

EXECUTIVE SUMMARY



POWER SECTOR COALITION: Clean, competitive and resilient energy to transform Brazil

OCTOBER 2025



PSR



cebds

TECHNICAL INFORMATION SHEET - POWER SECTOR COALITION: CLEAN, COMPETITIVE, AND RESILIENT ENERGY

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POWER SECTOR COALITION: CLEAN, COMPETITIVE, AND RESILIENT ENERGY FOR BRAZIL.

RIO DE JANEIRO, OCTOBER 2025.

**ACCESS THE DIGITAL VERSION
OF THE EXECUTIVE SUMMARY
AND THE FULL STUDY AT:**



INTRODUCTION:

By Marina Grossi

President of CEBDS and Special Envoy for the Business Sector to COP30

The Brazilian electricity sector stands as one of the clearest examples of how the combination of long-term vision, science, and public policy can deliver concrete and lasting results.

Over the past decades, Brazil has built a predominantly renewable electricity matrix, the outcome of sound technical choices, strong institutional capacity, and a business environment that has learned to innovate even in times of uncertainty.

Today, about 90% of the electricity we consume comes from clean sources, compared to a global average of around 40%. This difference represents more than a comparative advantage - it is a foundation of climate competitiveness that Brazil must preserve and expand if it aims to lead the global energy transition.

With this purpose, and at the invitation of Ambassador André Corrêa do Lago, President of COP30, CEBDS coordinated the Business Coalition for the Decarbonization of the Power Sector.

The process involved more than 70 companies and institutions in a cross-sector dialogue that brought together generators, transmitters, distributors, large consumers, and technology developers. This diversity was essential to build a shared vision of the role of electricity in the decarbonization of the Brazilian economy.

The result is a roadmap to 2050, grounded in technical evidence and guided by measurable targets. It shows that Brazil can reduce up to 176 million tons of CO₂ equivalent based on three main pillars:

- **Maintaining and expanding the renewable nature of the energy matrix;**
- **Accelerating the electrification of transport and industry; and**
- **Incorporating new technologies and business models to make the system more flexible, digital, and resilient.**

More than a set of goals, this Coalition represents a mature consensus among historically diverse stakeholders. There is a clear recognition that electricity is the central infrastructure of decarbonization - and that a stable, accessible, and clean power system is a prerequisite for progress across all other sectors.

Preserving Brazil's leadership in clean power generation and expanding its reach is a challenge that goes far beyond technology. It is a matter of governance, coherence, and national vision.

With this conviction, CEBDS continues to work to ensure that Brazil's energy transition is not only possible, but inevitable, happening with the seriousness, scale, and sense of future that the moment demands.

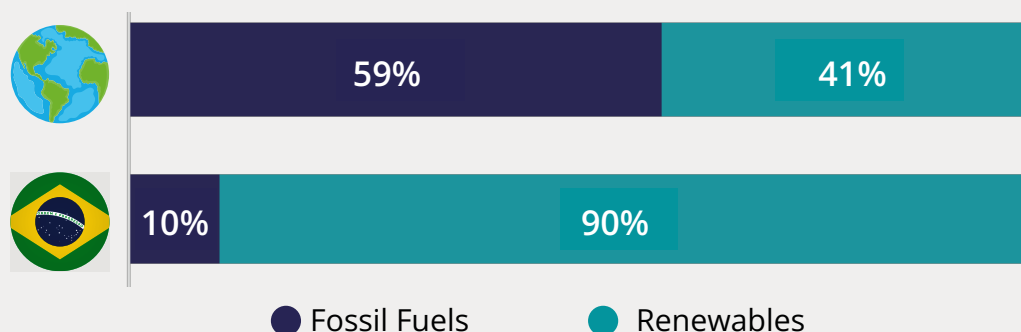
Enjoy the read!

CONTEXT AND MOTIVATION



- With **90% of the electricity produced from clean sources** (hydropower, wind, solar, biomass and nuclear), the Brazilian electric sector accounts for less than 2% of national emissions - in contrast with the global average of 30%.
- **Interconnected power grids serving 99% of the population** play a fundamental role in preserving the security, reliability and competitiveness of clean generation sources.
- It is **physically and economically feasible to reduce emissions in other sectors through electricity** - up to 18% of the country's net emissions could be reduced by electrifying industry and transport using clean power.
- The high share of renewables in the power sector can transform the country economically and socially, with competitive products in the global economy, fostering job creation, reducing inequalities, and contributing directly to climate action.

SHARE OF RENEWABLES IN THE POWER MIX - GLOBAL vs. BRAZIL (2024)



Source: Our World in Data (2024)

THE COALITION



- The Coalition, led by CEBDS, with technical and strategic curation by PSR, was made possible by six trade associations from the power sector, engaging more than 70 entities across four thematic pillars: Generation, Transmission, Distribution and Consumption.
- It sought convergence and consensus, through forums with participation from sector representatives, **defining levers that represent priority actions** to enable a just energy transition and the sustainable development of the sector.

AMBITIONS



Ensure the **renewability, competitiveness and reliability** of the Brazilian power mix.

Reduce inequalities, promote economic growth, and boost the production and demand for low-emission goods and services using electricity.

Position Brazil as a hub for low-carbon products and services, while helping address the climate crisis.

CONTRIBUTIONS OF THE POWER SECTOR

01

The Coalition adopted the 2050 horizon, aligned with the climate-neutrality target set in Brazil's NDC

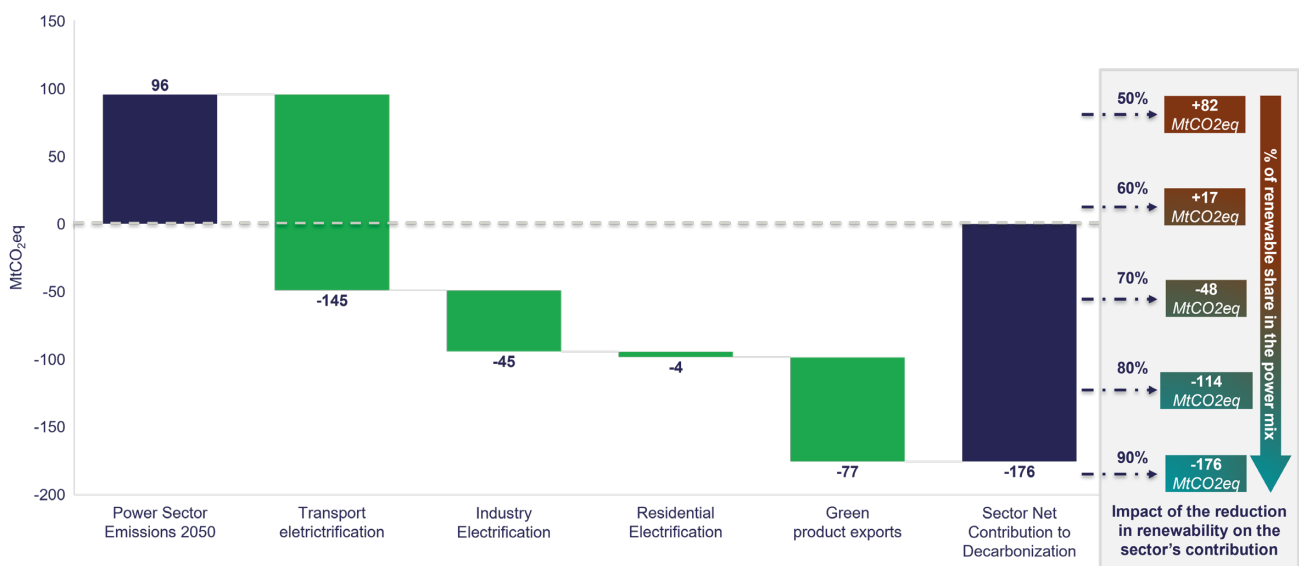
02

Within this horizon, the economically efficient expansion of the power sector can preserve a 90% renewable mix, with the potential to promote synergies for the national and global decarbonization of the economy by up to 176 MtCO₂ per year by 2050. This contribution represents 42% of current energy-sector emissions and 11% of Brazil's net emissions.

03

Preserving 90% renewability is essential. A reduction from this level would increase emissions (as highlighted on the right side of the chart), whereas economically achieving a share above 90% reduces emissions beyond 176 MtCO₂.

SYNERGY AND POTENTIAL OF THE POWER SECTOR IN REDUCING NATIONAL AND GLOBAL EMISSIONS



Source: PSR and Transport Coalition

WHY

CLEAN, COMPETITIVE AND RESILIENT ENERGY CAN TRANSFORM BRAZIL?

A combination of **vocation** and **capability** makes the Brazilian power mix comparatively better than that of many countries.

DIFFERENTIALS OF THE BRAZILIAN POWER SECTOR:

01

Abundant hydropower generation with storage, corresponding to most of national production, enabling production complementarity with other sources and the provision of multiple services to the system - 108 GW of installed hydropower capacity, with nearly 40 thousand km² of reservoirs.

02

Wind and solar sources with privileged natural resources, which enable production per installed MW above the global average. Declining investment costs benefit expansion with these sources.

03

Extensive, interconnected and reliable power grids that enable complementarity among generation sources. Investments of R\$ 405 billion in transmission over the last 25 years, and more than R\$ 30 billion per year in distribution, ensure expansion and provide reliability to the system.

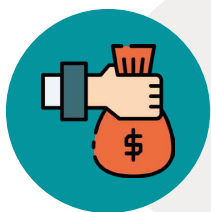
04

A substantial consumer market, with 99% universalization, more than 90 million consumers and an annual demand close to 700 TWh. Demand may potentially triple by 2050, with the synergistic interaction between new demand drivers and the Brazilian power mix.

05

A consolidated regulatory framework for more than 25 years, which secured significant expansion of system capacity during this period. The system has over 240 GW generation capacity and 200 thousand km high-voltage network.

CHALLENGES TO ENABLE THE TRANSFORMATION



SECTOR POLICIES THAT DISTORT INCENTIVES

Interventions in sector governance promote excessive subsidies. Also, public policies directed at polluting generation sources, or at sources that are already competitive, compromise the competitiveness and the preservation of renewability in the Brazilian power mix.



INEFFICIENT PRICE SIGNALS

Regulatory flaws affect economic signals and incentives, precluding the efficient use of system resources in power production, consumption and planning.



ADVERSE IMPACTS OF CLIMATE CHANGE

Climate change brings adverse effects that threaten the entire value chain of the power sector and its renewability.



HIGH ECONOMIC, SOCIAL AND CLIMATE INEQUALITY

Economic and social inequality limits access to energy and deepens regional disparities, while climate inequality intensifies the vulnerability of the most fragile populations to risks and to energy insecurity.



INSUFFICIENT FOCUS ON THE ROLE OF DEMAND

Sectoral policies have emphasized energy supply expansion, with limited instruments aimed at demand-side management and energy efficiency, whose protagonism could benefit the system.



ISOLATED SYSTEMS SUPPLIED BY FOSSIL FUELS

The supply to approximately 3 million people who are not connected to the National Interconnected System depends mostly on diesel oil, resulting in high costs and emissions per MWh of energy produced that are 13 times higher than the national average.

WHAT OUR AMBITIONS SHOW



01

Brazil can establish itself as a leading global actor in clean electricity, which can be expanded without subsidies.

02

Brazil must:

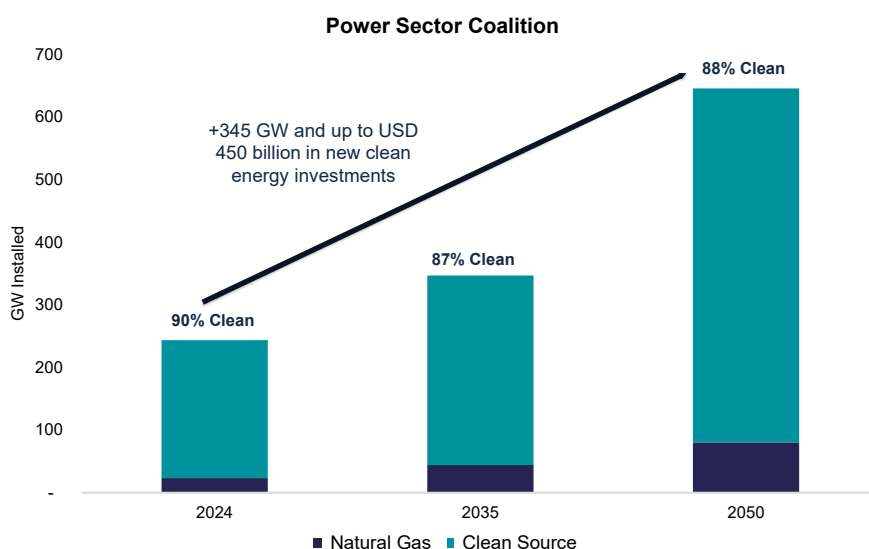
- Preserve what is already exemplary in the power sector;
- Neither create nor extend subsidies;
- Improve infrastructure planning and regulation to overcome climate and operational challenges and to innovate the sector;
- Direct efforts toward public policies that increase demand for electricity, decarbonize the economy and reduce inequalities, generating a social bonus.

03

Brazil can offer the world a “green bonus”: decarbonized and competitive products that reduce global emissions and drive and impact sustainable national development.

THE URGENCY OF THE PRESENT TIME

Meeting consumption growth and the electrification of the economy, while preserving the renewability of the power mix, implies installing an additional 345 GW¹ of clean energy² by 2050, based on economic criteria and respecting the role of all sources.



ACTIONS FOR NOW

Do not create or extend subsidies.

Ensure the economic-financial sustainability of the sector.

Modernize system user tariffs.

Prohibit compulsory contracting of resources not included in planning.

Promote policies to incentivize electrification.

Source: PSR Global Minimum-Cost Energy Planning.

¹ Additional demand for low-carbon products will increase this value.

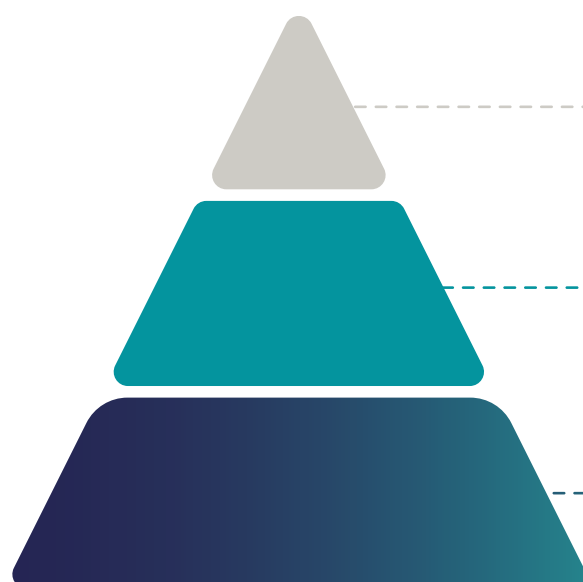
² Includes the expansion of wind, solar, hydro, storage, nuclear, biomass, and demand response.

EXPECTED RESULTS FOR THE POWER SECTOR IN 2050

NOW	2050
Subsidies paid by electricity consumers exceed R\$ 50 billion per year	Reduction of 90% of existing subsidies, prioritizing those with an exclusively social nature
Transport accounts for 14% of the country's net emissions	Electromobility could reduce Brazil's emissions by up to 145 MtCO ₂
Industrial energy consumption accounts for 4% of the country's net emissions	Electrification of industry could reduce Brazil's emissions by up to 45 MtCO ₂
Isolated systems, which supply 1% of the country's consumers, have 13 times higher emissions per MWh than the rest of the national system	Emission reductions through the conversion of fossil generation into hybrid solutions (renewables and gas/biomethane)
Brazilian households are still supplied with firewood, coal, and LPG	Two out of every three households will start using electricity in processes that currently rely on emitting sources, reducing emissions and providing health benefits to the population
Incipient use of storage to provide capacity, flexibility, and other services	Expansion of storage technologies, such as pumped-storage hydroelectric plants and batteries
Data center consumption in the country is negligible, and green hydrogen consumption is nonexistent	Addition of up to 50 GW of consumption with electrification of the economy, industry, and the consumption of data centers and green hydrogen
Advanced high-voltage grid technologies are still incipient in the country	Incentives for advanced technologies, improving planning and regulation, aiming at greater flexibility, agility, and resilience in transmission networks
Digitization of metering and grids is expanding, but still limited (only 5% of consumers with smart meters)	Expansion of digitization: grid automation, increased resilience, improved quality, greater operational efficiency, new tariffs, and services for consumers

PRINCIPLES AND STRATEGIC LEVERS TO GUIDE THE TRANSFORMATION

THE POWER SECTOR OPERATES AS INTERCONNECTED VESSELS: imbalances in specific points can compromise the entire system. Therefore, transversal principles have been established that function as vectors for levers and actions to be implemented by 2050.



AMBITIONS

Macro objectives of the **Electric Sector Coalition** with a focus on 2050.

LEVERS

Strategic and specific actions that translate into tools for the Power Sector to achieve its ambitions

PRINCIPLES

Vectors that structure the levers into modules, aligned with the **Coalition's** ambitions.

PRINCIPLES

GOVERNANCE

FAIR AND
SUSTAINABLE
ECONOMIC
FOUNDATIONS

INFRA-
STRUCTURE
RESILIENCE

INNOVATION
AND NEW
BUSINESS
MODELS



GOVERNANCE



Strengthen confidence and predictability in the power sector through a solid and coordinated institutional structure.

Agile mechanisms for resolving issues in the sector's value chain.

Regulatory predictability and legal stability.

Institutional respect and multisectoral dialogue.

Updated regulation for sustainable innovation.

Protective instruments to prevent the creation of new subsidies are needed.



FAIR AND SUSTAINABLE ECONOMIC FOUNDATIONS



Ensure an efficient environment for investments in supply and demand, strengthening power system security and resilience through improved price signals, tariff relief, and subsidy rationalization.

Reduction of existing subsidies and prohibition of new subsidies.

Improvement of price signals for efficiency and decarbonization.

Reduction of energy poverty through more affordable tariffs for low-income populations.

Preservation of the sector's economic and financial sustainability.

Carbon market to finance decarbonization policies and encourage innovation.

Optimization of resource attributes aligned with technological neutrality and system planning.



INFRASTRUCTURE RESILIENCE



Increase the power sector's capacity to adapt to the effects of climate change through economic rationality.

Improvement of climate forecasting, both in terms of measurement and modeling.

Incorporation of the effects of climate change into power system planning and operation.

Regulatory adjustments that allow for the financing of adaptation and mitigation needs.

Financing for climate adaptation to enhance the sector's resilience and adaptability.



INNOVATION AND NEW BUSINESS MODELS



Expand technologies and new business models that preserve renewability and drive electrification.

Dissemination of new technologies and services: efficiency, flexibility, storage, and consumer engagement.

Promotion of the role of demand as a protagonist in the country's energy transition, creating synergies between supply and consumption.

Digitization of grids, metering, and services.

Incentives for industrial and transport electrification.

Expansion of renewability in the Isolated Systems through the use of hybrid solutions.

Expansion of specialized workforce through training and job creation.



MAIN LEVERS BY THEMATIC AXIS



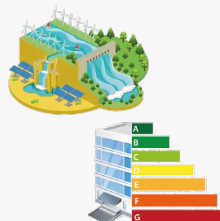
SEEK ACTIVE MANAGEMENT
BY DISTRIBUTORS OF
DISTRIBUTED ENERGY
RESOURCES



CREATE MECHANISMS
THAT ENCOURAGE ASSET
MODERNIZATION AND THE
OFFERING OF NEW SERVICES



STRENGTHEN THE
ECONOMIC SIGNAL
FOR THE LOCATION OF
SYSTEM USERS



ADOPT PUBLIC POLICIES AND
GREEN FINANCE, INCLUDING
THOSE THAT PROMOTE THE
ENERGY TRANSITION ON THE
NSUMPTION SIDE



EXPAND THE REACH OF
ENERGY EFFICIENCY
THROUGH DEMAND
MANAGEMENT MECHANISMS



IMPROVE THE COMPETITIVE
ENVIRONMENT FOR
TRANSMISSION AUCTIONS



STRENGTHEN
INFRASTRUCTURE TO
ENSURE ENERGY QUALITY
AND GREATER RESILIENCE



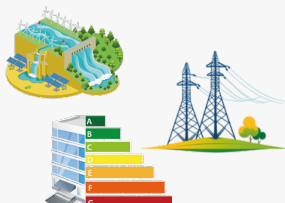
EXPAND FLEXIBILITY IN
CONTRACT MANAGEMENT
BY DISTRIBUTORS



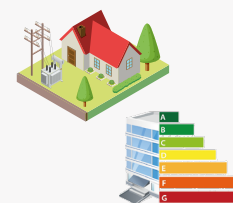
IMPROVE
COMMUNICATION
WITH THE CONSUMER



OPTIMIZE THE
ENVIRONMENTAL
LICENSING PROCESS



ENHANCE GOVERNANCE IN
ACCESS TO TRANSMISSION
NETWORKS



ADVANCE IN TAX
REDUCTION



GENERATION



TRANSMISSION



DISTRIBUTION



CONSUMPTION

The power sector coalition was enabled by 6 sectoral associations and mobilized more than **70 entities** for active discussions organized into **4 thematic pillars**



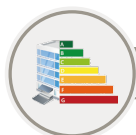
GENERATION - Coordination: ABRAGE



TRANSMISSION - Coordination: ABRATE



DISTRIBUTION - Coordination: ABRADDE



CONSUMPTION - Coordination: ABRACE



SUPPORTING

Master:



Gold:



Silver:



Support:



Our **COMPETITIVE
ENERGY** is clean



and our
CLEAN ENERGY
is competitive