

REVISTA DE DIREITO INTERNACIONAL
BRAZILIAN JOURNAL OF INTERNATIONAL LAW

Balancing growth and responsibility: a review of Brazil's offshore wind farm regulation

Equilíbrio entre crescimento e responsabilidade: uma análise da regulamentação brasileira relativa aos parques eólicos offshore

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VOLUME 22 • N. 2 • 2025
THE COMMON HERITAGE OF MANKIND IN
INTERNATIONAL LAW: PAST, PRESENT AND FUTURE

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Danielle Anne Pamplona **

Abstract

This article examines the regulatory framework for offshore wind farms in Brazil, focusing on the potential socio-environmental and human rights impacts associated with this rapidly growing sector. Brazil, with its extensive coastline and favorable conditions, holds vast potential for offshore wind energy. However, while the newly enacted legislation provides for environmental impact assessments (EIA) to mitigate environmental risks, it lacks explicit provisions for human rights due diligence on its own activities and in the supply chain. This omission is significant given the socio-economic disruptions that offshore wind farms can introduce, such as impacts on fishing communities and cultural heritage sites, as well as the broader implications of sourcing materials like lithium, crucial for turbine production, with known environmental and human rights concerns. The analysis aligns the legislation with international standards, such as the UN Guiding Principles on Business and Human Rights, emphasizing the state's duty to prevent human rights abuses by private entities through appropriate regulation and corporate responsibility to respect rights. The article argues that effective regulation should have extended beyond EIAs to include comprehensive human rights safeguards also along the supply chain, ensuring that offshore wind energy remains a truly sustainable alternative; and, in the absence of such regulations, companies must still observe their responsibility to respect internationally recognised human and environmental rights. The findings suggest that while Brazil's regulatory efforts are commendable, a more robust framework addressing both local and supply chain impacts would have been essential for aligning the country's renewable energy expansion with global human rights and sustainability standards.

Keywords: offshore wind energy; human rights due diligence; Environmental Impact Assessment (EIA); socio-environmental impacts; sustainable energy regulation.

* Recebido em: 04/12/2024.
Aprovado em: 05/05/2025.

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Resumo

Este artigo examina a estrutura regulatória dos parques eólicos offshore no Brasil, com foco nos possíveis impactos socioambientais e nos direitos humanos associados a esse setor em rápido crescimento. O Brasil, com seu extenso litoral e condições favoráveis, tem um grande potencial para a energia eólica offshore. No entanto, embora a legislação recém-promulgada preveja avaliações de impacto ambiental (EIA) para mitigar os riscos ambientais, ela carece de disposições explícitas para a devida diligência em direitos humanos em suas próprias atividades e na cadeia de suprimentos. Essa omissão é significativa, considerando as interrupções socioeconômicas que os parques eólicos offshore podem causar, como impactos sobre as comunidades pesqueiras e locais de patrimônio cultural, bem como as implicações mais amplas do fornecimento de materiais como o lítio, crucial para a produção de turbinas, com preocupações conhecidas sobre direitos humanos e ambientais. A análise alinha a legislação aos padrões internacionais, como os Princípios Orientadores das Nações Unidas sobre Empresas e Direitos Humanos, enfatizando o dever do Estado de evitar abusos de direitos humanos por entidades privadas por meio de regulamentação adequada e responsabilidade corporativa de respeitar os direitos. O artigo argumenta que a regulamentação eficaz deveria ter se estendido além dos EIAs para incluir salvaguardas abrangentes de direitos humanos também ao longo da cadeia de suprimentos, garantindo que a energia eólica offshore continue sendo uma alternativa verdadeiramente sustentável; e, na ausência de tais regulamentações, as empresas ainda devem observar sua responsabilidade de respeitar os direitos humanos e ambientais reconhecidos internacionalmente. As conclusões sugerem que, embora os esforços regulatórios do Brasil sejam louváveis, uma estrutura mais robusta que abordasse os impactos locais e da cadeia de suprimentos teria sido essencial para alinhar a expansão da energia renovável do país aos padrões globais de direitos humanos e sustentabilidade.

Palavras-chave: energia eólica offshore; due diligence em direitos humanos; Avaliação de Impacto Ambiental (EIA); impactos socioambientais; regulamentação de energia sustentável.

1 Introduction

The race to generate renewable energy is nothing new. Science has been informing us for years¹ about the possibility of climate change with drastic consequences for the world's population, and the causes are closely related to the exploitation of fossil fuels. Research has informed discussions, voluntary documents and international conventions drawn up at the United Nations Organisation for years².

The effects of generating energy from fossil fuels are widely discussed in the literature. Environmental concerns related to the exploitation and degradation of natural resources, which began to gain momentum in the 1970s, have intensified over time, especially with the identification of climate change caused by human actions. On the international stage, the United Nations has worked hard to raise awareness among governments and civil society about the importance of the issue and, progressively, its urgency. The creation of the IPCC represents a significant milestone in recognising the need to integrate scientific knowledge into the debate. Today, there is no longer any controversy about the role of humanity, especially large corporations, in greenhouse gas emissions.

The development of new energy generation models, driven by scientific advancements, opens fresh avenues for economic growth. Currently, the world is moving from fossil fuel dependency to “clean” energy sources, spurred by the urgent need to reduce greenhouse gas emissions resulting from fossil fuel combustion. These emissions, particularly from oil and its derivatives, have accelerated climate change at a worrying rate, posing significant risks to humanity's future.

However, this energy transition is complex, involving political, economic, and social challenges. Clean energy generation—such as wind, solar, and hydropower—demands vast land areas, specialized technology, and access to “critical minerals” necessary for manufacturing essential components like lithium-ion batteries, wind turbines, and solar panels. These resources are indispensable for the transition but also raise

¹ ENERGIA eólica, os bons ventos do Brasil. *ABEEólica*, 2023. Available at: <https://abeeolica.org.br>.

² 1987 Montreal Protocol, 1997 Kyoto Protocol, 2015 Paris Agreement are only examples of the documents produced internationally regarding environmental action and climate change.

considerations around environmental impact, resource management, and global supply chains³.

One of these models that responds to the need to change energy matrices is represented by wind farms. The so-called wind farms can be located on land or at sea, in other words, they can be on-shore or off-shore.

The first wind farm in Brazil was installed in 1992 and investment in the sector was small until, in 2009, under the Incentive Programme for Alternative Sources of Electricity - PROINFA, the business began to grow with the holding of auctions to sell this energy. The generation of onshore wind energy began at the end of the first decade of the 2000s and, from the middle of the following decade onwards, there was a boom in the installation of wind farms, reaching 883 farms in operation today⁴. Today, 50 per cent of the country's energy is generated by hydroelectric plants and wind farms are in second place, accounting for 15 per cent of the annual total generated. According to a report by the Global Wind Energy Council, Brazil was the third country to install the most wind farms in 2023⁵.

Brazil notably has favourable characteristics for the installation and operation of offshore power generation projects⁶. With 7,367 km of coastline and 3.5 million km² of maritime space under its jurisdiction, the country has an extensive continental shelf, with shallow waters along the coast, which makes it easier to install blades. Add to this the high incidence of trade winds, with constant intensity and direction, and you have the perfect physical conditions for exploring offshore wind projects. Brazil's offshore wind energy potential exceeds 1,200 GW, with 480 GW coming from fixed foundations and 748 GW from floating foundations. Add to

this the fact that the country is still very dependent on hydroelectric power generation⁷, which can be greatly impacted by climate change as it depends on river water levels. The result is the obvious economic interest that this activity can generate.

We are dealing with a new business that has not yet been explored in the country and is subject to new regulations. As an economic activity, it is subject to constitutional rules and whatever else is available from the international forum to provide regulation. On the domestic front, however, there are still no rules.

There is, however, a bill that has already been approved by the Chamber of Deputies and is now awaiting approval by the Federal Senate. As it is the first Brazilian legislative framework on the subject, it is important to assess how much it is in line with the most advanced regulatory frameworks.

This text analyses the bill from the perspective of the potential for human rights and environmental impacts resulting from the activity it regulates. It analyses the UN Guiding Principles on Business and Human Rights and what has already been explored by the Inter-American Court of Human Rights (IA Court) in Advisory Opinion 23/2017⁸. In the end, it concludes that the bill under discussion in the Senate falls far short of the current stage of development about respect for human and environmental rights by companies.

2 The impacts of offshore wind farms

Although wind is considered a renewable and clean source of energy, as well as being a more sustainable alternative to fossil fuels, its energy utilisation is not completely free of environmental impacts.

The negative impacts of building offshore wind farms have already been documented by science. Marine fauna

³ CEPAL analizó los desafíos de la extracción de minerales críticos para la transición energética durante el Foro de los Países de América Latina y el Caribe sobre Desarrollo Sostenible 2023. *CEPAL*, 7 July 2023. Available at: <https://www.cepal.org/es/notas/cepal-analisis-desafios-la-extraccion-minerales-criticos-la-transicion-energetica-durante-foro>.

⁴ EMPRESA DE PESQUISA ENERGÉTICA (Brasil). Plataforma Interativa de Energia Eólica Onshore no Brasil. *EPE*, 2024. Available at: <https://www.epe.gov.br/pt/publicacoes-dados-abertos/publicacoes/plataforma-interativa-de-energia-eolica-onshore-no-brasil>.

⁵ GLOBAL WIND ENERGY COUNCIL. *Global Wind Report 2024*. Brussels: GWEC, 2024. Available at: <https://gwec.net/global-wind-report-2024/>.

⁶ In the bill, offshore activity is conceptualised as follows: 'Offshore concept: area of the Territorial Sea, Continental Shelf, Exclusive Economic Zone (EEZ) or other body of water under the domain of the Federal Government of the Union.'

⁷ EMPRESA DE PESQUISA ENERGÉTICA (Brasil). *Balanco Energético Nacional 2023*. Rio de Janeiro: EPE, 2023. Available at: <https://www.epe.gov.br/sites-pt/publicacoes-dados-abertos/publicacoes/PublicacoesArquivos/publicacao-748/topico-687/BEN2023.pdf>.

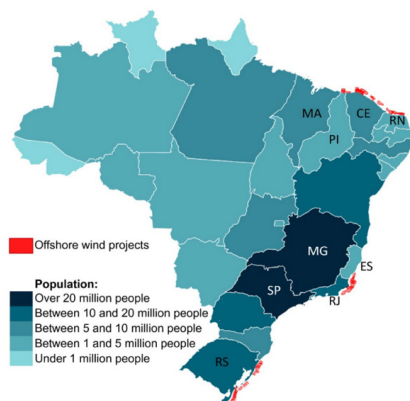
⁸ This AO was requested by Colombia in 2016 and asked about the scope of application of state obligations related to the protection of the environment derived from the American Convention and the obligations of states in the field of the environment, within the framework of the protection and guarantee of the rights to life and personal integrity.

and the structure of ecosystems are greatly affected, as are birds that may see their migratory corridors reduced or eliminated⁹, and the impacts are realised through 'habitat loss, collision risks, noise and electromagnetic field impacts, introduction of invasive species and visual or aesthetic impacts which may affect both human and animal populations in the vicinity of OWF turbines'¹⁰.

At all times, it is necessary to ask whether the installation, exploitation and decommissioning of wind farms does not destroy the different ecosystems affected. After all, the exploitation of this type of energy generation is done precisely to protect all ecosystems from climate change.

In Brazil, the great potential for energy generation in offshore wind farms is divided into three regions, as shown in the map below:

Figure 1 - Proximity of potential offshore exploration sites to the population



Source: World Bank, 2024.¹¹

⁹ LLORET, Josep; TURIÉL, Antonio; SOLÉ, Jordi; BERDALET, Elisa; SABATÉS, Ana; OLIVARES, Alberto; GILI, Josep-Maria; VILA-SUBIRÓS, Josep; SARDÀ, Rafael. Unravelling the ecological impacts of large-scale offshore wind farms in the Mediterranean Sea. *Science of The Total Environment*, v. 824, 2022. DOI: <https://doi.org/10.1016/j.scitotenv.2022.153803>. WWF. *Environmental impacts of offshore wind power production in the north sea: a literature overview*. Oslo: WWF, 2014. Available at: <https://tethys.pnnl.gov/sites/default/files/publications/WWF-OSW-Environmental-Impacts.pdf>. GALPARSORO, I. *et al.* Reviewing the ecological impacts of offshore wind farms. *Ocean Sustain*, v. 1, n. 1, 2022. DOI: <https://doi.org/10.1038/s44183-022-00003-5>.

¹⁰ WATSON, Stephen C. L.; SOMERFIELD, Paul J.; LEMASSON, Anaëlle J.; KNIGHTS, Antony M.; EDWARDS-JONES, Andrew; NUNES, Joana; PASCOE, Christine; MCNEILL, Caroline Louise; SCHRATZBERGER, Michaela; THOMPSON, Murray S. A.; COUCE, Elena; SZOSTEK, Claire L.; BAXTER, Heather; BEAUMONT, Nicola J. The global impact of offshore wind farms on ecosystem services. *Ocean & Coastal Management*, v. 249, 2024.

¹¹ WORLD BANK. *Scenarios for offshore wind development in Brazil: executive summary*. 2024. p. 15.

The World Bank report is very instructive because, as well as investigating and reporting on the optimum conditions for energy generation in the different locations along the coast, it also identifies the potential impacts of each region. The two regions with significant socio-environmental impacts are the north-east and the south. In the north-east, the report indicates that “there are significant artisanal and commercial fishing areas near to these zones, as well as significant tourism activities. As such, it is expected that social sensitivities will be high, requiring careful consideration”¹². In the south, the report indicates that the area “is located almost entirely within an Ecologically or Biologically Significant Area (EBSA) which increases the need for risk mitigation and careful designation of development zones”¹³.

Although the environmental impacts caused by onshore wind farms are clear, largely due to the widespread use of the technique, for offshore wind turbines there are still doubts about the type and magnitude of the environmental impacts caused by their implementation and use. There are still few scientific conclusions about cumulative impacts¹⁴ and the lack of consensus on the subject has motivated and continues to motivate the adoption of various measures to mitigate environmental impacts¹⁵.

Not enough is known about the magnitude of the environmental impacts caused by the installation and operation of wind turbines, especially in areas beyond the Territorial Sea. Among the main points of concern are the noise and vibrations generated during the foundation works (pile-driving noise) and the operation of the wind turbines, the alteration of geomorphology, the

¹² WORLD BANK. *Scenarios for offshore wind development in Brazil: executive summary*. 2024. p. 15.

¹³ WORLD BANK. *Scenarios for offshore wind development in Brazil: executive summary*. 2024. p. 15.

¹⁴ Those that result from additive impacts caused by other past, present or reasonably foreseeable actions, together with the plan, programme or project itself and Synergistic Impacts (in-combination) that arise from the reaction between impacts of a development plan, programme or project on different aspects of the environment. RENNEWABLEUK. *Cumulative impacts assessment: guiding principles for cumulative impacts assessment in offshore wind farms*. London: RenewableUK, 2013. Available at: <https://tethys.pnnl.gov/sites/default/files/publications/Cumulative-Impact-Assessment-Guidelines.pdf>.

¹⁵ WILLSTEED, Edward A.; JUDE, Simon; GILL, Andrew B.; BIRCHENOUGH, Silvana N. R. Obligations and aspirations: a critical evaluation of offshore wind farm cumulative impact assessments. *Renewable and Sustainable Energy Reviews*, v. 82, part 3, p. 2332-2345, 2018.

impacts on the seabed due to the installation of electricity transmission cables and the potential harmful effects of the electromagnetic field generated. Birds, fish, aquatic mammals and corals may be affected to a degree that is still unclear by the installation and operation of offshore wind turbines. Experience with onshore wind turbines has shown that installations often coincide with migratory bird routes, requiring the adoption of mitigating measures to ensure that the wind potential is utilised in a way that does not harm the local fauna (and flora). In the case of offshore wind farms, in addition to birds, corals, migratory and straddling fish and especially aquatic mammals are also impacted, particularly by the noise generated by pile-driving.

It is true that the health of coastal communities depends on a balanced marine environment. If not managed properly, these projects can interfere with marine fauna and flora, which can impact fishing and biodiversity, affecting the food and health of local communities. In addition, noise and vibrations generated by turbines during construction and operation can impact marine life and, consequently, the economic activities and livelihoods of those who depend on the sea's resources. But the impacts are not only environmental. Human rights impacts are also foreseeable and cover social and economic issues that affect local communities, workers and the coastal ecosystem, as well as indirect impacts caused by damage to the environment. There are positive impacts, such as job creation, but it is the negative ones that are of interest here, as the text seeks to assess the bill's ability to address them, especially through prevention.

The communities' negative perception of the installation of these offshore farms is very much based on the environmental damage, the loss of value of the properties near the farms - including the decrease in tourism; the potential increase in the cost of energy; and the impacts on fishermen¹⁶. However, there are other impacts that must be considered if respect for human rights is to be taken seriously.

¹⁶ CIARA, E.; GARCIA, T.; ORTEGA, C.; RICHMOND, L. Social impacts to other communities that experienced offshore wind. In: SEVERY, M.; ALVA, Z.; CHAPMAN, G.; CHELI, M.; GARCIA, T.; ORTEGA, C.; SALAS, N.; YOUNES, A.; ZOELLICK, J.; JACOBSON, A. (ed.). *California North Coast Offshore Wind Studies*. Humboldt, CA: Schatz Energy Research Center, 2020. Available at: <https://schatzcenter.org/pubs/2020-OSW-R20.pdf>. p. 6-8.

The installation and operation of offshore wind farms can generate direct and indirect jobs in the regions where they are implemented, offering opportunities in the construction, operation and maintenance phases. However, they can also impact traditional economic activities, such as fishing and tourism, which depend on free access to the sea and a healthy marine ecosystem.

The obstruction of fishing areas or the degradation of marine resources can reduce the livelihoods of local fishermen¹⁷, jeopardising their right to work and their livelihoods¹⁸. The right to participation must be ensured for communities living in regions close to the installation areas of such projects, especially to verify whether and to what extent the projects interfere with their economic activities or quality of life. The right to participation is essential to ensure that communities' needs and concerns are heard, and that they have a real influence on the decision-making processes that affect their lives and territories.

If the sea and its coastal zones have profound cultural and spiritual meanings for the local inhabitants, the installation of offshore power plants could potentially alter areas of cultural importance, as well as modifying the marine landscape, which affects the identity and cultural connection of the populations with the territory.

Operating offshore wind farms requires skilled labour and exposes workers to challenging conditions, including isolated environments subject to inclement weather, so it is also necessary to plan mechanisms to guarantee safety at work in order to prevent accidents and ensure that workers' rights are respected. The significant changes brought to the site by major infrastructure projects must also be evaluated. The arrival of new workers and investments can cause changes in social dynamics and the local economy, such as inflation in the cost of living, increases in land prices and rents, and an increase in demand for infrastructure and basic services.

¹⁷ SINCLAIR, M. *et al.* Responsible fisheries in the marine ecosystem. *Fisheries Research*, v. 58, n. 3, p. 255-265, 2002.

¹⁸ European regulations, for example, limit the mobility of fishermen to 500 metres away from offshore farms. CIARA, E.; GARCIA, T.; ORTEGA, C.; RICHMOND, L. Social impacts to other communities that experienced offshore wind. In: SEVERY, M.; ALVA, Z.; CHAPMAN, G.; CHELI, M.; GARCIA, T.; ORTEGA, C.; SALAS, N.; YOUNES, A.; ZOELLICK, J.; JACOBSON, A. (ed.). *California North Coast Offshore Wind Studies*. Humboldt, CA: Schatz Energy Research Center, 2020. Available at: <https://schatzcenter.org/pubs/2020-OSW-R20.pdf>. p. 5.

All these factors have a direct impact on the economic and social rights of local populations.

So many are the potential impacts of this economic activity that it is necessary to ask whether the regulatory frameworks are prepared to deal with the scenario, from the point of view of preventing the installation of activities and monitoring their impacts. In this sense, the legal instruments present in international and foreign law that aim to guarantee respect for human and environmental rights by economic activities deserve a problematised analysis. It is known that, in Brazil, 'The electricity matrix reached the mark of nearly 84% from renewable sources, establishing the country as an international reference in clean energy transitions', but is this growth accompanied by due respect for human and environmental rights? Let's look at the regulation of a specific type of clean energy generation, offshore wind farms.

3 The regulation of offshore wind farms in Brazil

Any economic activity with the potential to negatively impact rights attracts the application of the UN Guiding Principles on Business and Human Rights. They prescribe that companies must adopt measures that demonstrate that they respect rights, and that States must protect people by adopting measures that guarantee such business conduct. States must adopt any administrative, judicial or enforcement measures that can induce respectful business behaviour, avoiding or preventing negative impacts. The Principles are voluntary in nature, but as they do not innovate by creating new obligations for companies and they convey known content, it is not beyond their scope to state that companies operating offshore energy generation activities must comply with their precepts.

This means that it is up to the state to adopt measures that indicate to companies what behaviour they should adopt to respect rights. One of the ways to do this is to draw up laws that impose precautions to prevent impacts, as well as to mitigate them. Regulation is always frowned upon from the point of view of entrepreneurs who aim for a quick return on their investments¹⁹, but

this doesn't always reflect reality and shouldn't be enough to curb the care that must be taken to ensure that human and environmental rights are respected.

The exploitation of offshore energy generation is a relatively new activity that can start off well-regulated in material terms. In fact, by incorporating existing scientific studies, the legislature has an excellent opportunity to demonstrate how committed it is to the constitutional rules that establish respect for the environment and people.

Very recently, in Brazil, a decree²⁰ was issued on the assignment of the use of physical spaces and the utilisation of natural resources in inland waters under the control of the Union, in the territorial sea, in the exclusive economic zone and on the continental shelf for the generation of electricity from offshore projects. This decree establishes that the assignment of the use of physical spaces for the installation of offshore generation project must seek to promote sustainable development; the generation of employment and income; local and regional development, preferably with actions that reduce inequality and promote social inclusion, diversity and technological evolution; the harmonisation of the use of maritime space, in order to respect activities that have the sea and marine soil as a means or object of affectation; and responsibility for the impacts resulting from the exploitation of the energy generation activity.

Assignments of use follow two regimes: either it is a planned assignment, which consists of offering prisms²¹ previously delimited by the Ministry of Mines and Energy to possible interested parties; or it is an independent assignment, when it arises from a request from those interested in exploring a prism themselves.

ciples for cumulative impacts assessment in offshore wind farms. London: RenewableUK, 2013. Available at: <https://tethys.pnnl.gov/sites/default/files/publications/Cumulative-Impact-Assessment-Guidelines.pdf>.

²⁰ BRASIL. *Decreto nº 10.946, de 25 de janeiro de 2022*. Dispõe sobre a cessão de uso de espaços físicos e o aproveitamento dos recursos naturais em águas interiores de domínio da União, no mar territorial, na zona econômica exclusiva e na plataforma continental para a geração de energia elétrica a partir de empreendimento offshore. Available at: https://www.planalto.gov.br/ccivil_03/_ato2019-2022/2022/Decreto/D10946.htm.

²¹ According to Article 2, II of the abovementioned Decree, a prism is a vertical area of depth coinciding with the seabed, with a polygonal surface defined by the geographical coordinates of its vertices, where electricity generation activities can be carried out.

¹⁹ RENEWABLEUK. *Cumulative impacts assessment: guiding prin-*

In order for the assignment to be authorised, different bodies must issue a Declaration of Prior Interference - DIP, with the aim of identifying whether the prism will interfere with other installations or activities. It will be up to the Navy Command to assess compliance with the maritime authority's rules on safeguarding human life, safety of navigation and prevention of water pollution, and the absence of damage to the planning of waterway traffic and national defence. Besides that, the Chico Mendes Institute for Biodiversity Conservation must provide information if the area is located in a conservation unit or if there is a conservation unit nearby and on the possible future uses of the area; the Ministry of Agriculture, Livestock and Supply must assess the possibility of interference in areas given over to aquaculture or fishing routes in the prism region and the possible future uses of the area; the Ministry of Tourism must assess the possibility of conflicts with tourist areas or the impact on the landscape of a contemplative tourist region that requires greater distance from the coast and the possible future uses of the area. There is a shared responsibility between different bodies, which is positive given their specialisation and greater capacity to assess such issues. This all precedes the implementation of a project.

Given these requirements, it is possible to conclude that, from a socio-environmental point of view, there are some relevant elements that will be assessed in the process: location of the prism in a conservation unit; interference with aquaculture or fishing routes; and conflict with exploitation of the space for tourism purposes. The Decree, however, does not establish rules for defining what should be done with this information and what result is required if one of these scenarios occurs. In other words, for example, it is not clear what can happen if the DIP identifies that the area of exploitation, the so-called prism, is overlapping with a fishing area of the communities established on the waterfront.

For three years a legislative complement has been under discussion in the Brazilian Parliament and in February 2025, law 15.097²² has been passed aiming to re-

gulate the utilisation of offshore energy potential. This law can be evaluated from two perspectives: the first is to assess the general principles it lays down and the existence of mechanisms for their realisation; the second is to assess the way in which the text deals with the duty to prevent impacts. We'll do both.

3.1 The general principles established in the regulatory framework

The law lays down the principles²³ and foundations for the exploration and development of energy generation from offshore installations. In this sense, the projects must promote sustainable development with social inclusion and reduce carbon emissions on the energy production process. It also establishes as principle harmonisation of knowledge, mentality, routine, traditional ways of life and customs, and maritime practices with respect for activities that have the sea and the seabed as their medium and the principle of transparency as means to guaranteeing the public interest. Finally, it establishes civil responsibility for the impacts and externalities generated by the project²⁴.

By establishing that the undertakings covered by this framework must promote sustainable development, social inclusion and the fight against global warming, the law establishes clear guidelines that allow for interpretation and application of the rules. When in doubt, priority must be given to contexts in which sustainable development - and not economic development - is achieved; the application of the law must not be carried out to the exclusion of groups and undertakings must not contribute to the marginalisation of people; and, at the heart of the text, there is an interest in reducing the causes of global warming, after all, this is a regulatory framework for clean energy.

When the law establishes local and regional development as an objective, preferably with actions that reduce inequality and promote social inclusion, through transparency and popular participation, it is in line with UNGP 18, which dictates the need for affected groups or other interested third parties to be included in the processes of identifying and assessing potential or actual impacts. Similarly, in the AO 23/2017, the IA Court states that it is the duty of the State to guarantee

²² BRASIL. *Lei nº 15.097, de 10 de janeiro de 2025*. Disciplina o aproveitamento de potencial energético offshore; e altera a Lei nº 9.427, de 26 de dezembro de 1996, a Lei nº 9.478, de 6 de agosto de 1997, a Lei nº 10.438, de 26 de abril de 2002, a Lei nº 14.182, de 12 de julho de 2021, e a Lei nº 14.300, de 6 de janeiro de 2022. Available at: http://www.planalto.gov.br/ccivil_03/_ato2023-2026/2025/lei/L15097.htm.

²³ Art.4 states ten different principles.

²⁴ Art.12, VI.

the public participation of people in decision-making that may affect the environment. The IA Court also recognises that such qualified participation can only take place if the right to information is guaranteed. This imposes a duty on states to provide mechanisms that allow people to request information and a duty to provide it in an accessible, effective and timely manner²⁵. In fact, the law calls for free, prior and informed consent to ensure the participation of impacted communities, what could allow obstacles to be identified and the impact on fishing and extractive activities to be reduced as little as possible. It should be noted, however, that there is no room for not carrying out the project, since public consultation can only lead to the greatest possible reduction in impacts.

In relation to the responsibility for the impacts and externalities resulting from the exploitation of energy generation activities, there is also synergy with the UNGPs which establish that business activities must provide mechanisms for reparation, or collaborate in the operation of existing mechanisms, whenever the negative impact cannot be prevented (UNGP 29). To concretise this principle, the law establishes civil liability for the acts of employees and the duty to compensate for any damage resulting from electricity generation and transmission activities. There is no mention, though, to any responsibility arising from human rights abuses caused by the company, or that it had contributed or linked to.

Thus, it can be stated that the general principles enshrined in the law fall short of the standards set by the UNGPs and the rulings of the Inter-American Court. There remains ample room for progress, both in the development of mechanisms to ensure compliance with these principles and in the responsibility of corporations to step forward and fulfill their role.

3.2 The duty to prevent the impacts of offshore energy generation projects

The obligation of states to protect human rights is well-established, is the foundation of international human rights law and serves as the basis for the construction of regulations and public policies at national level²⁶.

Guiding Principle 1 reinforces the idea - already present in the International Covenants on Civil and Political and on Economic, Social and Cultural Rights - that this obligation implies the need to regulate private entities. In this sense, Principle 1 states that 'States must protect against human rights abuses in their territory and/or jurisdiction by third parties, including companies. This requires the adoption of appropriate measures to prevent, investigate, punish and redress such abuses through effective policies, legislation, regulations and judgments'.

This obligation is not restricted to passive protection, but implies positive and proactive action by the state, especially when it comes to regulating the activities of private entities such as companies. This regulation is essential to ensure that economic activities do not generate human rights abuses, thus placing a direct responsibility on the state to prevent and mitigate possible violations.

By creating regulations, the state must induce responsible behaviour on the part of companies to prevent their activities from having a negative impact on human rights. In practice, this requires a robust system of regulation that defines clear and enforceable standards aimed at identifying and preventing risks in economic sectors that could in some way expose individuals or communities to rights abuses. Measures such as requiring human rights due diligence processes, creating obligations for companies to identify and prevent risks and imposing sanctions in cases of non-compliance are instruments with which the state can induce such preventive behaviour.

There are cases in which the prevention of negative impacts may prove insufficient or even unfeasible, either due to the nature of the business activity or the context in which it takes place. In these situations, the state's obligation extends to requiring mitigation and dealing with the impacts caused. This means that the state must not only regulate the installation and execution of the activity and impose preventive regulations, but also monitor it and demand that companies adopt plans to mitigate, compensate and repair the damage caused.

All this can and should be done in the bill under discussion. In fact, since it is the regulatory framework for this activity, the ideal thing is for the state to already

²⁵ AO 23/2017, 221-222.

²⁶ SCHUTTER, Olivier de. *International human rights law*. Cambridge: Cambridge University Press, 2014. p. 427-526.

clarify what expectations it has of those who are going to exploit this activity.

3.3 Establishing prevention: regulatory and environmental assessment requirements for offshore wind projects

The business responsibility to prevent is also recognised by UNGP 13 and this creates an obligation for the state to regulate preventive mechanisms that must then be adopted by companies. One of the mechanisms widely used to prevent impacts on the environment is the Environmental Impact Assessment (EIA), which in Brazil is provided for in the Federal Constitution²⁷. This study must be carried out when a work or activity potentially causing significant environmental degradation is installed. It is a document drawn up by a multidisciplinary technical team that analyses possible problems that could result from the installation, expansion or operation of potentially polluting industrial and business activities; its function is to identify, assess and predict the consequences of human actions on the environment, taking into account biological, physical and socio-economic issues. The EIA must contain an environmental diagnosis of the project's area of influence, with a description and analysis of environmental assets and their interactions; an analysis of the project's environmental impacts (positive and negative) and alternatives for mitigating damage; a proposal for measures to minimise negative impacts; and finally, the development of a programme for monitoring and following up on impacts.

The first draft of the law established the requirement for two studies as mechanisms to ensure that activities with a high negative impact on the environment were not installed or that effective prevention and mitigation plans were created. First, there was a requirement for a technical and economic assessment, in order to subsidise the formation of energy prisms and the analysis of the viability and externalities of the projects, as well as their compatibility and integration with other local activities; and then there is the requirement for an EIA, to be carried out to analyse the environmental viability of the project. In order to assign responsibility for prevention, the text of the bill distinguishes between two situations: a grant planned by the state; and an independent

grant, whose exploitation is requested by the interested party. In the first case, the technical and economic assessment and the EIA would be carried out by the state; in the second case, they would have to be carried out by the interested party themselves, who will submit them with the application for exploitation and will be subject to approval. In the Chamber of Deputies, however, the bill was substantially amended to remove any mention of the need to conduct both studies. Vaguely, the law now leaves for regulation to require any assessment.

Regulation in Brazil provides that EIA is mandatory for 'activities or works potentially causing significant environmental degradation', in harmony with what the IA Court says, which states that in the event of 'the potential occurrence of significant environmental damage'²⁸, the EIA must be carried out. The law requires the EIA in the event of the installation of a work or activity that potentially causes significant environmental degradation, as prescribed by the Federal Constitution. In cases where the environmental aspects of the installation and operation of the project, when interacting with the environment, result in less significant impacts, a less complex study than the EIA may be required. This means that the need to carry out an EIA is defined in advance through an administrative process conducted by the competent environmental agency. In this process, information and technical documents related to the undertaking or activity in question are analysed, such as its location, characteristics, size and polluting potential. The conclusion about the degree of potential damage of an activity is defined by a regulation²⁹ that considers undertakings with a significant environmental impact to be those that may cause significant alterations to the environment or its natural resources.

Finally, the legislation prohibits the establishment of energy prisms in areas that coincide with areas protected by environmental legislation³⁰, such as conservation units, which is very welcome. This is an important preventive tool for protecting the environment.

²⁷ BRASIL. [Constituição (1988)]. *Constituição da República Federativa do Brasil*. Available at: http://www.planalto.gov.br/ccivil_03/constituicao/constituicao.htm. art. 225, § 1º, inciso IV.

²⁸ INTER-AMERICAN COURT OF HUMAN RIGHTS. *Advisory Opinion 23/2017, of november 15, 2017*. Available at: https://corteidh.or.cr/docs/opiniones/seriea_23_ing.pdf. par. 180-181.

²⁹ IBAMA. *Resolução Conama nº 001, de 23 de janeiro de 1986*. Available at: <https://www.ibama.gov.br/sophia/cnia/legislacao/MMA/RE0001-230186.PDF>.

³⁰ Art.6o, par 1, VI.

4 The responsibility to respect rights

According to the UN Guiding Principles on Business and Human Rights (UNGPs), businesses have an autonomous responsibility to respect all internationally recognized human rights. This responsibility does not depend on the capacity or willingness of states to regulate. Rather, it reflects global normative expectations of corporate behaviour in a world where business activities can significantly affect individuals and communities. The State bears the responsibility to establish a duty for companies to adopt appropriate preventative measures. By initiating the legislative process to create a regulatory framework for offshore wind exploitation, the State is presented with a key opportunity to define the standards of conduct expected from companies engaged in this sector.

The cornerstone of this responsibility is the implementation of human rights due diligence (HRDD) processes. As defined in UNGP 17, due diligence is the primary mechanism through which companies are expected to operationalize their responsibility to respect rights. It is not merely a procedural formality—it is the main tool through which companies must identify, prevent, mitigate, and account for how they address their human rights impacts.

Human rights due diligence involves a continuous process that includes identifying and assessing actual and potential adverse human rights impacts that the company may cause, contribute to, or be directly linked to through its operations, products, or services; integrating and acting upon the findings, which means taking appropriate action to prevent or mitigate the risks identified; tracking the effectiveness of responses, through appropriate indicators and consultation with affected stakeholders; communicating externally how impacts are being addressed, particularly to those who may be affected.

This process applies not only to a company's direct activities but also to its entire value chain, including suppliers, contractors, and other business partners. Therefore, it must encompass both upstream impacts (e.g., the sourcing of materials like lithium or rare earth minerals) and downstream effects (e.g., impacts on communities located near wind farms or power transmission lines).

The HRDD process differs substantially from Environmental Impact Assessments (EIAs), which are

more limited in scope and primarily designed to address environmental risks. While EIAs remain essential, they cannot substitute for HRDD because they do not comprehensively evaluate the social, cultural, economic, and labor-related dimensions of business impacts.

Despite the pivotal role of HRDD in the UNGPs, Brazil's Law 15.097/2025 makes no mention of it. The law focuses on environmental protection through EIAs and participatory consultations, particularly with local fishing communities. However, it fails to incorporate or require systematic human rights due diligence procedures either for companies operating offshore wind farms or throughout their supply chains. This omission is a significant gap and reveals a misalignment with global standards for responsible business conduct, according to the OCDE Guidelines for Multinational Enterprises.

The failure to require HRDD in legislation undermines the ability of Brazil's offshore wind regulatory framework to ensure that the development of clean energy is also socially just and rights-respecting. Offshore wind projects have well-documented potential to interfere with livelihoods, displace communities, disrupt cultural and spiritual ties to land and sea, and exacerbate social inequalities—especially if proper safeguards are not in place. These are precisely the types of risks that HRDD is designed to prevent.

Moreover, HRDD is essential, although it should not be the only tool³¹, for addressing supply chain risks, such as the use of critical transition minerals like lithium, cobalt, and nickel. These minerals are often extracted in contexts plagued by human rights violations, including forced labour, environmental degradation, and the displacement of indigenous communities³². The absence of a requirement for companies to conduct HRDD in their supply chains permits a legal vacuum in which chances of occurrence of preventable abuses may increase.

Therefore, the inclusion of human rights due diligence within the offshore wind regulatory framework is

³¹ LEITE, Marianna. Beyond buzzwords: mandatory human rights due diligence and a rights-based approach to business models. *Business and Human Rights Journal*, v. 8, n. 2, p. 197-212, 2023. DOI: <https://doi.org/10.1017/bhj.2023.11>.

³² ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT. *OECD due diligence guidance for responsible supply chains of minerals from conflict-affected and high-risk areas*. 2. ed. Paris: OECD Publishing, 2013. DOI: <https://doi.org/10.1787/9789264185050-en>.

not merely a technical improvement—it is a normative imperative that stems from the international obligations the country is binding to as the American Convention on Human Rights³³. By mandating HRDD, Brazil would not only align its law with the UNGPs and OECD Guidelines for Multinational Enterprises, but also strengthen the legitimacy and social license of its renewable energy projects. It would ensure that “clean” energy is not achieved at the cost of human dignity and rights.

In sum, any serious attempt to regulate offshore wind energy in line with international best practices must recognize human rights due diligence as a mechanism through which corporations fulfill their responsibility to respect rights. It is the missing link between environmental sustainability and social justice. Its absence in the current legislation constitutes a critical deficiency—one that future regulation must urgently address.

4.1 The absence of human and environmental rights due diligence

From what has been seen above, law 15.097/2025 explicitly provides for the use of EIA in the process of licensing undertakings, in accordance with item IV of §1 of art. 225 of the Federal Constitution. This EIA is necessary to analyse the environmental viability and identify the impacts of activities, and simplified studies are allowed for projects with a lower potential impact, according to §5 of art. 6 of the Bill.

With regard to the human rights due diligence process, the text makes no direct provision for this type of analysis, focusing mainly on environmental protection and the safety of maritime and aerial activities. It establishes the principle of ‘protection and defence of the environment and ocean culture’ and mentions the participation of impacted communities in public consultations. However, this public consultation is of a participatory and consultative nature, and it does not detail

the specific assessment of impacts on human rights in a comprehensive manner, as advocated in the UN Guiding Principles.

The law, differently from what was provided for in the bill, does not even cover EIA requirements, leaving gaps in the implementation of a due diligence process focusing on environmental and social impacts and human rights of affected populations. The human rights due diligence introduced by the UN Guiding Principles focuses on identifying, preventing, mitigating and accounting for impacts on the human rights of affected individuals and communities. This process applies to all internationally recognised human rights and must be carried out independently of a formal legal requirement, treating human rights as universal values and transversal to all business operations. Unlike the EIA, which is more circumscribed to environmental impacts, human rights due diligence covers a broader spectrum, represented by all internationally recognised human rights and should be mentioned in the regulation.

Human Rights Due Diligence is a procedure composed of the following elements a) identifying and assessing the nature of actual and potential adverse human rights impacts in which a company may be implicated; b) preventing and mitigating adverse human rights impacts; c) monitoring and tracking the effectiveness of actions to respond to adverse human rights impacts; and communicating the management of adverse human rights impacts. In addition, these steps are complemented by a) a public commitment to respect human rights; and b) operational-level grievance mechanisms that enable them to redress negative impacts that have materialised³⁴. Human rights impacts can be mitigated through a rigorous due diligence process, which includes broad consultation and the participation of affected communities at all stages of the project. This involves identifying risks in advance and implementing compensation measures to minimise negative effects on livelihoods, culture, health and the environment. Ongoing monitoring and reparation mechanisms for damage caused are also crucial to ensure that affected communities have access to justice and dignified living conditions.

³³ According to art.2 of the Convention, States need to provide for legislative or other provisions necessary to give effect to rights and freedoms enshrined. The duty to prevent human rights violations appears in several emblematic cases. This duty stems from Article 1.1 of the American Convention on Human Rights, which imposes on states the obligation to respect and guarantee the rights recognised in the Convention, which includes adopting measures to prevent, investigate and remedy violations. The leading case is *Velásquez Rodríguez vs. Honduras* (1988); but there are others such as *González y otras («Campo Algodonero») vs. México* (2009) and *Kaliña e Lokono vs. Suriname* (2015).

³⁴ ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT. *OECD due diligence guidance for responsible business conduct*. [S. l.]: OECD, 2018. Available at: https://www.oecd-ilibrary.org/finance-and-investment/oecd-due-diligence-guidance-for-responsible-business-conduct_15f5f4b3-en.

Since the law does not mention HRDD, it follows there are no responsibilities regarding the wind power plants' supply chain. The United Nations Development Programme (UNDP) has established 8 principles for a just energy transformation³⁵. These principles are: a) be guided by science and understand the urgency to reduce greenhouse gas emissions in line with the Paris Agreement; b) be fair and defend the rights, needs and values of all without privileging any group, and should not fall on those who have less responsibility for the climate field or capacity to assume it; c) be sustainable, ambitious and consistent with broader and holistic strategies that contribute to the energy transition; d) be comprehensive, transparent and inclusive; e) ensure stakeholder participation and robust and meaningful dialogue, including a specific focus on social protection policies and gender equality to promote equitable access to benefits; f) be focused on climate justice; g) recognise energy access as essential for social welfare, economic growth, sustainable development and improved livelihoods; and h) ensure access to justice, decision making and information; i) ensure access to energy and energy services for all; j) ensure that the energy sector has the capacity and capacity to deliver on its promises. Legal provisions demanding corporate action toward human rights due diligence are able to tackle at least the needs of principles 'b', 'c', 'e', 'f', hence, again, the relevance of such disposition.

Considering that the installation of wind power plants is incentivised because they are an alternative to fossil fuel energy production, this gap cannot be ignored. If the aim is to produce clean energy, free from environmental degradation and human rights violations, it is essential that the law also addresses the production chain of these plants. The manufacture of wind turbines, for example, requires strategic minerals such as lithium, the extraction and production of which can have significant socio-environmental impacts³⁶. Knowing the supply chain of a company, such as mining companies,

is quite complex, and even more so when it comes to issues related to the energy transition, where not only local economic actors come into play but also international companies in highly complex political contexts, as the current political situation in Chile, Bolivia, Ecuador, Colombia, Peru and Argentina, just to give a few examples. These are great centres of exploitation of critical minerals for the transition and its value chain is not fully known to anyone. The International Energy Agency (IEA) emphasises the need to make information on companies that are part of the supply chain of the company linked to the energy transition and/or exploitation of critical transition minerals more transparent, following an adequate due diligence framework³⁷.

Therefore, comprehensive legislation on the subject should include due diligence mechanisms to ensure responsible and ethical practices throughout the supply chain.

4.2 A case for responsibility

Although the law does not mention it, Brazilian law allows us to conclude that the general duty of the corporation, in order to avoid civil liability, is not to act negligently³⁸. Thus, the negligence provided for in civil law can serve as grounds for liability for non-contractual damages. This has already been defined in Brazil in consumer, labour and environmental cases³⁹.

In addition, it is important to look at the regulatory frameworks that may apply to the company that decides to exploit wind power production in Brazil. In order to do this, it is necessary to look at the jurisdiction to which the company and its parent companies are subject, and to assess the frameworks affecting different stakeholders.

For example, if the company is a subsidiary of a multinational, the country where the company is headquartered will attract the application of regulatory

³⁵ UNITED NATIONS DEVELOPMENT PROGRAM. The 8 core principles of a just energy transformation: the alliance for a just energy transformation. *UNDP*, 2024. Available at: <https://www.undp.org/energy/publications/8-core-principles-just-energy-transformation>.

³⁶ ACTIONAID; SOMO. *Human rights in wind turbine supply chains: towards a truly sustainable energy transition*. Amsterdam: Actionaid, 2018. Available at: https://www.somo.nl/wp-content/uploads/2018/01/Final-ActionAid_Report-Human-Rights-in-Wind-Turbine-Supply-Chains.pdf.

³⁷ INTERNATIONAL ENERGY AGENCY. *Sustainable and responsible critical mineral supply chains: guidance for policy makers*. [S. l.]: IEA, 2023. Available at: <https://iea.blob.core.windows.net/assets/7771525c-856f-45ef-911d-43137025aac3/SustainableandResponsibleCriticalMineralSupplyChains.pdf>. p. 29-35.

³⁸ BRASIL. *Lei nº 10.406, de 10 de janeiro de 2002*. Institui o Código Civil. Available at: https://www.planalto.gov.br/ccivil_03/leis/2002/10406compilada.htm. art.186.

³⁹ Brazilian Federal Supreme Court case law confirms it: ARE 903265, 15.09.2015; ARE 1153199 AgR, 29.03.19; and Labour Superior Court, Ag-Ag-ARR - 1001550-87.2015.5.02.0363, 14.04.25.

frameworks for exploitation in Brazil. The UN Guiding Principles on Business and Human Rights and the OECD Guidelines for Multinational Enterprises are candidates for application. There is no self-regulatory initiative in this sector, hence the absence of principles agreed by the companies themselves. Responsibility, from the perspective of the Guiding Principles, derives from the social expectation formed from the exploitation of resources and people. In this sense, there is no doubt about the need to assign some responsibility to companies in the sector for the impacts that their activities generate. In practice, however, in the absence of other specific regulatory frameworks to assign responsibility for the impact of business activity, the provision in the legal framework for offshore companies of the obligation to adopt human rights due diligence processes would have the potential to make a significant difference.

5 Final considerations

The regulation of offshore wind farms in Brazil holds transformative potential for advancing the country's renewable energy goals and addressing global climate imperatives. Given Brazil's extensive coastline and ideal wind conditions, offshore wind energy presents a substantial opportunity for diversifying the national energy matrix, promoting economic growth, and supporting global shifts away from fossil fuels. However, this endeavor requires more than technological innovation and financial investment; it calls for a legal framework that balances environmental, social, and human rights considerations comprehensively and equitably.

The objective of the regulatory frameworks that will regulate energy generation in the context of the necessary transition from the use of fossil fuels to elements that are less harmful to the environment must take into account the necessary protection and respect for the people who may be affected by these new ventures. The history of fossil fuel energy generation has taught us, or should have taught us, that economic exploitation occurs at the expense of people and the environment whenever there is no state interest in protecting them or when institutions are so weak that they cannot sustain regulation. With all the known history of human rights abuses by private entities, approving a regulatory framework that regulates an activity so prone to violating

human rights without any provision for the obligation to adopt preventive measures is irresponsible.

The new law has been in the right path, at least to provide for mandatory Environmental Impact Assessments (EIA) to help mitigate potential environmental harms. This was an essential foundation, ensuring that ecological risks — particularly to marine biodiversity — are identified, evaluated, and managed. At least, the law promotes sustainable development and responsible resource management, principles that align with Brazil's constitutional mandates on environmental protection. Yet, the regulation does not encompass the breadth of issues critical for true sustainability. Notably, it lacks explicit requirements for human rights due diligence also across the supply chain, a shortcoming that could undermine the social integrity of the industry as it grows.

In the context of human rights, the regulation falls short of providing adequate safeguards for local communities, particularly fishing and coastal populations, whose livelihoods and cultural heritage may be disrupted by offshore installations. Furthermore, the absence of due diligence requirements in the supply chain overlooks the environmental and social impacts associated with extracting and processing materials, such as lithium, essential for turbine production. Addressing this gap is crucial for offshore wind farms to genuinely represent “clean energy,” as social and ecological impacts along the supply chain could otherwise perpetuate harm to vulnerable communities and ecosystems globally. International frameworks, such as the UN Guiding Principles on Business and Human Rights, emphasize the state's duty to prevent human rights abuses by businesses and to protect affected communities through adequate regulation, encompassing both local impacts and global supply chains.

Incorporating comprehensive human rights safeguards within the regulatory framework could position Brazil as a leader in socially responsible renewable energy development. Ensuring that human rights due diligence is applied to all stages of the offshore wind sector, including its supply chain, would align with international sustainability standards, protecting communities from indirect and direct impacts and strengthening Brazil's commitments to human rights and environmental justice. The addition of consultation processes with affected communities and more robust, enforceable guidelines around socio-economic compensation could

further ensure that the benefits of offshore wind development are widely and fairly distributed.

Lastly, the regulatory framework would benefit from incorporating clear mechanisms for monitoring and accountability, as well as independent oversight to assess compliance with environmental and human rights standards. These measures would enhance transparency, increase public trust, and help maintain Brazil's long-term commitment to a clean energy transition that respects both people and the planet. As the country seeks to expand its renewable energy capabilities, a more inclusive, comprehensive framework will be essential for mitigating unintended consequences and fostering a truly sustainable offshore wind sector that aligns with Brazil's environmental, economic, and social aspirations.

In conclusion, Brazil's approach to regulating offshore wind energy is commendable but incomplete. Provisions should have been kept in the final text to include EIA; and comprehensive human rights due diligence should have been added, especially in the supply chain. It was the chance for the country to set a global example for a balanced, just, and sustainable energy transition, addressing gaps that would ensure that the expansion of offshore wind energy contributes positively not only to Brazil's economy and environmental health but also to the rights and well-being of all communities touched by this ambitious endeavor.

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