



Brazilian National Confederation of Industry

THE FUTURE OF INDUSTRY



STRATEGY TO SUPPORT A LOW CARBON ECONOMY

RENEWABLE ENERGY IN BRAZIL

THE NEW ECONOMIC AND ENVIRONMENTAL AGENDA



Brazil's formal request to become a member of the OECD

about 40% of the normative acquis refers to environmental issues



Mercosur-EU Agreement Ratification

specific chapter on "Trade and Sustainable Development"



European Green Deal

50 specific measures proposed by the European Commission to address climate change challenges



Post-Covid-19 Recovery

rethink the relationship with the environment in order to deal with the effects of the pandemic and prevent future similar events



COP27

Funding arrangements for responding to loss and damage associated with the adverse effects of climate change

Sharm El Sheikh Implementation Plan

TRENDS IN THE GLOBAL CLIMATE CHANGE AGENDA



Countries and companies making the commitment to emissions neutrality by 2050



Renewable Energy Expansion



New products and low carbon energy sources (e.g. hydrogen)



CO₂ as the new global commodity



Electrification of vehicle fleets



End of subsidies to fossil sources



Central banks and financial sector moving to measure climate risk



Carbon Pricing Systems

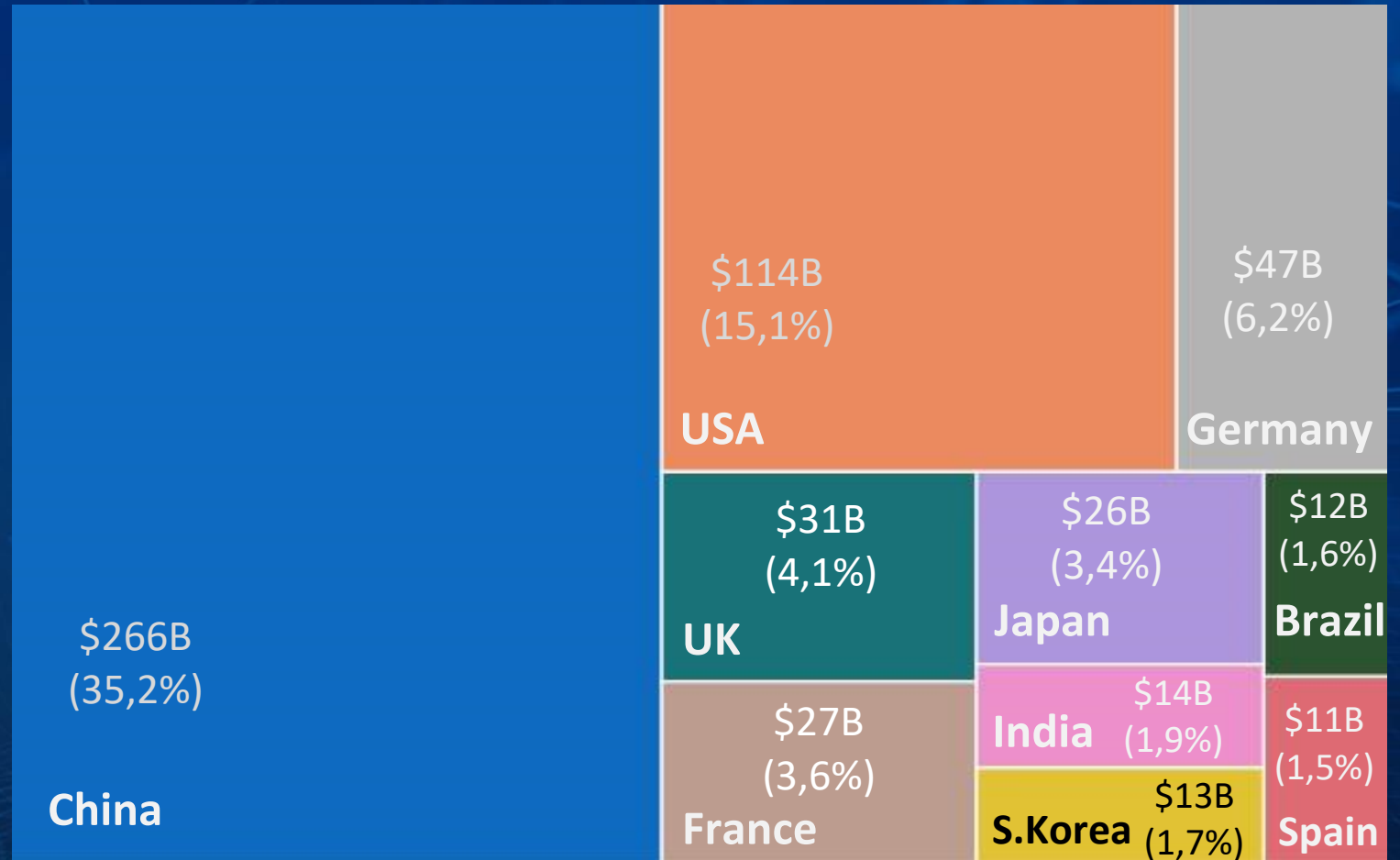


CBAM (European Union)

ENERGY TRANSITION INVESTMENTS

TOP 10 COUNTRIES IN 2021

The top 10 countries accounted for 74% (US\$ 561B) of global energy transition investment (US\$ 755B)



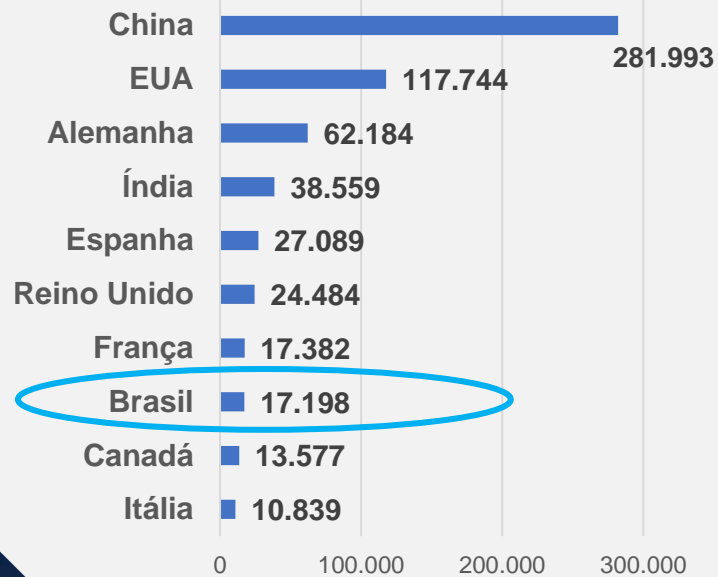
WHICH LOW-CARBON TECHNOLOGIES ARE ATTRACTING INVESTMENT?

Technology	Total Investment 2021 (US\$ bi)	%
Renewable energies	365,9	48,5
Electric mobility	273,2	36,2
Electric heating	52,7	7,0
Nuclear	31,5	4,2
Sustainable materials	19,3	2,6
Energy storage	7,9	1,0
Carbon capture and storage	2,3	0,3
Hydrogen	2	0,3

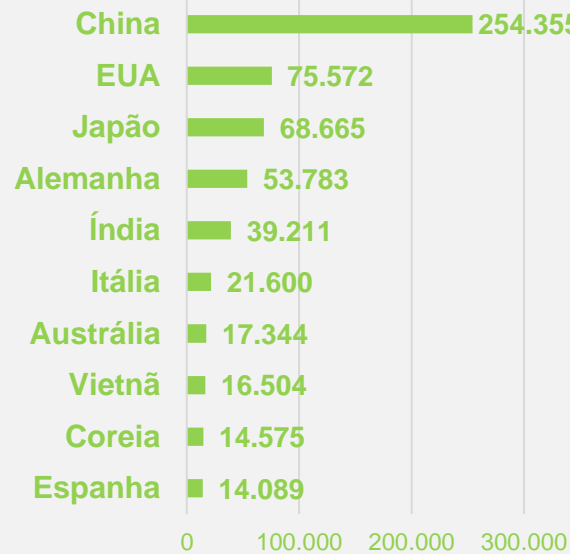
Source: Bloomberg, 2022.

INSTALLED RENEWABLE ENERGY CAPACITY TOP 10 COUNTRIES IN 2020

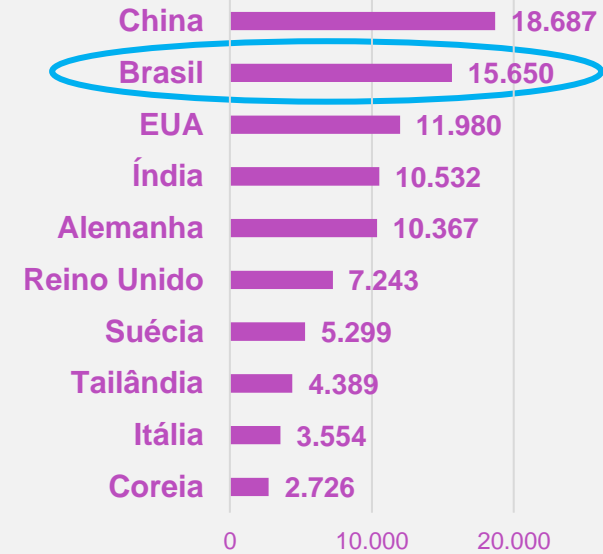
Wind Energy in 2020
Installed Capacity (MW)



Solar in 2020
Installed Capacity (MW)



Bioenergy in 2020
Installed Capacity (MW)



Source: UNCTAD, Technology and Innovation Report - Opening green windows. Technological opportunities for a low-carbon world, 2023.

Brazil highlights: wind energy and bioenergy

Clean electric matrix



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



Low carbon intensity of the industry



Largest forest cover (58% of the national territory)



2nd largest Biofuels production in the world



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



**HOW TO TURN COMPARATIVE ADVANTAGES INTO
COMPETITIVE ADVANTAGES?**

INDUSTRIAL SECTORS HIGHLIGHTS

CEMENT

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

PULP AND PAPER

- **9,93 million ha of planted forests** (for industrial purposes) while **6,05 million ha of native forests** (for conservation purposes)
- **Recycling rate of paper 66.7%** (one of the highest in the world)

ALUMINIUM

- **56%** of all aluminium consumed in the country is recycled (global average: 26%)
- **98,7%** of beverage cans are recycled in Brazil

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



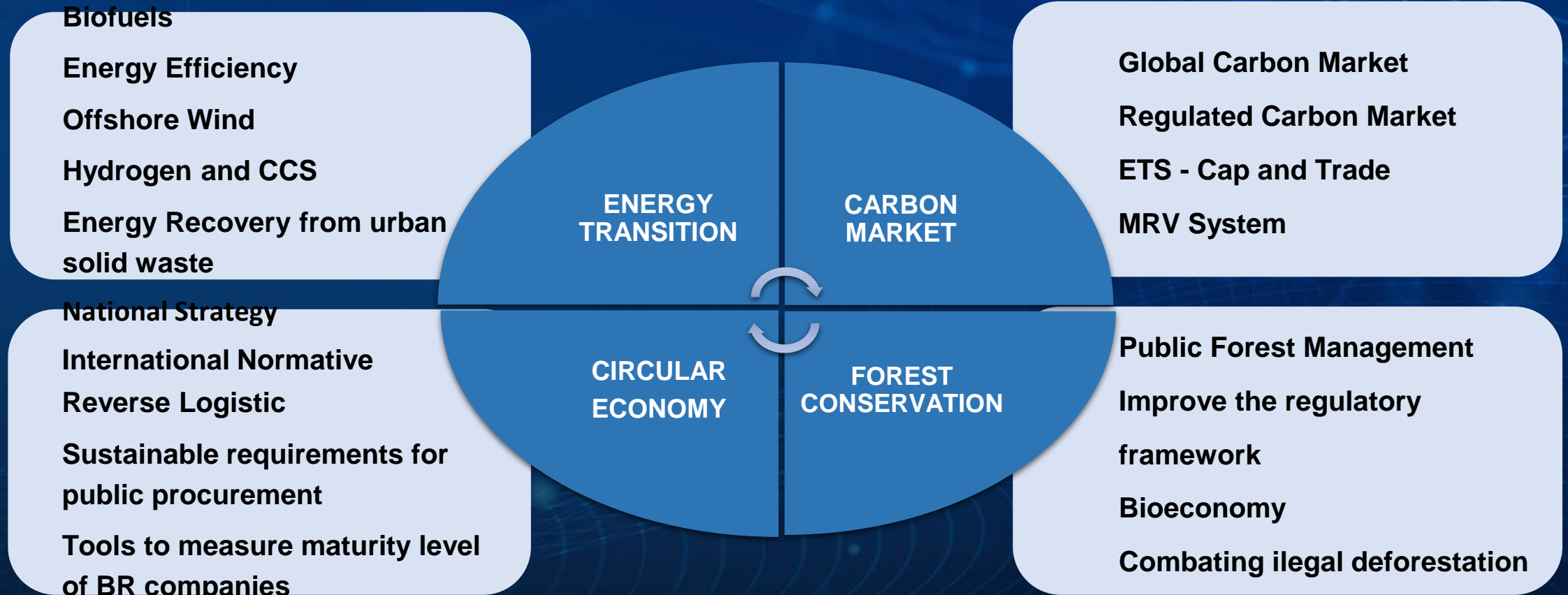
STEEL

- Around 19% of the production uses charcoal from planted trees
- Around 93% of co-products and waste generated by steel production are recycled, reused, co-processed or destined to composting

BRAZIL'S
COMPARATIVE ADVANTAGE

CNI'S STRATEGY TO SUPPORT A LOW CARBON ECONOMY

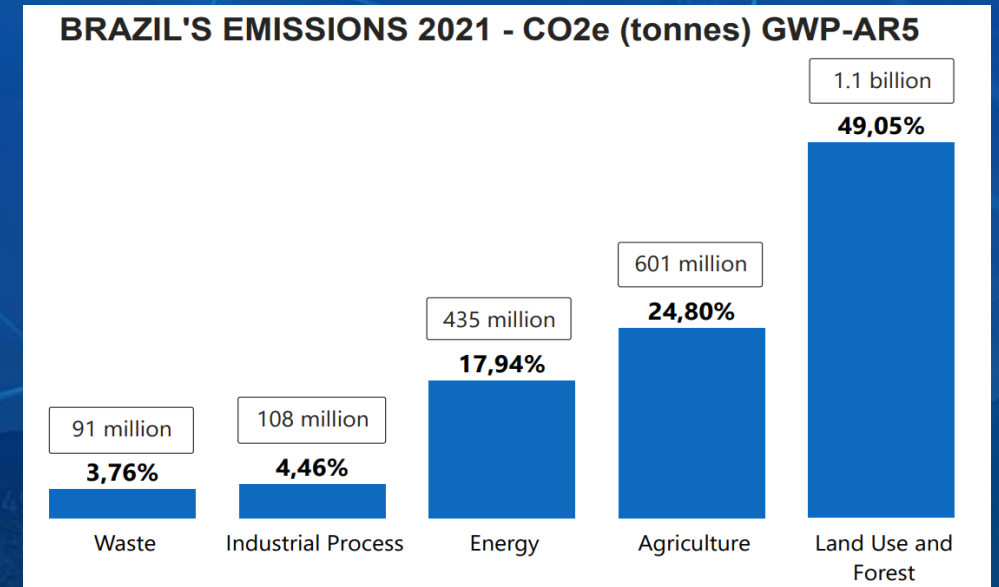
Goal: accelerating the implementation of programs and technologies to reduce GHG emission, in the short and medium term, while build the pathway for the climate neutrality in 2050



BRAZIL'S COMMITMENT AND CURRENT SITUATION

BRAZIL'S COMMITMENTS TO REDUCE GHG

- 37% by 2025 and 50% by 2030 (base year 2005)
 - 2028: zero illegal deforestation
 - 2050: climate neutrality

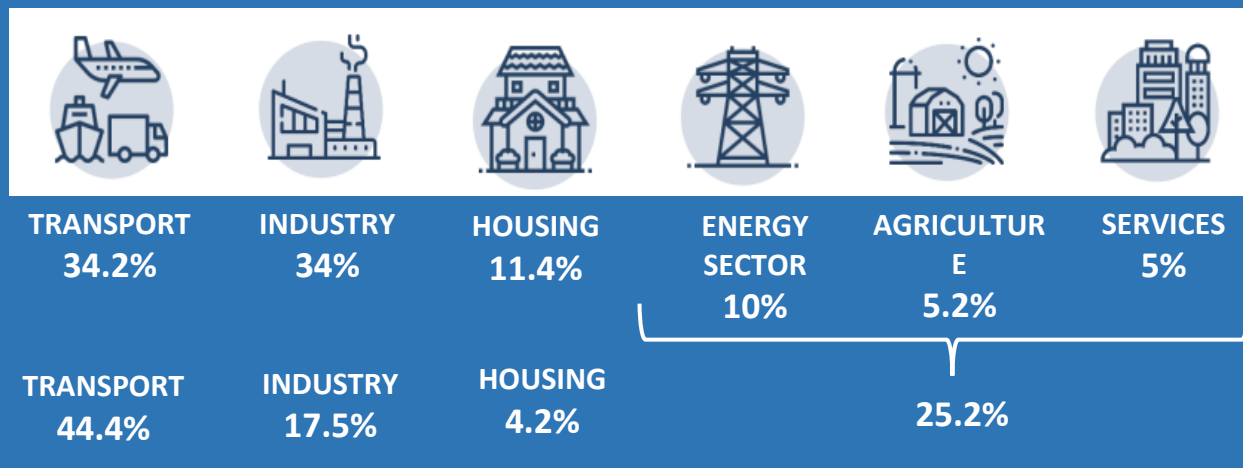


Source: SEEG

ENERGY CONSUMPTION 2021

ENERGY MATRIX

GHG EMISSIONS

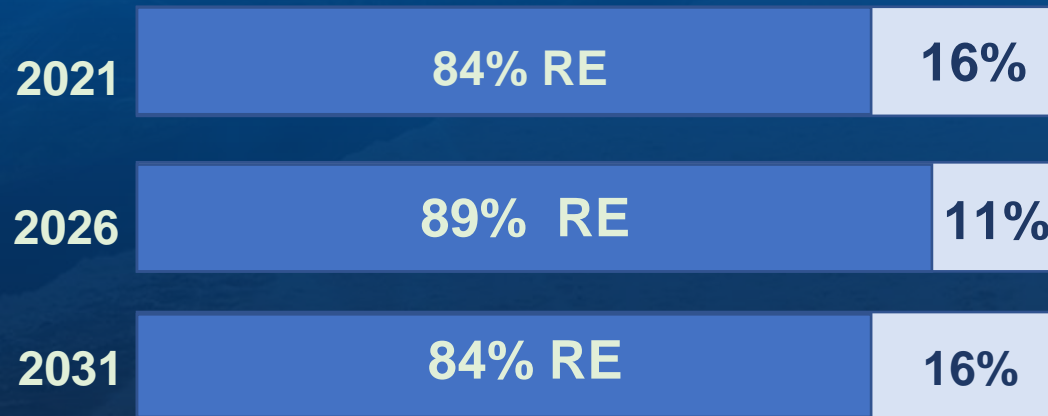


Source: EPE/MME

RENEWABLES IN NUMBERS

ELECTRIC MATRIX IN BRAZIL

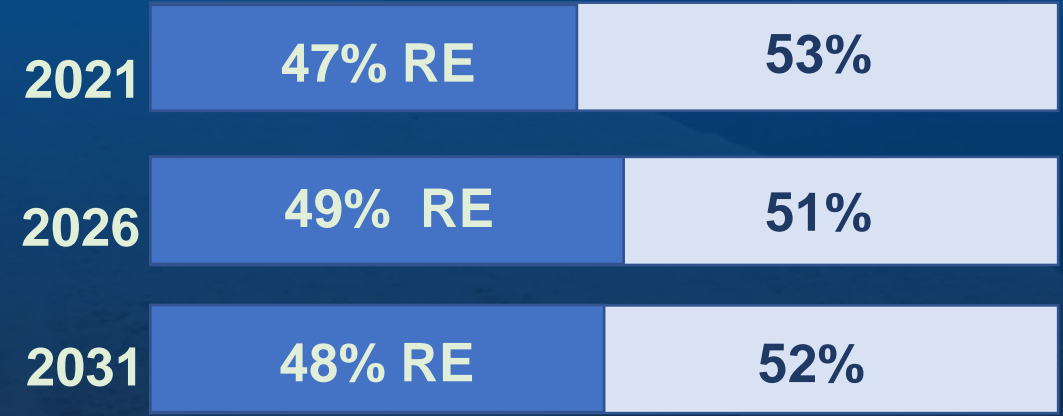
40% expansion of power supply in 10 years



Renewables in the world (2020): 26%

ENERGY MATRIX IN BRAZIL

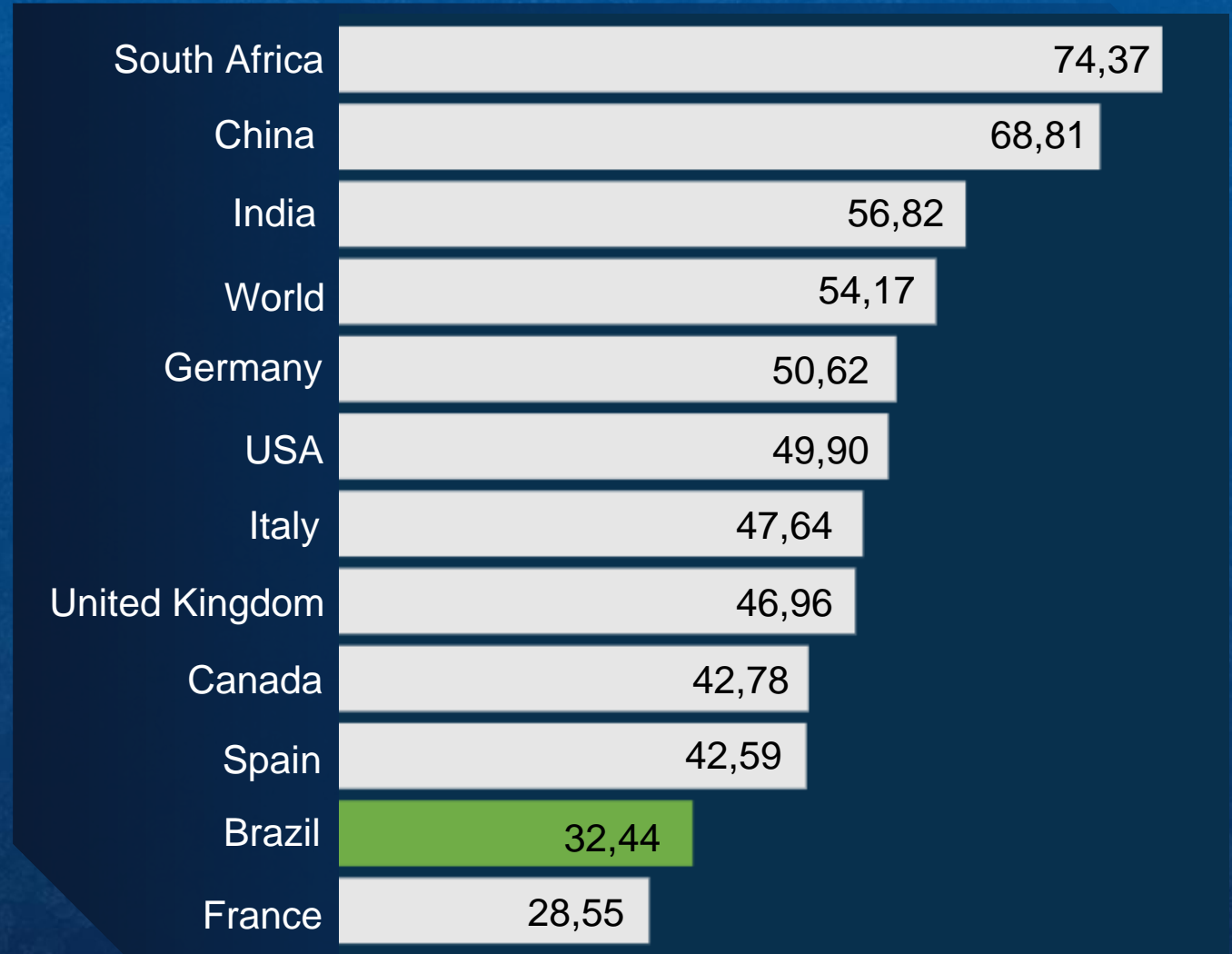
30% expansion of energy supply in 10 years



Renewables in the world (2019): 14%

GHG Emissions from Energy Sector

Tonnes of CO₂ emitted per
terajoule of energy used (2020)

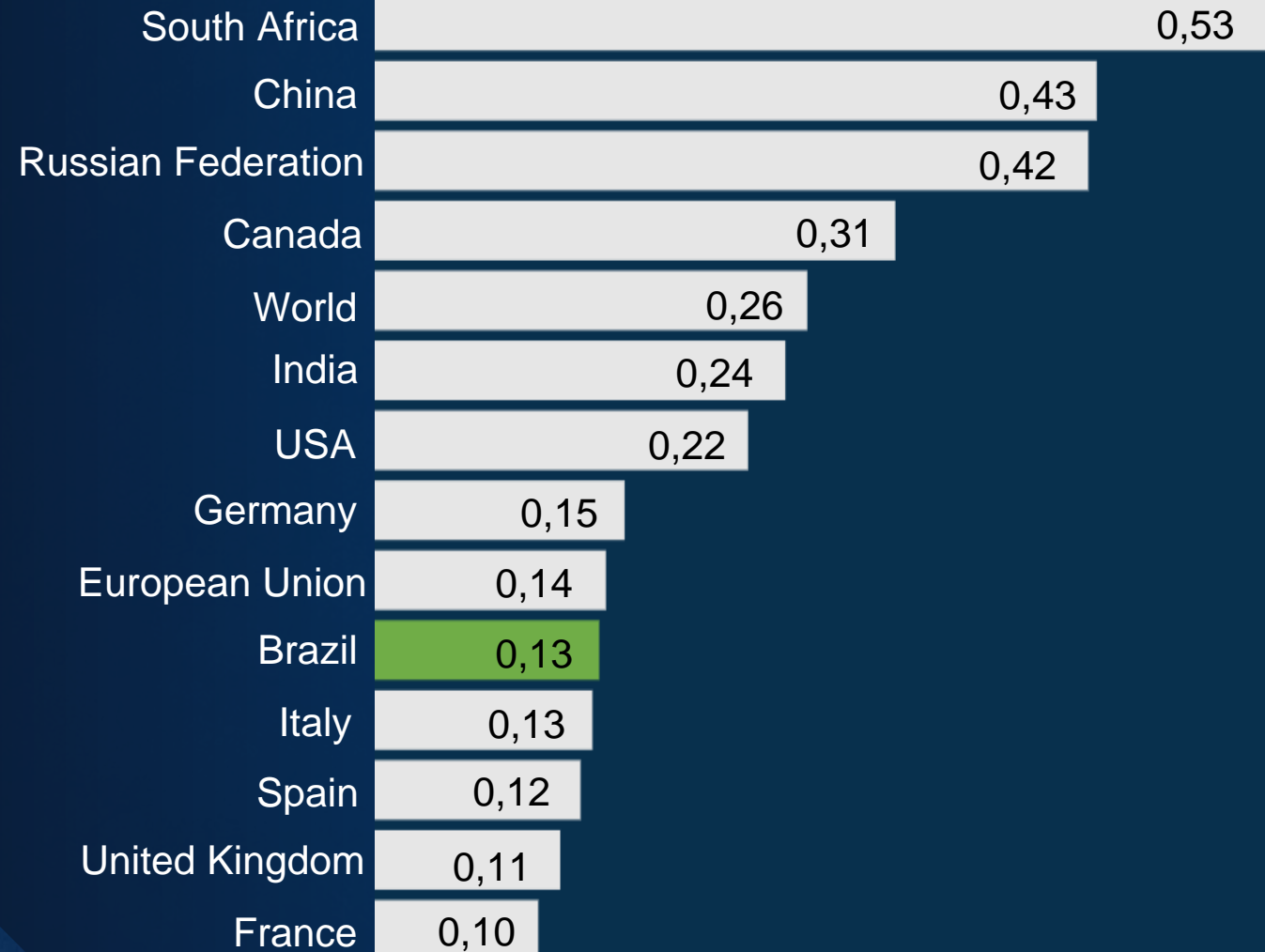


Source: Greenhouse Gas Emission from Energy Highlights,
International Energy Agency

GHG Emissions from Energy Sector

Kg of CO₂ emitted for each unit of
GDP (2020)

*GDP in 2015 USD prices, based on
purchasing power parities*



Source: Greenhouse Gas Emission from Energy Highlights,
International Energy Agency

THE WAY FORWARD

EXPANSION OF RENEWABLE ENERGY

OFFSHORE WIND



- 8.000 Km of coast
- 34 km/h of average wind speed
- 170 GW, in projects, submitted for environmental licensing
- Production costs dropped 50% in 5 years
- Estimated investments: US\$ 1 trillion by 2030

The potential of the offshore wind generation is 3.5 times greater (700GW) than the current installed capacity in Brazil (178GW)

NEW TECHNOLOGIES

CCS - CARBON CAPTURE AND STORAGE



- Improve regulations related to geological storage
- Coupling CCS technology in the value chain of the biofuels sector can lead to zero or negative emission (removal) of CO₂

ENERGY EFFICIENCY

ALLIANCE PROGRAM

CNI, Eletrobras and Abrace

(The Brazilian Large Industrial Energy Consumers Association)

Gain in competitiveness and technological innovation in the industrial sector, including micro and small companies

Transfer of knowledge and energy efficiency methodology to industrial plants

Alliance 2.0 - 24 industrial plants



Reduction of

- energy costs and consumption
- GHG emissions

Alliance 1.0 - 12 industrial plants

Energy savings exceeded 175MWh = city of 60 thousand residents per year

Average reduction of 5.5% in total energy consumption

Average payback of implemented actions less than a month

Every BRL invested by the industry generated 3.4 BRL per year in energy savings



SUSTAINABLE (LOW CARBON) HYDROGEN

CNI supports the implementation of the new technologies and the source diversity in a coordinated and transparent manner, with broad participation of the private sector

- Industry in the H2 National Plan: integrate national strategy, point out synergy with other public policies, improve regulation for the domestic and export market
- New business models: industrial port complexes and 'hard to abate' industrial plants (cement, steel, chemical, etc.), and green fertilizers
- Continue tracking the market progresses to help overcome transport and storage challenges
- Funding moving from research to demonstration

HYDROGEN

An energy vector



McKinsey

Brazil is among the most competitive countries for H₂ production

IEA

World

990 initiatives being 2/3 from EU

End use

25% mobility
17% power generation

By 2050

Potential to reduce emissions by up to 90%

BRAZIL

Potential investments of US\$ 200 bi by 2040

PECEM Industrial and Port Complex

3 companies announced US\$ 14 bi investments in the last year

HYDROGEN COUNCIL

World

Market potential of US\$ 2,5 tri

Jobs

30 milhões

Avoided GHGs

6 Gt of CO₂

CNI available in English
<https://www.portaldaindustria.com.br/cni/en/>

THANK YOU



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