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FROM RHETORIC TO REALITY: THE INSTITUTIONAL EVOLUTION OF BRICS ENERGY COOPERATION (2009–2025)

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Abstract

Structural transformations in global energy markets are reshaping the energy cooperation and financing needs of emerging economies. In this context, the expanding BRICS group is becoming an increasingly effective actor in global energy governance. The literature generally views the group's structure as a platform for dialogue limited to political declarations. However, this paper demonstrates that BRICS energy cooperation has gone beyond mere political rhetoric and has developed into an operational mechanism with technical tools and financial capacity. The paper analyses the group's development from an institutional evolution perspective. This analysis focuses on the simultaneous deepening of political, technical, and financial dimensions. Using a qualitative research method, this paper examines Leaders' declarations, Energy Ministers' Meeting decisions, and data from the New Development Bank (NDB) and the BRICS Energy Research Cooperation Platform (ERCP) covering the period 2009-2025. The findings show that energy cooperation is built on three core pillars. First, institutional resilience that sustains the energy agenda despite political tensions. Second, technical capacity that produces original data and strategies through the ERCP. The third is the financial infrastructure that provides resources for national development priorities through the NDB. Consequently, the paper argues that, rather than aiming to dismantle the current energy order, BRICS has evolved into a pragmatic and functional governance model that addresses the infrastructure and technology needs of member states through the mechanisms it has established.

Keywords

BRICS, Energy Governance, New Development Bank, Technological Neutrality, Just Transition.

Resumo

As transformações estruturais nos mercados globais de energia estão a redefinir as necessidades de cooperação e financiamento energético das economias emergentes. Neste contexto, o grupo BRICS, em expansão, está a tornar-se um interveniente cada vez mais eficaz na governação energética global. A literatura considera geralmente a estrutura do grupo como uma plataforma de diálogo limitada a declarações políticas. No entanto, este artigo demonstra que a cooperação energética do BRICS foi além da mera retórica política e evoluiu para um mecanismo operacional dotado de ferramentas técnicas e capacidade financeira. O artigo analisa o desenvolvimento do grupo numa perspetiva de evolução institucional. Esta análise centra-se no aprofundamento simultâneo das dimensões política, técnica e financeira. Utilizando um método de investigação qualitativa, este artigo examina as declarações dos líderes, as decisões da Reunião de Ministros da Energia e os dados do Novo Banco de Desenvolvimento (NDB) e da Plataforma de Cooperação em Investigação Energética do BRICS (ERCP), abrangendo o período de 2009 a 2025. Os resultados mostram que a cooperação

energética assenta em três pilares fundamentais. Em primeiro lugar, a resiliência institucional que sustenta a agenda energética apesar das tensões políticas. Em segundo lugar, a capacidade técnica que produz dados e estratégias originais através da ERCP. O terceiro é a infraestrutura financeira que fornece recursos para as prioridades de desenvolvimento nacional através do NDB. Consequentemente, o artigo argumenta que, em vez de visar o desmantelamento da atual ordem energética, o BRICS evoluiu para um modelo de governação pragmático e funcional que responde às necessidades de infraestruturas e tecnologia dos Estados-Membros através dos mecanismos que estabeleceu.

Palavras-chave

BRICS, Governação Energética, Novo Banco de Desenvolvimento, Neutralidade Tecnológica, Transição Justa.

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FROM RHETORIC TO REALITY: THE INSTITUTIONAL EVOLUTION OF BRICS ENERGY COOPERATION (2009–2025)[1]

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Introduction

The global energy landscape in the 21st century is undergoing a fundamental transformation driven by rising demand, geopolitical competition, and climate change. In this new era, where Western-centric governance structures are being questioned, the BRICS[2] group has expanded to include Egypt, Ethiopia, Indonesia, Iran, and the United Arab Emirates, in addition to its existing members. This expanding structure has the potential to reshape the global energy architecture, now that it has reached a level of maturity capable of challenging established powers like the European Union and limiting the dominance of Western-centric global governance through instruments such as summit diplomacy (Kırbaşoğlu & Tüfekçi, 2020; Dağ & Tüfekçi, 2025). Given the group's significant share of global energy production and consumption, collective action in sustainable development, energy security, and energy access is of great importance. In this context, analyzing the foundations and current status of BRICS' institutional policies in the energy sector is essential for future global energy projections, particularly during this transformation process where conceptual uncertainties in global politics and new forms of diplomacy signal a transition from an unsettled structure to a new order (Tüfekçi & Dağ, 2022; Dağ & Tüfekçi, 2022).

The international relations literature examines the role of the BRICS in global energy governance from various perspectives. On the one hand, skeptical authors such as Downie (2015) argue that the group's economic and political heterogeneity prevents the establishment of a concrete cooperation regime. In particular, the asymmetric interests between energy importers (China and India) and exporters (Russia and Brazil) contribute to this situation. Similarly, Cecchi (2025) and Mboya & Arun (2025) highlight the

[1] In this paper, AI tools such as DeepL and Gemini were used solely for translation support and grammatical correction. Suggestions provided by these tools were reviewed and finalized by the author(s). The scientific content, analyses, and results were independently developed by the author(s), who accept full ethical responsibility for the originality of the paper.
[2] Following the 2024 expansion, terms such as "BRICS+," "Expanded BRICS," and "BRICS+5" have become common in the literature. However, this paper prefers the acronym "BRICS" to emphasize the group's historical and institutional identity.

competition between China and India in the maritime domain. The authors argue that this competition complicates energy security cooperation. The literature addresses this competition from a soft balancing perspective (Pape, 2005; Hall, 2025). This perspective shows that India's BRICS strategy is based on limiting China's hegemony. Particularly after the 2020 Galwan Valley clashes, India has distanced itself from projects such as China's proposed Global Energy Interconnection for national security reasons. Furthermore, India has positioned the India-Middle East-Europe Economic Corridor initiative as an alternative to the Belt and Road Initiative. These developments clearly reveal the limitations of cooperation in the realm of low politics (Quimbre et al., 2023; Hall, 2025; Yurchenko & Tüfekçi, 2025; Rizzi, 2024). Beyond these debates over geopolitical competition, Ramluckun et al. (2024) highlight significant structural differences in the energy production profiles of member countries. The paper emphasizes that, unlike Brazil's largely renewable-based structure, South Africa and India continue to rely heavily on coal-based production models. The authors empirically demonstrate that these differences create technical asymmetry and complicate the establishment of a common policy ground.

In contrast, Lagutina (2019) emphasizes that the group has developed institutional resilience despite geopolitical competition. The author draws attention to the group's capacity to create an alternative to the Western-centric liberal order. Furthermore, the author notes that technical cooperation has deepened through institutional learning. Similarly, Wso & Mahmood (2025) focus on the group's motivation to create normative consistency against Western hegemony. The authors state that this motivation suppresses internal tensions stemming from national interests. Stuenkel (2020) expands on this perspective. The author notes that BRICS does not directly challenge the existing order, but instead builds its own institutions, as exemplified by the New Development Bank (NDB), and follows strategies of competitive multilateralism or institutional entrepreneurship. Thus, the group establishes alternative structures that are integrated into but complementary to the system. Cooper (2016), conceptualizing this institutional flexibility as club culture, considers the group's adoption of an informal, flexible operating model rather than a rigid charter or permanent secretariat a strategic choice. According to Cooper, this flexible structure allows for the compartmentalization of high-politics tensions, such as border disputes between China and India. Thanks to the pragmatic foundation this strategy establishes, cooperation in low-politics areas such as energy, infrastructure, and development financing can continue uninterrupted even if political competition persists. Turning to the recent waves of expansion, Griffin (2024) posits that BRICS has transformed into an energy super-bloc controlling 42% of global oil production. Liu & Papa (2022) examine the consequences of this transformation. The authors argue that the process has accelerated de-dollarization, including the petroyuan and trade in local currencies.

Carvalho et al. (2025) go beyond this binary opposition. The authors integrate Amitav Acharya's concept of multiplexity with Susan Strange's framework of structural power. The paper offers a more nuanced middle ground by proposing a structural-multiplex analytical framework. According to the authors, BRICS' role in energy governance is not a revolutionary movement that completely overturns the existing order. Nor is it a passive adaptation that fully integrates into the system. Instead, the group balances

systemic constraints with the pursuit of strategic autonomy. The group has followed a more complex route, which the authors describe as tempered incremental revisionism. According to this approach, the group is subject to Western-centric constraints at the systemic level, such as dollar hegemony and the established financial architecture. Therefore, the group has continued to exhibit structural dependence. However, the situation is different at the networked level. Instead of rigid institutional structures, the group has developed minilateral diplomacy and flexible, issue-specific coalitions. Thus, it has created a pragmatic sphere of influence in energy markets. Particularly after the expansion, a strategic overlap has emerged between BRICS membership and the OPEC+ structure. This has allowed the group to act as an informal but effective caucus in managing global oil supply. This networked pluralism strategy has enabled the group to act as an energy actor controlling 42% of global oil production, despite its internal differences. Consequently, this outcome shows that the group is following a sophisticated middle path aimed at transforming the system from within.

This paper aims to contribute to the post-expansion order debate highlighted by Patrick & Hogan (2025). The paper makes this contribution through the evolution of intra-group energy norms. Furthermore, the paper aims to fill an essential gap in the literature. This gap is the lack of a comprehensive paper assessing the financial and technical implications of these policies in the field. The paper essentially seeks to answer the questions: "How did BRICS energy cooperation evolve from a declaration-based political dialogue to an operational management mechanism during the period 2009-2025?" and "Through which institutional tools was this transformation achieved?" Based on these questions, the paper argues that BRICS energy cooperation did not remain merely rhetorical. The cooperation aligns with the parallel governance model. The group does not aim to dismantle existing energy institutions or completely break away from them. Instead, the group has evolved into a sui generis and concrete regime. This regime is based on mechanisms such as the NDB, the BRICS Energy Research Cooperation Platform (ERCP), and Energy Ministers' Meetings. This structure operationalizes the political vision set out in the summit declarations. Furthermore, the structure reflects the priorities of sovereignty, technological neutrality, and the right to development. This strategy grants member states the flexibility to act within the framework of their own just transition pathways. This flexibility eliminates the requirement for full compliance with Western-centric norms, such as restrictions on coal financing (BRICS Think Tanks Council, 2024).

The theoretical basis of the paper is a hybrid approach. This approach examines the evolutionary process of BRICS energy cooperation from a multi-layered perspective. The initial phase of cooperation is evaluated within the framework of the soft balancing concept defined by Pape (2005). This concept envisions the formation of coalitions through non-military diplomatic means to challenge the hegemony of the United States and the dollar's status as a reserve currency. However, energy projects require high capital intensity and long-term commitments. Diplomatic rhetoric alone has been insufficient to meet the growing energy and infrastructure needs of member countries. This situation has compelled the group to adopt a more organized, rule-based structure. The institutionalization process, in which cooperation has evolved into concrete mechanisms, is analyzed using Keohane's (1984) approach. Keohane views international regimes as a means of overcoming political market failure. According to Keohane,

cooperation is possible even in the absence of a hegemonic power. Institutions reduce transaction costs. They also address quality uncertainty by mitigating asymmetric information among members. In this context, the paper approaches the BRICS, positioning regional cooperation as a strategic lever, structured as the construction of an energy regime. The group has established technical platforms and financial mechanisms. These tools reduce uncertainty and information asymmetry and increase reputation costs. As a result, this structure enables member states to achieve long-term absolute gains rather than myopic self-interest (Dağ, 2025).

This paper, employing a qualitative research methodology, used document analysis techniques in the data collection and analysis. The paper adhered to Bowen's (2009) methodological framework. In this context, a systematic procedure comprising the stages of "skimming," "reading," and "interpretation" was followed. The paper's data set consists of 17 Leaders' Summit Declarations, Joint Statements from Energy Ministers' Meetings, ERCP technical reports, and NDB project databases covering the period 2009–2025. As Prior (2008) emphasized, these documents are not merely secondary sources. They also constitute primary data on the institutional evolution of BRICS energy cooperation. The paper examined these documents using a descriptive analytical approach. The analysis focused on key themes, including energy security, financing mechanisms, technological orientations, and the just transition. Furthermore, the analysis considers historical contexts. While seeking answers to the fundamental research question, the paper operationalized the phenomenon of institutional evolution. This process was conducted around three key qualitative monitoring parameters. The first is thematic deepening. This parameter tracks the transformation of concepts such as technology transfer and local currency. The analysis focused on how these concepts evolved from abstract aspirations into concrete policy items. The second is institutional functionality. This parameter measures the capacity of ERCP technical reports. The reports' capacity to inform decision-making mechanisms was evaluated. The third is financial consistency. This parameter interrogates the strategic alignment of NDB financing. The alignment of financing with committed clean energy and national development goals was examined. The data obtained was analyzed within this framework. The paper conducted a comparative consistency analysis between diplomatic discourse at the leadership level and technical reports and financed projects. This triangulation strategy provides an analytical basis. This basis addresses whether BRICS energy cooperation is a normative discourse space or an operational governance mechanism.

Framing Period (2009-2015)

During its incipient phase, BRICS energy cooperation was based on a shared perception of threats and political rhetoric. The primary motivation during this period was to minimize uncertainty in energy markets following the 2008 global financial crisis. The group also aimed to pursue a soft balancing strategy against the Western hegemony over global energy governance.

The BRICS's first concrete vision for energy was presented at the 1st Summit, held in Yekaterinburg in 2009. At this summit, leaders emphasized the need to strengthen coordination and cooperation to reduce uncertainty among energy producers, consumers,

and transit countries and to ensure stability and sustainability (Ministry of Foreign Affairs of the People's Republic of China, 2009). To this end, the final communiqué published at the summit established the group's energy policy on three main pillars. First, it aimed to ensure diversification of energy sources and supply, including renewable energy. Second, it sought to establish the security of energy transmission lines and encourage new energy investments and infrastructure projects. Third, the communiqué underscored international cooperation on energy efficiency and stated that the fight against climate change should be integrated with socio-economic development goals, based on the principle of "Common but Differentiated Responsibilities" under the United Nations (UN) Framework Convention on Climate Change (UNFCCC) (BRICS Information Centre, 2009).

The 2nd Summit, held in Brasilia in 2010, was built on these fundamental principles. At the summit, energy was defined as a fundamental resource for raising the quality of life, and the critical importance of access to energy for equitable and socially inclusive economic growth was reaffirmed. Leaders at this summit broadened their vision, committing to diversifying the energy mix by promoting the cleaner use of fossil fuels and increasing the share of renewable sources. In particular, the summit expressed a strong commitment to developing concrete cooperation in sustainable biofuel production, R&D, and technology transfer (BRICS Think Tanks Council, 2010). At these summits, leaders re-examined energy security in terms of the interdependence of supply and demand security and, contrary to the importer-focused security approach that dominates Western literature, presented a new vision for dialogue that balances the interests of producers (Russia, Brazil) and consumers (China, India). This approach reframes energy, transcending its status as merely a market commodity and positioning it as an integral component of states' right to development and a strategic public good (Umutlu & Çalışkan Terzioğlu, 2025).

At the 2011 Sanya Summit, where institutionalization deepened and the structure formalized the BRICS configuration with South Africa's participation, support for renewable energy sources was reiterated, and the critical role of these sources in combating climate change was reiterated. However, the key factor distinguishing this summit from previous ones in terms of energy policies was that nuclear energy was included as a concrete agenda item for the first time. The summit communiqué stated that nuclear energy would continue to be an important element in the future energy mix of member countries and emphasized the need for international cooperation in developing peaceful nuclear capacity, strictly adhering to high safety standards (Sekine, 2011; The World and Japan Database, 2011). This move, which marks a critical juncture in the normative evolution of BRICS, is of vital importance because it represents the group's first significant divergence from global norms. Particularly at a time when Germany, one of the driving forces of the EU, is transitioning toward a nuclear-free economy with its Energiewende policies, BRICS's endorsement of nuclear energy as an indispensable part of its energy mix is a declaration of strategic autonomy developed against Western-centric approaches. This situation also supports the contestation literature, which argues that the energy security perceptions of rising powers are shaped by priorities justified by the need for rapid industrialization and developmentalism rather than by Western environmental sensitivities (Ekman & Everts, 2024).

Following this emphasis on nuclear energy and renewable sources, a more pragmatic approach was adopted at the 4th Summit, held in New Delhi in 2012, acknowledging that fossil fuels would remain dominant in the energy mix in the medium to long term. Although leaders reiterated their commitment to expanding clean energy sources to meet growing demand while addressing climate concerns, the summit's main focus was market stability. The declaration emphasized that extreme volatility in energy and food prices threatens global prosperity, and a call was made to strengthen producer-consumer dialogue. Furthermore, in line with International Atomic Energy Agency standards on nuclear energy, it was noted that compliance with safety protocols in the design and operation of power plants is essential for public safety —a stance likely reinforced by the prevailing global concerns following the Fukushima incident (Embassy of the Russian Federation in the Republic of Tunisia, 2012).

Following a period in which market stability was prioritized, the 5th Summit, held in Durban in 2013, marked a critical turning point, with energy cooperation taking concrete shape in its financial and institutional dimensions. The inadequacy of the Bretton Woods system in financing infrastructure and energy gaps on the African continent led the BRICS countries to explore the feasibility of establishing the NDB. At this summit, where environmental sustainability was once again placed at the center, commitment to fundamental goals such as universal energy access, supply security, and affordability was reaffirmed. The Durban Declaration stated that the diversity of renewable and low-carbon sources must be increased to strengthen energy security and highlighted the role of public-private partnerships in financing these projects. Furthermore, leaders agreed that the energy transition should not be limited to the supply side (production) but must also be accelerated on the demand side, specifically in consumption sectors such as transportation, heating, and industry (Ministry of External Affairs, Government of India, 2013).

In the 6th Summit declaration held in Fortaleza in 2014, this transformation process was framed primarily through an economic lens rather than its environmental dimension. While acknowledging that fossil fuels remain the primary energy source, it was reiterated that renewable energy, R&D, and energy efficiency are the fundamental drivers of sustainable development. The declaration underscored that these elements have the potential to be engines of growth, reduce energy costs, and increase the efficiency of natural resource use. Furthermore, the need to strengthen international cooperation for universal energy access and clean energy incentives, which directly affect standards of living, was emphasized (Law and Business Review of the Americas, 2014).

The 7th Summit, held in Ufa in 2015, represented a pivotal milestone in establishing a concrete, institutional framework for BRICS energy cooperation. The Summit adopted "The Strategy for BRICS Economic Partnership," which outlined the main features of the bloc's future economic partnership (Ministry of Foreign Affairs of the People's Republic of China, 2015). The energy section of the strategy stated that promoting sustainable production and consumption is vital for the economic development of member countries. A number of priority areas were defined within the scope of the document to enhance energy security. These were identified as diversifying sources, developing infrastructure, ensuring universal access, increasing efficiency, sharing clean technologies, and making optimal use of low-emission sources such as natural gas. A regular energy dialogue

mechanism was established to achieve these goals and coordinate long-term strategies. As the first concrete step in this mechanism, Russia was designated to host the inaugural BRICS Energy Ministers' Meeting (Russian Presidency of the 7th BRICS Summit, 2015; Ministry of Foreign Affairs of the People's Republic of China, 2015). This effort, which marked the beginning of the institutionalization of the energy dialogue at the highest level, was reinforced in the same year by the Memorandum of Mutual Understanding in Energy Saving and Energy Efficiency among the respective ministries. This text stipulated the creation of an inventory of energy-efficient technologies and laid the foundation for technical cooperation mechanisms such as the BRICS Working Group on Energy Saving and Improvement of Energy Efficiency (BRICS Information Centre, 2015).

Corporate Building Process (2016-2020)

The institutional framework established in 2015, symbolizing the transition from political rhetoric to practical cooperation, acquired operational momentum through actionable projects during India's chairmanship in 2016. The BRICS Working Group on Energy Saving and Improvement of Energy Efficiency, which met in Visakhapatnam, India, on July 4-5, 2016, served as a platform for sharing national strategies and best practices, such as the LED conversion and Performance Achievement & Trade program led by India. The meeting resulted in the adoption of a Joint Statement setting out a roadmap for cooperation and a tangible Work Plan (Press Information Bureau, Government of India, 2016). The 8th Goa Summit, held immediately after the Paris Climate Agreement, was of strategic importance, confirming the key role of nuclear energy in fulfilling commitments and long-term greenhouse gas reduction. In this context, it was emphasized that predictable access to technology and finance is vital for increasing civil nuclear capacity (Ministry of External Affairs, Government of India, 2016). Parallel to political and institutional steps, 2016 also stands out as the year in which the NDB approved its first six projects in the field of clean energy and energy efficiency.[3]

This first project package demonstrates the implementation of the Goa Summit's energy transition vision through the NDB. By financing diverse energy modalities, such as solar and wind in China and hydroelectricity in Russia, the NDB has ensured resource diversification, particularly in Chinese projects, by advancing de-dollarization in the financial architecture by using local currencies. In Brazil, channeling funds through national development banks has supported institutional capacity-building. Through this multifaceted strategy, the NDB has become a pivotal actor in financing the energy transition of the Global South, in line with the goals of the Paris Climate Agreement.

Developments in 2017 gained momentum with the Second BRICS Energy Ministers' Meeting held in Beijing on June 7, prior to the leaders' summit. The Joint Statement issued at the end of the meeting codified the common understanding that underpins energy cooperation.

[3] Project areas supported by the NDB include *transport infrastructure, water and sanitation, environmental protection, social infrastructure, digital infrastructure, multiple areas,* and *COVID-19 emergency assistance*. However, this paper focuses on the *energy and energy efficiency* sector, as it represents a concrete indicator of financial commitments to energy transition and signifies the evolution of cooperation from a theoretical framework to practical applications.

Table 1. The first clean energy and energy efficiency projects approved/completed by NDB in 2016

Project Name	**Country**	**Approval Date and Status[4]**	**NDB Financing Limit**	**Project Purpose and Summary**
Lingang Distributed Solar Power Project	China	April 13, 2016 (completed)	RMB 222.6 million	To promote clean energy development with rooftop solar panels in Shanghai's Lingang district.
Financing of Renewable Energy Projects and Associated Transmission Project	Brazil	April 13, 2016 (completed)	USD 300 million	To provide a loan to the Brazilian Development Bank (BNDES) to reduce reliance on hydroelectric power.
Project Finance Facility for Eskom	South Africa	April 13, 2016 (approved)	USD 180 million	To support grid connection infrastructure and reduce dependence on fossil fuels.
Beliy Porog Hydro Powerplant Project	Russia	July 20, 2016 (approved)	USD 100 million	To construct two run-of-river hydroelectric power plants with a total installed capacity of 49.8 MW in the Karelia region.
Putian Pinghai Bay Offshore Wind Power Project	China	November 22, 2016 (completed)	RMB 1.97 billion	To build a 246 MW offshore wind power plant in Fujian.

Source: NDB, 2016.

The communiqué acknowledged that fossil fuels remain the dominant energy source, while reiterating that renewable energy and new technologies are the primary drivers of sustainable development. The ministers agreed to promote cooperation in solar, wind, bioenergy, and hydroelectricity, to create strategic reserves for energy security, and to recognize natural gas as a critical bridge fuel in the energy transition. One of the most tangible outcomes of the meeting was the decision to launch feasibility studies for establishing an ERCP that will integrate the resource and technology capacities of member countries. Additionally, the NDB's role, particularly in clean energy and energy efficiency, was acknowledged, and the bank's inaugural RMB green bond issuance was warmly welcomed (Ministry of Energy of the Russian Federation, 2017). This technical and strategic framework was also endorsed at the leadership level at the 9th Summit held in Xiamen that same year. Addressing energy in the context of green development, the leaders supported continuing the dialogue on establishing the research platform proposed at the Ministerial Meeting, thereby paving the way for the next institutional milestone (The State Council Information Office of the People's Republic of China, 2017).

The year 2018 marked a deepening of the institutionalization of BRICS energy cooperation. While high-level official mechanisms were strengthened on one hand, the bloc's youth structure made substantive contributions to the energy agenda on the other.

[4] To analyze the tangible outcomes and actual financial commitments of BRICS' financial mechanisms, this paper includes only projects with completed and approved status, projects in the cancelled or proposed stage have been excluded.

At the official level, the declaration issued at the 3rd BRICS Energy Ministers Meeting, held in Johannesburg on June 28, outlined the common vision. While confirming their commitment to the UN Agenda 2030 and the Paris Agreement, the ministers emphasized that a just transition could be achieved through the technological opportunities offered by the fourth industrial revolution. The most concrete outcome of the meeting was the establishment of a Senior Energy Officials Committee to coordinate cooperation (Ministry of Mines and Energy of Brazil, 2018). In addition to developments at the official level, 2018 also drew attention with the work of the BRICS Youth Energy Agency (BRICS YEA). The BRICS Youth Energy Outlook 2018, published by the agency with the main theme of "Energy in the digital future," presented a shared vision of the contribution of digitalization in areas such as cost reduction and network stability (BRICS Youth Energy Agency, 2018). These technical and youth-focused activities received formal institutional endorsement at the 10th Summit held in Johannesburg that same year. The most strategic outcome of the Summit was the official establishment of the ERCP, which will guide future joint efforts, and the adoption of its Terms of Reference (BRICS Information Centre, 2018). Financially, the NDB supported this vision by approving three major projects focused on clean energy and efficiency in 2018.

Table 2. Clean energy and energy efficiency projects approved/completed by NDB in 2018

Project Name	**Country**	**Approval Date and Status**	**NDB Financing Limit**	**Project Purpose and Summary**
Jiangxi Natural Gas Transmission System Development Project	China	November 16, 2018 (approved)	USD 400 million	To balance the coal-based structure, construct 2,134 km of pipelines and storage facilities in Jiangxi.
Greenhouse Gas Emissions Reduction and Energy Sector Development Project	South Africa	July 20, 2018 (completed)	USD 300 million	To support renewable energy projects and provide loans from the Development Bank of Southern Africa (DBSA) for structural transformation.
Guangdong Yudean Yangjiang Shapa Offshore Wind Power Project	China	November 16, 2018 (completed)	RMB 2 billion	To prevent 499,500 tons of carbon emissions annually by establishing a 300 MW offshore wind power plant in Guangdong.

Source: NDB, 2018.

Table 2 illustrates that the NDB has pursued a pragmatic energy financing strategy aligned with the national realities of its member countries. In particular, the acceptance of natural gas as a transition fuel in the Jiangxi project in China and the DBSA-focused model in South Africa demonstrate the equilibrium between energy security and climate goals. Wang (2019) characterizes the NDB's rejection of the conditionality principle inherent in Bretton Woods institutions as a model of multilateral development. The Eskom and BNDES loans in South Africa and Brazil, respectively, corroborate this characterization. The NDB financed public institutions in fiscal distress with these projects

and, contrary to the privatization pressure of Western institutions, aimed to strengthen the state's institutional capacity.

The year 2019 marked a period during Brazil's presidency when energy cooperation gained an operational foundation. The 4th BRICS Energy Ministers' Meeting held in Brasilia on November 11 represented a critical milestone in the institutionalization process with the adoption of the ERCP's Terms of Reference. This step provided the platform with the necessary institutional framework for joint research in technology and innovation. Ministers also reached consensus on the role of natural gas and nuclear energy in line with Sustainable Development Goal 7 (SDG 7-Affordable and clean energy) (BRICS Information Centre, 2019a). The BRICS Youth Energy Outlook 2019 report, which provided intellectual impetus to the formal process, addressed topics such as hydrogen and digitalization under the theme of Energy 4.0 (BRICS Youth Energy Agency, 2019). This report is significant because it is the first comprehensive international study to reflect the energy vision of youth. Technical and academic preparations throughout the year culminated in political approval at the 11th Leaders Summit, and the ERCP officially commenced operations (BRICS Information Centre, 2019b). In the financial sphere, the NDB approved four projects focusing on battery storage technologies and renewable energy infrastructure, which are critical for grid stability.

Table 3. Clean energy and energy efficiency projects approved/completed by NDB in 2019

Project Name	Country	Approval Date and Status	NDB Financing Limit	Project Purpose and Summary
IDC Renewable Energy Sector Development Project	South Africa	March 31, 2019 (approved)	ZAR 1.15 billion	As part of the coal phase-out strategy, finance wind, solar, and biomass projects through the Industrial Development Corporation (IDC).
Development of the Renewable Energy Sector in Russia Project	Russia	September 12, 2019 (completed)	USD 300 million	Provide credit for renewable energy projects through the Eurasian Development Bank (EDB) to diversify the energy mix.
REC Renewable Energy Sector Development Project	India	October 14, 2019 (completed)	USD 300 million	Finance a 655 MW power plant and transmission lines to reduce thermal power dependency.
Battery Energy Storage Project	South Africa	December 16, 2019 (approved)	ZAR 6,000 million	Establish large-scale battery storage systems with a capacity of 1,440 MWh within Eskom to ensure grid stability.

Source: NDB, 2019.

The project distribution in Table 3 indicates that the NDB's 2019 financing strategy focused on system integration. In particular, the battery storage project in South Africa is an important initiative that addresses the intermittency profile of renewable energy

and ensures grid stability, in line with the Energy 4.0 vision. Furthermore, the NDB's use of intermediary institutions such as IDC and EDB to allocate resources demonstrates that its strategy of spreading financing to channel finance and strengthening local institutional capacity has become an institutionalized strategy.

Under Russia's chairmanship, and notwithstanding the challenging conditions precipitated by the COVID-19 pandemic, 2020 was a period in which the strategic framework for energy cooperation was deepened. At the 12th Summit in Moscow, leaders approved critical documents that will shape the bloc's future vision. The pivotal document was the "Roadmap for BRICS energy cooperation up to 2025," adopted at the end of the 5th Energy Ministers' Meeting. This roadmap aims to establish a strategic partnership by promoting coordination across energy policies, trade, investments, and technological cooperation. The document delineates a three-phase approach to cooperation. The first phase involves continuing joint analyses and institutionalizing the ERCP; the second phase focuses on identifying energy security needs and solutions, and the third phase envisions concrete areas of cooperation for the diffusion of advanced technologies and investments (Ministry of Mines and Energy of Brazil, 2020). The document "Strategy for BRICS Economic Partnership 2025," adopted in the same year, also positions energy as one of the main pillars of sustainable development (Russian Presidency of the 12th BRICS Summit, 2020).

2020 also marks the year in which the ERCP yielded its first tangible results. Two important reports, prepared within the framework of the platform and welcomed at both the Ministerial Meeting and the Leaders' Summit, were published. The "BRICS Energy Report" revealed that while the bloc accounts for 40% of the global population, it only contributes 37% to global energy consumption, with coal dominating the current energy mix (49%). However, it is projected that this balance would shift in favor of renewables and natural gas by 2040 (BRICS Energy Research Cooperation Platform, 2020a). The "BRICS Energy Technology Report," aimed at identifying areas of mutual interest in energy technologies, mapped 547 different technologies, including digitalization and smart grids. According to the report's findings, smart grids, digital twins, grid monitoring technologies, and autonomous processing of seismic data emerged as the most promising avenues for cooperation (BRICS Energy Research Cooperation Platform, 2020b). On the youth engagement front, BRICS YEA published the BRICS Youth Energy Outlook report, prepared with more than 180 young experts, and sought answers to critical questions such as emission reduction in the context of Industry 4.0 and the post-pandemic period from the perspective of youth (BRICS Youth Energy Agency, 2020).

This period served as a critical litmus test for the rival explanations adopted in the paper. The approval process of the roadmap revealed that the issue was more than just a technical procedure. Despite the high politics crisis between China and India in the Galwan Valley that resulted in casualties that same year, the parties' agreement on the roadmap and ERCP reports demonstrate that institutional mechanisms can be insulated from political conflicts. This resilience confirms Cooper's (2016) compartmentalization hypothesis and refutes skeptical arguments that geopolitical competition would end cooperation. In parallel, the NDB's portfolio during this period highlights the difference between its financing strategy vis-à-vis Western institutions. Neunuebel et al. (2025) highlight that the NDB's model, characterized by non-conditionality, aligns with national

priorities and is sensitive to local issues. Unlike commercial banks, this development-oriented approach has mitigated currency risk by using local currencies and increased the feasibility of green projects.

Deepening and Norm Production (2021-2025)

In the post-2020 period, the global climate regime that consolidated around the Paris Agreement and the increased geopolitical fractures following the Ukraine War have enabled the BRICS to evolve from a defensive position to a norm-entrepreneurial role. The most tangible manifestation of this strategic transformation was seen in 2021, under India's chairmanship, with a shift in energy cooperation to a more practical and strategic footing. The Joint Declaration adopted at the 6th Energy Ministers' Meeting held within the framework of the 13th Summit in New Delhi has established a new norm against Western-centric prescriptions, asserting the sovereign rights of member countries to determine the pace of energy transition in accordance with their own national conditions. For the first time in the history of the Summit, a vision for an inclusive energy system encompassing fossil fuels, hydrogen, nuclear, and renewable sources was presented, while the concept of energy security was expanded beyond supply stability to include the secure supply of critical minerals and the necessity of material recycling. (Ministry of Power, Government of India, 2021).

This normative consensus is the result of contentious intra-group negotiations rather than a spontaneous, smooth process. While India and Russia, heavily reliant on fossil fuels, resisted Western pressure for rapid decarbonization, China and Brazil aimed to strengthen their leadership in renewable energy. In this context, just transition served not only as an environmental goal but also as a strategic variable balancing conflicting interests. Indeed, instead of completely excluding fossil fuels, the parties managed to transform friction into cooperation by agreeing on the principle of technological neutrality, which includes hydrogen and Carbon Capture, Utilization and Storage (CCUS) technologies.

Under India's leadership, this consensus has catalyzed the way for an expanded agenda, leading to the publication of two key documents on CCUS and Circular Carbon Economy technologies. First, the BRICS Energy Technology Report 2021 prioritized clinker substitution and direct-reduced iron technologies in industry, as well as transportation and building automation, within the scope of deep decarbonization (BRICS Youth Energy Agency, 2021a). The second document, the BRICS Energy Research Directory, aggregated more than 50 research institutions to create an inventory for scientific cooperation (BRICS Youth Energy Agency, 2021b). On the financial front, the NDB has approved a critical LNG project for China's transition from coal to gas, transforming the discursive cooperation, which extends to strategic areas such as hydrogen and deep decarbonization, into concrete investment.

Table 4. Clean energy and energy efficiency projects approved by NDB in 2021

Project Name	Country	Approval Date and Status	NDB Financing Limit	Project Purpose and Summary
Beijing Gas Tianjin Nangang LNG Emergency Reserve Project	China	March 9, 2021 (approved)	EUR 436 million	As part of the "transition from coal to gas" policy, an LNG terminal and storage facility are being constructed in the Beijing-Tianjin-Hebei region to meet peak demand during the winter months.

Source: NDB, 2021.

The 14th Summit, held in Beijing in 2022, took place amidst geopolitical tensions and concerns about energy supply security. The summit emphasized the central role of energy security in achieving sustainable development goals, recognizing each country's right to an energy transition specific to its national circumstances, and reiterated the importance of access to modern and reliable energy (Ministry of Foreign Affairs of the People's Republic of China, 2022a). This political framework was subsequently translated into the technical domain with the 7th Energy Ministers Meeting, held virtually on September 22, 2022. At the meeting, consensus was reached on the future of the ERCP and the low-carbon transition, resulting in the publication of three critical reports prepared by the ERCP: the BRICS Energy Report 2022, the BRICS Renewable Energy Report 2022, and the BRICS Smart Grid Report 2022 (Ministry of Foreign Affairs of the People's Republic of China, 2022b). These efforts have been confirmed at the leadership level, securing top-level political support for technical cooperation. In parallel with the formal processes, BRICS YEA has expanded its work to the BRICS+ format. The BRICS Plus Youth Energy Outlook 2022 report, focusing particularly on energy access, climate risks, and clean cooking opportunities in Africa, highlights one of its most striking findings: 68.7% prefer electrification as the fuel of the future in transportation and cooking technologies. Reflecting the vision of young stakeholders amidst the uncertainty created by the pandemic and political tensions, the report indicates that young people believe the current energy crisis will accelerate the transition to renewable energy despite the costs. Notably, 70% of young participants support nuclear energy as a solution to climate change, while seeing SDG 7 and SDG 9 (Industry, Innovation, and Infrastructure) as closely linked. With the planned presentation of this report at the UNFCCC in Egypt (COP27), the bloc's youth voice was effectively amplified on the global stage (BRICS Youth Energy Agency, 2022).

The 15th Summit held in Johannesburg in 2023 placed the concept of a just, affordable, and sustainable transition at the center of the energy agenda. The Summit communiqué emphasized that, given the dual status of BRICS countries as both major producers and consumers, energy security and transformation processes must be managed in a balanced manner. While the need for full participation in clean energy value chains and increased supply chain investments was noted, the role of fossil fuels in supporting energy security was also confirmed (South African Government, 2023a). The foundation for this agenda was laid at the 8th Energy Ministers Meeting held on August 18, 2023, where host South Africa's just (energy) transition priorities for the continent were

articulated (South African Government, 2023b). The most concrete outputs of the year were two comprehensive reports prepared by the ERCP, which substantiated the concept of just transition with empirical data. First, the BRICS Energy Security Report 2023 was published, proposing that the bloc, which consumes 40% of global energy, manage the balance between fossil fuel dominance and renewable energy through resource diversification and joint trade (South African National Energy Development Institute, 2023a). In addition, the BRICS Energy Transition Skills Report 2023, which addresses the human dimension of the transition, emphasizes that the process is not only technological but also a profound workforce restructuring transformation for member countries, which account for 80% of the global coal sector workforce; it has identified a serious skills gap, particularly in the areas of digital network management and cybersecurity (South African National Energy Development Institute, 2023b).

The 2023 studies have shown that BRICS no longer confines its energy future exclusively to the traditional paradigm of supply security. With this summit, the bloc has solidified its commitment to a transformation that protects the workforce and is inclusive and equitable. This normative orientation, cultivated under South Africa's chairmanship, is far from arbitrary. Indeed, Ramluckun et al. (2024), in their analysis of BRICS members' Nationally Determined Contribution documents, found that South Africa was the only member to categorically include the concept of Just Energy Transition in the context of protecting the workforce and social dialogue. This reality not only elucidates why the country sought to transform this vision into a bloc norm during its 2023 presidency, but also explains the creation of an alternative to Western-centric Just Energy Transition Partnership models. In this context, Csanadi & Helmeci (2025) note that the Western model tethers financial aid to the condition of a rapid exit from coal, whereas the BRICS approach, led by South Africa, advocates a more flexible, gradual transition that prioritizes energy security and economic growth.

In 2024, under the chairmanship of the Russian Federation, the energy policies of the expanding bloc were concretized around the twin pillars of technological neutrality and just transition. At the 16th Leaders' Summit in Kazan, it was emphasized that BRICS members are the world's largest producers of natural resources, and a call for cooperation across the value chain was made (President of Russia, 2024). This vision was further detailed in the Communique issued at the 9th Energy Ministers' Meeting in Moscow on September 26, 2024. The ministers confirmed that the bloc's expansion creates complementarity in energy systems and prioritized the issue of using national currencies in energy trade. The Communique emphasized that ensuring universal access to affordable, reliable, and modern energy, in line with SDG 7, is a priority of the global energy agenda. The most strategic element of the text was adopting the principle of technological neutrality. This principle envisages the non-discriminatory use of all sources that reduce emissions, such as renewable energy, nuclear energy, low-emission hydrogen, and fossil fuels with carbon capture technology. Furthermore, terrorist attacks against cross-border energy infrastructure were condemned, and attention was drawn to market stability (Ministry of Energy of the Russian Federation, 2024). A seminal deliverable of 2024 was the BRICS Just Energy Transition Report 2024, prepared by ERCP. The report advocated for each country's right to access energy, essential for national security and social stability, through country-specific transition pathways rather than a

single, uniform prescription (South African National Energy Development Institute, 2024). On the youth front, the BRICS Youth Energy Outlook 2024, reflecting the voice of the Global South and featuring over 120 young experts, offered analyses across a wide range of areas, from a just and sustainable energy transition and resource management to critical minerals and nuclear energy (BRICS Youth Energy Agency, 2024). On the financial front, the NDB continued its energy commitment in 2024 by approving three critical infrastructure projects in Brazil and India focused on clean energy and energy efficiency.

Table 5. Clean energy and energy efficiency projects approved by NDB in 2024

Project Name	Country	Approval Date and Status	NDB Financing Limit	Project Purpose and Summary
Electricity Distribution Infrastructure Modernization Project	Brazil	October 23, 2024 (approved)	RMB 1,425 million	Modernizing infrastructure in São Paulo to provide access to electricity for households without power and to increase efficiency.
Brasilia Capital of Solar Lighting Project	Brazil	December 26, 2024 (approved)	EUR 77 million	Replacing 129,000 lamps with LEDs in public lighting and building a 100 MW solar power plant.
SAEL 300MW Renewable Energy Project	India	December 27, 2024 (approved)	USD 63 million	Constructing a 300 MW solar power plant and transmission line in Andhra Pradesh.

Source: NDB, 2024.

Table 5 illustrates the tangible financial operationalization of the technological neutrality and just transition vision articulated at the Kazan Summit. In 2024, the NDB moved beyond the traditional approach focused solely on increasing production capacity, directly linking SDG 7 goals to social welfare through public lighting and grid modernization projects in Brazil. The preference for RMB financing, particularly for the São Paulo project, serves as empirical evidence that the strategy of using national currencies, emphasized at the Ministerial Meeting, is being effectively implemented in infrastructure financing. When considered alongside the solar energy investment in India, this demonstrates the Bank's establishment of a flexible financing regime that respects country-specific transition patterns. However, to maintain analytical rigor, it is essential to note the challenges in implementing these projects. In particular, the restrictions on the NDB's access to international capital markets following the Ukraine War constrained its financing capacity. As Neunuebel et al. (2025) point out, the bank's shift towards local currencies in its São Paulo and India projects is not merely a preference, but a necessary and pragmatic adaptation strategy developed in response to the tightening of dollar liquidity. This demonstrates that the collaboration is not immune to external shocks but can develop institutional resilience against them.

2025 marked a historic turning point for energy cooperation under Brazil's presidency, attaining a level of institutional maturity. Transcending the phase of mere rhetorical reiteration, the bloc adopted fundamental documents defining its medium-term strategy

(Department of International Relations and Cooperation, Republic of South Africa, 2025). At the heart of this process was the 10th Energy Ministers Meeting, convened on May 19, 2025, and the Joint Communiqué adopted. The Communiqué formally endorsed the Roadmap for BRICS Energy Cooperation 2025-2030, prepared by the BRICS Committee of Senior Energy Officials, outlining the vision for the next five years. While acknowledging the role of fossil fuels in developing economies, the ministers called for a just, orderly, and equitable energy transition. The process is built upon the SDG 7 goals, technological neutrality, and the principles of common but differentiated responsibilities and respective capabilities. The most strategic innovation of the Communiqué is the promotion of local currencies in energy trade and the recording of concerns against unilateral sanctions. Furthermore, the secure supply of critical minerals for low-emission technologies has been prioritized, and constructive engagement towards the COP30 summit in Brazil has been confirmed (Ministry of Mines and Energy of Brazil, 2025; Ministry of Mines and Energy of Brazil BRICS Committee of Senior Energy Officials, 2025a). The 2025-2030 Roadmap, which translates this political framework into concrete actions and is technically implemented by the ERCP, focuses cooperation on four key objectives: strengthening BRICS cooperation and coordination on the international energy agenda; expanding the scope of cooperation based on energy security and equitable and inclusive energy transitions; improving governance, decision-making, and implementation processes for cooperation initiatives; and increasing trade in energy-related goods and mutual investment. To achieve these objectives, the cooperation structure is divided into two main branches: Sectoral Cooperation and Cross-cutting Areas. Sectoral Cooperation covers sectoral issues such as renewable energy, bioenergy, hydrogen, and CCUS, while Cross-cutting Areas details priorities such as financing, critical minerals, digitalization, and skills development for a just transition (Ministry of Mines and Energy of Brazil, BRICS Committee of Senior Energy Officials, 2025b). The NDB, which forms the financial component of the roadmap, has approved two critical projects in 2025 that are fully aligned with current targets.

Table 6. Clean energy and energy efficiency projects approved by NDB in 2025

Project Name	Country	Approval Date and Status	NDB Financing Limit	Project Purpose and Summary
Shanxi Taiyuan Wusu Zero-Carbon Airport Project	China	July 14, 2025 (approved)	RMB 1.448 billion	Installation of solar, geothermal, smart energy, and storage systems to reduce the airport's net CO2 emissions to zero.
Serra da Palmeira Wind Power Project	Brazil	September 17, 2025 (approved)	RMB 1,400 million	Construction of a 648 MW wind power plant in Paraíba Prefecture. The use of Chinese-made turbines exemplifies intra-BRICS technology trade and the use of local currencies.

Source: NDB, 2025.

The projects in Table 6 demonstrate that the 2025-2030 Roadmap has moved beyond a theoretical framework and has been operationalized through the NDB. The project in

China presents a comprehensive model integrating renewable energy, storage, and digitalization under the Sectoral Cooperation heading defined in the Roadmap. However, the profound strategic significance lies in the Serra da Palmeira project in Brazil. The use of Chinese-made turbines and financing in RMB for this project directly implements the goals of increasing energy-related goods trade and promoting local currencies outlined in the Ministerial Declaration. This is fully consistent with Liu & Papa's (2022) thesis of de-dollarization. With this move, the NDB has moved beyond being merely an infrastructure financier to assume the role of a market and rule maker governing technology transfer and trade integration within BRICS. This emerging picture indicates that intra-group trade is shifting away from a raw-materials-focused structure toward a South-South Technology Ecosystem, and that the energy transition is being used not only as an environmental necessity but also as a means of geo-economic autonomy.

Conclusion

This paper analyzed the evolution of BRICS energy cooperation during the 2009-2025 period from an institutional perspective and revealed that the group has transformed from a consultative platform into an operational mechanism with concrete tools. The findings show that BRICS' institutional development in the energy sector is predicated on three pillars: institutional flexibility, technocratic knowledge production, and financial infrastructure.

Firstly, the soft balancing strategy discussed within the theoretical framework of this paper has given way to functional institutionalization in the post-2015 period. The analyzed Leaders' Summit and Energy Ministers' declarations demonstrate that cooperation is not merely a reaction based on a shared perception of threat, but also the construction of a sui generis regime that prioritizes the energy security and development imperatives of member states. The unabated persistence of energy cooperation, particularly amid geopolitical tensions between China and India, and the adoption of the 2025-2030 Roadmap empirically validate that the group has successfully executed its compartmentalization strategy and developed institutional resilience against high politics crises.

Secondly, the paper's empirical data show that BRICS has produced not only rhetorical but also practical alternatives to Western-centric energy governance. Technical reports produced through the ERCP demonstrate that the group has gained epistemic autonomy by generating its own data and strategy; financing provided through the NDB, meanwhile, reveals the group's concrete pursuit of financial autonomy. The NDB's promotion of local currencies in its projects and its adoption of a flexible, development-oriented financing model rather than the Bretton Woods institutions' conditionality principle have opened up a new normative space in global energy finance.

The third and perhaps most critical finding is the normative consensus developed to manage the group's heterogeneous structure. The paper shows that the concepts of technological neutrality and just transition are used as strategic tools to bridge the differences in interests among member countries. Instead of imposing a uniform decarbonization prescription, BRICS has institutionalized a flexible transition model

covering a wide range from fossil fuels to renewable energy and from nuclear to hydrogen, offering a more inclusive governance model for the Global South.

Ultimately, the process that began as a declaration of intention in Yekaterinburg in 2009 has matured under Brazil's presidency in 2025, evolving into a structural force that is characterized by financial autonomy, indigenous technological development, and that prioritizes national currencies in energy trade. In this context, BRICS energy cooperation should be conceptualized not as a revisionist movement aiming to completely dismantle the existing global energy order, but rather as a transformative and complementary governance model that integrates into the system through parallel mechanisms while protecting the sovereign rights and development priorities of member states.

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