Strategic Energy Diplomacy of China, India, and Russia in Times of Global Crisis: Brazil as a Receptive Case

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Abstract

The global energy crisis has reshaped the landscape of international energy governance, prompting new forms of diplomacy among emerging powers. Amid intensifying rivalries among the United States, China, and Russia, countries within the BRICS group have advanced energy diplomacy strategies that balance bilateral engagement with multilateral cooperation. Although previous research highlights the geopolitical logic behind recipient country selection, less attention has been paid to how these strategies evolve under crisis conditions. This paper addresses that gap by examining Brazil—a key factor in the global energy transition—as a case study. This paper focuses on Brazil, a promising market in the energy transition, as a case study to clarify whether supplier countries could influence recipient countries. Through a comparative analysis of China (renewable energy), India (biofuels), and Russia (nuclear), this paper identified the relative advantages of these countries in research and development (R&D), manufacturing, and distribution and analyzes the various energy statecrafts in terms of the type of technology transfer, manufacturing location, and global supply chain. The results show that all countries aim for complementarity through strategic partnerships with other countries and organizations to compensate for their weaknesses. The emerging powers' competitive energy diplomacy in times of global crisis has accelerated energy supply. They also utilize existing multilateral frameworks to enhance their credibility.

Keywords

Energy diplomacy, emerging powers, global energy governance, energy statecraft

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Introduction

Energy security represents a persistent global challenge, compelling states to engage in both collaborative and competitive behavior during periods of crisis. The Paris Agreement, the Sustainable Development Goals (SDGs), and the COVID-19 pandemic collectively provided significant momentum for advancing a global energy transition. However, the outbreak of the Russia–Ukraine war in February 2022 exposed the continued structural reliance on fossil fuels within the global energy system.

The energy transition entails a fundamental restructuring of the traditional fossil fuel–based energy system toward one anchored in low-carbon sources, including renewables. Yet, the viability and trajectory of such transitions are deeply shaped by country-specific contexts. Governmental preferences must account for environmental, economic, and political conditions unique to each state. Consequently, although resistance to decarbonization may attract criticism from international observers, such actions may, in some contexts, constitute rational strategies for safeguarding national energy security.

The recent global energy crisis has laid bare the evolving architecture of global energy governance. In the face of mounting instabilities in energy markets, scholars have emphasized the emergence of "global energy governance" as an international public good characterized by non-excludability and non-rivalry in energy supply (Hafner & Tagliapietra, 2020; Van de Graaf & Sovacool, 2020). While institutions like the International Energy Agency (IEA) have attempted to enhance global energy security, their perceived Western orientation—particularly as a body of OECD countries—has generated discontent among non-Western states. In the wake of the Russia–Ukraine conflict, Western countries increasingly treated renewable energy as a club good restricted to allies, invoking energy nationalism. In contrast, emerging powers sought to frame energy access as a public good, deploying energy diplomacy to reposition themselves within global energy markets.

The limitations of global energy governance have provided fertile ground for the rise of energy diplomacy, even as the latter further exposes the fragility of the former. As geopolitical tensions—particularly between the United States, China, and Russia—intensified, states faced a dilemma: whether to pursue narrowly defined national interests or uphold norms of international cooperation in resource allocation. In this context, energy diplomacy by emerging powers such as China, India, and Russia has become increasingly salient. While often enacted through bilateral arrangements, energy

diplomacy is also employed as a strategic tool to exert political influence and shape the terms of global energy access. Although these countries remain largely reliant on fossil fuels, many have begun leveraging renewable and low-carbon energy—such as wind, solar, biofuels, and nuclear power—as instruments of influence in negotiations with recipient states (Aalto, 2017; Singh, 2019; Becard et al., 2020; Jayaram, 2021).

This paper seeks to explain how and why emerging powers have succeeded in using low-carbon energy to influence recipient countries. While existing literature emphasizes the geopolitical orientation of energy diplomacy, its role in shaping ties with developing countries—less is known about how these strategies function under conditions of crisis. Adopting a political economy lens, this study investigates the forms of energy statecraft employed by China, India, and Russia, with specific attention to their comparative advantages in technology transfer, manufacturing, and supply chain integration.

This study employs Brazil as a case study—a country widely regarded as a promising market for energy transition. Geographically distant from the Eurasian heartland, Brazil may appear, at first glance, to be a peripheral recipient in the strategic calculus of supplier states. Yet this remoteness can serve as a diplomatic asset, insulating Brazil from the rivalries that often characterize regional proximity (Xu, 2017). By selecting a country that lies outside immediate spheres of influence, the analysis foregrounds the relative strengths and limitations of emerging powers in exercising energy diplomacy across distance.

Previewing the main findings, this paper argues that China, India, and Russia have each cultivated strategic partnerships with Brazil using distinct approaches aligned with their sectoral strengths. China has capitalized on its manufacturing and distribution capacities in wind and solar technologies to expand into Brazil's renewable energy market. While initially perceived as lacking credibility in R&D, China has enhanced its technological reputation through active market engagement. India, by contrast, has leveraged its comparative advantage in biofuel manufacturing. Despite limited distribution reach, it has strengthened bilateral and multilateral ties and drawn on Brazilian expertise to improve its domestic base. Russia's engagement is anchored in its advanced nuclear research and development. Lacking robust manufacturing or distribution capabilities, it has fostered collaboration with Brazil by outsourcing nuclear technology transfer and positioning itself as a partner in high-sensitivity sectors.

This paper makes three key contributions. First, it shows that emerging powers actively pursue complementarity through strategic partnerships,

allowing them to offset domestic limitations in energy capacity. Second, it demonstrates that competitive energy diplomacy—even amidst geopolitical tensions—can contribute to expanding global energy supply. Third, it reveals how emerging powers utilize existing multilateral frameworks not merely as platforms for cooperation but as instruments for enhancing international credibility.

The remainder of this paper is organized as follows. Section 2 reviews existing literature on the energy diplomacy of emerging powers and highlights key analytical gaps. Section 3 introduces the proposed framework and applies it to the cases of China, India, and Russia. Section 4 examines Brazil's evolving role as a receptive partner in energy diplomacy. Section 5 analyzes the structural factors underpinning each country's relative strengths. The conclusion reflects on the broader theoretical and empirical implications for understanding energy diplomacy in a shifting global order.

2. Strategic Configurations of Energy Diplomacy: Institutions, Capabilities, and Crisis Response

This section advances the hypothesis that countries exhibiting high institutional coherence, and a diverse array of diplomatic modalities are more likely to sustain meaningful energy engagements with host countries during times of crisis. The growing salience of energy diplomacy—intensified by overlapping disruptions such as the COVID-19 pandemic, supply chain fragmentation, and the Russia–Ukraine war—has renewed scholarly interest in how domestic capabilities and institutional arrangements shape foreign policy. While traditional analyses often emphasize either geopolitical strategy or technological prowess, a more refined political economic perspective is needed to understand how internal strengths are translated into external opportunities.

Rather than presuming a one-size-fits-all model of energy statecraft, this paper proposes that the strategic configuration of energy diplomacy is shaped by three interrelated dimensions: (1) the credibility of domestic technological innovation, (2) the institutional coherence of energy governance, and (3) the scope and sophistication of diplomatic infrastructure. Together, these factors determine the extent to which emerging powers can design, implement, and sustain energy diplomacy amid conditions of heightened global uncertainty.

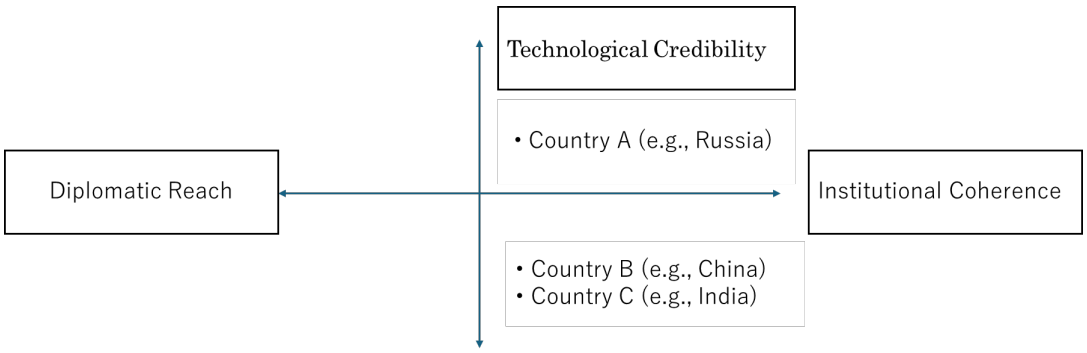
First, technological credibility—encompassing both actual performance and perceived reliability—shapes how a country's energy products and expertise are received internationally. States with recognized strengths in low-carbon innovation, such as photovoltaic technology or nuclear safety, are more likely

to gain the trust of partner governments, facilitating sustained cooperation in areas such as technology transfer, licensing, and joint research. Conversely, countries facing doubts over product quality or regulatory standards often rely on compensatory strategies, including concessional financing or infrastructure.

Second, institutional coherence—understood as the alignment between a state's domestic energy, foreign policy, and industrial strategies—affects both the consistency and scalability of energy diplomacy. In centralized political systems, strong inter-agency coordination can facilitate coherent long-term planning and efficient implementation. By contrast, fragmented institutional arrangements, such as those found in federal systems or states with overlapping bureaucratic mandates, often hinder sustained diplomatic alignment, particularly in complex multilateral settings.

Third, the quality and scope of a country's diplomatic infrastructure—including the global presence of its foreign ministry, state-owned enterprises (SOEs), and strategic alliances—conditions, its ability to project energy initiatives beyond its borders. States with robust development finance institutions, transnational contractor networks, and access to high-level diplomatic platforms such as BRICS and the G20 are better positioned to align their energy diplomacy with broader

Figure 1. Strategic Dimensions of Energy Diplomacy among Emerging Powers



Note: This model adapts the logic of capability-based diplomacy to the energy sector by incorporating variables specific to low-carbon transitions—such as technology diffusion, institutional permeability to foreign actors, and engagement across global energy supply chains. While inspired by previous frameworks in areas like health diplomacy (e.g., Suzuki and Yang, 2022), it is restructured to reflect the unique dynamics and institutional requirements of energy governance.

Figure 1 maps the strategic orientations of selected emerging powers across three dimensions: technological credibility, institutional coherence, and diplomatic reach. The relative placement of each country reflects observed tendencies in energy diplomacy during the 2020–2024 period of global crisis. In contrast to conventional typologies focused narrowly on material capacity, this framework foregrounds the interdependencies between domestic institutional architecture, reputational assets, and external mechanisms of influence.

This tripartite framework leads to the hypothesis that states with greater institutional coherence and broader diplomatic reach are more likely to establish durable and multifaceted partnerships in host countries' energy transition processes.

3. The Political Economy of Energy Diplomacy

As outlined in Table 2, China exhibits strong host-country engagement and diplomatic diversity, though its technological credibility remains moderate—an asymmetry that informs its infrastructure-intensive approach to energy diplomacy. To understand why emerging powers, pursue divergent diplomatic strategies, it is essential to move beyond narrow conceptions of energy statecraft and explore the broader structural conditions that enable or constrain their external engagements. Recent scholarship, particularly in the context of vaccine diplomacy, has emphasized the value of analyzing national capabilities in research, manufacturing, and cross-border distribution. This same analytical lens can be effectively applied to energy diplomacy. For emerging powers, foreign energy initiatives are not solely driven by geopolitical ambition; they are also shaped by varying degrees of technological maturity, industrial capacity, and transnational connectivity. This paper adopts a political economic perspective to examine how countries strategically deploy tools such as technological cooperation, targeted investment, and supply chain integration in response to these internal asymmetries during the global energy transition.

States with robust research and innovation ecosystems typically pursue technology-driven partnerships, aiming to enhance the credibility of their emerging energy sectors. In contrast, countries endowed with strong manufacturing capacity often frame their energy diplomacy around export-oriented growth and the localization of production. Meanwhile, those with expansive global distribution networks prioritize bilateral initiatives to boost geopolitical visibility, while selectively engaging multilateral platforms to enhance international legitimacy. These diverse strategic orientations

illustrate how energy diplomacy is deeply embedded in broader patterns of national development and global positioning.

Consequently, when emerging powers perceive an opportunity to bolster the global credibility of their energy technologies and industrial innovation, they are more inclined to channel their diplomatic efforts through multilateral frameworks.

4. Diversity in Energy Diplomacy by Emerging Powers

Building on the conceptual framework presented above, this section examines how China, India, and Russia adopted differentiated energy diplomacy strategies between 2020 and 2023, during a period marked by overlapping global crises. Each country deployed distinct combinations of technological strengths, institutional structures, and diplomatic instruments in its pursuit of influence.

4.1 China: Renewable energy

China's energy diplomacy is driven by its dominant manufacturing and distribution capacity in renewable technologies, especially solar and wind, and supported by infrastructure-heavy strategies and selective multilateralism.

China has developed a relatively balanced capacity to develop, manufacture, and distribute renewable energy. The launch of the Green Belt and Road Initiative (GBRI) in 2017 marked a shift in its global positioning, reframing infrastructure diplomacy through the lens of sustainable development (Gong & Lewis, 2023). As part of this initiative, China emphasized international cooperation in renewable energy with developing regions across Eurasia, Africa, and Latin America.

Chinese firms have secured significant global orders in wind and solar power, thanks to their ability to offer cost-effective technologies at scale. The country dominates the global photovoltaic cell market and has leveraged these advantages to build deep partnerships, particularly with developing countries. Its diplomacy benefits from strong state backing, and its SOEs play a central role in marketing renewable technologies abroad.

Although historically weak in R&D credibility, China has improved its international reputation by scaling its market presence. Technological cooperation with BRICS members and joint investments in renewable sectors

have helped bolster its image. China's multilateral engagement remains selective; it uses platforms such as the UN, G20, APEC, and BRICS to legitimize its initiatives but largely pursues state-led bilateral infrastructure deals. The BRICS Energy Cooperation Forum hosted in Beijing in 2022 exemplifies its effort to position itself within the broader architecture of global energy governance.

Figure 2: China's Global Ambitions

Source: Retrieved from https://ieefa.org/2017-01-10-ieefa-china-investments-360x216-v1/

4.2 India: Biofuels

India's energy diplomacy hinges on its high biofuel manufacturing potential and active multilateralism, despite constraints in technological innovation and distribution capacity. India's strengths lie in its industrial base for biofuel production. Although government–industry collaboration is less institutionalized than in China, India has positioned itself as a leading actor in bioethanol and biodiesel innovation. The creation of the Global Biofuels Alliance in 2023—launched in partnership with Brazil and the U.S.—highlights its ambition to shape global biofuel governance.

India's energy diplomacy has evolved from a focus on solar (via the International Solar Alliance, co-launched with France at COP21 in 2015) to a new emphasis on biofuels. It has invested in bilateral and multilateral

channels to diversify its partners and reduce dependence on Chinese supply chains.

Despite lagging in distribution infrastructure and solar R&D, India compensates through international networking, expert exchanges, and an open approach to foreign participation in its domestic energy sector. Bengaluru has emerged as a hub for offshore development and foreign technology investment. However, effective communication and policy outreach remain critical bottlenecks in expanding its energy diplomacy.

4.3 Russia: Nuclear Energy

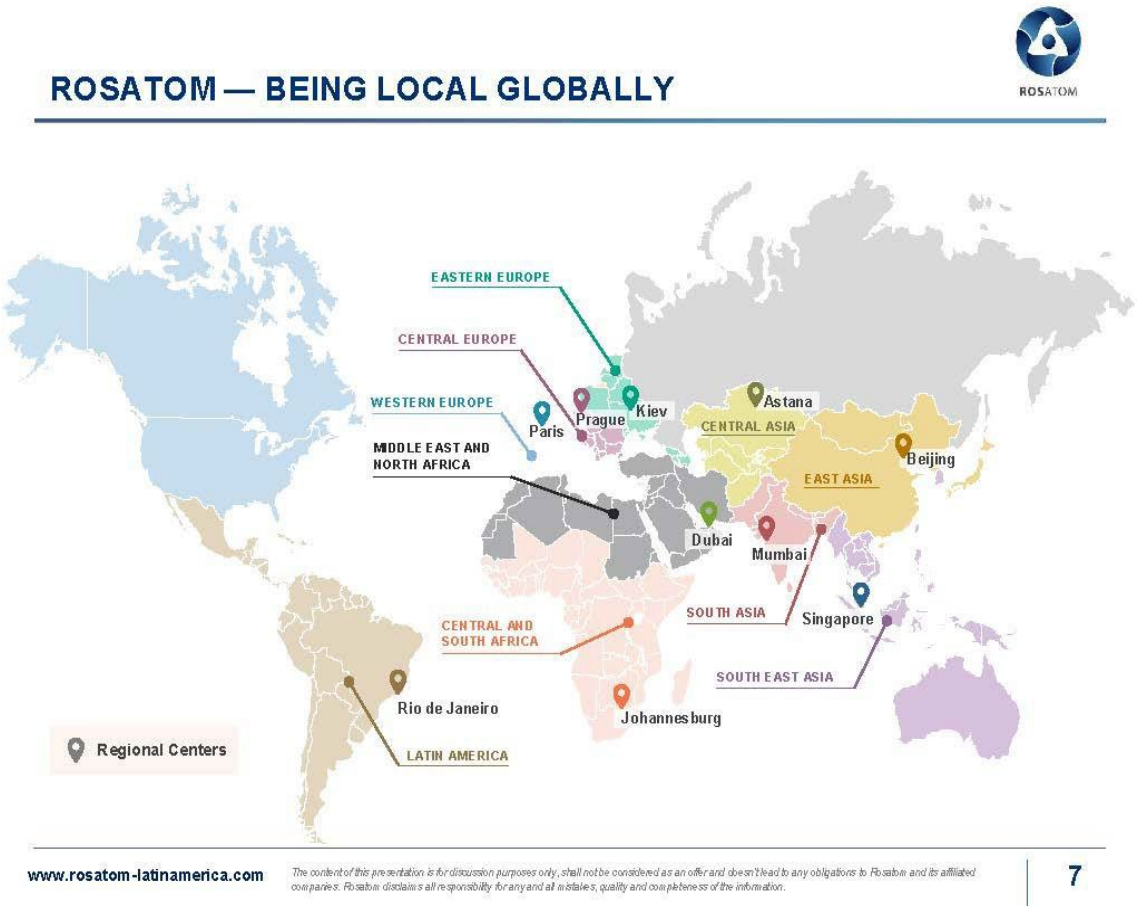
Summary: Russia's energy diplomacy is underpinned by strong R&D capacity in nuclear technology and pursued through bilateral, SOE-led partnerships focused on long-term dependency and strategic influence.

Russia, despite its limited manufacturing base, has maintained global influence through its advanced nuclear expertise. The state-owned Rosatom serves as the primary vehicle of nuclear diplomacy, offering comprehensive services—from reactor design and construction to safety training and financing (Szulecki & Overland, 2023).

Following Western sanctions in the wake of the Ukraine invasion, Russia expanded its nuclear outreach as part of a broader strategy to deepen ties with non-Western states. It now has active or planned nuclear energy projects in 29 countries. Cooperation with Brazil, including agreements with Eletronuclear and statements of interest in small modular reactors, reflects this global push.

Unlike China and India, Russia's engagement with multilateral institutions is minimal. Its efforts remain concentrated in bilateral domains, particularly within its geopolitical spheres of influence (e.g., Eurasia, Africa, Latin America). Nuclear energy, as a high-sensitivity sector, allows Russia to maintain leverage through interdependence and long-term contractual commitments.

Figure 3: Rosatom- Being Local Globally



Source: Rosatom

5. Brazil as a Receptor of Energy Diplomacy

Brazil has emerged as a receptive and strategically important partner for energy diplomacy from China, India, and Russia, leveraging its resource base, institutional openness, and pragmatic foreign policy to attract diverse energy investments and technology partnerships.

5.1. Domestic Energy Landscape and Strategic Appeal

Brazil is recognized as one of the most active countries in the global energy transition (Hochstetler, 2020) and is widely considered a promising market for clean energy cooperation. As shown in Table 1, Brazil's overall energy consumption mixes in 2022 consisted of 50.29% fossil fuels, 48.74% renewables, and 0.98% nuclear energy—making it a notable outlier among BRICS countries.

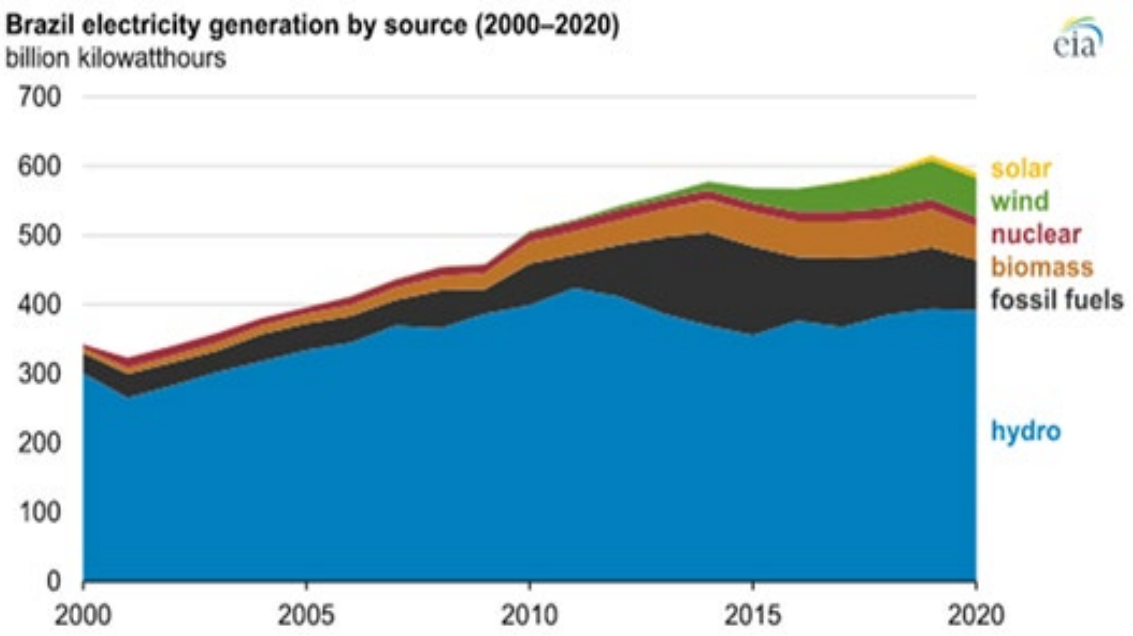
Table 1. Energy Mix in BRICS Countries and the World (2022)

Country	Fossil Fuels	Renewable Energy※	Nuclear
Brazil	50.29%	48.74%	0.98%
Russia	86.32%	6.71%	6.97%
India	88.46%	10.40%	1.14%
China	81.62%	16.02%	2.36%
South Africa	94.24%	3.88%	2.61%
World Avg.	81.79%	14.21%	3.99%

※ Includes hydro, solar, wind, geothermal, tidal power, and bioenergy. Source: Our World in Data, 2023.

Within the electricity sector, Brazil is even more exceptional. As of 2020, approximately 85% of Brazil's electricity was generated from renewable sources, with hydroelectric power alone accounting for over 60%. According to the International Energy Agency (2023), the share of fossil fuels in electricity generation has steadily declined since 2015, while renewable and nuclear sources have gradually increased (see Figure 4).

Figure 4. Electricity Generation by Source in Brazil (2000–2020)



Source: International Energy Agency (IEA, 2023)

This structural configuration makes Brazil an attractive receptor of foreign energy engagement. Three factors, in particular, shape their receptivity to energy diplomacy:

5.2 Key Features of the Brazilian Energy Market

5.2.1. Strategic Resource Endowments and Priority Sectors

Brazil's long-term energy strategy, as outlined in the National Energy Plan 2050 (PNE2050), identifies four priority areas:(1) renewable energy, (2) biofuels, (3) nuclear energy, and (4) oil and gas. Brazil ranks second globally in hydroelectric power generation, second in biofuel production, and seventh in uranium reserves. These rich endowments make Brazil a favorable partner for countries aiming to engage in technology transfer, production partnerships, and long-term energy cooperation. Unlike energy exporters such as Russia or China, whose diplomacy is tied to surplus capacity, Brazil offers a receptive and scalable domestic platform for innovation and market expansion.

5.2.2. Multi-level Governance and Subnational Diplomacy

Energy policy in Brazil is shaped not only by the federal government but also by powerful state-level actors. States such as São Paulo and Minas Gerais have actively promoted energy cooperation with emerging powers through subnational diplomacy. These engagements often involve public-private partnerships, technology parks, and memoranda of understanding with foreign entities, particularly from China and India.

In contrast, nuclear diplomacy—due to its strategic sensitivity—remains centralized under the federal government, particularly via coordination with Eletronuclear and the National Nuclear Energy Commission (CNEN). This division of responsibility reflects a hybrid model of federal and decentralized energy diplomacy.

5.2.3. Regulatory Openness and Depoliticized Supplier Criteria

Brazil's energy sectors are overseen by independent regulatory bodies. The National Petroleum Agency (ANP) manages oil, gas, and biofuels; the National Electric Energy Agency (ANEEL) regulates electricity; and the National Nuclear Energy Commission (CNEN) oversees nuclear energy. These agencies operate under clear technical mandates and ensure supplier compliance with safety and efficiency standards.

Importantly, Brazil maintains an open stance toward all supplier countries and firms that meet regulatory criteria. Unlike many Western countries, Brazil does not incorporate political considerations such as democracy or human rights into energy procurement decisions. This pragmatic posture reinforces Brazil's receptivity to energy diplomacy from a diverse range of emerging and established powers.

5.3. Diplomatic Pragmatism and Strategic Non-alignment

Brazil's foreign policy during the crisis period (2020–2023) reflected a pragmatic approach rooted in non-alignment. Successive governments have sought to diversify energy partnerships while minimizing entanglement in great power rivalries. This is evident in Brazil's simultaneous participation in China's Green BRI initiatives, India's Global Biofuels Alliance, and exploratory cooperation with Russia on nuclear energy. Rather than aligning with any one strategic bloc, Brazil has strategically positioned itself as an intermediary capable of leveraging multiple partnerships.

This non-alignment also facilitates Brazil's role in multilateral energy governance. Brazil has hosted and participated in key energy forums, including BRICS energy summits, G20 working groups, and UN climate platforms. Its leadership in the run-up to COP30 (to be held in Belém, 2025) underscores its growing normative influence in global climate and energy discussions.

5.4 Sectoral Engagements with China, India, and Russia

Brazil's engagement with China is most advanced in renewables. Chinese firms have participated in major wind and solar projects across the country, often in partnership with Brazilian state governments or development banks. Investment flows from China are supported by a dense diplomatic network and growing SOE–SOE ties.

With India, Brazil has expanded collaboration in biofuel research and commercialization. The two countries signed a series of MOUs and academic exchange agreements during 2021–2023, culminating in Brazil's role as a founding partner of the Global Biofuels Alliance. Indian firms have also explored manufacturing partnerships with Brazilian ethanol producers, aiming to create a South–South model of sustainable fuel production.

Russia-Brazil cooperation is more narrowly focused on nuclear energy. While Brazil has maintained its commitment to non-proliferation and the peaceful use of nuclear technology, it has welcomed cooperation with Rosatom in areas

such as modular reactor development and nuclear medicine. These initiatives remain exploratory but symbolize Brazil's willingness to engage across the technological spectrum.

6. Comparative Analysis and Strategic Implications

Despite shared ambitions as emerging powers, China, India, and Russia employ divergent energy diplomacy strategies, shaped by distinct technological capacities, industrial structures, and geopolitical preferences. Brazil's multi-vector engagement reveals both the appeal and limitations of each approach.

6.1 Comparative Patterns among Emerging Powers

A comparison of China, India, and Russia reveals at least three major axes of divergence: Emerging powers exhibit notable divergences in their strategic orientations toward energy diplomacy, which can be observed across three dimensions: technological orientation, diplomatic modality, and instruments of engagement. First, in terms of technological orientation, China leverages its industrial dominance by promoting large-scale infrastructure and manufacturing-based renewables, particularly in solar and hydropower. India, by contrast, focuses on innovation niches—most notably in biofuels—while positioning itself as a normative leader in multilateral fora. Russia adopts a high-tech exclusivity model, emphasizing nuclear diplomacy as a strategic tool to cultivate long-term dependence among partner countries.

Second, these states differ significantly in their diplomatic modalities. China pursues a hybrid approach that combines bilateral financing mechanisms with selective multilateralism, using platforms like BRICS and the Belt and Road Initiative to enhance legitimacy while retaining strategic flexibility. India adopts a more open and inclusive multilateral strategy, aligning with South–South initiatives such as the International Solar Alliance and the Global Biofuels Alliance. Russia, constrained by geopolitical tensions and sanctions, largely avoids multilateral engagement and instead relies on state-to-state bilateralism, where its diplomatic posture is tightly linked to broader geostrategic considerations.

Third, their instruments of energy diplomacy also diverge. China offers an integrated package of technology, financing, and infrastructure development, primarily through its state-owned enterprises (SOEs). India emphasizes joint research projects, institutional capacity-building, and leadership in agenda-setting within global governance frameworks. Russia provides end-to-end

nuclear energy solutions—ranging from reactor construction to fuel supply and waste management—anchored in long-term contracts that lock recipient states into extended technical and political dependencies.

6.2 Brazil's Role as a Strategic Receptor

Brazil does not engage with foreign energy diplomacy initiatives passively; rather, it selectively curates its partnerships to align with domestic development priorities and long-term strategic goals. Its receptivity is not rooted in dependency, but in a pragmatic set of enabling conditions. First, Brazil possesses an institutional architecture that upholds regulatory rigor while avoiding overt political favoritism in the selection of international partners. Second, its resource-rich and diversified energy matrix makes it an attractive site for collaboration across a wide spectrum of technologies, including hydro, wind, solar, biofuels, and nuclear. Third, Brazil's tradition of non-aligned foreign policy affords it strategic flexibility, enabling simultaneous cooperation with both Global North and Global South actors.

These conditions empower Brazil to adopt a multi-vector energy diplomacy strategy. It engages with China on renewable infrastructure, collaborates with India on biofuels and institutional innovation, and maintains long-term nuclear partnerships with Russia—all without becoming structurally dependent on any single actor. In this sense, Brazil exemplifies a receptive yet autonomous actor, navigating global energy diplomacy with both strategic selectivity and normative consistency.

6.3 Implications for Global Energy Governance

The interplay between the strategic approaches of emerging powers and Brazil's hybrid positioning yields several broader implications for the evolving landscape of global energy diplomacy. First, it highlights the fragmentation of global energy governance: rather than converging toward a unified regime, the field is increasingly characterized by competitive and differentiated models shaped by national industrial strengths and geopolitical interests. Second, Brazil's case illustrates a rescaling of South–South cooperation—one that is less ideologically driven than often assumed. Instead, such cooperation is pragmatic, adaptive, and issue-specific, guided by domestic policy priorities rather than normative alignment alone. Third, Brazil's multi-vector engagements underscore the need for interoperable frameworks. As recipient countries simultaneously engage with multiple partners, the absence of harmonized technical standards, financing protocols,

and governance principles risks inefficiencies and redundancy. Developing interoperable systems will be critical to enhancing coherence, minimizing friction, and maximizing developmental impact across diverse partnerships.

Table 2: Comparative Strategic Profiles in Brazil's Energy Sector[2]

Country	Technological Credibility	Diplomatic Modality Diversity	Host Country Engagement Depth	Strategic Profile
China	Moderate but improving (especially in solar PV, wind)	High (bilateral + multilateral + SOE-driven)	Deep (multiple companies active in NE/Southeast Brazil)	Supply-chain anchor with embedded diplomacy
India	Moderate (strong in biofuels, weak in solar R&D)	High (e.g., ISA, G20 biofuels alliance, tech MOUs)	Limited (mostly technical cooperation, few firms active)	Bilateral innovator and multilateral norm-setter
Russia	High (nuclear safety, reactor design)	Low (primarily bilateral, SOE-led)	Moderate (Rosatom–Eletronuclear agreements)	Strategic partner in high-sensitivity sectors

Notes: Author's elaboration based on observed state behavior in energy diplomacy (2020–2024). While broadly informed by comparative political economic frameworks developed in adjacent domains (e.g., health diplomacy), this table is independently constructed to reflect sector-specific dimensions of the energy transition.

7. Conclusion

This paper has analyzed the energy diplomacy strategies of three emerging powers—China, India, and Russia—during a period of overlapping global crises and examined how Brazil has responded as a receptive and strategic partner. Drawing on a comparative framework that integrates technological

[2] Author's elaboration based on empirical analysis of Brazil's bilateral energy cooperation during 2020–2024. While informed by previous comparative frameworks, this model introduces sector-specific and political-institutional dimensions relevant to the global energy transition.

capacity, institutional arrangements, and diplomatic modality, we find that emerging power strategies are both diverse and path dependent.

China's energy diplomacy leverages scale, infrastructure, and manufacturing advantages to promote a state-led, infrastructure-intensive approach. India, by contrast, emphasizes institutional leadership and biofuel innovation through multilateral and South–South platforms. Russia pursues a high-tech, bilateral strategy centered on nuclear technology and long-term contractual dependency. Each model reflects not only national industrial structures but also distinct geopolitical calculations.

Brazil's strategic autonomy and regulatory openness have enabled it to act as an agile and selective receptor. Rather than aligning with any single partner, Brazil has cultivated overlapping partnerships, aligning each engagement with domestic policy goals and sectoral strengths. Its approach reflects a form of "strategic multi-alignment" rooted in pragmatic non-alignment.

These dynamics reveal three key insights:

1. Energy diplomacy is increasingly multipolar, with no single dominant template among emerging powers.
2. South–South cooperation is not ideologically uniform but selectively constructed and strategically instrumental.
3. Recipient countries like Brazil play an active role, filtering and shaping foreign engagements based on domestic constraints and opportunities.

As the world approaches critical climate and energy milestones—such as Brazil's hosting of COP30 in 2025—understanding the differentiated strategies and interactions among emerging powers will become essential for designing inclusive, adaptive, and sustainable global energy governance.

These findings suggest that energy diplomacy in the Global South is not merely an extension of technological capabilities, but rather a function of institutional adaptability and diplomatic architecture. The tripartite framework proposed here offers a basis for future comparative studies on strategic engagement in decarbonization efforts.

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