

*Philippe Pedro Santos Xavier, Elia Elisa Cia Alves,
Andrea Quirino Steiner, & Fabíola Faro Eloy Dunda*

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Brazil-China Energy Cooperation: Did BRICS Change Anything?

Philippe Pedro Santos Xavier¹, Elia Elisa Cia Alves², Andrea Quirino Steiner³, and Fabíola Faro Eloy Dunda⁴

Abstract: Is it possible to infer that the BRICS has boosted energy cooperation between Brazil and China? If yes, how did it happen? Here, we attempt to answer these questions by analyzing all of the statements from the eight summits promoted under the BRICS (2009-2016), as well as thirty-four energy related bilateral international acts promoted among BRICS countries between 1994 and 2015. Among the main results, we found that, while bilateral energy relations between Brazil and Russia, and India and South Africa, respectively, have undergone subtle changes during this period, Brazil-China energy relations underwent an enlargement concerning their scope and complexity. Thus, it is possible to suggest that the BRICS provided an especially cooperative environment for these two countries in the energy sector, although we cannot infer causality. In addition, we found that the direction of the negotiations seems to have shifted towards a more favorable position for China.

Keywords: niche diplomacy; South-South cooperation; bilateral agreements; content analysis

1. Introduction

When Jim O'Neill⁵ formulated the term BRIC in 2001 to characterize a group of countries with economic potential to debunk the great global powers, nobody was sure if this group would be restricted to the global financial market or whether it would adopt a broader approach. Before the financial crisis of 2008, Brazil, Russia, India and China were expected to raise their gross domestic products (GDP) within a period of 50 years and lead the planet's ranking. When the effects of the economic crisis spread, the BRIC's potential to move beyond the economic dimension became even more important.

By understanding their own potential, BRIC countries have strengthened relations and sought to deepen political and diplomatic cooperation. In 2011, the group was reinforced by

¹ Philippe Xavier is a graduate student in Political Science with an emphasis International Relations, Pernambuco Federal University, Brazil. Email: philipe_pedro@hotmail.com

² Elia Elisa Cia Alves is a postdoctoral researcher at Nucleus of Comparative Politics and International Relations (NEPI) in the Political Science Department, Federal University of Pernambuco (UFPE), Brazil. Email: eliacia@gmail.com

³ Andrea Q. Steiner is Professor and Head of the Department of Political Science at the Federal University of Pernambuco, Brazil. E-mail: ecodea@gmail.com.

⁴ Fabíola Faro Eloy Dunda holds a PhD of Political Science from the Federal University of Pernambuco (UFPE). Email: fabioladunda@gmail.com

⁵ Jim O'Neill was the chief economist at Goldman Sachs from 1995 until 2013.

South Africa, and became the BRICS (Ribeiro & Moraes, 2015). As it gained relevance, the BRICS began to align some of its objectives for cooperation in international meetings and organizations and to construct a multisector cooperation agenda among its members (BRICS, 2012).

The group gradually expanded its cooperation goals from economic and political governance issues to more than thirty areas, such as agriculture, health, science and technology, renewable energy, and sustainable development (BRICS, 2015a). This study focuses precisely on these last three, all of which are linked to energy policy. In fact, all of the five BRICS countries have publicly demonstrated concerns over high dependence on non-renewable energies, the unpredictability of fossil fuel prices, and climate change issues. In addition, both Brazil and China have sought to expand their relevance in the international system through energy related leadership, whether through biofuel diplomacy, in the case of the first, or by meeting growing demands, in the case of China (Ziegler, 2006; Tan, 2013; Wilson, 2015; Afionis et al., 2016).

Thus, the BRICS is a multilateral forum with a potential to leverage energy cooperation among its members, which leads to two important questions. First, is it possible to consider the energy dimension as a niche diplomacy topic, from the point of view of Sino-Brazilian bilateral relations? Secondly, has the BRICS served as a platform for negotiation and political-diplomatic articulation in the sense that it influenced the expansion of the number of initiatives and agreements between those countries in relation to energy issues?

There are three main reasons to study this topic, each linked to energy security, the environment and technology, respectively. Concerning the first, the issue is relevant in International Relations (IR) due to the increasing demand for energy, both domestically and internationally. In fact, the possibility of future fuel shortages and related animosities are related to the desire for self-sufficiency in energy production (Hage, 2008).

Regarding the environment, in 2008 (the year of the first meeting of the BRIC foreign ministers), BRIC members were among the fifteen largest carbon dioxide emitters (CO₂) in the world in absolute terms. China, Russia, and India were among the four largest issuers (World Bank, 2017), and their emissions added up to 35% of the world's total CO₂ emissions in 2008 (Chamon, 2012) – an amount comparable to the Organization for Economic Cooperation and Development (OECD) countries' emissions (Shelton-Zumpano, 2014).

Concerning the technological dimension, the BRICS have great capacity to generate energy from renewable sources, either due to their natural potential or through technology. China, for example, although it is the largest emitter in the world in absolute terms, is also the

largest investor in renewable energy technologies (REN21, 2016). Considering that scenario, the BRICS can play a global role in changing the international energy matrix; and analysts say that the position of these countries concerning energy will influence the future of the economy and overall global order (Chamon, 2012).

In order to answer the questions proposed, we investigated the frequency and content of international agreements between Brazil and China related to energy, before and after the BRIC(S), and carried out a content analysis on the BRICS' Summit statements. The empirical analysis is split into two steps: first, we show the results of the document analysis, with material from the eight BRICS Summit Declarations (2009-2016) concerning energy policy and cooperation. The second part of the document analysis encompassed all energy related international agreements that Brazil signed with Russia, India, China, and South Africa between 1990 and 2015, which were classified by year and energy source. Here we used the International Acts Division database (DAI) from the Brazilian Ministry of Foreign Affairs (MRE).

The paper is organized as follows. In Section 2 we use the theoretical framework of niche diplomacy to contextualize the BRICS' articulation from a multisector approach. In Section 3, we present a brief historical institutional analysis on the BRICS' formation process, in which we highlight the emergence of energy security interests within the group. In Section 4, we tackle Brazilian energy relations among BRICS countries from a qualitative standpoint, and evaluate whether BRICS' articulation concerning this topic changed. In a final section, we present some reflections on the energy dimension as a niche of the diplomatic relationship between Brazil and China, as well as historical qualitative changes in this area.

2. The niche diplomacy and international insertion strategy of intermediate countries: a literature review

How can energy cooperation be explained? As the rigid hierarchy of the Cold War waned, changes in the international system influenced theoretical IR perspectives. On the one hand, such cooperation could be analyzed through the lens of new security studies from the 1980s and 1990s. For Thomas (1987) and Mathews (1989), for example, in addition to military matters, security could also encompass issues like food, climate change, domestic politics, and trade, etc.

On the other hand, energy issues also fit within the idea of niche diplomacy, a literature that grew in importance after the Cold War. Since then, the potential ability of middle powers to open segmented niches seeking to boost participation in the international system increased. The idea of niche diplomacy was born with the study of the role of the traditional intermediary

countries, as Cooper *et al.* (1993) did when analyzing the foreign policy of Canada and Australia.

The study of intermediate countries – which are neither great powers, nor small countries in the international scenario – began during the second part of twentieth century, when several authors started to analyze this country category from different perspectives. Thus, the study of intermediate countries was analyzed considering the size (land area), material and influence capacity, desire and ability to accept responsibility, and the degree of stability in the international system (Glazebrook, 1947).

Another standard used is the role these countries played in the context of the world wars. The general claim supported was that their participation in the war effort, as well as their strategic locations, gave them the power to maintain international peace and security along with the great powers (Holbraad, 1984).

In the context of the Cold War, other roles of intermediate countries started to be studied. Keohane (1969) developed a framework evaluating the impact of those countries in the international system. According to this author, states could be categorized into four different typologies: system-determining states; system-influencing states; system-affecting states, and system-ineffectual states. While the first group played a critical role in shaping the system, the following two needed multilateral forums or alliances to influence the international agenda. Meanwhile, system-ineffectual states could do little to influence the system-wide force that affected them, and their foreign policy is an adjustment to reality. Holbraad (1984) labeled intermediate countries as mediators between capitalist countries and the socialist block.

After the end of the Cold War and the emergence of a multipolar system with a great dominant power: the United States, new approaches to intermediate countries emerged. Literature started addressing new criteria to characterize this group of countries, such as geography and normative behavior (Cooper *et al.*, 1993; Cooper, 1997). These countries sought to mediate conflicts, promote multipolarity, and strengthen the role of international norms and institutions. With the growing relevance of other countries to the international system, such as China (Gilley & O'Neil, 2014), this kind of study became even more relevant.

Cooper (1997) uses the term niche diplomacy to explain the *modus operandi* of Canada and Australia, countries traditionally considered intermediate in the international system. The concept suggests that countries would rather concentrate resources in specific areas than try to cover the field (Evans; Grant, 1991). On this topic, Nossal & Stubbs (1997) describe four relevant characteristics of niche diplomacy: scope, style, focus, and form and forum. With regard to scope, the actions undertaken by intermediate countries tend to push the boundaries

of the region where they are located geographically. The style adopted by intermediate countries, in turn, is more activist in form. This style is achieved through international initiatives that develop action plans in countries' areas of expertise, which also involves seeking support for their ideas/actions from other states. Regarding focus, this refers, in principle, to countries' performance during international conflicts. The country's share of the idea in this context is to reduce conflict in war zones and to decrease tension. With regard to form and forum, multilateralism stands over bilateralism.

While initially attributed to traditional intermediaries countries like Canada and Australia, the idea of niche diplomacy can be used as a conceptual tool for analyzing non-traditional intermediate countries like Brazil (Spanakos; Marques, 2014) and China (Gilley; O'Neil, 2014) and their relationship within the BRICS.

3. The articulation between BRICS and energy as a niche of diplomacy

After the end of the Cold War, even with multilateral international institutions such as the United Nations (UN), the United States emerged as global leader. Nevertheless, as Fonseca Jr. (2012) points out, in the face of difficulties such as those in Afghanistan and Iraq, even the US itself realized that multilateralism was still necessary.

In the early twenty-first century, the world's power structure changed with the growing economic and political relevance of developing countries like Brazil, China, India, and South Africa (Reis, 2012). Consequently, criticism about the lack of representativeness and legitimacy of international institutions increased, and developing countries started to seek space for their ideas and new instances of articulation and coordination.

It was precisely to reformulate global governance that the BRICs emerged. It began informally in 2006, when Russia coordinated a working lunch on the sidelines of the UN General Assembly (Reis, 2012). The same happened in 2007 but, this time, it was under Brazilian coordination. Brazil, Russia, India, and China realized the importance of institutionalizing their relations, and agreed to hold a meeting of foreign ministers in 2009 in Yekaterinburg, Russia. From this moment on, the BRICs became a political-diplomatic entity (Reis, 2012). In the Joint Statement presented at the occasion, the following declaration stands out: "recognition of the importance of international cooperation in coping with the effects of climate change and the strengthening of multilateralism, with the UN and G-20 playing a central role" (BRIC, 2009).

On April 14, 2011, the Third Summit took place in Sanya, China. South Africa was then included in the BRICs, which was renamed the BRICS. With this new membership, the

political-diplomatic forum was comprised of representatives from four continents to consolidate two bases: “coordination in multilateral fora on issues of common interest and the establishment intra-BRICS cooperation” (Reis, 2012: 40). Therefore, the BRICS began to advocate increased cooperation between members in various fields, as mentioned above.

The BRICS’ interest in a cleaner and more self-sufficient energy matrix was derived from two main drivers: the increasing demand for energy and the limited supply of fossil fuels, as clearly stated in the BRICS’ Summit Declaration from 2012 (BRICS, 2012). Not to mention the environmental concerns, linked to energy issues. Regarding the energy quest, Brazilian diplomat Alberto Pfeifer (2012: 84) stated, “departing from a concrete vital subject to the five countries it is possible that they might come up with a partial solution through (...) cooperation.”

Several factors make energy security relevant to the world in general and to the BRICS in particular, but it is worth mentioning one that is historic: the oil crisis in the 1970s. This episode spread worldwide concern on oil dependence for energy generation. Second, most of the energy supply in the world is still derived from fossil fuels, which are not compatible with the current global concern for sustainable development.

In contrast to the previously mentioned levels of the BRICS’ CO₂ emissions, the five countries boast abundant natural resources to be explored in energy generation and are among the leaders of investments in clean energy. China, despite being a major polluter, has a robust technological apparatus (mainly in solar and hydraulic energy) and is the world’s largest global exporter of photovoltaic panels (Hochstetler & Kostka, 2015). It also has the highest hydroelectric potential (Chamon, 2012). Russia has the second largest hydroelectric potential, although its matrix is still dominated by fossil sources. India has a significant percentage of biofuels in its energy matrix, which is also the case in South Africa, although both countries are still strongly dependent on coal and oil. Brazil has the largest share of renewable energy sources in its energy matrix (MME, 2015) and the country was the largest biofuel exporter in 2011 (Gomez et al., 2012).

In 2015, the BRICS surpassed most of the developed nations in terms of renewable energy investments (see Table 1). The costs of renewable sources declined and the amount invested is two times higher than that of non-renewable energy capitals (REN21, 2016). According to the report, the total amount invested globally reached US\$286 billion, in 2015, and China’s investments accounted for one third of this amount.

Table 1 – The BRICS among the top ten of the countries that invested in renewable energy in 2015, considering solar, wind, and hydroelectricity

	Amount	Position
China	US \$ 102.9 billion	1 st
India	US \$ 10.2 billion	5 th
Brazil	US \$ 7.1 billion	7 th
South Africa	US \$ 4.5 billion	8 th

Source: Based on REN21 (2016).

This indicates an increase in actions taken by countries individually to promote the sector (Hochstetler & Kostka, 2015). In fact, Wilson (2015) explores the BRICS' emerging status as resource powers, examining how natural resources have contributed to their rising influence in international affairs. He argues that, through the use of nationalistic and state-led policies, the BRICS governments have leveraged natural resources for both domestic-economic and international-diplomatic objectives, thus executing “resource diplomacy” – which means that resource wealth is making a positive, though limited, contribution to the growing international influence of the group.

Cooperation in technical and managerial skills are examples of instruments by which countries can improve energy security. Hulbert & Brüttsch (2012) suggest that energy cooperation is a part of the BRICS' foundation. Overall, all of these facts indicate that the quest for energy among the BRICS is part of a diplomatic strategy in order to strengthen cooperation. Nevertheless, is it possible to identify this pattern among the BRICS' declarations and bilateral initiatives among members? This question will be answered in the next section.

4. Brazil and China in energy in the BRICS: a qualitative analysis of niche cooperation

How is energy treated among the BRICS? Have changes occurred since the group's creation? This section is divided into two parts. The first analyzes several documents which originated from BRICS negotiations, such as Summit Declarations and Action Plans, as well as documents published by the group concerning energy related issues. The second part presents a systematic

analysis on the international agreements⁶ between Brazil and China from 1990 to 2015. The year 1990 was chosen because it marked Brazil's re-democratization process⁷, and 2015 was chosen as it was the last year for which full data was available before this study was concluded. Within this time frame, it was possible to analyze cooperation before and after the BRICS. All agreements were taken from the DAI⁸ linked to the MRE.

4.1. Declarations from BRICS Summits

Up to 2016, eight annual meetings had been promoted to discuss common interests among the five BRICS nations, including issues related to energy. Every meeting resulted in Joint Statements or Declarations and, for the last six occasions, also Action Plans. Table 2 displays the dates and places of each of the seven meetings.

Table 2 - Year and place of BRICS Summit's Statements

BRICS Summit Statement	Date	Local
First Summit	June 16, 2009	Yekaterinburg, Russia
Second Summit	April 15, 2010	Brasilia, Brazil
Third Summit	April 14, 2011	Sanya, China
Fourth Summit	March 29, 2012	New Delhi, India
Fifth Summit	March 27, 2013	Durban, South Africa
Sixth Summit	July 16, 2014	Fortaleza, Brazil
Seventh Summit	July 9, 2015	Ufa, Russia
Eighth Summit	October 15 and 16, 2016	Goa, India

Source: Foreign Ministry website: http://brics.itamaraty.gov.br/pt_br/

⁶ We analyze all available bilateral acts that cover energy related issues as Treaties, Conventions, Agreements, Adjustments or Supplementary Agreements, Protocols, and Memoranda of Understanding. According to the Ministry of Foreign Affairs of Brazil (2008: 6-8): treaty – “generally designates an international agreement”; convention – “at a similar level of formality, the term convention is used to designate multilateral acts, coming from international conferences and which are a matter of general interest”. “Agreement is an expression of free use and of high incidence in international practice; adjustment or supplementary agreement it is the act that gives execution to another, previous”; protocol – “appears by designating less formal agreements than treaties, or complementary or interpretative agreements of previous treaties or conventions. It is also used to designate the final minutes of an international conference”; and Memorandum of Understanding – “common to acts drafted in a simplified form, intended to record general principles guiding relations between the parties (...) widely used to define lines of action and cooperation commitments”.

⁷ In 1990, the first elected president took office in Brazil after the 1964 military coup.

⁸ DAI was a directory which stored all international treaties, conventions, agreements, joint declarations, protocols, and amendments in which Brazil was involved.

Following the 2008 financial crisis, the BRICs heads of government came together at the First Summit Meeting of the group, in 2009, to find ways to address the severe imbalances in the global economy and to occupy a leading role in the international system. The First Summit Declaration highlights the world economy. However, in Conclusions 8 and 9, the BRICs commit to energy security:

8. We stand for strengthening coordination and cooperation among states in the energy field, (...) in an effort to decreasing uncertainty and ensuring stability and sustainability. We support diversification of energy resources and supply, including renewable energy, security of energy transit routes and creation of new energy investments and infrastructure. 9. We support international cooperation in the field of energy efficiency. We stand ready for a constructive dialogue on how to deal with climate change based on the principle of common but differentiated responsibility, given the need to combine measures to protect the climate with steps to fulfill our socio-economic development tasks (BRIC, 2009).

In 2010, the main issues discussed were economic and political. However, energy was also a topic for Conclusions 19, 20, and 21, in which countries pledged to:

19. (...) develop cleaner, more affordable and sustainable energy systems, to promote access to energy and energy efficient technologies and practices in all sectors. We will aim to diversify our energy mix by increasing, where appropriate, the contribution of renewable energy sources, and will encourage the cleaner, more efficient use of fossil fuels and other fuels. In this regard, we reiterate our support to the international cooperation in the field of energy efficiency. 20. We recognize the potential of new, emerging, and environmentally friendly technologies for diversifying energy mix and the creation of jobs. In this regard, we will encourage, as appropriate, the sustainable development, production and use of biofuels. In accordance with national priorities, we will work together to facilitate the use of renewable energy, through international cooperation and the sharing of experiences on renewable energy, including biofuels technologies and policies. 21. We believe that BRIC member countries can cooperate in training, R&D, Consultancy services and technology transfer, in the energy sector (BRICS, 2010).

Regarding the 2011 Summit Declaration, there was little change. Energy continued to receive the group's attention, and Conclusions 18 and 19 highlighted nuclear energy for peaceful purposes (BRICS, 2011). The Delhi Declaration and Action Plan (Fourth Summit), from 2012, puts a greater emphasis on energy, when considering the number of paragraphs dedicated to the issue (paragraphs 17, 28, 38, 39, and 45):

39. Energy based on fossil fuels will continue to dominate the energy mix for the foreseeable future. We will expand sourcing of clean and renewable energy, and use of energy efficient and alternative technologies, to meet the increasing demand of our economies and our people, and respond to climate concerns as well. In this context, we emphasize that international cooperation in the development of safe nuclear energy for peaceful purposes should proceed under conditions of strict observance of relevant safety

standards and requirements concerning design, construction and operation of nuclear power plants (BRICS, 2012).

In 2013, the eThekweni Declaration and Action Plan does not bring anything new on energy. The subject is mentioned only briefly in Conclusion 18 (areas of cooperation) and 28, where the importance of nuclear energy for peaceful purposes is reinforced (BRICS, 2013a). The Fortaleza Declaration, from 2014, reaffirms the importance of investing in renewable and clean energy for members' sustainable development and economic growth. Conclusion 53 recognizes that fuels are dominant, and it is also reiterated that:

53. The belief that renewable and clean energy, research and development of new technologies and energy efficiency, can constitute an important driver to promote sustainable development, create new economic growth, reduce energy costs and increase the efficiency in the use of natural resources. Considering the dynamic link between renewable and clean energy and sustainable development, we reaffirm the importance of continuing international efforts aimed at promoting the deployment of renewable and clean energy and energy efficiency technologies, taking into account national policies, priorities and resources. We stand for strengthening international cooperation to promote renewable and clean energy and to universalize energy access, which is of great importance to improving the standard of living of our peoples (BRICS, 2014a).

The Ufa Declaration revives the energy quest in several parts of the document. BRICS members advocate renewable energy sources in Conclusion 52 as a “strategic objective for sustainable growth” (BRICS, 2015b). The concern for energy security appears in Conclusion 69 (the largest reference to energy, with three paragraphs), which states concerns about economic and social development consistent with environmental conservation.

69. Recognizing the importance of monitoring global trends in the energy sector, including making forecasts regarding energy consumption, providing recommendations for the development of energy markets in order to ensure energy security and economic development we call on our relevant agencies to consider the possibilities of energy cooperation within BRICS (BRICS, 2015b).

In 2016, the Goa Declaration brings about three main aspects regarding energy issues. Firstly, it highlights the approval of the first set of loans by the New Development Bank, particularly in renewable energy projects in BRICS countries, which issued the first set of green bonds in renminbi. Secondly, it reinforces the importance of nuclear power to some members and the need for expansion in order to meet the 2015 Paris Climate Change Agreement commitments. Thirdly, energy efficiency initiatives are supported and the countries also signal the significance of clean energy in achieving the UN Sustainable Development Goals in terms of sustainable development, energy access, and energy security, all of which are critical to the shared prosperity and future of the planet.

In addition to the Summit's declarations, other documents were produced in parallel and on different occasions. In 2014, for example, countries drew up a "Cooperation Agreement on Innovation", whose aim was to establish innovation goals, with an emphasis on renewable energy through multilateral and bilateral agreements. Government agencies responsible for implementing the agreement would be the national development banks of the respective BRICS countries (BRICS, 2013b).

In 2015, another document, titled "The Strategy for BRICS Economic Partnership", set out the terms of negotiations with international forums and organizations and marks energy cooperation initiatives as priority areas for cooperation. In addition, renewable energy, as well as energy efficiency, were officially established as areas of cooperation among the countries. This document also addresses clean energy sources, and is intended to implement methods that reduce environmental impacts. Regarding energy, it aims to cooperate on:

(...) increasing energy efficiency, including joint development and sharing of energy efficient and cleaner energy technologies; introducing environmentally friendly technologies of energy production, storage and consumption; promoting the use of renewable sources of energy; improving the utilization of clean energy sources such as natural gas (...). To achieve these goals BRICS countries should: (...) establish regular energy dialogue between the BRICS countries in order to discuss long-term and medium-term strategies and energy security issues (BRICS, 2015a: 12).

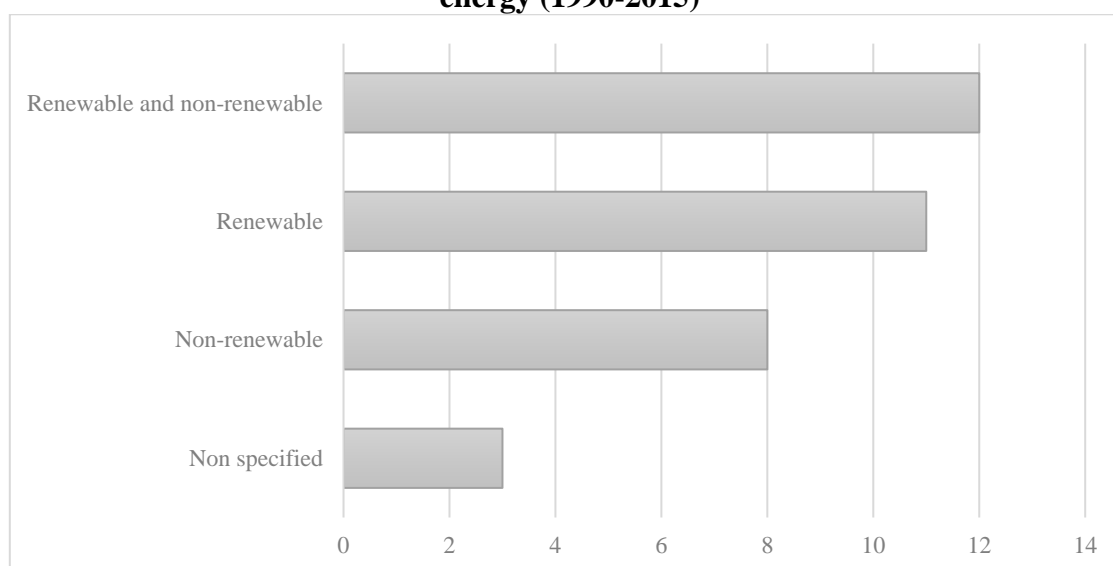
In accordance with the guidelines of previous Summits, ministers and representatives of the ministries of science and technology of the five countries met on three occasions to discuss measures solely related to that area. The meetings held in South Africa, Brazil, and Russia produced the declarations of Cape Town (BRICS, 2014b), Brasilia (BRICS, 2015c) and Moscow (BRICS, 2015d), respectively, and outlined directives for institutional cooperation. In Russia, the group committed to creating a dataset on energy efficiency technologies, an innovation compared to other documents described above, and considered promoting cooperation through joint scientific and technological research, as well as through capacity building and technology transfer (BRICS, 2015d).

Overall, documental analysis made it possible to track the growing importance of the quest for energy. Yet it is also worth mentioning the relevance of non-renewable energy sources in most declarations, as is the case with fossil and nuclear technologies. In the following section, we analyze energy as a topic of IR among BRICS countries, focusing on the historic evolution of the bilateral relations of Brazil and China. With this, we seek to answer whether the BRICS changed Sino-Brazilian energy bilateral cooperation in terms of the number of initiatives and the sources prioritized.

4.2. International agreements on energy

This section describes the results obtained from the analysis of documents related to energy extracted from the DAI/MRE, with a focus on energy cooperation between Brazil and China. The database was prepared by the authors, and comprises thirty-four international agreements signed by Brazil with one or some of the BRICS countries between 1990 and 2015. We classified the agreements according to the type of energy promoted: renewable, non-renewable, both, and non-specified. Figure 1 illustrates cooperation on the energy issue.

Figure 1 – Number of international agreements between Brazil and China, by type of energy (1990-2015)



Source: Based on DAI (2016).

As shown in Table 3, among the thirty-four agreements analyzed, ten were promoted from 2009 onwards, and fifteen with China.

Table 3 - Number of international acts with Brazil by country and type of energy, before and after the formation of the BRICS

Country	Unspecified		Non-renewable		Renewable		Renewable and non-renewable		
	Pre-BRICS	Post-BRICS	Pre-BRICS	Post-BRICS	Pre-BRICS	Post-BRICS	Pre-BRICS	Post-BRICS	Total
South Africa	2								2
China			2	1	4		2	6	15
India			1		3				4
Russia	1		4		1		2	2	10
IBSA⁹					2	1			3
Total	3	0	7	1	10	1	4	8	34

Source: Based on DAI (MRE).

The first international agreement that covers renewable energy between Brazil and China is dated from May 1993. The *Complementary Adjustment to an Economic and Technological Cooperation*, established between Brazil and China, promoted technology cooperation in the hydroelectric sector. In 1994, these same countries signed a *Memorandum of Understanding on Economic Cooperation, Science and Technology*, which once again aimed at cooperation on electricity. One of the results of this cooperation was the creation of a committee for the construction of the Three Gorges Dam, in China. In 1996, Brazil and China signed the *Joint Declaration on the Common Agenda for Sustainable Development*, which aimed at environmental preservation and strengthened the promotion of alternative energy sources.

Regarding non-renewable energy sources, the first instrument was the *Memorandum of Understanding on Technical Cooperation in Mineral Coal Combustion*, signed by Brazil and China in 1994. In 2004, Brazil and China established the *Memorandum of Understanding on Cooperation in Trade and Investment*, which arranged for cooperation in natural gas exploration. In 2009, the two countries signed a *Memorandum of Understanding on Oil, Equipment and Financing* that aimed, through Brazilian and Chinese companies, to promote and expand bilateral cooperation in development and marketing activities in oil exploration-related activities; it also prescribed important roles for SINOPEC (a Chinese oil company) and the Development Bank of China.

⁹ IBSA stands for another political group articulated in 2006, congregating India, Brazil, and South Africa.

Among international agreements promoting both renewable energy and non-renewable energy sources, there is an *Agreement on Strengthening Cooperation in Building Infrastructure* from 2006, to deepen bilateral cooperation on energy infrastructure related to hydroelectricity, oil, and natural gas. Also from 2006, a *Memorandum of Understanding on the Establishment of the Subcommittee on Energy and Mineral Resources Committee of Sino-Brazilian High-Level Coordination and Cooperation* reinstates the referred subcommittee which was established in 2004 with the goal of promoting partnerships on oil, gas, renewable energy, and biofuels. In 2009, Brazil and China signed two more acts: the *Protocol on Cooperation in Energy and Mining* and a *Joint Statement on Strategic Partnership*, which reinforced previously negotiated terms and reaffirmed state and business partnerships within energy which comes from fossil and renewable sources.

Still on agreements promoting both types of energy, four were signed with China. In April 2010, the *Joint Action Plan 2010-2014*, one of the major documents including the energy sector that has been signed between the two countries, established the strengthening of cooperation in oil, gas, and alternative energy sources. It contains twenty-five pages of descriptive cooperative initiatives, including activities promoted by collaborating agencies and institutions such as ministries and universities.

In April 2011, a *Joint Communication* expressed the countries' commitment to expanding and diversifying mutual investments in the energy sector for electricity generation from biofuel and nuclear sources. In June 2012, the *Decennial Cooperation Plan* can be considered the most emphatic regarding energy security, and establishes key areas and mechanisms for the development of science, technology, and innovation in both countries. The document also emphasizes a broadening of the target activities of cooperation (reaching electricity generation and transition), as well as related sources (nuclear, bioenergy, hydropower, wind, solar, biogas, liquid biofuels, biomass, oil, and gas). In 2015, another act was established between the two countries. The *Joint Action Plan 2015-2021* is an update of the *Joint Action Plan 2010-2014*, and expands the thematic scope beyond the sectors that were already defined in the preceding document, including biofuels, biomass, and innovation on energy distribution such as smart grids.

Table 4 – Number of agreements in terms of sources prioritized

Energy	South Africa	China	India	Russia	IBSA	Total
Unspecified	2			1		3
Non-renewable						
Nuclear				3		3
Fossils		3	1			4
Oil, natural gas and nuclear				1		1
Renewable						
Biofuels			1	1	1	3
Wind					1	1
Hydro		3				3
Unspecified		1	2		1	4
Renewable and non-renewable		8		4		12
Total	2	15	4	10	3	34

Source: Based on DAI (MRE).

Analyzing all of the thirty-four international agreements signed by Brazil with one of the other four members of the BRICS, as shown in Tables 3 and 4, some important aspects can be revealed. First, within the period after the BRICS negotiations, renewable energy sources were mainly prioritized parallel to non-renewables between China and Brazil. Second, while the negotiations with Russia, India, and South Africa do not seem to have so many changes from the point of view of frequency and thematic scope, Sino-Brazilian relations are marked by a strong expansion in scope and depth on energy cooperation, although we are not suggesting a causal effect, only a tendency.

A closer look at the content of the agreements between Brazil and Russia reveals a predominance of fossil and nuclear sources, through a few significant changes over time. In fact, this is not surprising. Although boasting the fifth largest potential in hydropower (REN21, 2016), over 80% of Russia's energy matrix is comprised of non-renewable energy sources – mainly coming from fossil fuels (Gómez *et al*, 2012). In addition, both oil and gas are crucial to Russian external accounts. Focusing on Brazil and India agreements, there is a ubiquity for biofuels and the natural gas industry. Lastly, the few agreements promoted between South Africa and Brazil focus on biofuels and on the wind sector, within the scope of IBSA negotiations.

On the other hand, the scenario changes regarding energy diplomacy between Brazil and China. It can be inferred that the relations between the two countries have undergone significant changes since the first agreements were signed. Since then, there has been a

considerable expansion of thematic scope, which began with negotiations on the sharing of Brazilian expertise in the hydropower sector. Nowadays, the cooperation covers the whole Brazilian energy matrix, from the extractive sector to fossil resources, from electricity generation to the transmission and distribution of energy (with the promotion of smart grids and energy efficiency initiatives that are mentioned in the most recent agreements). Notably, more than a change in qualitative terms, there was a shift in the power balance between both countries: while in the 1990s the idea was of a flux going from Brazil to China, nowadays this has been inverted.

Concerning the four relevant characteristics of niche diplomacy – scope, style, focus, and form and forum (Nossal & Stubbs, 1997) – all of these appear in Sino-Brazilian relations on energy. In respect to the scope, China's strategy of increasing cooperation with Brazil in energy distribution and transmission, for example, spills over to other Latin American countries and not only Brazil. Regarding style, one example is China taking an activist role promoting international agreements supporting the performance of the Chinese company SINOPEC, as well as the broadening of the topics related to its area of expertise, as mentioned above. Although focus cannot be analyzed in this context because war or acting as mediator or a third party in conflicts is not an issue, energy security is, indirectly, related to the decrease of conflict drivers in the international arena.

With regard to form and forum, the multilateral agreements within the BRICS work as a platform to strengthen bilateralism. In short, despite the fact that niche diplomacy characteristics cannot be completely used to explain the behavior of BRICS countries, niche diplomacy can be considered as one of the instruments that has increased the international participation of Brazil and China, and as a strategy for these two countries to become relevant players in energy field. It has also been a tool to strengthen the bilateral relationship between them.

While, in the 1990s, technical cooperation flowed from Brazil to China, by 2015 it seems that China is the one setting the tone of the negotiations, given the significant increase in Chinese presence in the different markets related to energy exploration (generation, distribution, and transmission). Overall, it is possible to say that energy is used as a niche diplomacy strategy by both countries, and that the BRICS was a differential platform for the expansion of the negotiations between the two.

5. Final considerations

Since its beginning, the BRICS has undergone major changes, as the scope of its diplomatic articulation went beyond the economic and trade dimensions. Energy is one example, as it became an issue of interest with the potential of being promoted through niche diplomacy. Considering this, this study sought to introduce the idea of joint energy cooperation as a niche diplomacy tool by the BRICS member countries. From the standpoint of Brazilian bilateral relations concerning energy cooperation, it was notable that the BRICS' articulation had little effect on relations with Russia, India, and South Africa in terms of sources prioritized and the frequency of negotiations. This is not the case for Sino-Brazilian relations, in which the content and scope of relations expanded in this area.

This initial effort was able to map and characterize energy cooperation between BRICS countries – especially Brazil and China – and not necessarily to claim causality. Future studies can assess variables that were not dealt with by this work, such as the discovery of pre-salt oil reserves in Brazil in 2007, and a shift of Brazilian international negotiations towards oil exploration after the discovery. Thus, this study opens a future research agenda in order to deepen the understanding of the underlying factors and possible outcomes of the negotiations between Brazil and China in the energy sector.

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*Philippe Pedro Santos Xavier, Elia Elisa Cia Alves,
Andrea Quirino Steiner, & Fabíola Faro Eloy Dunda*

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