  
Research  
priority for  
hydrogen  
(February 2021)

**Bases para a  
Consolidação da  
Estratégia Brasileira  
do Hidrogênio**



(February 2021)

National Hydrogen  
Policy guidelines  
(August 2021)

RCNPE 06/2021  
Working group  
Hydrogen Policy  
guidelines  
(May 2021)



High-level Dialogue on Energy  
New York, September 2021

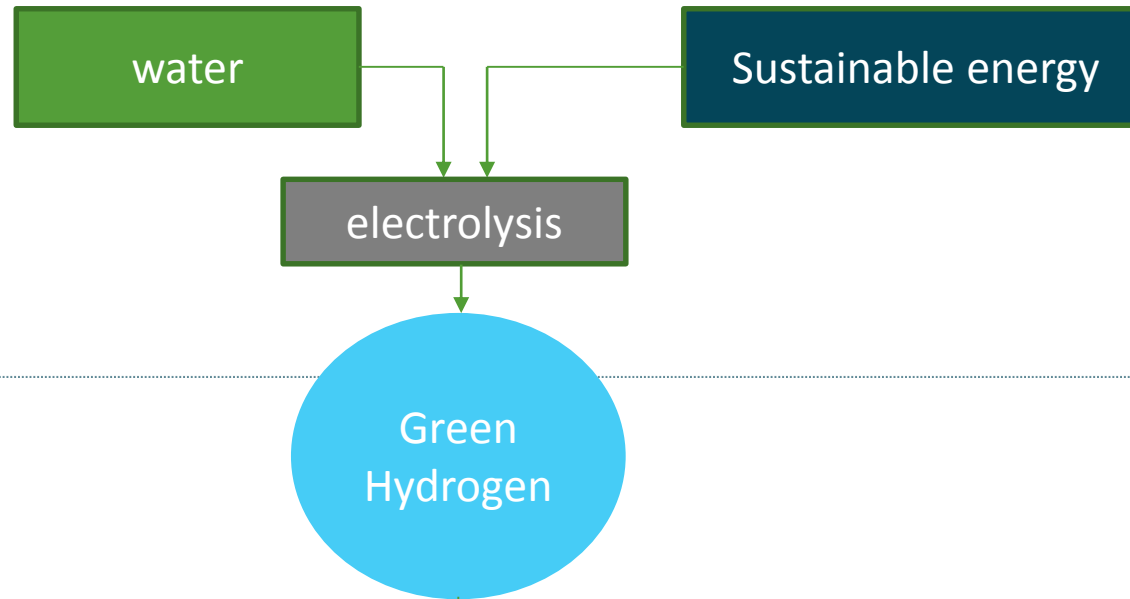


**UN CLIMATE  
CHANGE  
CONFERENCE  
UK 2021**

IN PARTNERSHIP WITH ITALY

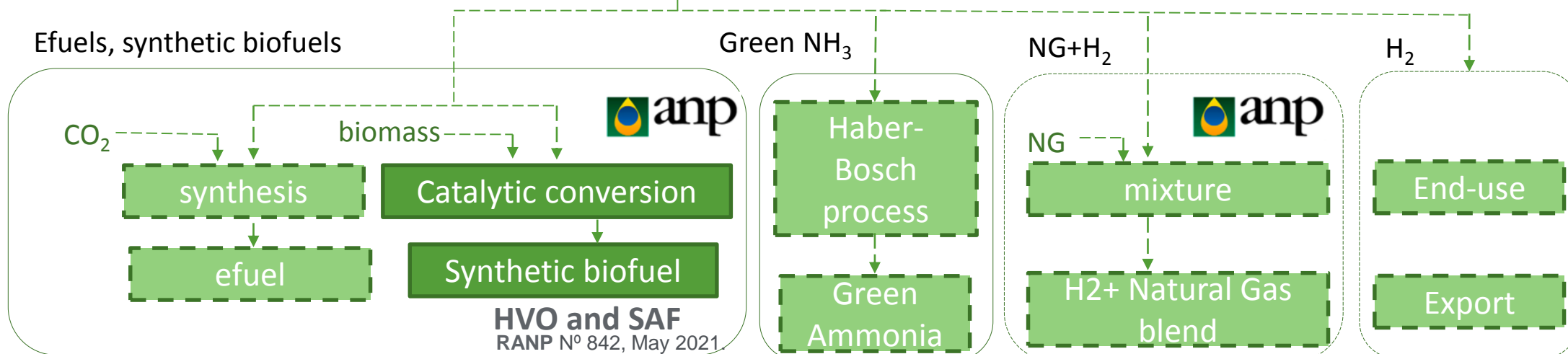
(November 2021)

## Green H<sub>2</sub> supply



- ❑ Potential integration between Renewables and Oil and Gas operations, promoting electrification of production fields as well as oil refineries and gas plants.
- ❑ Potential supply chain and infrastructure integration.

## Green H<sub>2</sub> demand



- ❑ Synthetic fuels fully compatible with existing infrastructure, particularly for heavy duty, marine and aviation applications.
- ❑ H<sub>2</sub> as key element for gradual transition from fossil fuels to clean energy.



RANP 799/2019 & 50/2015

Contractual obligation

Projects aimed at renewable energy generation and carbon capture are accepted by the regulation



## ANP Proposed Principles to New R, D & I Regulation

- The decision of where to invest and apply the resources is a responsibility of the oil companies themselves
- Two basic and **non-negotiable principles** for the development of any project:
  - It must be an R,D&I Activity
  - The R,D&I activity must be developed in Brazil
- The oil companies should seek the projects they consider the best for their strategy
- Promote projects with services companies & universities → emphasis on "I" (innovation).

**“CO2CHEM”  
(under analysis)**

**Oil Company:** Repsol-Sinopec  
**Executor:** RGCI-USP / USP- Polytechnic School  
(Chemistry Engineering) / **SENAI-CETIQT** / Hytron

**PEROVSKITE SOLAR CELLS FOR  
ARTIFICIAL PHOTOSYNTHESIS**

**Oil Company: Shell**  
**Executor:** UNICAMP/CEPETRO

**SYNTHESIS OF NEW ELECTRODIC  
MATERIALS FOR DEVICES REGARDING  
PHOTO ELECTRODECOMPOSITION OF  
WATER**

**Oil Company: Shell**  
**Executor:** UNICAMP/CEPETRO

**ACTIVATION OF THE METALLIC OXIDES  
SURFACE FOR THE SUNLIGHT  
ASSISTED WATER OXIDATION  
REACTION**

**Oil Company: Shell**  
**Executor:** UNICAMP/CEPETRO

We need innovations to continue benefiting from the responsible utilization of our energy resources

Renewables are by far the fastest-growing fuel source

The greatest transformation in the Brazilian energy sector supported by innovations that drive competitiveness

Green Hydrogen in Brazil: abundant energy resources and available technologies to increase capacity factor for production and reducing costs

# *Thank you*

*additional information*

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