



BRAZILIAN CHAMBER
OF COMMERCE IN GREAT BRITAIN



Department for
Business & Trade

ALLEN & OVERY

Hydrogen in Brazil

1 March 2024

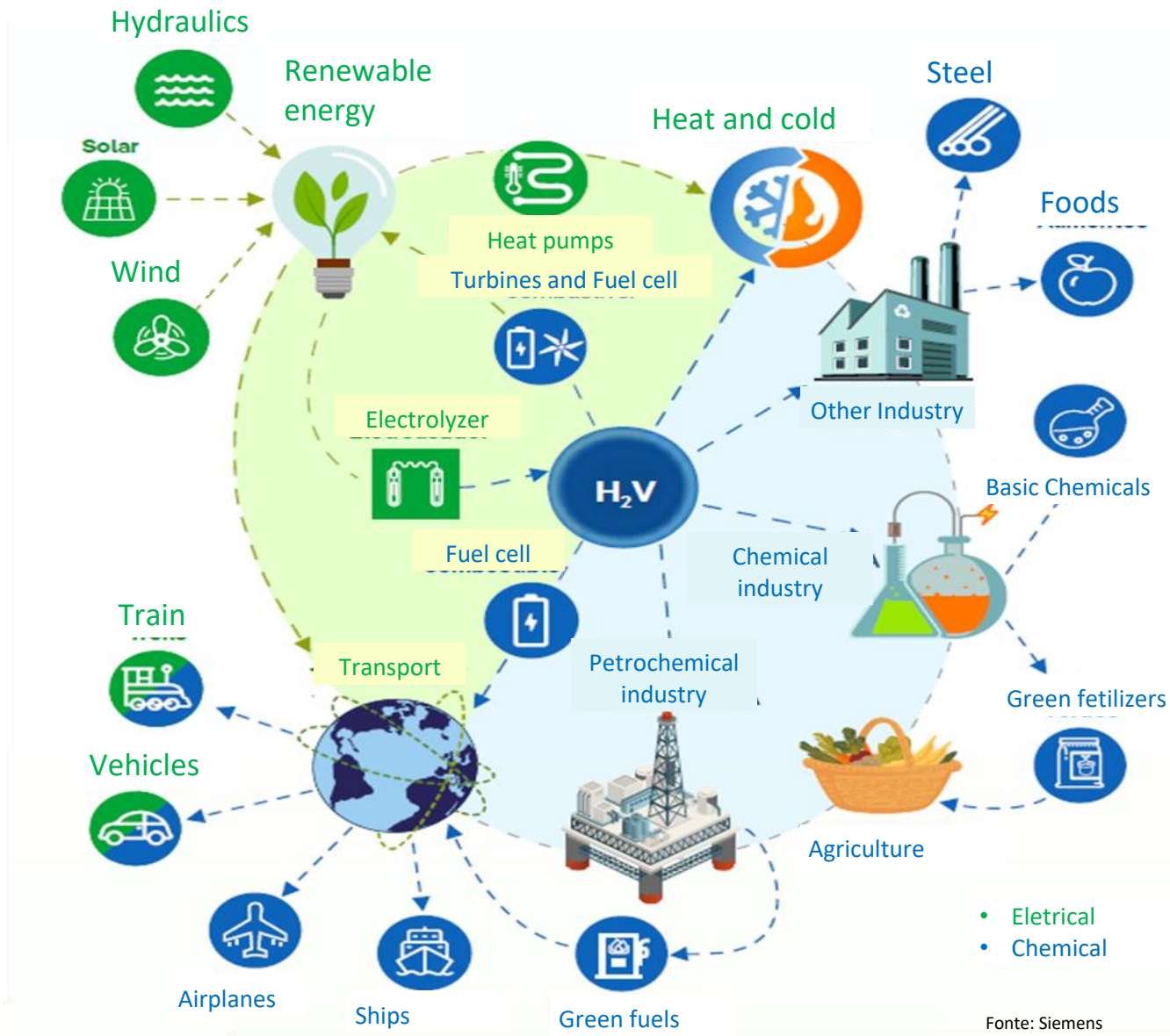


Context, Challenges and Technological Routes for Green Hydrogen at Eletrobras

E-fuel Department
New Solutions Executive Directorship
Vice Presidency of Commercialization and Energy Solutions



Brazilian Market – Opportunity for Decarbonization



Total Energy Demand
3.523.646 GWh

Eletrical Demand
690.100 GWh
(20% of total)

Eletrobras produced 24% of Brazil's EE in
2022
170.628 GWh
(5% of total energy)

Transport and Industry consume
58.2% of all energy, but only **32%** of
electricity

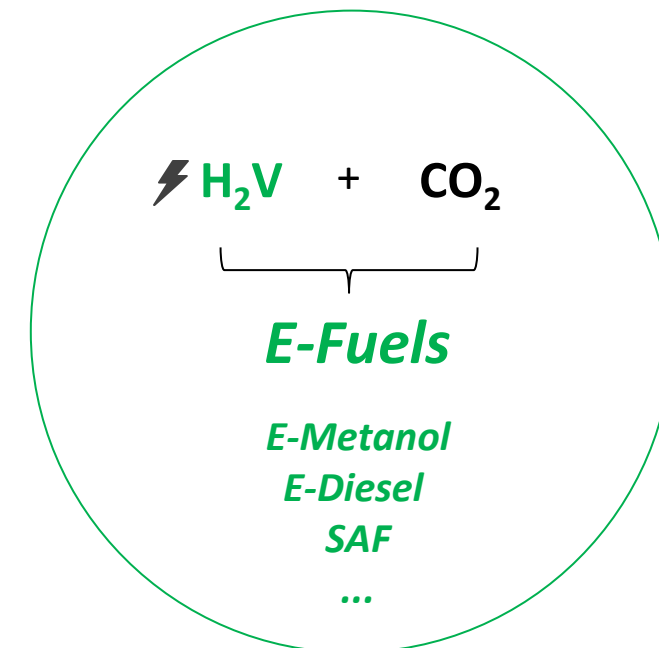
The steel/metallurgical industry
consumes **53%** of the industrial sector's
fossil energy

National Energy Balance – Year 2022

Sector	Energy Consumption			Electrical Consumption		Electrification Potential		GHG Emission Year 2022 (Mt Co2-eq)
	Consumption (at 1000 toe)	Consumption (GWh)	Participation (%)	Consumption (GWh)	Participation (%)	Difference (GW)	Difference (%)	
	A	B	C	D	E	F = (B-D)	G = (F/B)	
ENERGY SECTOR	23.496	273.258	7,8%	35.800	5,2%	237.458	86,9%	*
COMMERCIAL SECTOR	9.329	108.496	3,1%	97.100	14,1%	11.396	10,5%	*
PUBLIC SECTOR	4.128	48.009	1,4%	44.600	6,5%	3.409	7,1%	*
RESIDENTIAL SECTOR	28.963	336.840	9,6%	155.600	22,5%	181.240	53,8%	18,6
AGRICULTURAL SECTOR	13.083	152.155	4,3%	32.300	4,7%	119.855	78,8%	*
TRANSPORTATION SECTOR	89.427	1.040.036	29,5%	2.000	0,3%	1.038.036	99,8%	210,4
INDUSTRIAL SECTOR	86.953	1.011.263	28,7%	218.700	31,7%	792.563	78,4%	76,7
OTHERS (LOSSES + NON-ENERGY USES)	47.600	553.588	15,7%	104.000	15,1%	449.588	81,2%	
TOTAL	302.979	3.523.646	100,0%	690.100	100,0%	2.833.546		423,0

*these sectors total 117.4 MtCO2 eq

- *Energy Consumption (column B) of the Transport sector (1.04 Million GWh) is close to that of the Industrial sector (1.01 Million GWh).*
- *However, the Electrification potential (columns F and G) and CO₂ emissions (column H) in the Transport sector are much greater than those in the Industrial sector.*



Transport Sector

=

Market Opportunity and Sustainability/Decarbonization

Brasil Diferencial



Renewable energy matrix



Competitive renewable sources



High power supply capacity factor



Potential production of derivatives such as green methanol



High domestic demand for H₂

Electrobras specific differentials



Renewable energy in the portfolio now available in all submarkets

Ability to connect large projects, taking advantage of reinforcements and improvements to your Transmission network

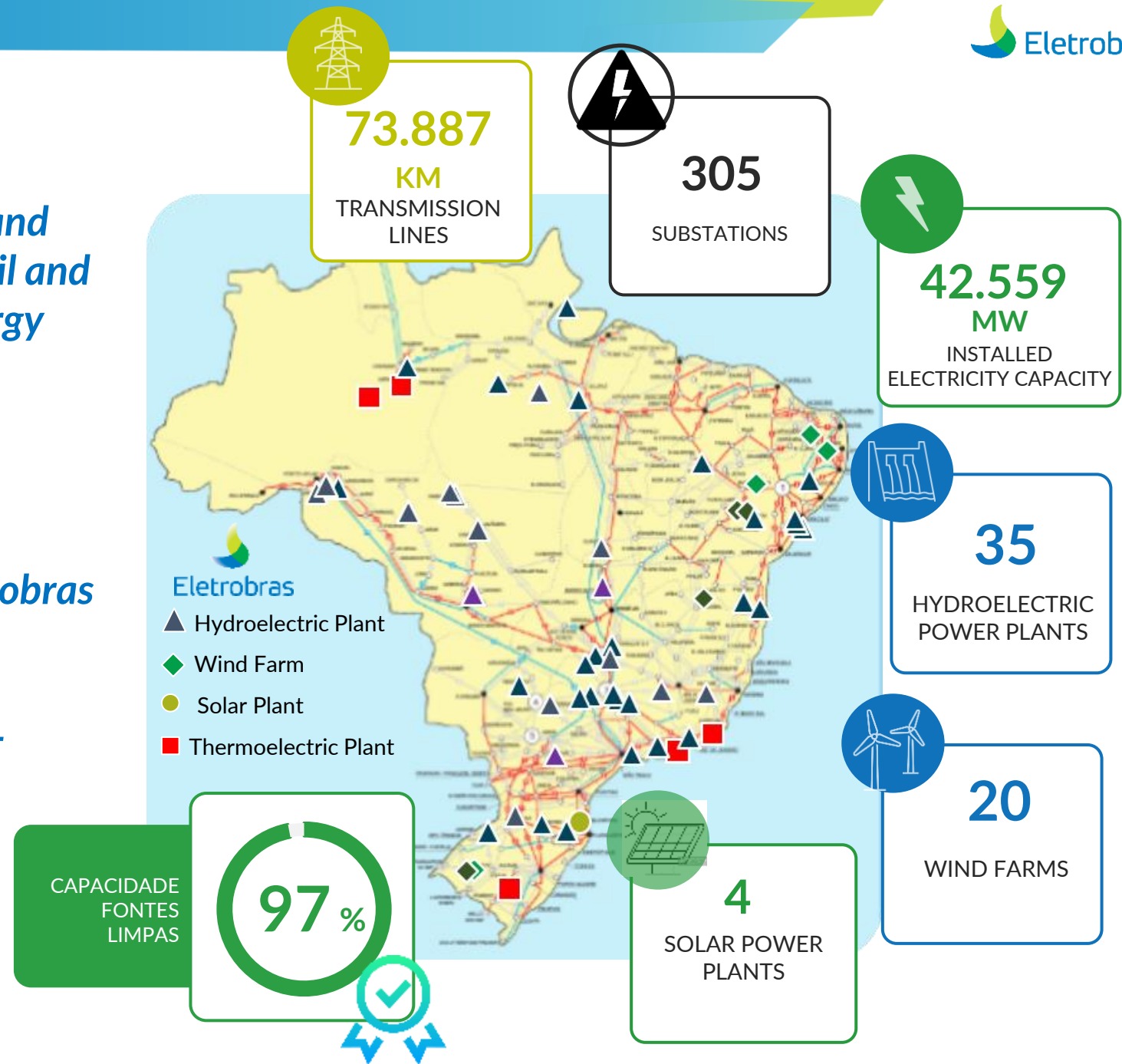
Competitive 24/7 renewable energy

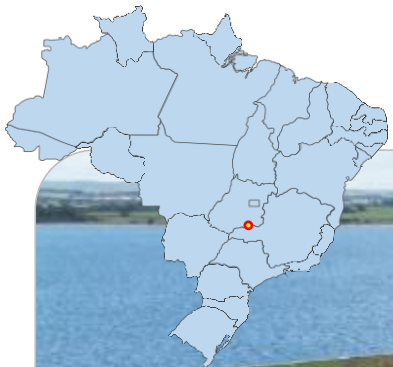


Greater competitiveness, lower risk and “time to market”

Eletrobras is a leader in the generation and transmission of electrical energy in Brazil and contributes to making the Brazilian energy matrix one of the most renewable in the world. It is the largest company in the electricity sector in Latin America.

The E-Fuel Department, an area of Eletrobras dedicated to green hydrogen, plans and coordinates the development of new technologies related to Hydrogen and E-fuels.





2.082 MW
HYDROELECTRIC
POWER PLANT

800 kWp
SOLAR PARK

H₂
300 kW
H₂V GENERATION
CAPACITY

Operating since 2021

4 ton H₂V produced

Hybridization: Hydro-
Solar-H₂V-BESS

Plan 2023-2025:
Ammonia and E-Fuels

SIN
INTERCONNECTION
24/7

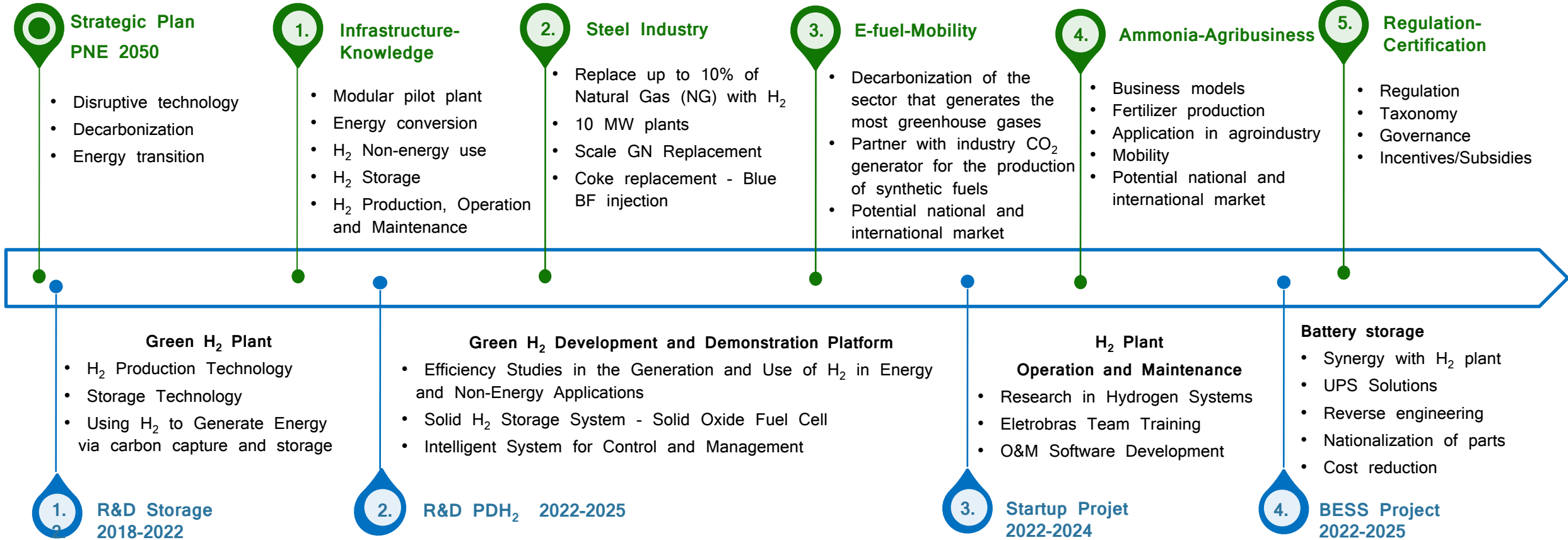
300 kW
FUEL CELL

600 kWh
BESS

18 months
STARTUP
O&M



Business/Partnership



Technological Development



Thank You!

E-fuel Department
Victor Hugo Goes Ricco
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Certificado de Hidrogênio Renovável
ccee

Orgulhosamente Certificamos que
Furnas Centrais Elétricas S/A
produziu hidrogênio em outubro de 2023 a partir de fontes renováveis e contribuiu com a redução da emissão de carbono.

A aceitação deste certificado está condicionada a verificação de autenticidade no site CCEE pelo QR Code ao lado.

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