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Contribution of Brazilian Association of Wind Energy and New Technologies (ABEEólica) to Call for Inputs for the Belém Mission to 1.5

- 1. What action areas and solutions have the highest impact potential to support the submission, ambition and implementation of NDCs and NAPs. This could include consideration of priority solutions and innovations across policies, technologies, practices and investments, finance, technology, capacity building, and institutional opportunities, and the most significant barriers.**
 - II. One of the most significant barriers to supporting ambitious NDCs and NAPs is the structural economic dependence on fossil fuels in many countries. Fossil fuel production and exports remain major sources of government revenue, employment and trade income, making rapid transitions politically and economically complex and, in some cases, unfeasible. In addition, energy security and affordability concerns continue to slow the transition, particularly in countries where clean alternatives are not yet sufficiently scaled.
 - III. Recent international analysis highlights that the global energy system has entered an "age of electricity", in which demand for power grows faster than overall energy demand, driven by electrification, digitalization, data centers and new industrial uses. This increases the urgency of expanding generation, transmission and flexibility resources while maintaining the reliability, resilience and affordability of energy systems.
 - IV. According to the International Energy Agency (IEA), power demand is set to grow by more than 3.5% per year on average over the rest of this decade, with electricity generation from renewables, natural gas and nuclear all expanding to keep pace. By 2030, renewables and nuclear power are expected to generate around 50% of global electricity. Natural gas-fired generation is also projected to grow through 2030, while coal-fired generation gradually declines as renewable energy expands. As a result, global carbon dioxide emissions from electricity generation are expected to remain broadly flat between now and 2030 (IEA Energy Mix, 2026).
 - V. Despite the increase in global clean energy investments, capital remains unevenly distributed. Investment flows continue to concentrate in advanced economies, while many developing countries face high financing costs, elevated interest rates and limited access to competitive long-term capital. Expanding concessional finance, blended finance mechanisms and private investment mobilization is therefore essential to support NDC and NAP implementation.

- VI. Another significant barrier is the persistence of fossil fuel subsidies and other market distortions that continue to favor incumbent energy systems over cleaner technologies. Reforming these incentives can help accelerate the deployment of low-carbon solutions.
- VII. In the electricity sector, infrastructure constraints remain a critical challenge. Insufficient transmission capacity, limited deployment of storage systems and the slow adoption of low-carbon industrial technologies constrain the pace at which clean energy can replace fossil fuels. Expanding and modernizing transmission infrastructure is therefore a strategic priority for increasing climate resilience, improving energy security and reducing renewable energy curtailment.
- VIII. Supporting the deployment of low-carbon technologies in hard-to-abate sectors should be a priority action area. Electrification, sustainable fuels, biofuels, low-carbon hydrogen and its derivatives, industrial decarbonization technologies and energy efficiency measures can significantly contribute to achieving NDC targets. In Brazil, while the power sector is already largely renewable, the remaining mitigation challenges are concentrated in fossil fuel-consuming sectors such as industry, mobility, heavy road transport and petrochemical production.
- IX. Regional inequalities and infrastructure gaps, particularly in transmission networks, can constrain the large-scale deployment of renewable energy. Particular attention should be given to Emerging Markets and Developing Economies (EMDEs), including through coherent public policies, improved planning and investment frameworks, and stronger institutional coordination to facilitate the adoption of low-carbon technologies.
- X. Brazil offers an example of how comparative advantages can support ambitious climate action. The country has one of the cleanest electricity systems in the world, with approximately 93% of electricity generated from renewable sources in 2023 and around 50% of its total energy matrix composed of clean energy. Combined with its abundant wind and solar resources, this has enabled important advances in the country's regulatory and policy agenda for industrial decarbonization and energy transition.
- XI. Brazil has recently established an important legal and regulatory framework to support the energy transition, including:
 - b. Law No. 14,948/2024 – Legal Framework for Low-Carbon Hydrogen;
 - c. Law No. 15,097/2025 – Offshore Energy Regulatory Framework;
 - d. Law No. 14,990/2024 – Low Carbon Hydrogen Development Program (PHBC);
 - e. Law No. 14,993/2024 – Fuel of the Future Law;
 - f. Law No. 15,042/2024 – Brazilian Greenhouse Gas Emissions Trading System (SBCE);
 - g. Law No. 15,103/2024 – Energy Transition Acceleration Program (PATEN);

- h. Launch of the Brazil Platform for Climate Investments and Ecological Transformation (BIP).
 - I. Institutional strengthening and capacity building are essential enablers for ambitious NDCs and NAPs. Effective planning, operation and expansion of increasingly interconnected electricity systems require strong regulatory agencies, qualified technical staff, sound governance and robust institutional capacity to respond to the growing complexity of the energy transition.
 - II. The roadmap should place particular emphasis on strengthening transmission infrastructure as a strategic solution for climate resilience and energy security. A robust transmission network enables the safe and efficient integration of renewable energy sources, reduces curtailment and supports the expansion of clean electricity across regions.
 - III. Both demand-side and supply-side perspectives should be considered in infrastructure planning. Expanding grid capacity is essential to connect electricity consumers and generators, support industrial electrification, residential and commercial demand, electromobility, and future green hydrogen and derivative production facilities. A stronger and more integrated electricity network increases system flexibility and enables greater utilization of renewable resources throughout the country.
2. What is required to further strengthen international cooperation to enhance ambition and enable the effective implementation of NDCs and NAPs?
- I. International cooperation should prioritize enabling countries to transform their clean energy potential into tangible social and economic benefits. A central implementation lever is ensuring that clean energy systems generate a **"social bonus"** by delivering affordable electricity, improving competitiveness, increasing household welfare, creating jobs and promoting social inclusion. Making the benefits of the energy transition visible to society is essential for sustaining political ambition and public support for NDC and NAP implementation.
 - II. Countries should cooperate on policies that reduce structural distortions in electricity markets, including tariff design, excessive charges and inefficient subsidy schemes. Even countries with highly competitive renewable generation may face high end-user electricity prices, limiting the social acceptance of the energy transition. Sharing regulatory best practices can help ensure that clean energy benefits reach consumers.
 - III. International cooperation should also support countries in leveraging their **"green bonus"** by transforming clean electricity into broader economic, industrial and geopolitical advantages. This includes supporting industrial decarbonization, attracting electricity-intensive industries, developing green hydrogen and derivatives, expanding data centers powered by renewable energy, and strengthening regional low-carbon value chains.

- IV. Renewable energy deployment should be recognized not only as a climate solution but also as an industrial development strategy. Brazil's wind energy sector demonstrates how local manufacturing, supply chain development, job creation and regional economic development can reinforce climate ambition. International cooperation should encourage similar industrial ecosystems in other countries.
- V. Greater international cooperation is needed to promote coherent public policies that align energy planning, industrial policy, climate commitments and infrastructure planning. This includes improving access to competitive finance, supporting workforce qualification, strengthening regulatory certainty and providing long-term visibility for investors.
- VI. Countries should avoid creating new fossil fuel lock-in through policies that incentivize fossil-based electricity generation for emerging electricity-intensive activities. International cooperation should instead promote renewable-based solutions that simultaneously improve reliability, competitiveness and climate performance.
- VII. Strengthening renewable energy value chains and aligning market incentives with long-term decarbonization objectives should become key pillars of international cooperation. Policy frameworks should consistently reward investments in clean technologies while discouraging carbon-intensive alternatives.
- VIII. Brazil demonstrates that accelerating the transition away from fossil fuels can be compatible with economic growth and social inclusion. International cooperation should facilitate the exchange of experiences regarding regulatory reforms, industrial policy, electricity market design, subsidy reform and mechanisms capable of attracting low-carbon investments and technological transfer.
- IX. Achieving the transition away from fossil fuels requires accelerated deployment of renewable energy technologies. International cooperation should expand knowledge sharing and partnerships on electrification technologies, energy storage, smart grids, transmission infrastructure and both onshore and offshore renewable energy systems.
- X. Innovation and technology development are essential for scaling low-carbon alternatives quickly enough to replace fossil fuels while maintaining energy security. International cooperation should support innovation ecosystems and create instruments that accelerate technology deployment and commercialization.
- XI. One of the strongest implementation levers is strengthening international innovation networks. Partnerships between governments, research institutions, multinational companies, industry

associations and technology providers should connect technology demand with technology supply, accelerating innovation diffusion and reducing implementation costs.

- XII. Technology transfer should go beyond equipment deployment and include knowledge transfer, workforce development, human capital formation, patent cooperation and institutional learning. International agencies and collaborative initiatives should strengthen local innovation ecosystems, particularly in Emerging Markets and Developing Economies (EMDEs), enabling them to absorb, adapt and scale low-carbon technologies.
- XIII. Expanding carbon markets represents another important area for international cooperation. Well-designed carbon pricing mechanisms and international carbon markets can provide robust price signals, mobilize private investment, stimulate emissions reductions and support the development of low-carbon technologies and nature-based solutions.
- XIV. Further international cooperation should support reforms that phase out inefficient fossil fuel subsidies, strengthen carbon accounting frameworks, improve regulatory certainty and promote targeted support for innovation, industrial decarbonization and workforce reskilling. These measures help create a level playing field for clean energy investments.
- XV. A key lesson from recent transition experiences is that there is no single pathway applicable to every country. International cooperation should therefore promote flexible frameworks that recognize different national circumstances, levels of fossil fuel dependence, institutional capacities and development priorities, while supporting country-specific transition strategies.
- XVI. The roadmap should also incorporate ESG principles and just transition objectives, ensuring that climate action reflects regional, social and territorial realities. Regulatory engagement, stakeholder participation, knowledge generation and institutional dialogue should be strengthened to support inclusive implementation.
- XVII. International cooperation should encourage improvements in environmental governance and regulatory quality. Sharing best practices for environmental licensing, legal certainty and socio-environmental management can accelerate renewable energy deployment while maintaining high environmental and social standards.
- XVIII. Developing methodologies to measure socio-economic and environmental impacts should become part of international cooperation. Tools that assess local development, social benefits and community impacts can improve transparency, strengthen public confidence and support evidence-based policymaking.

- XIX. Stakeholder engagement should be strengthened through continuous dialogue among governments, industry, local communities, academia and civil society. International cooperation can facilitate knowledge exchange on participatory governance models that improve project acceptance and social inclusion.
- XX. Successful transitions require simultaneous action on both the supply and demand sides of the energy system. International cooperation should support renewable energy deployment while also accelerating industrial electrification, energy efficiency, clean fuels and demand-side decarbonization to avoid energy shortages and ensure long-term reductions in fossil fuel consumption.
- XXI. Integrating carbon markets, industrial policy and infrastructure planning into national transition strategies should be promoted as a comprehensive implementation approach. These instruments reinforce one another by mobilizing investment, reducing emissions and creating new low-carbon industrial value chains.
- XXII. Brazil's experience demonstrates that expanding electricity access through renewable energy can simultaneously improve energy security, competitiveness and social inclusion. Universal electricity access creates a "social bonus" by enabling economic opportunities while supporting climate objectives, offering valuable lessons for other developing countries.
- XXIII. International cooperation should also strengthen development finance institutions. Brazil's experience with the Brazilian Development Bank (BNDES) illustrates how development banks can foster domestic industrial capabilities, attract international manufacturers, support local supply chains and accelerate technological learning through concessional financing.
- XXIV. Institutional cooperation is equally important. Robust regulation, integrated electricity planning, transmission expansion and coordinated system operation have enabled Brazil to integrate large shares of renewable energy while maintaining system reliability and minimizing renewable curtailment. These experiences can inform international capacity-building efforts.
- XXV. Renewable energy expansion requires not only generation assets but also strong transmission networks, forecasting capabilities, system flexibility and institutional coordination. International cooperation should therefore support integrated infrastructure planning that combines renewable deployment with industrial development, economic competitiveness and clean manufacturing.
- XXVI. Finally, international cooperation should promote a flexible global framework that supports country-specific transition pathways anchored in just transition principles, regulatory certainty, integrated supply-and-demand strategies, measurable socio-environmental outcomes and alignment between climate ambition and inclusive economic development.

- XXVII. A just and orderly transition requires recognizing that countries have different economic structures, development priorities and energy systems. International cooperation should therefore respect national circumstances while maintaining the shared objective of transitioning away from fossil fuels through differentiated pathways, policy sequencing and implementation approaches.
- XXVIII. International cooperation should strengthen ESG-based approaches that integrate regulatory engagement, knowledge production and stakeholder dialogue, ensuring that energy transitions are inclusive, regionally balanced and responsive to local realities.
- XXIX. For developing countries, climate cooperation must remain closely linked to broader development objectives. Expanding access to affordable climate finance, technology transfer and capacity building is essential to simultaneously advance energy access, industrialization, economic growth and employment while implementing ambitious NDCs and NAPs.
- XXX. A just transition also requires international cooperation to support workers and communities affected by structural economic change. Workforce reskilling, regional development policies, social protection mechanisms and inclusive planning processes are fundamental to ensuring that the costs and benefits of the transition are shared equitably.
- XXXI. Brazil's experience illustrates how renewable energy expansion can simultaneously strengthen energy security, industrial competitiveness and employment. International cooperation should help countries replicate these opportunities while supporting regions and workers dependent on fossil fuel activities, expanding infrastructure and ensuring that the benefits of the transition are broadly distributed across society.