CNI

Brazilian National Confederation of Industry

THE FUTURE OF INDUSTRY

STRATEGY TO SUPPORT A LOW CARBON ECONOMY

Clean electric matrix (83% from renewable sources)

Low carbon intensity of the industry

2nd largest Biofuels production in the world

Greatest biodiversity on earth (20% of the total species on Earth)

Largest forest cover (58% of the national territory)

World's largest water resources (12% of world reserves)

BRAZIL'S

COMPARATIVE ADVANTAGE

INDUSTRIAL SECTORS HIGHLIGHTS

GLASS

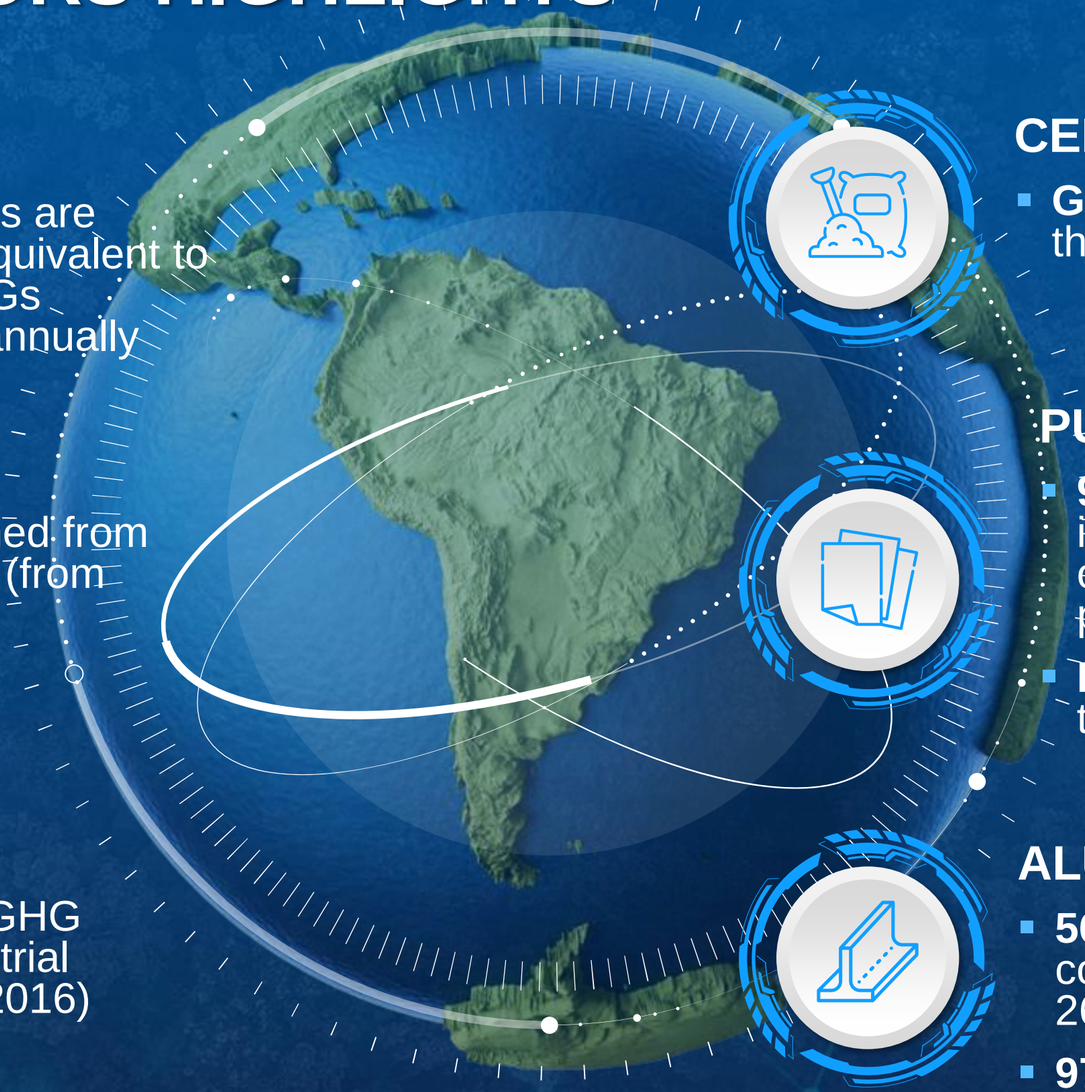
- 400,000 tons of glass are recycled per year, equivalent to 100,000 tons of GHGs emissions avoided annually

STEEL

- Around 12% of the production is obtained from the use of charcoal (from planted trees)

CHEMICAL

- 44% reduction of GHG emissions in industrial processes (2006-2016)



CEMENT

- **GHG emissions 11% lower** than the world average for the sector

PULP AND PAPER

- **9 million** ha of planted forests (for industrial purposes) while 5.9 million ha of native forests (for conservation purposes)
- **Recycling rate of paper 66.9%** (one of the highest in the world)

ALUMINIUM

- **56%** of all aluminium consumed in the country is recycled (global average: 26%)
- **97%** of beverage cans are recycled in Brazil

BRAZIL'S

COMPARATIVE ADVANTAGE

CNI'S STRATEGY TO **SUPPORT A LOW CARBON ECONOMY**

Reduce absolute GHG emissions of 37% by 2025 and 43% by 2030 (base year 2005)

Climate Neutrality by 2050

Zero illegal deforestation by 2030

CNI supports the implementation of the climate commitments made by the country in an integrated and transparent manner, with broad participation of the productive sector

In order to leverage its contribution to the achievement of the national targets under the Paris Agreement, **CNI** developed a proposal of a Strategy to Consolidate a Low Carbon Economy.

CNI'S STRATEGY TO **SUPPORT A LOW CARBON ECONOMY**

Our proposal consists of **16 actions**, organized into **4 main themes**, where government and industry can work together, aiming at accelerating the implementation of programs and technologies to reduce GHG emission, in the short and medium term, while build the pathway for the climate neutrality in 2050

The priority themes are:

01 Energy Transition

02 Carbon Pricing

03 Circular Economy

04 Forest Conservation

THEME 1

ENERGY TRANSITION

CONTEXT

- The Brazilian energy matrix has a large share of renewable sources, **46%**
- On the power matrix, renewables represents **83%**, a great share when compared to the USA **(18%)** and the OECD countries **(27%)**
- Despite its favorable situation, Brazil has further invested in the expansion of renewables in the matrix
- The country has also strengthed its National Policy for Biofuels (RenovaBio), and has developed a strategy to promote new source of energies (e.g. hydrogen)
- The challenge is to ensure tariff modicity while maintaining safety of energy supply

GENERAL PROPOSAL

Increasing the percentage of renewable energy and biofuels in the energy mix, by maintaining investments in renewable energy, strengthening the biofuels program, and policies and investments in new energies such as hydrogen and offshore wind and low carbon technologies (e.g carbon capture and storage) for the energy transition.

THEME 1

ENERGY TRANSITION

ACTION 1:

Support the expansion of biofuels and the strengthening of the National Biofuels Policy (Renovabio)

ACTION 2:

Articulate greater participation of industry in the energy efficiency programme (Procel)

ACTION 3:

Support the government in building and implementing new regulations to support implementation of offshore wind projects in Brazil.

ACTION 4:

Promote new clean technologies, such as hydrogen and CCUS

ACTION 5:

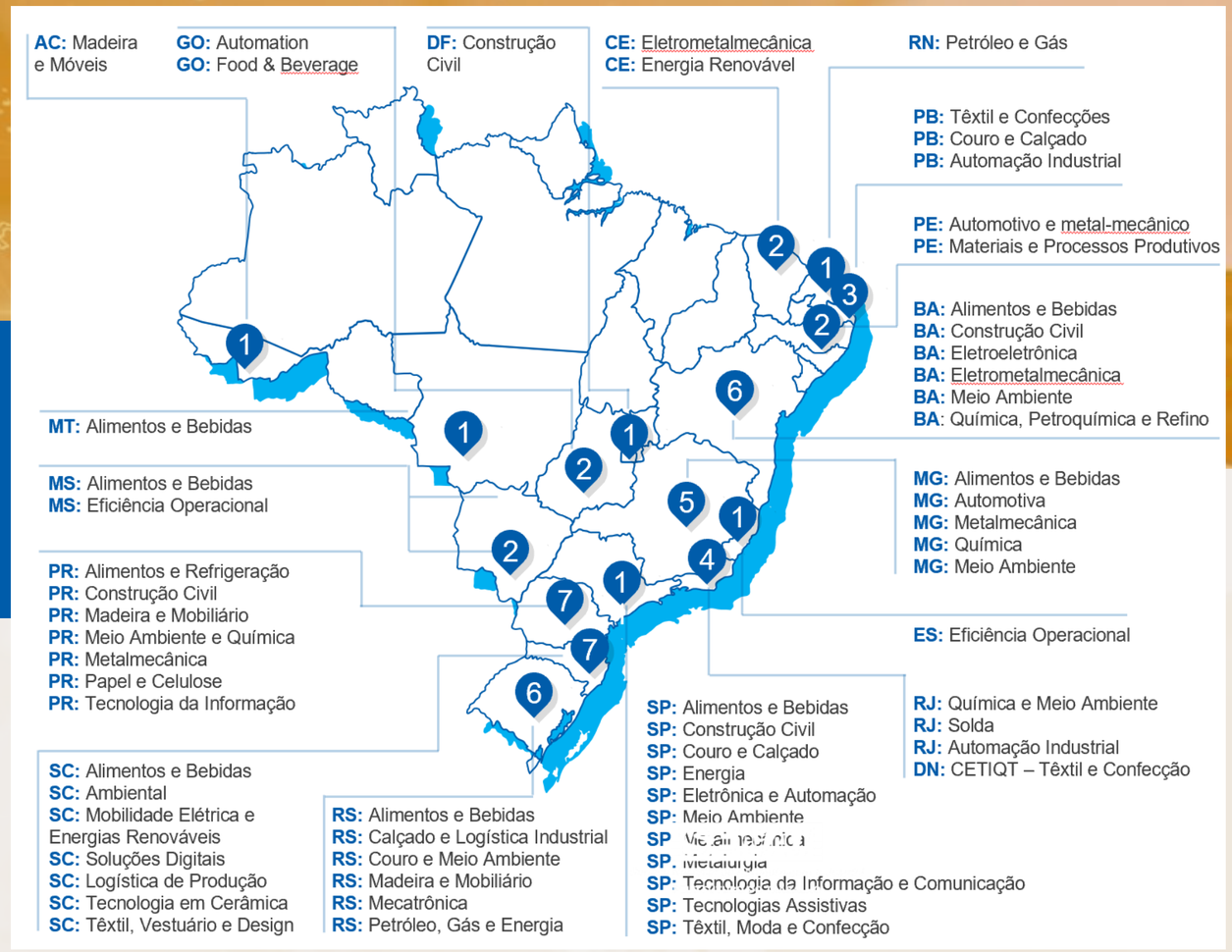
Articulate public policies to encourage the production of energy from solid waste

CNI
Confederação Nacional da Indústria
PELO FUTURO DA INDÚSTRIA

24 **thousand** own Employees

2,7 **thousand** Total number of municipalities where SENAI is present

LARGEST PRIVATE PROFESSIONAL EDUCATION COMPLEX AND OF TECHNOLOGICAL SERVICES IN LATIN AMERICA



Since its creation in 1942, the organization has trained more than **81 million workers,** in 28 segments – from professional initiation to undergraduate and technological postgraduate courses.

It has also become a national reference in supporting technology and innovation for industrial companies of all sizes and segments.

SENAI
Serviço Nacional de Aprendizagem Industrial
PELO FUTURO DO TRABALHO

INITIAL INVESTMENT OF
Aprox. US$ 1 BILLION

27
SENAI INSTITUTES OF INNOVATION

Impact Goals

Energy transition accomplished

Digitalized value chain

Fully circular economy

Security and resilient society

Affordable healthcare

SENAI
Serviço Nacional de Aprendizagem Industrial
PELO FUTURO DO TRABALHO

Lead-Market-oriented alliances

Fraunhofer

Massachusetts Institute of Technology

AM Microeletrônica

PA Tecnologia minerais

MS Biomassa

PR Eletroquímica
PR Engenharia de estruturas

SC Processamento a lazer
SC Sistemas embarcados
SC Sistemas de manufatura

RS Engenharia de Polímeros
RS Soluções Integradas em metalmecânica

RN Energia renováveis

PE Tecnologia da informação e comunicação

BA Conformação e união de materiais
BA Automação de produção
BA Logística

MG Engenharia de superfícies
MG Metalurgia e Ligas especiais
MG Processamento mineral
MG Sistemas Elétricos

RJ Inspeção e integridade
RJ Sistemas virtual de produção
RJ Química verde
RJ Biosintéticos

SP Manufatura avançada e microfabricação
SP Materiais avançados e nanocompósitos
SP Biotecnologia

More than **1300 research projects** carried out for more than **600 Brazilian companies**

INDUSTRIAL MISSION ORIENTED PROGRAMMS designed for big environment and social challenges

Boundary conditions:

1. Impact investments with focus on ESG agenda
2. SENAI Institutes are committed to “race to zero” initiative
3. Green clausulae in all research projects of SENAI Institutes
4. New business models metrics and impacts
5. RESOURCE SHARING - formation of partnerships with other ecosystem actors of innovation
6. Global governance (all connected)
7. Blended finance
8. Transparency and accountability
9. One stop shot solution

Applications in Industry

Safety and life cycle

Technology production

Application in mobility and transport

Energy sector and power economy

Advanced Materials

Biotech

SENAI's Innovation Institutes Network is leading the Mission Oriented Innovation Agenda in Brazil

DIGITAL TRANSFORMATION:

SENAI developed the first satellite for a private company in BRAZIL for SUSTAINABLE AGRICULTURE;

SENAI launched a SMART FACTURING program in partnership with the Brazilian Government in order to support 1.200 local SMEs.

ENERGY TRANSITION:

SENAI has supported companies in Brazil to develop/test Green Hydrogen Technologies, such as the Tech Hub at Suape Harbor (Pernambuco State) in partnership with China Three Gorges, Itaipu, Hytron and other companies.

In the Bahia State with Unigel, in the RJ State at Açu Harbor and in the Amazonas with Eletronorte Balbina Hydroeletric Powergen.

BIODIVERSITY / BIOECONOMY:

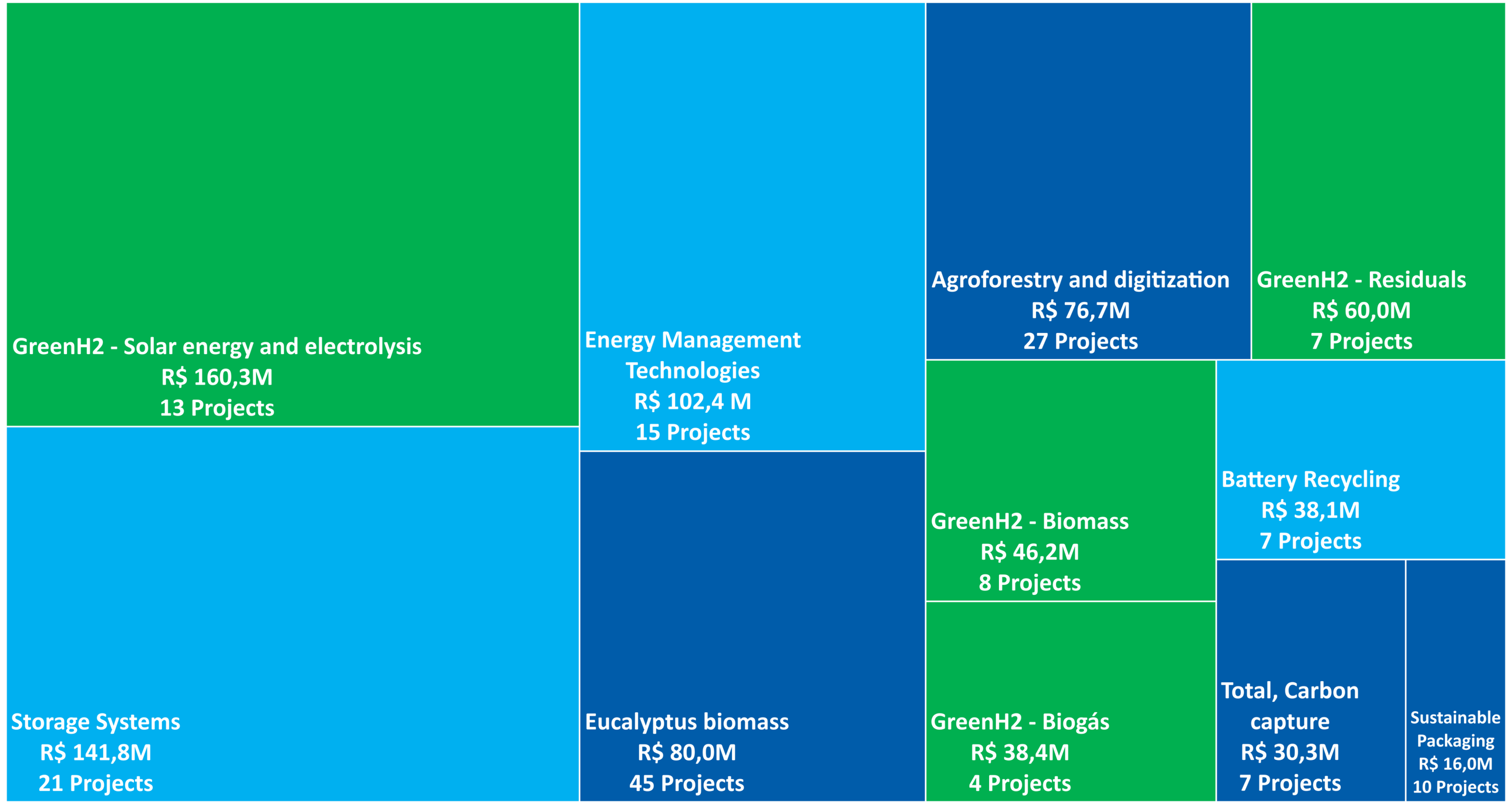
SENAI has developed the largest infrastructure for BIODIVERSITY research and development in Brazil, connecting the network of Innovation Institutes with local supply chains/communities in the all 6 Biomas.

CIRCULAR ECONOMY:

SENAI has developed a Circular Economy Maturity Check for SMEs in Brazil;

SENAI has developed a SUSTAINABLE OCEAN program with FRAUNHOFER and SINTEF in Brazil, to be launched in 2023.

INDUSTRIAL MISSION SENAI: THEMES – PROJECT PROPOSALS



Action 4

Potential of Hydrogen Economy

Reduce Emissions

Diversify Energy Supply

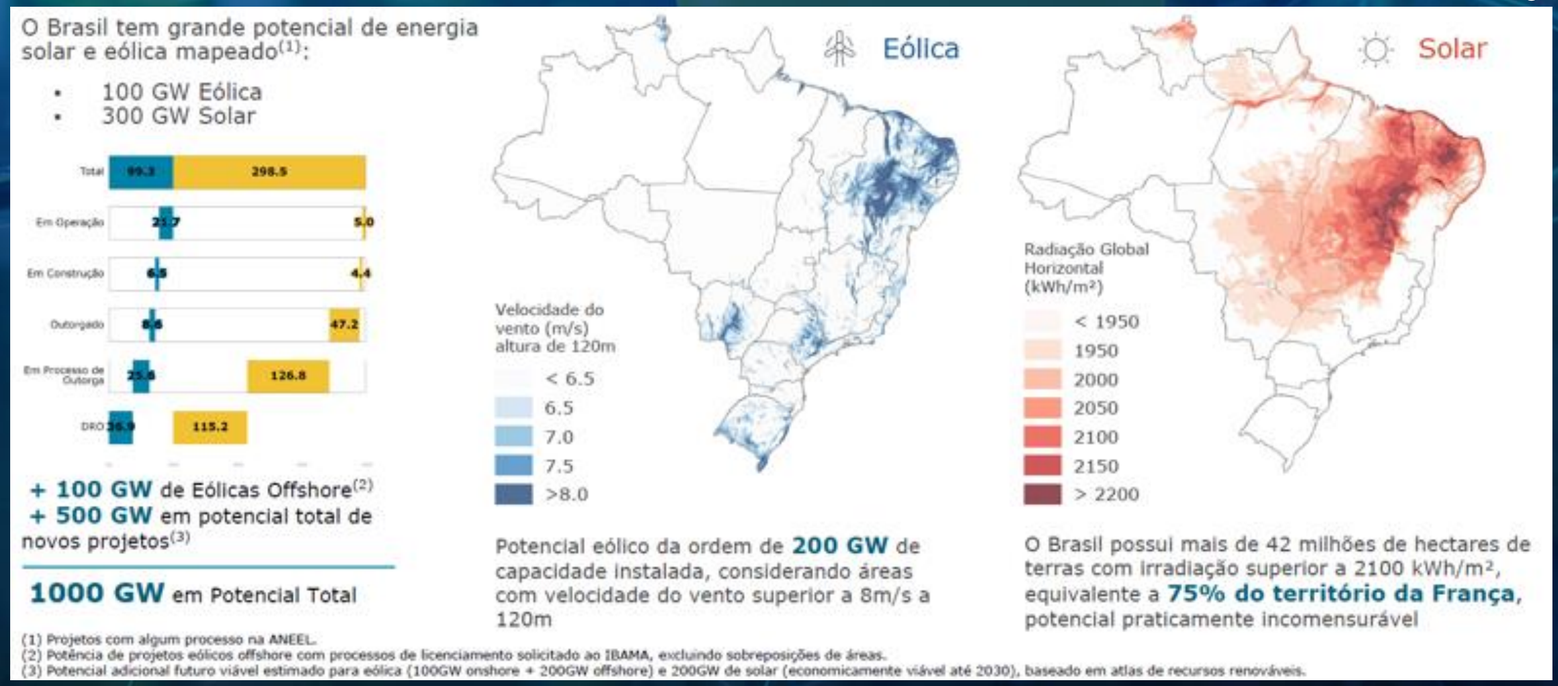
Foster Economic Growth

Support National Technology Developments

Integration of renewables

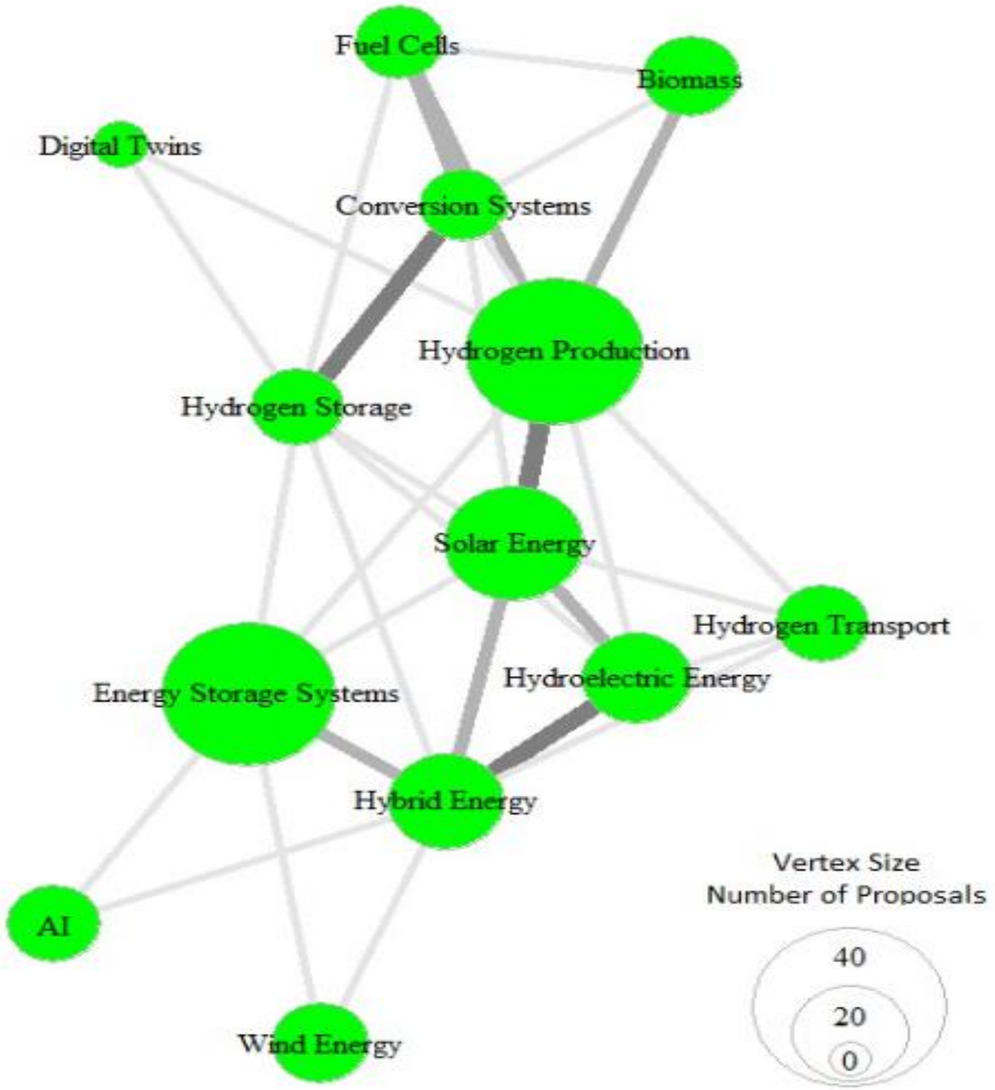
Develop Hydrogen for Export

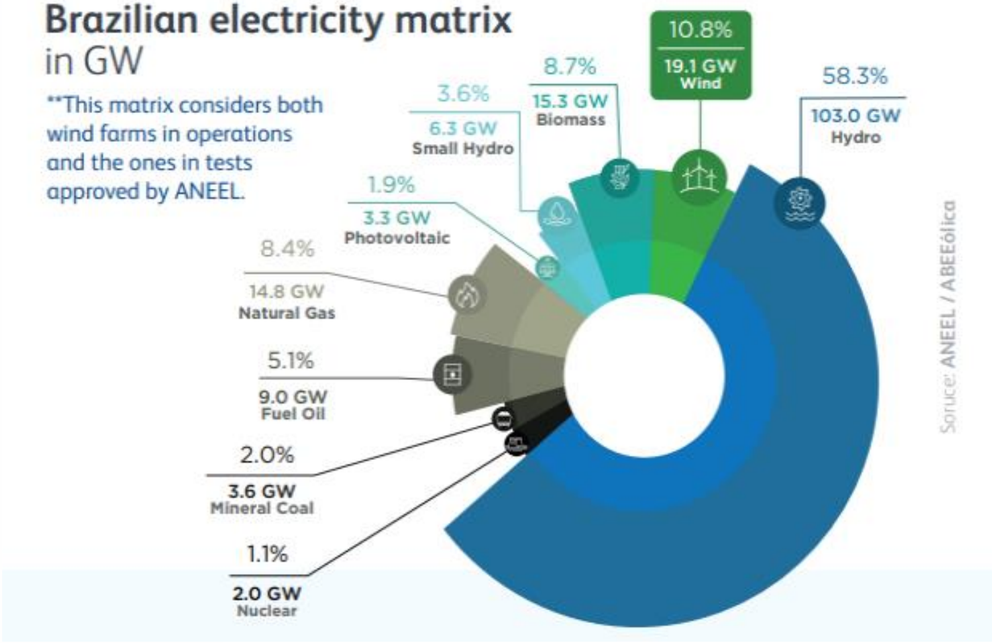
Source: Bloomberg



Source: ANEEL Brazil

ENERGY TRANSITION





Contracted proposals 8

Opportunities 52

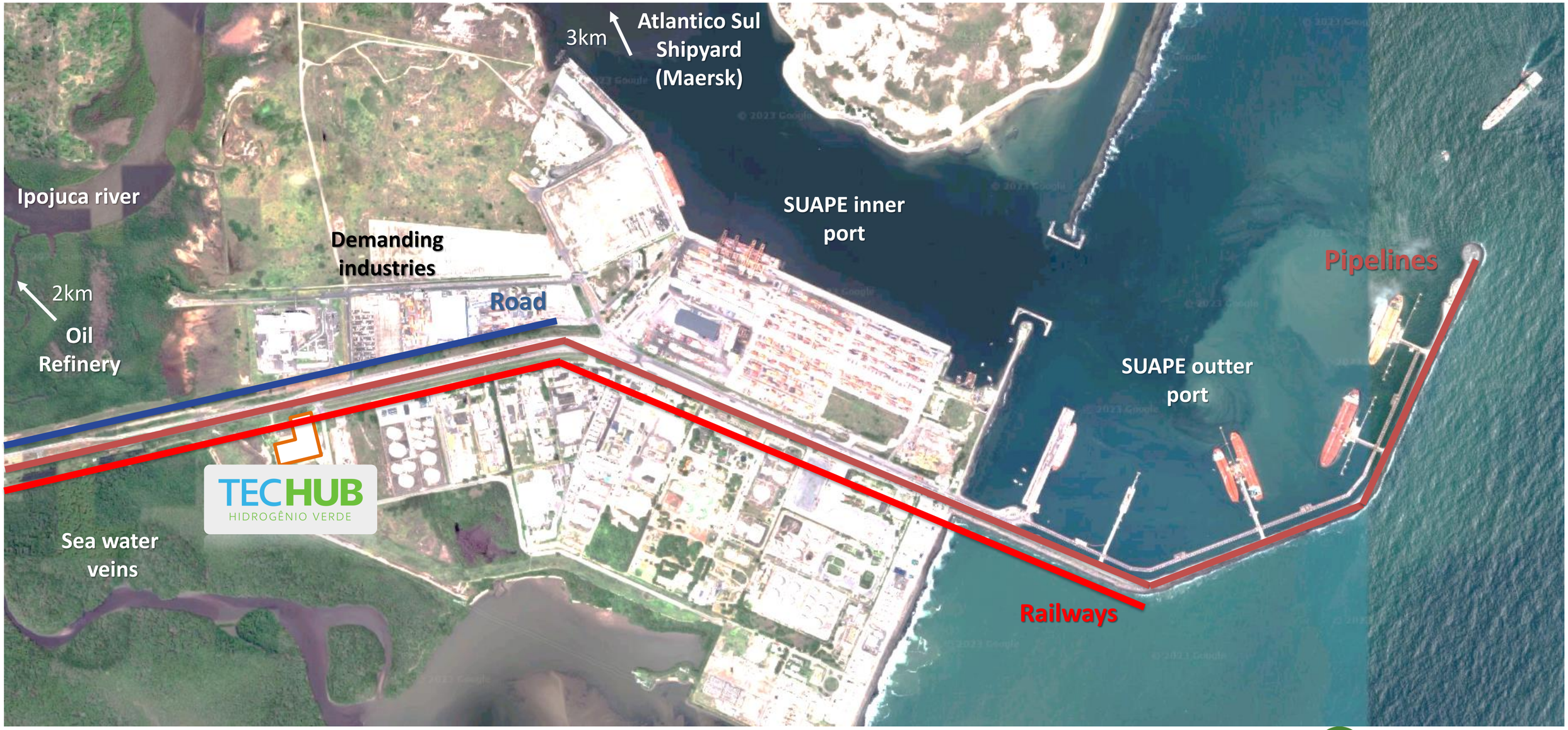
TECHUB is a testbed environment created with the aim of driving hypotheses for the development of new technologies and business models focused on the H2Verde production chain connected to the Suape Port Industrial Complex.

SUAPE
Complexo Industrial Portuário
Governador Eraldo Gueiros

TECHUB
HIDROGÊNIO VERDE

46 CONTAINER LABORATORIES Units

Location


3km
Atlantico Sul Shipyard (Maersk)
Ipojuca river
SUAPE inner port
Demanding industries
Pipelines
2km
Road
Oil Refinery
SUAPE outter port
TECHUB
HIDROGÊNIO VERDE
Sea water veins
Railways

INDUSTRIAL MISSION
Green Hydrogen

International Call for the Development of Solutions for the H2V Chain from Brazil to the World

International R&D projects with industries from both countries

Both AiF and SENAI represent the industry associations in the respective countries

Brazilian National Confederation of Industry

THE FUTURE OF INDUSTRY

Learn more in the link:

http://institutos.senai.br/

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