



MESA REDONDA BRASIL: ENERGIA E SUSTENTABILIDADE

27-28 DE JUNHO DE 2023

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Event Summary Report

Introduction

On June 27-28, in collaboration with the Brazilian Center for International Relations (CEBRI), the Institute of the Americas co-hosted the Brazil Energy & Sustainability Roundtable in Rio de Janeiro.

Our discussions featuring representatives from industry, government and the private sector assessed and debated the mosaic of the Brazilian energy sector and role as a key stakeholder for global energy security across a wide range of energy sources, as well as Nature Based Solutions for emissions reduction. Add to Brazil's legacy low carbon electric matrix and prolific offshore oil and gas the potential for lithium, hydrogen, offshore and onshore wind, and the upside is clear.



But doubts around legal and regulatory certainty remain as key energy legislation has yet to pass Congress since President Lula took office in January. Further, Petrobras' pivot to embrace energy transition is also in early stages and how and to what extent hydrogen, advanced biofuels and offshore wind become commercialized by the NOC remains to be seen.

Nature Based Solutions could be one of Brazil's greatest opportunities to take the lead in a more sustainable development model. This path should include incentives for bioeconomy, industry decarbonization, and environmentally responsible agribusiness not connected with deforestation. In addition, Brazil still needs to improve technology for the forest-standing/low-carbon economy to equate it with the advanced technology the country already has for traditional land use.

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Most passionately debated at the Roundtable was the need to further leverage the country's immense talent for the workforce of the future and how to engender a workforce that more truly reflects Brazilian society in a more equitable manner.

Brazilian and International Energy Perspectives

The panel addressed the possibilities for scaling up the energy transition. At the center of the discussion was the issue of the "energy trilemma", which involves energy security, affordability, and sustainability. In times of crisis, different levels of priority are given to certain pillars of the trilemma. For example, the Russian invasion of Ukraine intensified the importance of this trilemma, especially regarding energy security.

The crisis revealed the fragility of dependence on specific energy sources, especially in the case of the European Union, which relied on Russian oil and gas. Governments' ability to respond was challenged, leading to significant responses and investments in restructuring key energy sources.

In the European Union alone, it is estimated that around 900 billion dollars have been invested to ensure energy security and reduce dependence on a single source or producer country. This process has resulted in a notable increase in investments in renewable energy and capacity expansion, while at the same time driving down Europe's dependence on oil and gas from Russia.



One speaker highlighted the relevance of oil and gas companies being concerned with the energy transition and reducing carbon emissions. Several reasons for this urgency were set forth from aligning with the goals of the Paris Agreement and global targets to combating global warming, to decreasing oil consumption and reducing operating costs by adopting cleaner energy sources. In addition, the growing pressure from financiers and investors for

companies to set concrete decarbonization targets was noted.

The role of hydrogen in the energy transition was also highlighted, describing it as a bridge that links Petrobras' renewable energy activities.

The panelists reinforced that the energy transition will depend on technologies and new economic activities that drive new renewable sources and decarbonization technologies, such as

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CCUS (Carbon Capture Use and Storage), as well as Green Hydrogen. One panelist underscored energy efficiency, renewable energy and increased electrification as key factors to achieve decarbonization.

Brazil is well positioned in the adoption of traditional renewables but lags behind in the development and implementation of these new technologies, despite its great potential to be a relevant player in the space.

In addition, the importance of the International Renewable Energy Agency (IRENA) in the energy transition process, which works to establish scenarios consistent with the Paris Agreement, was highlighted.

As for China's role in the global energy transition, one speaker noted that the country is fully committed to this transformation in virtually all sectors of the economy, including those that present the greatest challenge for mitigation. China has ambitious plans for increasing electric vehicle sales and has set targets to peak emissions by 2030 and achieve carbon neutrality by 2060. The changes implemented in the country could have a significant impact on the global energy value chain, with the potential to reduce renewable energy prices and accelerate the energy transition on a global scale.

Technology and Innovation: can Brazil be competitive?

The experts discussed Brazil's position in the global energy transition and the importance of innovative technologies to achieve carbon neutrality. The transition is not only energy -- innovations must also provide advances in the three dimensions of sustainability: environmental, economic and social, contributing to a just energy transition that reduces asymmetries between nations and increases equity among citizens across the globe.

One speaker highlighted the speed and importance of technologies in the context of the energy transition. Promising advances, such as sufficient electrical capacity to enable electric aviation and the trend to focus research and development on specific challenges, such as the efficient transfer of large amounts of electrical energy over long distances, were set forth in this context.

In addition, Brazil's potential to play a crucial role in the energy transition is clear. Yet, panelists highlighted the need to implement reforms that improve the business environment, including tax reform, as well as the creation of public policies aimed at sustainable development in the 21st century. Further noted was Brazil's energy surplus as an opportunity for export, especially to neighboring countries.

It was also underscored that the energy transition offers a unique opportunity to boost Brazil's reindustrialization and diversify its exports. The relevance of well-designed public policies to fully seize this opportunity was emphasized. It is important to establish competitive ecosystems of

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cooperation between the private sector and the community, which should be supported by public policies in line with this objective.

In addition, the importance of green industrial policies and the need for legislation on offshore wind, hydrogen and the carbon market were discussed. One speaker expressed concern about congressional decisions, especially regarding incentives for distributed solar generation and in terms of incentives for distributed solar generation within the scope of the Minha Casa Minha Vida program. The argument is that these technologies are already competitive on their own and do not need additional incentives.



These technologies do not require incentives to grow, generating potential market distortions. Specifically, regarding wind, it was mentioned that every day there are onshore wind farms that cut generation at the beginning of the day, showing that we have surplus to export.

Finally, Brazil's appeal as a favorite in offshore wind electricity auctions along with the potential to capture 6% of the world's green hydrogen demand was applauded. To consolidate this opportunity, however, public energy policies are needed and investor certainty with offshore wind regulation is necessary. One speaker mentioned ERM's Dolphyn project (Deepwater Offshore Local Production of Hydrogen) as an example of innovation, experimenting with the concept of hydrogen production from offshore wind generation, highlighting the need for innovation. They also emphasized the need for the industry to embed ESG (environmental, social and governance) aspects, given the increasing demand and pressure from investors, consumers, and regulators.

The fuel mix of the future in transportation: green molecules and electrons

The session and discussion included a thorough analysis of the feasibility of electric vehicles in the Brazilian transportation sector, as well as the use of green molecules as an alternative to conventional fuels. One panelist highlighted the crucial importance of infrastructure investments for the energy transition process. They warned that a reduction in investments in this area could be a significant obstacle.

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The focus turned to the electrification of the transport sector and the use of low-carbon fuels as key parts in this process. In addition, speakers emphasized Brazil's favorable position in adopting the electrification of bus fleets, seen as a logical choice due to the reduced Total Cost of Ownership (TCO) in this context.

The need for an approximate investment of R\$350 billion in infrastructure and stated that Brazil has the potential to be one of the first countries to achieve carbon neutrality was cited. Almost 60% of emissions in Brazil come from deforestation and land use while transportation only amounts to 13%. Therefore, Brazil can be one of the first countries in the world to achieve Net-Zero if the deforestation challenge is solved.

Another speaker addressed the issue of cost competitiveness in the context of electrification and decarbonization alternatives for the transport sector. They emphasized the relevance of the TCO concept for understanding the uptake of new technologies and pointed to bottlenecks and challenges such as access to capital, demand for charging capacity and domestic production of electric vehicles in Brazil.

Additionally, ethanol-powered cars were argued to have a lower carbon footprint than electric vehicles, when considering the full life cycle of the automobile and fuel. There is also the challenge of educating the public about the potential of sugarcane and biofuels. Consumers may not always be fully conversant in the potential of sugarcane and biofuels.

A major automaker in Brazil will focus on electric vehicles rather than hybrids, which represents an important step towards the ambitious plan to no longer sell combustion vehicles from 2045. The company has not yet made significant investments in Brazil for electrification, due to insufficient and suitable infrastructure.

In this sense, as panelists argued, electric vehicles are still more expensive than combustion vehicles and the models that thrive are usually linked to leasing or financing agents that remove several financial and logistical obstacles. The separation of the asset from the operation works with different timeframes and displays a financing architecture that supports the elimination of bottlenecks –this is how bus operations run.

The role of the oil and gas sector in the energy transition

The main points of debate revolved around the relevant role of the oil and gas (O&G) sector in the Brazilian economy, its contributions to financing the energy transition and the innovations needed for decarbonization. For the role of natural gas, the expression "bridge" was used between where we are and where we want to go, in terms of a greener lower carbon future.

Panelists analyzed how exploration and production activity in the country and the region would be affected in this context, as well as what could be expected in terms of climate policies,

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regulation, and environmental licensing. Policy decisions made now shape future possibilities and a decarbonized future is not necessarily a future without hydrocarbons.



Overall, panelists noted, there is a decline in the exploitation of fossil fuels as dependence on renewable energy increases globally. There is, one suggested, a certain inevitability of the energy transition and the need to contribute to global stability in this scenario. It is important

to emphasize that the energy transition must consider four pillars: energy security, sustainability, economic development with social inclusion, and ensuring competitiveness for Brazilian industry and society.

Regarding the National Agency of Petroleum, Natural Gas and Biofuels (ANP), it was argued that it should guarantee the security of energy supply throughout the national territory and reduce the asymmetry of information. The ANP is committed to the energy transition, having initiated an interdisciplinary working group to explore the potential of hydrogen.

Brazilian electricity sector: challenges and opportunities

The panel discussed the evolution of energy markets and their regulatory frameworks, the impact of subsidies on competitiveness in the sector and the need for openness in markets with centralized resources. The speakers highlighted the need to change the remuneration of hydroelectric plants to a model consistent with the functions they perform in the system, especially in the context of low energy prices. Also, the sector faces challenges related to lack of planning, oversupply, and low prices, which are ultimately passed on to the final consumer. In addition, many of the existing regulatory frameworks in Brazil are based on outdated operational models and logics, mainly from the 1990s. With the introduction of new technologies in generation, production, and distribution, it is necessary to have an agile regulatory approach to properly manage, if not correct the deficiencies, related to these new paradigms.

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Panelists agreed that the continued provision of subsidies for renewable energy sources such as solar and wind power has caused problems and in some cases distortions in the market. Hence, it is important to review subsidies that mask the value of energy and that are not transparent.

Brazil has a competitive advantage, as its matrix is almost 90% renewable and is considered “cheap,” so it does not need subsidies to expand. In this context, the

experts reaffirmed the need to promote relevant changes in regulation, dissolve unnecessary incentives, promote greater market opening and a more natural allocation of resources in the sector.

Regarding new vectors of electrification, one speaker described the next ten years as the decade of electrification, highlighting the potential of the transport sector and industry as vectors of this growth in Brazil.

Technology is still needed to support an open and efficient market, including ideally changing the way metering is done in Brazil. New services can be provided by distributors, but there is no incentive for them to do so. Also, the small consumer can be more efficient with digitalization, but today there are very few smart meters in Brazil, about 12 thousand in a universe of millions of meters in the country. In this sense, we can make bills cheaper through energy efficiency. To do so, a robust legal framework is needed.

There was consensus in the panel that this is an opportune moment for Brazil. The pandemic has brought logistical challenges, while the conflict in Ukraine has reduced investment interest in Russia. Brazil, in turn, becomes an attractive destination for green investments. The country has a great chance to advance in the world of decarbonization and digitalization.

Forests are part of the Brazilian solution: nature-based solutions and forest services

The panel began with the statement that one cannot talk about reducing greenhouse gas emissions in Brazil without addressing the need to eliminate deforestation. In Brazil, this is the key and central aspect of any emissions reduction discussion.

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For Brazil to achieve the goal of Net Zero by 2050, it is imperative to eliminate deforestation by 2028. To achieve this goal, it is essential to take strict measures to combat illegality and stop any unauthorized activity that could impede this transition.

There are several projects in Brazil with this ultimate goal. The panel highlighted the “Boi na Linha” project, which consists of inspecting and monitoring the adoption of the measures provided for in the Conduct Adjustment Agreement (TAC) signed by the Federal Public Prosecutor's Office and meatpacking plants located in the Amazon region.



This project has a partnership with the Brazilian Association of Meat Exporting Industries (ABIEC), aiming to expand the scope of the project to all exporting meatpackers in Brazil, adapting to the new traceability guidelines. Also, the Brazilian Federation of Banks (FEBRABAN) has a partnership with the project, committing itself not to grant financing to slaughterhouses that do not comply with the standards established by the TAC.

It was also highlighted that there is an extension of about 90 million hectares of degraded pastures in the country that have the potential to be recovered and used for agricultural purposes again. Thus, it is essential to adopt science-based strategies, while offering incentives that go beyond credit. This includes placing special emphasis on technical and productive assistance for small producers.

In this context, one panelist highlighted that the federal government recently announced the largest Safra Plan in Brazil's history. Minister Marina Silva disclosed specific measures aimed at low-carbon agriculture, highlighting the importance given to sustainability actions in the plan.

The panel also highlighted the Inflation Reduction Act in the United States and the European Green Deal. These are the two largest economic packages mobilizing countries and regions for a new economic model and have a huge impact for Brazil. We must reallocate subsidies, bring incentives to responsible agribusiness, think about bioeconomy and decarbonization of industry. It was emphasized that Brazil needs technological densification to export more than just commodities.

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Finally, the panelists agreed that Brazil is behind in regulating the carbon market. The country has great potential in this area but loses opportunities with the slowness of organization. Payment for environmental services is also very important. This market is the only chance for Brazil to reindustrialize with a social increase. Collaboration is needed for everyone to think together about this model.

Workforce of the Future: Diversity, equity and inclusion

The discussion was launched with critical data points: 56% of the Brazilian population is black, 28% of the population is composed of black women and less than 1% of leadership positions in Brazil are held by these black women.

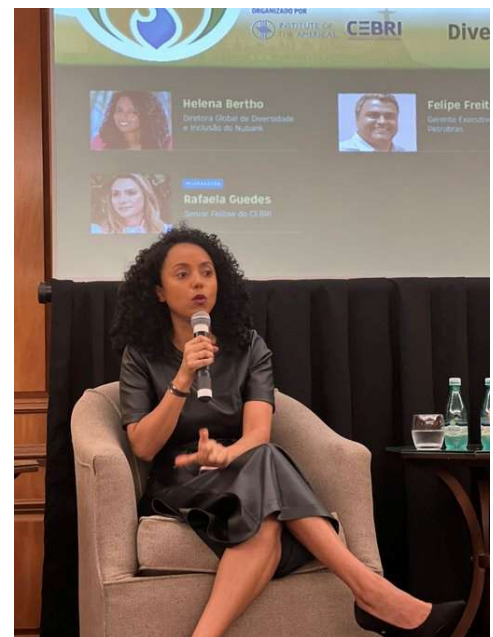
This data highlights the under-representation of this racial and gender profile. One speaker warned of the slow progression of gender and racial equity in leadership positions, which, according to the Ethos Institute, would only be achieved organically in 120 and 138 years, respectively.

The panel drew attention to the trend of lack of representation of black people in positions of power and highlighted the importance of diversity and inclusion as essential elements to promote innovation and broaden the range of experiences and perspectives in decision-making spaces.

It was also emphasized that the lack of qualification is not a valid argument to explain the under-representation of black people in leadership positions. One speaker stated that there is a problem of intentionality in Brazilian companies, which naturalize the absence of black people in their high-level staff.

An analysis of the origin of social inequality in Brazil was proposed, relating it to slavery, which served as the basis for an economic system that, in historical terms, can be considered relatively recent in the formation of the country. There are many forms of aggression that the black population suffers to this day. Multiple physical and moral aggressions throughout the day that need to be fought.

Empowering black people to develop the country is the only way out. In this sense, it is necessary to recognize the importance of the role of public authorities, private organizations and academia in the process of promoting diversity and inclusion.



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In general, there is an urgent need to transform and rebuild the internal structures of Brazilian companies in relation to diversity and inclusion. The Oil and Gas sector in particular has historically had a male predominance and is permeated by a male chauvinism rooted in its structures.

The wish was expressed that, in an ideal future, the diversity, equity and inclusion departments of companies be eliminated because they have already been fully incorporated into the company. These departments are the way forward, not an end in themselves. It was also emphasized that people want to be treated as individuals, regardless of any demographic attribute.

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The Institute of the Americas extends its sincere appreciation to our colleagues at CEBRI for their support and partnership in the realization of the Roundtable. In addition, we recognize and thank Tamara Handfas, a graduate student at the University of California San Diego School of Global Policy and Strategy (GPS), for her support and excellent work to prepare and write this English language summary report based upon discussions at the Roundtable.

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