Revista Latino-Americana de
RELAÇÕES INTERNACIONAIS
Campos Neutrais

ARTIGO

Chinese investments and the reconfiguration of the Brazilian energy sector (2007–2022)

Investimentos chineses e a reconfiguração do setor energético brasileiro (2007-2022)

Abstract

This article examines how Chinese investments have contributed to the reconfiguration of Brazil's energy sector between 2007 and 2022. Drawing on the literature on transnational state capital and International Political Economy, it argues that Chinese engagement cannot be reduced to a single resource-seeking or market-seeking strategy. Instead, Chinese actors have adopted differentiated, sector-specific strategies that combine financial and geopolitical objectives. Empirically, the article identifies three distinct patterns: minority participation in oil and gas projects, control-oriented acquisitions in the electricity sector, and greenfield investments in renewable energy. These strategies were enabled by structural transformations within Brazil's energy sector, including the pre-salt boom, regulatory changes, and moments of economic crisis, which opened windows of opportunity for foreign capital. The findings show that Chinese investments have reconfigured not only ownership structures but also financing mechanisms and Brazil's external energy relations, particularly through loan-for-oil arrangements and infrastructure expansion. The article contributes to debates on state capitalism and energy transitions by demonstrating how transnational state capital reshapes sectoral development trajectories in emerging economies, without necessarily promoting domestic upgrading.

Keywords: China; Energy Transition; Energy Geopolitics; Renewable Energy; Brazil.

Resumo

Este artigo examina como os investimentos chineses contribuíram para a reconfiguração do setor energético brasileiro entre 2007 e 2022. Com base na literatura sobre capital estatal transnacional e Economia Política Internacional, argumenta-se que o engajamento chinês não pode ser reduzido a uma única estratégia de busca por recursos ou por mercado. Em vez disso, os atores chineses adotaram estratégias diferenciadas e específicas para cada setor, que combinam objetivos financeiros e geopolíticos. Empiricamente, o artigo identifica três padrões distintos: participação minoritária em projetos de petróleo e gás, aquisições com foco no controle em empresas do setor elétrico e investimentos *greenfield* em energias renováveis. Essas estratégias foram viabilizadas por transformações estruturais no setor energético brasileiro, incluindo o *boom* do pré-sal, mudanças regulatórias e momentos de crise econômica, que abriram janelas de oportunidade para o capital estrangeiro. Os resultados mostram que os investimentos chineses reconfiguraram não apenas as estruturas de propriedade, mas também os mecanismos de financiamento e as relações energéticas externas do Brasil, particularmente por meio de acordos de empréstimo em troca de petróleo e expansão de infraestrutura. O artigo contribui para os debates sobre capitalismo de Estado e transições energéticas, demonstrando como o capital estatal transnacional remodela as trajetórias de desenvolvimento setorial em economias emergentes, sem necessariamente promover a modernização interna.

Palavras-chave: China; Transição Energética; Geopolítica de Energia; Energias Renováveis; Brasil.

1 INTRODUCTION

Among the aspects receiving growing attention in International Political Economy are studies related to the transnationalization of capital and state-led foreign investment. In this context, China is frequently highlighted as one of the primary beneficiaries of globalization, a process initially promoted under Western sponsorship.

A notable feature of China's rise in recent decades has been the transformation of its state power and sovereignty into a prominent economic force, exemplified by the remarkable transnationalization of Chinese capital. Whether through investments by state-owned enterprises or sovereign wealth funds, the movements of transnational state capital have challenged traditional notions of sovereignty and power in twenty-first century capitalism (Dixon & Monk, 2011). From a political economy perspective, capitalist markets do not exist without the presence of the state, and both operate within given boundaries in a wholly interrelated manner, resulting in a co-constituted relationship (Apeldoorn & Horn, 2007; De Graaff, 2017). State capital has crossed borders in search of investments in different types of ventures and enterprises.

To understand Chinese strategy in the energy sector, this article analyzes a constantly expanding element in the global landscape: the emergence of transnational state capital as a transformative force shaping the international order in the twenty-first century. To carry out this research, a set of procedures, materials, and research sources were employed through a qualitative approach — particularly the documentary analysis of ANP agreements and auction records, alongside the mapping of investment and financing flows (CDB, CHEXIM, AIIB). The investigation drew primarily on three types of bibliographic sources: books, peer-reviewed articles, and databases made available by national and international institutions.

The period selected for analysis — from 2007 to 2022 — was delimited essentially between the announcement of the pre-salt, which drew the attention of numerous foreign companies to Brazil's energy resources, and the recent period of intense and sustained deepening of Brazil-China relations, with both countries pursuing economic and, at times, political rapprochement in the international arena.

Taking into consideration the objectives described above, two fundamental questions can be formulated: i) what are the reasons behind the attraction of investments by Chinese

companies in the Brazilian energy sector? ii) how has Brazil been incorporated into the commercial and strategic needs of Chinese companies?

Drawing from these research questions, a set of hypotheses was developed to be tested throughout this investigation. These hypotheses may prove to be either complementary or mutually exclusive, while the results of the analysis may lead to the validation or rejection of their underlying premises:

i. Chinese company investments in Brazil are motivated primarily by corporate interests, given the constraints these companies face in accessing oil resources in other regions of the world and the need to expand their reserves in the face of the natural decline of wells currently under exploitation.

ii. Beyond commercial interests, Chinese company investments are strategic in nature, driven by state-level interests, positioning Brazilian energy resources as an important element contributing to that country's energy security.

iii. The expansion of Chinese companies in the energy sector forms part of a broader logic of Chinese capital transnationalization, driven by the need to consolidate and multiply capital across new territories.

Global energy markets have been undergoing a process in which capital accumulation becomes increasingly transnational while continuing to serve national interests (De Graaff, 2017). These ideas are grounded in Harvey's (1985, 2003, 2006) theoretical perspective, which emphasizes the state dimension of capitalist accumulation and its continuous process of territorialization, in which the state plays a fundamental role as an agent of globalization. Numerous contradictions exist within this process, including the dynamic of capital's unlimited need to cross borders and enter new markets to achieve unrestricted accumulation and expansion. At the same time, these borders — created by nation-states — are essential for accumulation to take place, since this geographical and political differentiation was created and constituted by the state system, thereby providing capital accumulation with a stable foundation by dividing the globe into exclusive spheres of territorial sovereignty.

As highlighted by Harvey (1985, 2003, 2006), capitalism shows a tendency toward production and consumption within a space determined by state actors. However, capital accumulation within such a geographically bounded space ultimately enters a process of

overaccumulation. Capital then requires an external space in which to invest its surpluses, allowing the process of profit expansion to continue. In this way, capital surpluses and/or labor seek geographical expansion in many forms — a dynamic Harvey defines as the spatial fix. The state, in China's case, would thus function as an organizer of the territorial expansion of Chinese capital in the context of globalization. It is worth noting that, from this perspective, the state assumes a fundamental role as an actor in capitalist organization and in the expansion and accumulation of globalized capital.

Given that capital competes for geographical spaces, Chinese capital identified in the opportunities opened in Brazil a window for achieving its catch-up, expanding into a new geographical space, and competing with enterprises from other countries. This also applies to capital expansion related to new renewable energies, given that China occupies a vanguard position in these new technologies, with the technological factor identified by Harvey as one of the essential elements for the continuity of capital accumulation. The historical evolution of capitalism can be divided into five technological revolutions, which triggered a profound reorganization of productive structures, substantial increases in productivity, and new trajectory possibilities for national economies. In each revolution, different nations take the lead in the process and achieve significant advances in their technological standards (forging ahead), while countries left at the margins of the new paradigm must define strategies to catch up with it (catching up). However, the dynamics of technological revolutions have often prevented most underdeveloped countries from following the same development trajectory as others (falling behind) (Arend & Fonseca, 2012).

The combination of capital transnationalization and the positioning of China at the technological frontier of the energy transition is therefore essential for China to achieve its catch-up and continue the accumulation of capital in new territories. Amineh & Guang (2018) and Schutte and Reis (2020) indicate that the Chinese catch-up has been grounded in sustained investment in the expansion of technological capacity and endogenous innovation, to create conditions for the emergence of Chinese companies capable of operating globally.

It is therefore important to highlight that states do not merely regulate, encourage, or restrict corporate movements. States are responsible for allocating state capital in domestic markets and, increasingly, in foreign markets. These investments stem from decisions

encompassing commercial dimensions but increasingly embrace strategic dimensions as well — that is, there are financial and political interests that coexist, to varying degrees, in these capital movements (Balbuena, 2016).

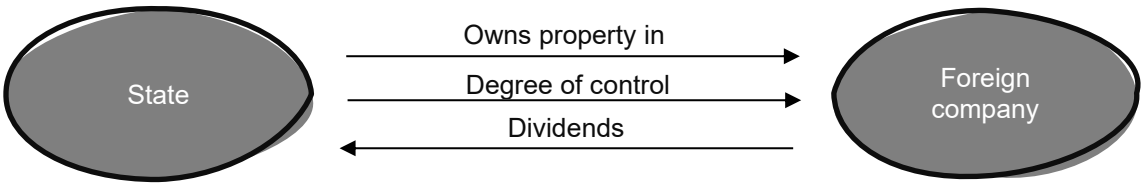
According to Babic, Garcia-Bernardo & Heemskerk (2019), the Chinese strategy can be interpreted within the broader perspective known as 'going global', which refers to investments abroad — particularly in Western companies through mergers and acquisitions (M&A) — to assimilate know-how and propel the catch-up of the Chinese economy. This helped to transform China's dependence on exports, converting it into an economy based on technological domination and innovation in key industries such as agrochemicals and renewable energies (Baroncelli & Landoni, 2019, p. 21).

The movement of transnational state capital strengthened at the beginning of the 2000s and accelerated following the 2008 economic crisis. The expansion of state influence in the global economy accompanied the rise of the BRICS, especially the Asian countries within this grouping of Brazil, Russia, India, China, and South Africa. Russia, India, and China endorsed an economic model permeated by the state, resulting in a wave of investments led by state-owned multinational corporations. State capital was integrated into the global economy through investments by sovereign wealth funds and state-owned enterprises, generating what De Graaff (2017) calls the 'hybridization of the State-Capital nexus'. This ambiguity has given rise to a new form of globalization centered on the role of states.

2 CHARACTERISTICS OF TRANSNATIONAL STATE CAPITAL IN THE ENERGY SECTOR

State-led capitalism challenges the prevailing global economic order (Kiely, 2015; Stephen, 2014) by inserting state entities into global value chains (Mayer & Phillips, 2017). This means that state ownership is internationalizing, with state-owned enterprises increasingly seeking assets abroad for both financial and political reasons (Cuervo-Cazurra *et al*., 2014), creating global chains of corporate and state control (Haberly & Wójcik, 2017). When a state or a state-owned entity (such as a state-controlled enterprise or a sovereign wealth fund) invests in foreign markets, a transnational ownership link is created (as illustrated in Figure 1 below).

Figure 1. Ownership of Transnational State Capital

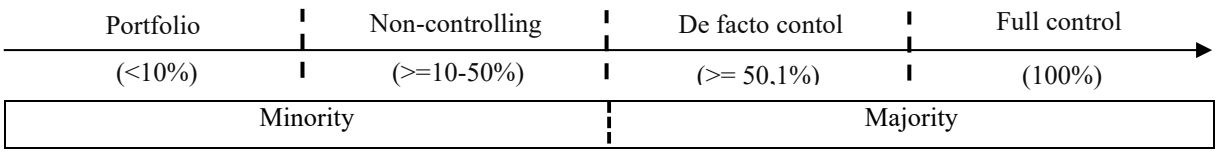


Source: Babic, Garcia-Bernardo & Heemskerk, 2019, p. 9. Elaborated by the author.

The level of state ownership varies, according to Babic, Garcia-Bernardo & Heemskerk's (2019) classification, from a minority stake to full control. In all types of participation — whether minority or majority — the shareholder (in this case, the state, sovereign wealth fund, or state-owned enterprise) begins to receive dividends on its investment, thereby generating an inverse capital flow (as illustrated in the figure above).

The classification developed by Babic, Garcia-Bernardo & Heemskerk (2019) distinguishes degrees of transnational state capital ownership to identify the strategies adopted by states. Investments were categorized as portfolio, non-controlling, de facto control, and full control1. Portfolio investment remains below 10% and reflects a strategy that does not seek a controlling interest, with states acting to obtain economic returns from participation in foreign companies. Within this logic, participation is limited and does not aim to alter the controlling interest of companies abroad, characterizing it as a financially motivated strategy. Other ownership models focus on acquiring a majority stake — that is, control of assets abroad at 50.1% or more of the shareholding structure — reflecting a control strategy.

Figure 2. Different Degrees of Transnational State Capital Ownership



Source: Babic, Garcia-Bernardo & Heemskerk, 2019, p. 9. Elaborated by the author.

[1] It is worth noting a limitation regarding this classification, since different ownership compositions may confer control over a given entity without necessarily exceeding 50.01% of a company's shares — such as golden shares.

The control strategy can be associated with geoeconomic and geopolitical ambitions, especially when transnational foreign capital is directed toward strategic sectors such as oil and energy in general. Such geopolitical and geoeconomic interests are linked to the model of urban and industrial development underlying China's growth, which resulted in high dependence on imports of these inputs. It is with the strategic objective of securing the supply of natural resources in different territories that Chinese investments in the energy sector have multiplied (Amineh & Guang, 2014). The distinction between the level of participation in ventures undertaken through investments allows us to identify and differentiate the strategies of states when they assume the role of owners in transnational capitalism.

From these definitions, we examine that within the transnationalization of Chinese state capital, the Brazilian energy sector as an investment destination cannot be reduced to a single strategy. The transnationalization of Chinese state capital was, in the first place, assisted by the moment of intense reconfiguration occurring in the Brazilian energy sector. Chinese capital found several doors open in the Brazilian market:

1) The requirement for large volumes of capital to achieve pre-salt exploitation, with multiple auctions opening the opportunity for Chinese capital to hold minority stakes alongside Petrobras in such ventures.
2) Electricity sector companies faced a period of fragility in which, following regulatory changes that damaged their balance sheets, they found themselves in need of capital — a situation exploited by Chinese companies to assume control of power companies in Brazil.
3) The energy transition opened space for Chinese companies to enter the Brazilian market — this time, not through acquisitions but through the establishment of new greenfield solar and wind energy projects, as well as the electrification of the transport sector. It is worth emphasizing that this phase of Chinese capital transnationalization is not restricted to state capital but also encompasses private Chinese capital.

These three distinct phases of the transnationalization of Chinese capital are summarized in Table 1 below, demonstrating that the interests in distinct energy subsectors have predominantly different characteristics.

Table 1. Transnationalization of Chinese State Capital in Brazil

Period	Sector	Strategy
2011–2015	Electricity	Acquiring control of companies and projects
2013–2021	Oil and Gas	Minority participation in projects led by other controlling parties
2015–Present	Renewable Energy	Greenfield investments to exploit opportunities created by decarbonization transitions

Source: Elaborated by the author.

Chinese investments in electricity companies were characterized by the acquisition of controlling stakes in companies already established in the Brazilian market — that is, financial interests coexisted alongside geoeconomic and geopolitical interests in these assets. This explains why the control element present in investment decisions distinguishes Foreign Direct Investment (FDI) from the entry of other types of capital into a given territory, since it confers decision-making power upon the investor. Unlike financial flows and financing, FDI involves acquiring decision-making authority and influencing the direction of a business, with stable long-term interests (Schutte, 2020).

According to Dunning and Lundan (2008), FDI can be directed by four distinct strategies: market-seeking, resource-seeking, efficiency-seeking, and strategic asset-seeking. Market-seeking investment aims to enter new consumer markets; resource-seeking investment seeks to establish more advantageous conditions for access to natural resources; efficiency-seeking investment aims to improve a company's production operations through the relocation of production to foreign countries, whether due to cheap labor, lower taxes, or less restrictive regulations; and strategic asset-seeking prioritizes control of assets in key sectors, whose return on investment may occur through dividends or profit remittances, as well as through the incorporation of technological and organizational competencies.

In the electricity and renewable energy sectors, Chinese investments abroad aimed not only to establish control over the decision-making processes of foreign strategic sector companies, but also to seek markets and expand financial returns for Chinese companies that need to mobilize their technological assets — as in the case of ultra-high-voltage (UHV) transmission technology, solar panels, wind turbine blades, and electric vehicle manufacturers, whose technological standards are led by Chinese companies (Schutte, 2020).

In the oil and gas sector, there was no intention of taking control of ventures, with Chinese companies not becoming operators of the blocks offered. The interests of Chinese companies were guided by the quality of the assets and by the possibility of returns offered by the pre-salt blocks. It cannot be claimed, for example, that the interest of Chinese companies was part of a strategy of the Chinese state, since the decision-making capacity of the companies — and therefore of state influence over the ventures — was minimal. The strategic — that is, political — interest was much more about positioning Chinese companies as Brazil's partner in pre-salt exploration efforts: Chinese companies were alongside Petrobras in the first pre-salt auction, Libra, in 2013, and were the only foreign companies participating in the onerous assignment surplus (ECO) auction in 2019. In addition, there was a clear corporate interest in participating in technically complex ventures, as identified by authors such as Babic, Garcia-Bernardo & Heemskerk (2019), who analyzed Chinese investments in other parts of the world.

Although it may appear that the investments of Chinese National Oil Companies (NOCs) in the oil and gas sector were driven by the Chinese government's interest in supplying Chinese energy demand and ensuring its energy security, the conduct of NOCs is more complex and also encompasses commercial interests of these companies, in addition to other state motivations such as the pursuit of financial efficiency, the guarantee of social stability for the growing Chinese middle class, and the provision of cheap energy for the continuity of Chinese economic growth (Amineh & Guang, 2014). In other words, although the initial motivation for Chinese investments in energy-rich countries and the application of the going global strategy to NOCs may have been Chinese energy security, the transnationalization of these companies is motivated by multiple reasons.

According to De Graaff (2017) and Hogenboom (2014), there is a growing 'hybridization' of the sector, with resource-holding NOCs that traditionally operated exclusively within their borders now gradually moving further up the oil value chain, working with International Oil Companies (IOCs) and other NOCs to acquire technological know-how and management experience. In this case, the interest of Chinese companies lies in Petrobras's recognized leadership in offshore technology. When operating abroad, NOCs adapted to the governance and rules of the game created by Western companies and countries, while in their domestic operations they remain under state oversight.

Petrobras's leadership in offshore technology has been internationally recognized for decades. The pre-salt discovery marked the beginning of a new phase in the history of offshore exploration in Brazil. The technological advances required to make pre-salt exploitation viable were replete with challenges, requiring substantial investments in research and development (R&D), in cooperation with universities, research centers, and equipment manufacturers, to develop new equipment capable of operating in an environment with such adverse characteristics in terms of distance from the coast, depth, and geological conditions (Morais, 2013).

To maximize petroleum revenues, the government introduced the production sharing regime, created a company to manage contracts and reduce the information asymmetry between the government and the companies participating in the consortia — the Pre-sal Petróleo S.A. (PPSA) — established Petrobras's mandatory participation in all exploratory blocks with a minimum 30% stake, and instituted a sovereign fund to invest resources derived from pre-salt petroleum revenues (Oliveira, 2012). Chinese companies took advantage of this window of opportunity created by pre-salt exploration to expand their presence in the oil and gas sector, as we shall see below.

3 INVESTMENTS AND FINANCING IN THE OIL AND NATURAL GAS SECTOR

The Chinese strategy in the Oil and Gas (O&G) sector encompassed three pathways: 1) the acquisition of exploration rights from companies operating in Brazil that were purchased by Chinese companies; 2) financing for Petrobras tied to oil supply through the loan-for-oil model used in other countries; and, finally, 3) participation in the Agência Nacional do Petróleo, Gás Natural e Biocombustíveis (ANP) auctions to acquire exploratory rights alongside other companies (Schutte, 2020). The loan-for-oil mechanism typically consists of a trilateral long-term credit arrangement between a Chinese bank (the financier), an international oil company (the supplier), and a Chinese oil company (the buyer) (Barbosa, 2021).

We have already observed that Chinese oil companies seek profits, like any other company in the sector. However, they sometimes undertake projects that Western multinationals would not, since the latter may consider the physical, economic, political, or social conditions to be high-risk. Compared to Western companies, Chinese NOCs invest more

readily in projects requiring infrastructure development, are less constrained by short-term shareholder value maximization, and are less exposed to a range of (home country) risks — financial, political, and legal (Hogenboom, 2014). Unlike IOCs originating from developed countries, China's NOCs need to meet energy needs in locations considered less valuable and therefore bypassed by Western majors (Amineh & Guang, 2018).

This is not the case in Brazil. In Brazil, Chinese NOCs had the opportunity to gain access to quality projects and valuable resources. Unlike other parts of the world where the activities of NOCs and IOCs are limited by regulatory restrictions, Latin America is a region that offers opportunities for Chinese companies, as regulation generally permits oil exploration by foreign companies. Pre-salt regulation, for example, from its very conception — even when it intended to place Petrobras at the center of pre-salt exploration and development — included the participation of foreign companies. Another advantage of Latin America is that, compared to other oil-holding regions, the region is politically more stable. Historically, oil-producing regions and countries have exhibited political instability, particularly in the Middle East.

In Brazil, even amid the political and economic crisis that set in from 2014 onwards, contracts were honored, and projects were not affected. The rules established for the pre-salt were amended to favor foreign companies. Despite changes in the rules governing foreign company participation in pre-salt auctions, Chinese NOCs opted to continue operating alongside Petrobras to absorb technological knowledge, as can be observed in the following table.

Table 2. Production Sharing Contracts Signed in the Pre-Salt Polygon

Year	Round	Area	Operator	Consortium Partners	Min. Gov't Oil Surplus Offered	Awarded Gov't Oil Surplus
2013	1st Round	Libra	Petrobras (40%)	Shell (20%), Total (20%), **CNPC (10%), CNOOC (10%)**	41.65%	41.65%
2017	2nd Round	Sul de Gato do Mato	Shell (50%)	Ecopetrol (30%), Total (20%)	11.53%	11.53%
		Entorno de Sapinhoá	Petrobras (45%)	Shell (30%), **Repsol Sinopec (25%)**	10.34%	**80%**
		Norte de Carcará	Equinor (40%)	ExxonMobil (40%), Petrogal (20%)	22.08%	**67.12%**

2018	3rd Round	Peroba	Petrobras (40%)	BP (40%), **CNODC (20%)**	13.89%	**76.96%**
		Alto de Cabo Frio Oeste	Shell (55%)	QPI (25%), **CNOOC (20%)**	22.87%	22.87%
		Alto de Cabo Frio Central	Petrobras (50%)	BP (50%)	21.38%	**75.80%**
2018	4th Round	Uirapuru	Petrobras (30%)	ExxonMobil (28%), Equinor (28%), Petrogal (14%)	22.18%	**75.49%**
		Dois Irmãos	Petrobras (45%)	BP (30%), Equinor (25%)	16.43%	16.43%
		Três Marias	Petrobras (30%)	Shell (40%), Chevron (30%)	8.32%	**49.95%**
	5th Round	Saturno	Shell Brasil (45%)	Chevron (45%), Ecopetrol (10%)	17.54%	**70.20%**
		Titã	ExxonMobil Brasil (64%)	QPI Brasil (36%)	9.53%	**23.49%**
		Pau-Brasil	BP Energy (50%)	**CNOOC (30%)** and Ecopetrol (20%)	14.40%	**63.79%**
		Sudoeste de Tartaruga Verde	Petrobras (100%)	Petrobras (100%)	10.01%	10.01%
2019	1st ECO Round	Búzios	Petrobras (90%)	**CNODC (5%) and CNOOC Petroleum (5%)**	23.24%	23.24%
		Itapu	Petrobras (100%)	Petrobras (100%)	18.15%	18.15%
	6th Round	Aram	Petrobras (80%)	**CNODC (20%)**	29.96%	29.96%
2021	2nd ECO Round	Sépia	Petrobras (30%)	TotalEnergies EP (28%); Petronas (21%) and QP (21%)	15.02%	37.43%
		Atapu	Petrobras (52.5%)	Shell Brasil (25%) and TotalEnergies EP (22.5%)	5.89%	31.68%

Source: PPSA, 2022.

Chinese interests were further benefited by changes in local content rules, which removed the requirement that a large portion of vessels, platforms, drilling rigs, and other equipment used in pre-salt operations be produced in Brazil. Following this regulatory change, the Chinese shipbuilding industry experienced rapid growth, and oil platforms and oil tankers

came to figure as China's primary export product to Brazil. Between 2018 and 2020, drilling or exploration platforms, floating or submersible, occupied the first position among products imported from China, totaling approximately US$ 6 billion in imports over the period (MDIC, 2023).

Before Chinese entry into pre-salt blocks, Alves (2013) noted that Chinese NOCs and banks had faced challenges entering the Brazilian market. China had accumulated experience entering markets with lower institutional complexity, particularly in African and other Latin American countries. For instance, Chinese loans to energy and infrastructure projects were more easily applied to centralized countries such as Angola than to Brazil, which has greater institutional complexity. Chinese banks and oil companies proved capable of adjusting to Brazil's institutional frameworks. Nevertheless, China's entry into the Brazilian market was slower and more gradual, as it lacked experience in "managing complex cross-border mergers and navigating highly regulated markets. This is a particularly daunting challenge in countries with overlapping jurisdictions and complex regulations, such as Brazil" (Alves, 2013).

Chinese banks acquired experience and, between 2007 and 2019, Brazilian companies received approximately one quarter of the oil-related loans extended by Chinese financial institutions. Petrobras became the primary creditor of such institutions. The mechanisms linking loans to oil supply (loan-for-oil), local content purchase requirements, and a countercyclical lending pattern led Brazilian energy sector actors to voluntarily align themselves with the Chinese state's objectives and long-term goals related to energy security. These goals, as discussed above, include the diversification of supply sources, the increase of imports, and the internationalization of Chinese companies (Hogenboom, 2017).

Through the loans extended, China has secured a stable supply of Brazilian oil, and energy-backed loans (EBLs) have been used to foster Brazilian oil exports. These loans include procurement clauses and ultimately promoted — alongside Brazilian exports to China — the purchase of equipment and services from Chinese companies. A notable example is the drilling units used for pre-salt oil extraction. In 2019, half of Petrobras's FPSOs (floating, production, storage, and offloading units) were partially or entirely manufactured in Chinese shipyards (Barbosa, 2021).

Another element, according to Barbosa (2021), in the expansion of Chinese presence was the moments of crisis that Brazil underwent during its transformation into an oil exporter. Two periods stand out: between 2008 and 2009, with the onset of the international financial crisis; and between 2014 and 2017, with the combination of economic recession and the impacts of the corruption scandals of Operation Lava Jato, which paralyzed the activities, operational plans, and financial stability of Brazilian companies. In March 2014, federal investigators and prosecutors uncovered a massive money laundering and illegal payments scheme within Petrobras, which became the epicenter of the largest corruption scandal in Latin American history.

The drop in oil prices intensified the company's losses. Brent crude was quoted at US$ 112 per barrel in 2012, declining to US$ 43 in 2016 (BP, 2020). In 2008, the Brazilian currency stood at R$ 1.83 per dollar, rising to R$ 3.93 in 2019. This depreciation increased the cost of Petrobras's foreign currency-denominated debt to finance pre-salt exploration. The company also had its investment-grade rating downgraded by the major credit rating agencies such as Moody's, Standard & Poor's (S&P), and Fitch. The company had the technical capacity to exploit its reserves but faced a financial impediment. This situation was addressed through resources lent by Chinese financial institutions, with their loans assuming a countercyclical effect amid the crisis situation (Barbosa, 2021).

Brazil's transformation into an oil-exporting country, combined with China's energy security needs, produced a dynamic that enabled the convergence of companies and institutions from both countries in the energy sector. This occurred amid China's need to meet its energy security interests and the 'go global' plans for its companies, while Brazil required capital to realize pre-salt projects and a consumer market for its oil output (Hogenboom, 2017; Vasquez, 2019; Zhou, 2017).

Financing from Chinese banks began in 2007, shortly after the announcement of the pre-salt discovery. The advancement of pre-salt exploration and the gradual increase in exports over the years made Brazil a viable option within China's diversification of supply (Xu, 2017; Zhang, 2017). The pre-salt enabled Brazil's entry into Chinese oil diplomacy, attracting attention through the large volume of resources and capital requirements announced — and later, through the expansion of exports, investments, and loans in the relationship between the

two countries in the energy sector (Xu, 2017; Zhong, Zhu & Sun, 2016; Zhou, 2017). On a global scale, the total lent to Brazil represents approximately one-fifth of the US$ 124.5 billion lent by Chinese banks in oil-related transactions. Brazil thus ranks in second place as the primary recipient of Chinese capital, behind only Russia (Barbosa, 2021).

Chinese financial institutions accelerated investments and provided resources when Petrobras most needed — during the crisis period the company faced between 2014 and 2017 — which tied the company to the strategic interests of the Chinese government and its long-term objectives related to energy security (Downs, 2011; Kong, 2019), and was essential for the consolidation of Chinese presence in the sector as the primary destination for Brazilian oil exports. Chinese banks created a scenario in which Chinese companies could become competitive in the Brazilian market, enabling their access to crude oil exported by Petrobras, while simultaneously facilitating the sale of equipment and construction services through local content rules attached to the loans.

Between 2000 and 2012, the United States was the primary destination for Brazilian oil, except in 2010, when it ranked second. However, China's growing oil imports from Brazil over time caused the Asian country to temporarily surpass the United States in 2010 as the primary destination for Brazilian oil. From 2013, China consolidated its leading position and became the main market for Brazil's growing oil exports (Hiratuka & Deos, 2019; Rosito, 2017; Xu, 2017). In sum, since the pre-salt discovery, Brazil has offered China: natural resources to import, strategic assets to exploit, and equipment purchases for its engineering and machinery companies.

4 INVESTMENTS AND FINANCING IN RENEWABLE ENERGY

Concern for energy security is a fundamental aspect of Chinese development. To safeguard its energy supply, China first developed an 'oil diplomacy' and subsequently expanded this into an 'energy diplomacy' that, in the renewable sphere, encompasses a unique technological capacity in vehicle electrification and UHV transmission lines (Xu, 2017; Zhong, Zhu & Sun, 2016; Zhou, 2017). Chinese efforts include the pursuit of energy supplies worldwide.

An analysis of renewable energy investments reveals that the majority are concentrated on hydroelectric power, with less participation in wind and solar energy projects. China developed expertise in the hydroelectric industry with the assistance of State Grid and China Three Gorges (CTG), two major state-owned enterprises.

State Grid developed ultra-high-voltage technology for deployment within China, and, due to the company's geographic expansion, Brazil became a natural market for it: Brazil is one of the few nations that can provide the geographic and demographic conditions for investment in UHV transmission lines. There are a few nations that could offer a large territory and large consumer centers for the building of UHV transmission lines, and in those that could, they either already have installed infrastructure or their own companies capable of offering this technology. In other instances, there is no substantial demand for large transmission line projects — as in Russia and Canada, where a considerable portion of the country is sparsely populated. Brazil, in contrast, has large consumer centers located far from energy-producing regions, particularly given that hydroelectric power generation occurs in regions distant from Brazil's main urban centers.

In addition to investments in UHV transmission lines, the prominence of Build Your Dreams (BYD) in clean energy, batteries, and urban mobility warrants attention. To better serve regional demands and capitalize on scientific partnerships with Brazilian universities, the company established its largest research center in Campinas, São Paulo, in 2014. BYD manufactures solar panels, electric vehicles, buses, and monorails, among other equipment for the urban mobility of large cities.

Given so many attractive conditions for Chinese companies, the Brazilian electricity sector attracted nearly half of all Chinese investment in Brazil (48%), while oil and gas production ranked second (28%), followed by manufacturing (6%), infrastructure (5%), agriculture, livestock, and related services (3%), and financial services activities (2%) (CEBC, 2021).

At a time when Brazilian energy companies were confronting the economic challenges brought about by the 2008 crisis, Chinese companies identified in Brazil a solid regulatory environment and a highly qualified technical workforce. The aggressive strategy of Chinese companies in a strategic sector was not viewed with concern in Brazil, as this was the second

round of denationalization in the sector, which had already had a strong international presence since the 1990s, when many American and European companies acquired assets in Brazil (Schutte, 2020).

Two Chinese companies — CTG and State Grid — were technologically and financially well-prepared to enter the Brazilian market and diversified their portfolio of assets in Brazil:

Table 3. Major Chinese Investments in the Brazilian Electricity Sector (2010–2017)

Company	Year	Investment
State Grid	2010	Acquisition of 7 of the 12 subsidiaries of Plena Transmissoras
State Grid	2012	Acquisition of the remaining 5 subsidiaries of Plena Transmissoras
State Grid	2012	51% of the Teles Pires transmission line consortium
State Grid	2012	Acquisition of 7 transmission lines from the Spanish company Actividades de Construcción y Servicios (ACS)
CTG	2014	50% of the Santo Antônio do Jari hydroelectric plant
CTG	2014	50% of the Cachoeira Caldeirão hydroelectric plant
CTG	2014	33.3% of the São Manoel hydroelectric plant
State Grid	2014	51% of the Belo Monte Hydroelectric Plant transmission consortium
State Grid	2015	Second Belo Monte transmission line
CTG	2015	Acquisition of Salto and Garibaldi plants from Triunfo Participações
CTG	2015	49% of EDP Renováveis
State Grid	2016	Acquisition of Camargo Correa and pension fund stake in CPFL Energia
State Grid	2016	Acquisition of CPFL Renováveis from Camargo Côrrea
State Grid	2016	Concession of Jupiá and Ilha Solteira hydroelectric plants from CESP
CTG	2016	Acquisition of Duke Energy Brasil assets
SPIC	2017	Santo Antônio hydroelectric plant

Source: Schutte, 2020.

To navigate Brazil's stringent environmental regulations — among the most rigorous in the world — and to avoid the environmental problems and criticisms experienced in other Latin American countries, such as in Ecuador (Sousa *et al*., 2023), State Grid established a dedicated department to handle the project's environmental issues (Zhang & Leal, 2019). The ability to secure financing from Chinese banks and the synergy of working together to achieve this

objective allowed Chinese companies to expand rapidly in the Brazilian energy market. CHEXIM and the China Development Bank (CDB) are two significant actors in financing in Brazil. Between 2007 and 2017, these two institutions lent US$ 28.7 billion to companies and projects in Brazil, according to the China-Latin America Finance Database (2023), with 90% of this amount directed to energy-related projects.

In this context, the relationship between China and Brazil in the renewable energy sector has solidified as an example of strategic cooperation and long-term investment. Drawing on their technological and financial capabilities, Chinese companies — led by CTG and State Grid — found in Brazil fertile ground to expand their businesses and capitalize on the opportunities offered by the country's sustainable energy matrix. Through concessions, acquisitions, and substantial financing, China has become a key partner in the development of Brazil's energy infrastructure, with an emphasis on hydroelectric, wind, and solar energy. Furthermore, Brazil's membership in the Asian Infrastructure Investment Bank (AIIB) and the bank's support for renewable energy projects signal a promising outlook for the future of clean energy in the country, establishing a solid foundation for ongoing collaboration between the two nations.

The transnationalization of Chinese capital has consolidated itself in the O&G sector, as well as in electricity generation, transmission, and distribution. The new frontier of Chinese capital expansion is the energy transition, with investments in wind and solar energy, urban mobility, and the electrification of the transport sector. The Brazilian case of energy transition holds significant potential for positioning the country prominently within the geopolitical landscape of the transition to a low-carbon economy, aided by the growth of Chinese capital in this process.

Unlike other developing countries, Brazil is not at risk of a debt trap, as it does not offer investors the possibility of sovereign guarantees. That is, if a company decides to build a road or port — even through competitive bidding or direct government invitation — and the debt contracted for project execution is not repaid, the debt burden falls on the company. The Brazilian government does not assume debts in infrastructure projects and is exempt from any such liability; this burden rests with Chinese companies and banks, or those of any other nationality, which decide to invest in Brazil. Other countries with smaller markets —

particularly in Latin America, Africa, and Asia — provide sovereign guarantees to attract more investment.

Ultimately, what determines whether an investment happens is the quality of the project — identified in terms of its guarantees, structure, and risk profile. Chinese capital entered energy projects on a massive scale because the risk is mitigated. Unlike road, port, or other concession projects in Brazil, where the risk rests with the concessionaire, in the energy sector, the risk is mitigated by the state's commitment to purchase the energy generated. It is the only sector in Brazil that carries this state guarantee. In a road concession, for example, the concessionaire must independently calculate demand risk and invest accordingly — if losses occur, they fall entirely on the concessionaire. In China, the state would assume this risk.

For this reason, demand risk is the primary determinant for projects in Brazil with Chinese involvement. The similarity in the energy sector was one of the factors behind the concentration of energy investments. In the energy sector, Brazil and China share similar characteristics: energy production in both countries occurs in locations geographically distant from consumer centers and, given the territorial extent of both, requires the construction of long transmission lines. Both have hydroelectric energy participation in their energy mix. These characteristics enabled the development of UHV transmission technologies. Furthermore, the energy sector is capital-intensive and, given the historical scarcity of capital in developing countries, Brazil has a propensity to seek foreign capital.

The Chinese expansion in the electricity sector was also driven by the Lava Jato Operation, which affected various Brazilian companies operating in electricity sector projects. The economic crisis in Brazil led electricity sector companies and state governments to put quality assets up for sale in a second wave of privatizations in the sector, following the first wave in the 1990s.

Ultimately, this expansion was a combination of market similarities, a reliable regulatory framework, and a business opportunity. In conclusion, Brazil finds itself in a unique position in the international arena by virtue of its market characteristics, favorable regulation, and investment opportunities. Project quality and risk mitigation are the key factors driving this expansion. The relationship between Brazil and China in the energy sphere is in constant evolution, and the choices made will shape the future of the energy transition and the country's

economic development. It is therefore essential to continue monitoring and evaluating this dynamic in permanent flux to ensure that Brazil achieves its economic and sustainable development objectives.

5 FINAL REMARKS

This article has addressed the growing influence of Chinese capital in the global energy sector, highlighting how China has benefited from economic globalization and the transnationalization of state capital. We have argued that the expansion of state influence in the global economy — particularly through investments by sovereign wealth funds and state-owned enterprises — is transforming the dynamics of globalization, giving rise to a new state-centered form of globalization that challenges traditional notions of sovereignty and power in twenty-first century capitalism.

Against this global backdrop, this article sought to address the following questions: i) what are the reasons behind the attraction of investments by Chinese companies in the Brazilian energy sector? ii) how has Brazil been incorporated into the commercial and strategic needs of Chinese companies? To answer these questions, the hypothesis was formulated that Chinese capital directed at the energy sector in Brazil operates neither under a strictly market-driven logic nor a purely statist one; rather, it constitutes a hybrid modality of transnationalization in which corporate commercial interests and the strategic objectives of the Chinese state coexist, are mutually reinforcing, and adapt to local institutional frameworks. The findings demonstrated that Brazil has consolidated itself as a strategic territory for Chinese energy security and for the transnationalization process of its state capital:

Chinese oil companies demonstrated willingness to undertake capital-intensive projects and adapted to Brazilian conditions. Furthermore, changes in local content rules drove the import of Chinese equipment, particularly drilling platforms. The Sino-Brazilian relationship in the oil sector was strengthened by China's need to secure oil supplies, while Brazil sought capital to exploit the pre-salt and a consumer market for its production. China became the primary destination for Brazilian oil exports, and Chinese banks played a crucial role in providing financing to Petrobras in times of crisis. This contributed to the consolidation of

Chinese presence in the sector, with China also benefiting from equipment exports and construction services related to oil projects in Brazil.

In the renewable energy sector, it was demonstrated that China expanded its 'energy diplomacy' to increase its presence in vehicle electrification technologies and UHV transmission lines. Chinese state-owned companies — CTG and State Grid — led investments in Brazil, with a considerable focus on hydroelectric power, in addition to wind and solar energy projects. These companies also sought partnerships with financial institutions, such as CHEXIM and CDB, to finance Brazilian projects. In addition, China has actively participated in multilateral initiatives in Brazil, such as the AIIB, providing resources for renewable energy projects. This cooperation has established a foundation for the expanded presence of Chinese interests in Brazil's energy infrastructure, particularly in the areas of hydroelectric, wind, and solar energy.

The interpretation articulated between International Political Economy and International Relations leads to the conclusion that Chinese presence in the Brazilian energy sector evidences the emergence of a new form of state-centered globalization (state-capitalized globalization). Unlike the neoliberal waves of internationalization led by Western corporations and guided strictly by short-term profit maximization, the Chinese movement combines the pursuit of capital accumulation with technological catch-up and long-term national state planning. Within this context, the conceptual duality between "commercial interests" and "strategic interests" dissolves: Chinese corporate investments in Brazil are commercial in their mode of operation and profitability, yet simultaneously deeply statist in their genesis, financial support, and alignment with Beijing's global directives.

REFERENCES

ALVES, A.C. Chinese economic statecraft: A comparative study of China's oil-backed loans in Angola and Brazil. **Journal of Current Chinese Affairs**, v. 42, n. 1, p. 99-130, 2013. Available at: https://doi.org/10.1177/186810261304200105.

AMINEH, M.P.; YANG, G. Introduction: Geopolitics of transnationalization of Chinese national oil companies. **Perspectives on Global Development and Technology**, v. 13, n. 5-6, p. 495-535, 2014. Available at: https://brill.com/view/journals/pgdt/13/5-6/article-p495_4.xml.

AMINEH, M.P.; YANG, G. China's Geopolitical Economy of Energy Security: A Theoretical and Conceptual Exploration. **African and Asian Studies**, v. 17, 2018, 9-39. Available at: https://doi.org/10.1163/15692108-12341399.

APELDOORN, Bastiaan; HORN, Laura. The marketisation of European corporate control: A critical political economy perspective. **New Political Economy**, v. 12, n. 2, p. 211-235, 2007. Available at: https://forskning.ruc.dk/en/publications/the-marketisation-of-european-corporate-control-a-critical-politi.

AREND, M.; FONSECA, P.C. Brasil (1955-2005): 25 anos de catching up, 25 anos de falling behind. **Revista de Economia Política**, vol. 32, n. 1 (126), pp. 33-54, jan/mar 2012. Available at: https://doi.org/10.1590/S0101-31572012000100003.

BABIC, M.; GARCIA-BERNARDO, J.; HEEMSKERK, E.M. The rise of transnational state capital: State-led foreign investment in the 21st century. **Review of International Political Economy**, v. 27, n. 3, p. 433-475, 2019. Available at: https://doi.org/10.1080/09692290.2019.1665084.

BALBUENA, S.S. **Concerns related to the internationalisation of state-owned enterprises**: Perspectives from regulators, government owners and the broader business community. OECD: 2016. Available at: https://doi.org/10.1787/5jm0xvx0b223-en.

BARBOSA, P.H.B. Chinese Economic Statecraft and China's Oil Development Finance in Brazil. **Journal of Current Chinese Affairs**, v. 50, n. 3, p. 366-390, 2021. Available at: https://doi.org/10.1177/1868102621105713.

BARONCELLI, A.; LANDONI, M. **Chinese State-Owned Enterprises in the Market for Corporate Control**, p. 17-36, 2019. Available at: https://www.springerprofessional.de/en/chinese-state-owned-enterprises-in-the-market-for-corporate-cont/16345196.

CHINA-LATIN AMERICA FINANCE DATABASE. China Loans to Latin America and the Caribbean Database. **The Dialogue:** 2023. Available at: https://www.thedialogue.org/map_list/.

CUERVO-CAZURRA, Alvaro *et al*. Governments as owners: State-owned multinational companies. **Journal of International Business Studies**, v. 45, p. 919-942, 2014. Available at: https://doi.org/10.1057/jibs.2014.43.

DIXON, A.D.; MONK, A.H.B. Rethinking the sovereign in sovereign wealth funds. **Transactions of the Institute of British Geographers**, v. 37, n. 1, p. 104-117, 2012. Available at: https://doi.org/10.1111/j.1475-5661.2011.00447.x.

DOWNS, E.S. China Development Bank's oil loans: Pursuing policy and profit. **China Economic Quarterly**, v. 15, n. 4, p. 43-47, 2011. Available at: https://www.brookings.edu/articles/china-development-banks-oil-loans-pursuing-policy-and-profit/.

DE GRAAFF, N. The hybridization of the state-capital nexus in the global energy order. In: **The State-Capital Nexus in the Global Crisis**. Routledge, 2017. p. 65-79.

DUNNING, J.H.; LUNDAN, S. Theories of Foreign Direct Investment. In: **Multinational Enterprises and the Global Economy.** Cheltenham: Edward Elgar, 2008.

HABERLY, D.; WÓJCIK, D. Earth incorporated: Centralization and variegation in the global company network. **Economic Geography**, v. 93, n. 3, p. 241-266, 2017. Available at: https://doi.org/10.1080/00130095.2016.1267561.

HARVEY, D. **The geopolitics of capitalism.** Macmillan Education UK, 1985, p. 128-163. Available at: https://doi.org/10.1007/978-1-349-27935-7_7.

HARVEY, D. **The New Imperialism.** Oxford/New York: Oxford University Press, 2003.

HARVEY, D. **The Limits to Capital.** London/New York: Verso, 2006.

HIRATUKA, C.; DEOS, S. Chinese Financing in Brazil (2000-2018). In: Enrique Dussel Peters (ed.) **China's Financing in Latin America and the Caribbean**. Mexico City: UNAM, 2019, pp. 209-234.

HOGENBOOM, B. Latin America and China's transnationalizing oil industry: A political economy assessment of new relations. **Perspectives On Global Development and Technology**, v. 13, n. 5-6, p. 626-647, 2014.

HOGENBOOM, B. Chinese influences and the governance of oil in Latin America: the cases of Venezuela, Brazil, and Ecuador. In: Mehdi P Amineh Mehdi and Guang Yang (eds.) **Geopolitical Economy of Energy and Environment**: China and the European Union. Leiden: Brill, 2017, pp. 172-211.

KIELY, R. **The BRICs, US 'decline' and global transformations.** Basingstoke/Hampshire: Palgrave Macmillan, 2015.

KONG, Bo. **Modernization through globalization**: Why China finances foreign energy projects worldwide. Singapore: Springer, 2019.

MAYER, F.W.; PHILLIPS, N. Outsourcing governance: States and the politics of a 'global value chain world'. **New Political Economy**, v. 22, n. 2, p. 134-152, 2017. Available at: https://doi.org/10.1080/13563467.2016.1273341.

MDIC. ComexStat: Exportação e Importação Geral. Database. 2023. Available at: http://comexstat.mdic.gov.br/pt/home.

MORAIS, J.M. **Petróleo em águas profundas**: uma história tecnológica da Petrobras na exploração e produção offshore. Brasília: IPEA, 2013. Available at: https://repositorio.ipea.gov.br/handle/11058/1147.

OLIVEIRA, A. Brazil's Petrobras: strategy and performance. In: VICTOR, D.G. HULTS, D.R.; THURBER, M.C. **Oil and Governance**: State-Owned Enterprises and the World Energy Supply. Cambridge: Cambridge University Press, 2012.

ROSITO, T. Petrobras e as parcerias com a China. **CEBC Carta Brasil-China** n. 12, v. 18, 2017, p. 9-15. Available at: https://www.cebc.org.br/arquivos_cebc/carta-brasil-china/Ed_18.pdf.

SCHUTTE, G.R. **Oásis para o capital** - solo fértil para a 'corrida do ouro': a dinâmica dos investimentos produtivos chineses no Brasil. 1 ed. Curitiba: Appris, 2020.

SCHUTTE, G.R.; REIS, R. Investimentos externos diretos e o processo de catch-up: a experiência chinesa e as lições para o Brasil. **Cadernos do Desenvolvimento**, v. 15, n. 27, p. 63-82, 2020. Available at: http://www.cadernosdodesenvolvimento.org.br/.

SILVEIRA, L.C.F.U. **Laços e traçados da China no Brasil**: implantação de infraestrutura energética e a componente socioambiental. Master's Thesis (International Relations). Universidade de Brasília (UnB). 2018. Available at: https://repositorio.unb.br/bitstream/10482/34946/1/2018_LauraCristinaFeindtUrrejolaSilveira.pdf.

SOUSA, A.T.L.M.; SCHUTTE, G.R.; ABRÃO, R.A.F.; RIBEIRO, V.L. China in Latin America: To BRI or not to BRI. In: **The Palgrave Handbook of globalization with Chinese characteristics**: The case of the Belt and Road Initiative. Singapore: Springer Nature Singapore, 2023. p. 495-514. Available at: https://link.springer.com/chapter/10.1007/978-981-19-6700-9_29

STEPHEN, M.D. Rising powers, global capitalism and liberal global governance: A historical materialist account of the BRICs challenge. **European Journal of International Relations,** v. 20, n. 4, p. 912-938, 2014. Available at: https://doi.org/10.1177/1354066114523655.

VASQUEZ, P. China's oil and gas footprint in Latin America and Africa. **International Development Policy**, n. 12, v. 11, 2019, p. 1-25. Available at: https://doi.org/10.4000/poldev.3174.

XU, Yanran. An analysis of the strategic partnership between China and Brazil: take oil cooperation as an example. **Modern International Relations**, v. 1, n. 7, 2017, p. 33-38.

ZHANG, Wuyue. China-Brazil oil trade opens a win-win era. China Daily, 2017. Available at: http://cnews.chinadaily.com.cn/baiduMip/2017-02/16/cd_28226355.html.

ZHANG, Yuwen; LEAL, A. The Belo Monte Cooperation. In: **A Bright Shared Future** (English Edition). Beijing: Foreign Languages Press/China Commerce and Trade Press, 2019.

ZHONG, Wenxin, ZHU, Yichao, SUN, Yimin. Influence of Brazilian political situation on Chinese petroleum enterprises and countermeasures. **International Markets**, v. 1, n. 6, 2016, p. 84-87. Available at: https://www.doc88.com/p-5791520418524.html.

ZHOU, Jie. Approaches to upgrade China-Brazil oil investments and trade cooperation. **International Business Forum**, v. 7, n. 6, 2017, p. 29-31.