FRAMING SINO-BRAZILIAN ENERGY COOPERATION: PERSPECTIVES FROM CHINA

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The vast resources demand driven by China’s fast urbanization and economic growth and the abundant resource reserves coupled with efficient exploration capacity consolidate a solid foundation for vigorous increase in bilateral trade. In the meantime, the improving political synergy in bilateral ties reinforced by the mutual interests and common views of both countries’ political elites, pundits and entrepreneurs, highlights the complementarity of their economies development and political aspirations. Following the natural incentives listed above, the Chinese FDI in Brazil flows into a wide array of sectors that range from mining and infrastructure to telecommunications and services (Fritschak, Soares and O’Connor), but among all of them energy represents the most substantial investment. According to China Global Investment Tracker, from 2005 to 2016 the Chinese FDI in Brazil represented US$ 45 billion dollars, in which energy ranked first, receiving more than US$ 30 billion dollars. (AEI, 2016)

The Peoples Republic of China (PRC), as the largest energy consumer and the second largest economy in the world, has seen remarkable economic growth sustained by a growing dependency on the importation of energy resources, oil and gas in particular. Consequently, energy supplies are becoming one of its pressing concerns for energy security. Brazil, on the other hand, is the largest developing economy of the western hemisphere, endowed with abundant reservoirs of oil and natural gas in deep offshore waters as well as plenty of new oil fields. Furthermore, Brazil holds huge hydroelectric poten-

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tial, biofuels production, and significant investment in solar and wind energy farms that is transforming Brazil into energy superpower.

China and Brazil are the biggest developing nations of the Eastern and Western Hemisphere respectively, and the nature of their energy cooperation evidently complements one another, and carries strategic importance, highlighting enormous potential for future growth in the coming decades. The implications of the Sino-Brazilian cooperation are not only restricted to both countries, but have far-reaching intra-regional and global impacts. The cooperation, also aiming to continuously improve the China-Latin America integration mechanisms, with energy as a key area for cooperation. Thus, the examination of the present situation and future challenges of the Sino-Brazilian energy cooperation, as well as the discussion of actions to better advance the ongoing momentum are pertinent in this context.

Recent Developments in Sino-Brazilian Energy Cooperation

Currently, Brazil is the world’s 7th largest economy and is the most prosperous economy in South America. (World Bank 2014) According to the U.S. Energy Information Administration (EIA), Brazil is the 8th largest consumer of energy and the 10th biggest energy producer. Due to the rapid increase in the oil demand, Brazil’s oil consumption reached 3 million b/d in 2014. (EIA 2014) In the last decade, because of the fast growth of its economy, the national energy demand increased by a third. In 2014, the oil and petroleum liquids production capacity reached at 2.8 million b/d, with off-shore deep water oil accounted for more than 91 percent of the national production. (EIA 2014) According to the data released by Brazil’s National Agency of Petroleum (ANP 2014), in 2014 the crude oil exploited from the Pre-salt oil reserve reached at 300 thousand b/d, representing 15 percent of the overall oil production, while in 2008 during the beginning of the exploitation of the Pre-salt oilfields the production only represented 0.4 percent of the annual production of crude oil. (ANP 2014)

The discoveries of off shore oil reserves have enabled Brazil to become an important oil producer. In 2007, Petrobras announced the offshore oil discovery with estimated oil reserves up to 5 to 8 billion barrels in the Santos basin, later named as Lula oil field. According to the BP’s estimates, the total reserves may stand at 12 to 13 billion barrels, one of the biggest oil field discoveries of the past decade. (Cui 2012)

It is estimated that the current oil production lifted Brazil to the rank of second biggest South American oil reservoir, second to Venezuela. (Jia 2009) According to estimate of the International Energy Agency (IEA 2014),
by 2035 the global offshore oil supply will increase by 13 percent, in which the Brazilian production alone shall account for a third of the new supply. (IEA 2013) The IEA also predicts that by 2035 the Brazilian production of oil may double its current figure, making it the 6th largest world oil producer. (IEA 2013) Indeed, the great potential for oil exploration, together with the advanced exploitation technology know-how in deep waters, will transform Brazil into a major oil producing country in the coming decades.

Brazil is not only an advanced country in conventional energy, but also is a global leader in the development and utilization of new energy sources. The vast national hydropower potential and great investments backed and even stimulated by the government in other fields of clean and renewable energy, brings Brazil as a valuable set of energy resources and one of the biggest world investors, along with China, India and South Africa ranking at the top 10. Being guided by its own robust and diverse energy strategy, Brazil was the first country to harness biofuels. Being one of the world’s largest producers and consumers of ethanol, the country has attained a remarkable progress in bioenergy production, accounting for 35 percent of global production and 13.6 percent of global consumption. (Xinhua 2015) Moreover, Brazil also has a vast hydropower industry, with hydropower generation representing approximately 80 percent of total national electricity supply. (IEA 2013)

In contrast, facing a harsh energy security situation, China has prioritized the advancement of energy partnerships, including with Brazil. The general status of Sino-Brazilian energy cooperation has unfolded in two parallel but complementary hierarchies, which can be proposed as government-to-government level and business-to-business level.

**Government-to-Government Level Cooperation**

From the government-to-government perspective, since the beginning of the 21st century the high level dynamics between two governments have achieved numerous breakthroughs in energy cooperation practices. China and Brazil have already established a inter-governmental cooperation platform through the creation of a high level joint committee. Inspired by innovative ideas, new cooperation frameworks and a series of bilateral and multilateral agreements have been established. In 2006, the PRC’s National Development and Reform Commission (NDRC) and the Brazilian Ministry of Mines and Energy signed the Memorandum of Understanding (MOU) on the China-Brazil Commission of High Level of Agreement and Cooperation (COSBAN). Pursuit to that, the Subcommittee of Energy and Mining was soon established in order to accelerate the cooperation in the various energy
fields, deepen the mutual understanding of each other’s energy policies, and facilitate the dispute resolution arises in bilateral energy cooperation. Furthermore, the Chinese government has been attempting to apply new energy cooperation models with Brazil, in which the most known model is referred to as loan-for-oil. Distinct from directly purchasing oil from international market, or acquiring a certain percentage of equity by direct oversea investment, China extends a loan to a certain oil exporting country and expects loan repayments in the form of oil shipments at market prices. The oil-backed loan is usually granted to an oil-rich developing country with a reasonably stable political environment but short for foreign direct investment (FDI). In 2009, China and Brazil negotiated and signed a US$ 10 billion deal in oil-backed loans granted by the China Development Bank (CDB), to be paid with the supply of 100 to 160 thousand b/d by following the market price of the commodity.

Since the loan-for-oil cooperation model has been regarded as a beneficial and profitable means by the Brazilian government, on the one hand this has allowed China to maintain stable imports of crude oil and increase its energy security, while on the other hand, Brazil has been bankrolled by the Chinese fund, a key aspect for driving its economic growth. Although for the time being Petrobras languishes in debt crisis, the loan-for-oil cooperation will not be affected, as the Chinese government prefers to take a long-term view for the investment rather than a short-sighted approach. The CDB and Petrobras signed a US$ 5 billion agreement in 2015, which assured Brazil that China will continuously strengthen the strategic financial and energy cooperation with its Brazilian counterparts. (Petrobras 2015) The China Development Bank’s (CDB) investments will partially soothe the debt and credibility crisis faced by Petrobras and set the skeptical minds at ease.

In addition to creating the high level committee and adopting a new cooperation model, China and Brazil also signed a series of agreements seeking to further promote the bilateral energy cooperation (Table 1). In April 2011, China and Brazil released the “Joint Communiqué between the People’s Republic of China and The Federative Republic of Brazil”, which covered various fields of cooperation, energy in particular. Both sides demonstrated the willingness to deepen oil trade, financing, upstream oil exploration and production (E&P), electricity, energy equipment, the peaceful use of nuclear energy, biofuels and new energy sources. In February 2012, a “Joint Action

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3 Resource-backed structured financing is provided to an overseas borrower based on the long term resource product purchase and sale contract signed between the borrower and domestic enterprise, with the borrower’s future sales income under the purchase and sale contract as a main source of repayment.
Plan” was also signed to formalize a decade of cooperation. During the BRICS 2014 summit, the Russian President, Vladimir Putin proposed the initiative of creating the BRICS Energy Coalition, together with a Fuel Reserve Bank and the BRICS Energy Policy Institute to promote the energy cooperation and integration among the member countries, due to the lack of coordination mechanisms inside the group, which was agreed with high enthusiasm from all the members.

The Sino-Brazilian inter-governmental energy cooperation not only enhanced the mutual political trust between both countries, but also set a solid cooperative foundation for business-to-business level cooperation, driven by both countries’ companies.

Table 1 - Table of Successful Sino-Brazilian Government Negotiations on Energy Cooperation

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/1984</td>
<td>Intergovernmental Agreement on the Peaceful Use of Nuclear Energy</td>
</tr>
<tr>
<td>7/1985</td>
<td>Agreement on the Technical Cooperation on the Exploitation of Petroleum in the Sea signed between the PRC’s Ministry of Mining and Brazil’s Ministry of Mining and Energy</td>
</tr>
<tr>
<td>7/1988</td>
<td>Agreement on Scientific and Technologic Cooperation in Electricity (including hydroelectricity)</td>
</tr>
<tr>
<td>6/2006</td>
<td>Memorandum of Understanding of the COSBAN’s Subcommittee of Energy and Mining</td>
</tr>
<tr>
<td>5/2009</td>
<td>Memorandum of Government Understanding on Oil, Equipment and Financing</td>
</tr>
<tr>
<td>11/2009</td>
<td>US$ 10 billion in oil-backed loans funding agreement signed by Petrobras and the CDB</td>
</tr>
</tbody>
</table>
Memorandum of Understanding signed between the PRC’s Minister of Water Resources and the Brazil’s Ministry of Environment on Water Resources

Memorandum of Understanding between Brazil’s and the PRC’s Ministries of Science and Technology on the Formation of a Sino-Brazilian Center of Biotechnology

US$ 5 billion in oil-backed loans funding agreement signed by Petrobras and the CDB

Source: RPC’s and Brazil’s Ministry of Foreign Affairs

Business-to-Business Level Cooperation

From the business-to-business point of view, the potential development of Brazilian natural resources are the main incentive that drives the oil-thirsty Chinese companies to explore commercial opportunities. In business-to-business level, the energy cooperation between China and Brazil is mainly concentrated in four fields: crude oil trading, market access, technology absorption, and bioenergy cooperation.

The first cooperation field is bilateral oil trading. In the past few years Brazil has had a significant increase in its energy supplying role to China. Between 2003 and 2014 the Brazilian crude oil exportation to China went from less than 200 thousand tons to more than 7 million tons of equivalent oil and became China’s the 10th biggest oil suppliers. (Pang 2014) If the current oil trade momentum continues, China, the world’s largest oil importer, may surpass the United States and become Brazil’s largest crude oil buyer. To date, the Chinese dependency on overseas oil imports has already drawn near 60 percent, half of which comes from the Middle East. In this context, the strengthening of the energy partnership between Brazil and China is more than a business opportunity, but also has a central role in the diversifying of oil import sources, relieving China of its over-dependency on the increasingly chaotic Middle East countries.

China’s access to Brazilian energy market is the second. The late discoveries of offshore oil fields have provided investment opportunities for Chinese companies. Besides that, the adjustments in the Brazilian energy policy had ushered in a more favorable and attractive investment environment for Chinese energy companies to invest in Brazil, which is manifested in the fact that Chinese companies acquired equities in electric transmission
companies and constructed power transmission lines. Petrobras, as Brazil’s most important and valuable public company, has been in partnership with the Chinese energy giants Sinopec, CNPC, SinoChem and CNOOC in the areas of crude oil trading, deep waters exploitation, shipbuilding industry, and marine equipment manufacturing. As a result, all the above areas have developed significantly. The fruitful and mutual beneficial cooperation has enabled the Chinese companies to be more incentivized in acquiring local assets, attending public biddings, and participating in transnational operations. In addition to the tangible commercial profits, the competitiveness and the internationalization of Chinese enterprises have also been substantially enhanced. (Table 2). (Gu 2014)

Third is technology know-how. With the fast technological development in the deep waters oil E&P, there is an increasing consensus that the gravity center of world oil production is shifting from conventional to unconventional, such as offshore reserves. In recent years, China has adapted foreign technology to improve its shallow water E&P technology, however, deep offshore exploration requires improvements. Currently, the Chinese National Oil Companies (NOCs) own technology for offshore oil exploration in approximately 1,500 meters deep, but is still lacking the independent R&D capabilities. However, Brazil has grasped far more sophisticated technology know-how in deep and ultra-deep water oil exploration, having successfully drilled oil in depths that exceeds 3,000 meters. Furthermore, Brazil is the first country in the world that applies remotely operated vehicles (ROV) into the installation of Wet Christmas Trees in wellheads, and also the first to use steel catenary risers in semi-submersible platforms, now having 48 floating platforms, 56 ships of different classes and more than 30 thousand kilometers of undersea pipelines. Brazil also holds the world’s largest amount of offshore production platforms, and her model of installation, floating production, storage and off-loading summed along with her subsea storage and disposing systems form the Petrobras’ “Early Floating Production Systems”, or the “Brazil model”. (Li 2014) In this area, Chinese NOCs should take a pragmatic approach to learn from Brazilian counterparts in order to fulfil its goal of becoming a leading county in marine equipment manufacturing as indicated in China’s 13th Five Year Plan (2016-2020).

Last but not least is biofuels cooperation. Biofuels, after coal, oil and natural gas, is the most disseminated form of energy form in the earth. Brazil has been a leader in utilizing biofuels in the world. In contrast to the relatively fast development in oil and gas cooperation, as well as the recent hydropower and transmission lines investments, the cooperation in biofuels fields is still in an early stage. Brazil has been a pioneer in the development of liquid bio-
fuels industry, solving a series of key technology obstacles and industrialization barriers. The development of biofuels has not only significantly increased Brazil’s overall energy security, but contribute to the sustainable growth of national economy. With the increasing depletion of conventional energy, the lower greenhouse gas emissions and the high efficiency characteristics of biofuels make it more popular among the international community. It is thus undeniable that a well-planned and consistent cooperation with Brazil in this field would enrich the strategic partnership.

Table 2: Main agreements and facts of the Sino-Brazilian Energy Cooperation (2004-2015)

<table>
<thead>
<tr>
<th>Year</th>
<th>Agreement Content</th>
<th>Companies</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>Strategic cooperation agreement on oil exploration, prospection, pipelines, engineering and technical services</td>
<td>Sinopec and Petrobras</td>
<td>Agreement</td>
</tr>
<tr>
<td>2004</td>
<td>GASENE pipelines building</td>
<td>Sinopec and Petrobras</td>
<td>Infrastructure construction</td>
</tr>
<tr>
<td>2006</td>
<td>Oil export agreement</td>
<td>Sinopec and Petrobras</td>
<td>Negotiation</td>
</tr>
<tr>
<td>2006</td>
<td>Joint construction of the Vitória-Cabiúnas pipeline</td>
<td>Sinopec and Petrobras</td>
<td>Infrastructure construction</td>
</tr>
<tr>
<td>2009</td>
<td>US$ 10 billion Oil-backed loans</td>
<td>CDB and Petrobras</td>
<td>Oil-Backed Loans</td>
</tr>
<tr>
<td>2010</td>
<td>Sinopec acquires for US$ 7,1 billion 40% of Repsol Brazil’s shares</td>
<td>Sinopec and Repsol Brasil</td>
<td>Equity acquisition</td>
</tr>
<tr>
<td>2010</td>
<td>Sinochem Purchases for US$ 3 billion 40% of Statoil’s shares at the Peregrino oilfield</td>
<td>Sinochem and Statoil</td>
<td>Equity acquisition</td>
</tr>
<tr>
<td>2010</td>
<td>Joint purchase of 25% of the exploration rights at two oilfields in the Northeast</td>
<td>Sinopec and Petrobras</td>
<td>Equity acquisition</td>
</tr>
<tr>
<td>2010</td>
<td>State Grid acquires seven electric transmission companies and sets up a subsidiary in Brazil for R$ 3 billion</td>
<td>State Grid and Spain’s Elecnor, Isolux Corsan and Cobra</td>
<td>Equity acquisition</td>
</tr>
<tr>
<td>Year</td>
<td>Event Description</td>
<td>Parties</td>
<td>Type</td>
</tr>
<tr>
<td>------</td>
<td>-----------------------------------------------------------------------------------</td>
<td>----------------------------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>2011</td>
<td>Agreement to rise the Natural Gas offer to Rio de Janeiro</td>
<td>Sinopec and Petrobras</td>
<td>Agreement</td>
</tr>
<tr>
<td>2011</td>
<td>US$ 3.9 billion agreement for the increase of Galp Energia’s Brazilian subsidiary</td>
<td>Sinopec and Galp Energia</td>
<td>Financing</td>
</tr>
<tr>
<td>2012</td>
<td>State Grid acquires for € 751.7 million 7 power transmission lines</td>
<td>State Grid and ACS</td>
<td>Equity acquisition</td>
</tr>
<tr>
<td>2013</td>
<td>CTG buys 50% of 2 hydropower plants for R$ 900 million</td>
<td>CTG and EDP Energias do Brasil</td>
<td>Equity acquisition</td>
</tr>
<tr>
<td>2013</td>
<td>Sinopec purchases for US$ 15 billion deep water oilfields projects</td>
<td>Sinopec, Petrobras, Shell and Total</td>
<td>Stock Purchase</td>
</tr>
<tr>
<td>2013</td>
<td>Joint venture for exploration projects at the Santos basin and Libra oilfield</td>
<td>CNPC, CNOOC, Petrobras, Shell and Total</td>
<td>Joint Venture</td>
</tr>
<tr>
<td>2014</td>
<td>CTG purchases for R$ 364.8 million 49% of EDP’s participation in 11 wind farms</td>
<td>CTG and EDP Renováveis Brasil</td>
<td>Stock Purchase</td>
</tr>
<tr>
<td>2014</td>
<td>State Grid owns 49% of the joint venture to build and operate the transmission line from Belo Monte to the Southeast</td>
<td>State Grid and Eletrobras</td>
<td>Joint Venture</td>
</tr>
<tr>
<td>2014</td>
<td>CNPC purchases for US$ 2.6 billion all the shares of Petrobras Energía Perú</td>
<td>CNPC, Petrobras and Petrobras Energía Perú S.A.</td>
<td>Stock Purchase</td>
</tr>
<tr>
<td>2015</td>
<td>CTG purchased TPI’s assets for R$ 970 million</td>
<td>CTG and Triunfo Participações e Investimentos</td>
<td>Stock Purchase</td>
</tr>
<tr>
<td>2015</td>
<td>State Grid won the auction for the building and operation of Belo Monte’s 2nd energy transmission system</td>
<td>State Grid</td>
<td>Hired Project</td>
</tr>
</tbody>
</table>
Challenges to the Bilateral Energy Cooperation

Even though the Sino-Brazilian bilateral energy cooperation has vast potentials and embraces diverse fields, there are still unavoidable constraints that engender barriers to a further development of the cooperation. In a nutshell, momentary and chronic challenges may affect the cooperation. This paper analyses mainly the chronic ones, which can be defined as resource nationalism, cultural and legal differences, laws and regulations constraints and the US relations with its closest neighborhood.

The first challenge is the sentiment of resource nationalism. Resource nationalism is the tendency of a government to assert control or seek revenue stakes over natural resources located on their territory for strategic and economic reasons, by setting or changing contractual terms for foreign resource extraction companies. These terms constrain the operation or profit-earnings of foreign entities, which is particularly embodied in the control of the hydrocarbon industry, thus resource nationalism conflicts with the interests of multinational corporations. (Mares 2010) Latin America often regarded as the historic origin of the resource nationalism, being one of the regions where some countries strengthen the sovereign control over oil and gas resources, restricting the participation of transnational corporations in their oil and gas sectors.

There is strong evidence that the nationalist waves in some Latin American countries remount to the economic sphere rather than ideology, and the resources nationalism follows the same historical course. (Berrios, Marak and Morgenstern 2010) As the new left arose in Latin America, Venezuela was the first country to implement nationalist policies over oil resource. In 1999 and 2001, the new Venezuelan constitution and laws granted the state full ownership of PDVSA's shares, consequently the Hugo Chavez administration adopted nationalization policies toward foreign enterprises by demanding the Venezuelan NOCs to hold no less than 60-80 percent of stakes, (Sidney 2007) substantially raising the taxation on private and foreign

<table>
<thead>
<tr>
<th>2015</th>
<th>US$ 5 billion credit provided to Petrobras</th>
<th>CDB and Petrobras</th>
<th>Oil-Backed Loans</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>CTG purchases the integrality of the Jupiá and Ilha Solteira hydropower plants for US$ 3.7 billion</td>
<td>CTG</td>
<td>Stock Purchase</td>
</tr>
</tbody>
</table>

Source: Authors’ compilations
capital invested in hydrocarbons, changing the status of previous contracts and agreements signed between PDVSA and foreign investors and reducing the profit margin of national private and international companies. In 2008, Bolivia and Ecuador also pursued similar policies towards international oil companies, which particularly put European, American and Brazilian companies in a tough situation.

The Brazilian energy policies are also worth noting. Since the discovery of massive deep waters oil reservoirs is a recent phenomenon, Brazil haven’t historically enjoyed the same benefits of ‘oil dividends’ as other Latin American countries did. Therefore, the Brazilian resources nationalism sentiments are relatively mild compared with countries like Venezuela, Bolivia, or Ecuador. However, Brazil is not apathetic to the regional tendency towards resources nationalism. During the Lula administration the government introduced regulations and reforms with a strong nationalist characteristic towards the Pre-salt oil reserve, establishing the Petrobras’ obligation to hold at least 30 percent of stakes in their reservoirs exploration. (Viscidi 2015) Moreover, in order to guarantee its global leadership in deep water drilling, the Brazilian government has adopted special protection measures on its advanced technologies, preventing foreign companies from obtaining access to the offshore oil drilling technology know-how, indirectly raising the exploitation costs for partner countries.

The second challenge comes from cultural and legal differences. One could argue, China’s international system approach and social structure originates from Confucianist cultural traditions, while the Brazilian culture, institutions and international insertion are based on western values, highlighting the differences between the two emerging countries. In the legal aspect, Brazil’s legal institutions derive from the civil law system. However, the unique combination of the civil law and the American common law makes the understanding of the Brazilian legal system more complex for foreign investors. Brazil does not have a singular comprehensive energy law encompassing various energy fields, but it has specific regulations in different energy fields, which are composed of the overall energy regulatory system. The current Constitution is clear-in maintaining the Brazilian government’s monopoly on the exploration and production (E&P) of important fields and resources. Prior to 1997, the Brazilian oil industry was monopolized by Petrobras, the only public company in the country, not only participating in the formulation and implementation of national energy policies, but also being responsible for administrating and overseeing the domestic oil exploration, production, refinement and transportation industry. After approximately 40 years of monopoly, in the 1990s Brazil implemented a market-oriented reform in the en-
ergy fields, as in 1997, the law 9.478, popularly known as the “New Oil Law”, allowed foreign companies to attend public biddings to explore the nation’s oilfields, liberalizing the oil and gas sectors.

Following the new law, a new legal framework was also established to uphold it, resulting in the creation of the National Council of Energy Policy (CNPE) and the National Petroleum, Natural Gas and Biofuels Agency (ANP), seeking to draw out policies for various energy sectors and to define guidelines for the participation of domestic and international companies. (Gomes 2014) The National Agency of Electrical Energy (ANEEL) was also founded, being mainly responsible for the management of hydropower. The Ministry of Mines and Energy was appointed as the coordinator of all of the new agencies. Besides the new law, other regulations have also been issued, like the “Conservation and Rational Use of Energy Law”, the “New Oil Regulatory Framework”, the Inter-ministerial Ordinance 553, which deals with the national energy efficiency, as well as others laws also compose the Brazilian system of energy regulation. (Yang 2013)

The Brazilian energy regulatory system is very broad, covering from hydrocarbon extraction rights to the taxation, licensing and energy-saving systems, all of them having specific legal regulations that if added to the cultural and linguistic barriers creates major market access restrictions for Chinese and foreign companies, necessitating a meticulous study on the whole legal system. The Brazilian legislation and law enforcement processes have been complained as lacking of transparency, with a relatively high degree of arbitrariness. As an example, shortly after the deep waters oil discovery, in 2008 the Brazilian government decreed that Petrobras must hold at least 30 percent of stakes in every new project in the Pre-salt oilfields. However, the Brazilian government unexpectedly suspended the bidding process already underway for the exploration of the pre-salt blocks, in order to wait until the decree being formally legislated as law. The public biddings were resumed only after the new law was passed in 2013; however, this move discouraged foreign companies from investing in the oilfields. However, since the discovery of the Pre-salt oil the Brazilian government has introduced preferential policies intended to protect the national control over the oil reservoirs, which indirectly again raised legal obstacles for international investors. The harsh regulations, the high taxes on foreign companies, and the complex financial system, will potentially increase investment costs. (EIA 2014) Besides having a deep understanding on the energy law and regulation, Chinese companies should also be acquainted with Brazil’s labour standards and environmental law in order to perform well in the Brazilian energy market.

The US influence is the last challenge from the Chinese perspective.
From the mainstream Chinese point of view, Latin America is historically perceived as Washington’s geopolitical influence sphere and the triangular relations between China, the U.S. and Brazil should not be neglected. However, since the consecutive rise of nationalist-leftist governments in many Latin American countries, the pursuit of independent foreign policies became more evident if compared to the political momentum that preluded the trend. (Hirst 2013) Seeking to reduce the American dependency on Venezuelan oil, the U.S. government viewed in the Brazilian energy market an important alternative supply source. Especially after the ‘Shale Revolution’, adjustments in the US energy cooperation priorities can be easily perceived and the US has a very strong interest in cooperating with Brazil particularly in the sustainable energy sectors. (Stevens 2012) Since the beginning of the last Bush administration, this tendency has been noted and several memorandums of understanding for cooperation in energy projects have been signed. The increasing engagement between Latin American countries and China coincides with some leftist governments distancing themselves from the U.S. influence, thus the Chinese inroad naturally raises the Washington’s concerns in the West Hemisphere, where China’s intense commercial activities, investments and political dynamics are gradually contesting the American influence and threatening their hegemony in the region. (Johnson 2005)

Despite the recent achievements and progress, the Brazil-China relation is remarkable, and the Chinese presence in Latin America is a recent phenomenon. Latin America historically and geographically is viewed as an US geopolitical sphere of influence, of whose investments and trade volume in the region are still far larger than the China’s, therefore, the US factors in the region whether direct or not, should not be ignored.

**Suggestions for Promoting Sino-Brazilian Energy Cooperation**

In January 2015, the first Ministerial Meeting of the CELAC-China Forum was successfully held in Beijing, obtaining a historical breakthrough and rushing in a new chapter in the development of the relations between China and Latin America. During the summit Beijing proposed the ‘China-CELAC Cooperation Plan 2015-2019’, and announced six priority key cooperation fields, in which energy ranked as the first and foremost priority for industrial capacity cooperation. In this respect, the Sino-Brazilian energy cooperation will further deepen and develop the China-Latin America holistic relations, whereas the advance of China-Latin America relations will in turn accelerate the Sino-Brazilian energy cooperation.
Despite the problems and challenges in the bilateral cooperation, the Sino-Brazilian energy cooperation is facing a historic opportunity in the coming decades. Looking into the future, China should adopt proactive energy diplomacy towards Brazil in order to strengthen long term cooperation, enhancing its understanding on the local energy market. Furthermore China should seek to understand the Japanese and South Korean engagement approaches, and how to understand the triangular relations between China, Brazil and the US.

Primarily, China should enhance its understanding on the Brazilian energy market, reducing legal, social, environmental and commercial risks. Undoubtedly, a thorough and comprehensive knowledge is the most basic prerequisite for Chinese energy companies to engage and expand its role in the Brazilian energy market. This knowledge is not only restricted to energy resources but also to complex Brazilian energy policies, different culture, distinct institutions, among others. When compared with Latin America, the Brazilian energy policy may seem to be favorable but when compared with other countries globally, it seems to be rather restrictive, particularly regarding the hydrocarbon industry.

While Brazil has been consistently reducing the barriers for foreign investments, nevertheless, its legal and administrative measures still restrict the participation of foreign companies, such as the Law 12.351, that stipulates technical parameters for oil companies and service providers that precisely intend to protect and raise the market share of domestic companies. (Macedo 2013) Following those requirements, a significant share of the oil companies operating in Brazil have to purchase products and services from Brazilian domestic ship builders or oil service providers, with a low degree of market competition. According to the Brazilian Institute of Petroleum, Natural Gas and Biofuels (IBP), the government monitoring policies and mechanisms lack of flexibility, which block the development of domestic oil industry. The low administrative efficiency of the Brazilian government is not only due to the complicated legal system, but also to the lack of transparency and over-inspection towards foreign investors.

The opacity and abrupt suspension of bids due to adjustments of several administrative orders in the standards of the processes are the main complaints of international oil companies, since it compromises the attendance of foreign oil companies for the lack of procedural justice and bad planning, also harming the Brazilian interests by lacking of market competition. The current economic recession may lead Brazil to a more flexible energy policy, which can be observed by the deregulations of the domestic oil and natural gas market as well as statements of the Petrobras’ president and the Minister
Cui Shoujun, Otávio Costa Miranda

23

of Mining and Energy indicating the necessity of a suitable policy for attracting more foreign investments. (Globo 2015)

Second, the Chinese companies’ intents to expand their investments to Brazil must be well aware of the environmental and socio-economic impacts of their operations and should also develop a much closer tie with the local communities and civil society. It is noted that an important resistance factor to the Chinese engagements in many projects is caused by a devoid of understanding to Brazilian domestic civil societies, which have a much deeper embeddedness in the social life of the country. In comparison with China, Brazilian civil society is much more embedded, autonomous and active because of the intensive participation and mobilization in various social strataums during the process of democratization, nowadays being a fundamental part of the Brazilian democracy, represented by many diverse and active groups with a high degree of participation in economic, political and social affairs. (Avritzer 2012)

Regarding energy resources, the Brazilian Civil Society Organizations (CSOs) are fairly playing an important role in shaping projects implementation, more specifically the indigenous people, the environmental groups, Non-Governmental Organizations (NGOs) and labor unions. Mega-infrastructure projects like the Belo Monte dam had been protested by neighboring indigenous people and NGOs because of the adverse social-environmental impacts and lack of involvement of the local representatives in the social-environmental assessment process. Despite the indigenous peoples being very diverse and having different histories, Latin America is currently experiencing an indigenous resurgence. From Mexico to the Andes, indigenous peoples have stepped forward to demand their long-denied cultural, political, and economic rights. (Cleary and Steigenga 2004) In Brazil the claims of participation as stakeholders in the political and economic systems seems to be following the same tendency. In addition to that, international NGOs such as Amazon Watch, the Conservation International, the Earth Rights International and the Amazon Conservation Association have a great influence over political representation, opinion articulation, and social mobilization. Brazil’s labor rights are also fairly protected and in daily matters labor unions play an important and impacting role as well. For example, despite the US $200 billion investment in the oil industry after the discovery of Libra oilfields, numerous strikes halted the production capacity, which brought up great concerns among foreign investors. (Li 2014)

It is well known that energy infrastructure and oil exploration projects have high socio-environmental risks if handled improperly, thus potential environmental and social conflicts arise in the due course may damage
the governmental legitimacy, simultaneously being one of the main concerns in Brazilian society. Demonstrations, strikes and other forms of pressure are constantly triggered against the government and energy companies, which definitely raise the investment cost and risk for the reasons exposed above. For Chinese energy companies, they should bear this in mind when engaging with Brazilian energy market.

Thirdly, Chinese companies must improve corporate social responsibility (CSR), which is very likely to create a positive corporate image by reducing conflicts over environmental and social issues. Environmental protection and social responsibility are two important indicators to evaluate the performance of foreign companies in Brazil. Historically, before Chinese companies began investing in Brazil, some western companies did not conduct due diligence in mitigating the environmental impacts in energy E&P. The environmental and social problems left behind increased anti-development sentiments and concerns among the local society, which came as one of the main basis of resources nationalism.

It is widely admitted that the environmental impacts of oil and gas exploitation is relatively high, since the ecological system is both vulnerable and sensitive to human activities. In the early stage of China’s engagement with Africa, negative episodes of damaging the local environment occurred in some infrastructure and natural resources exploitation projects due to the lack of appropriate environmental mitigation measures. Such irresponsible and short-sighted commercial behaviors in Africa were put into spotlight by international media, which not only substantially damaged China’s image but also even gave rise to local violent conflicts. (Wu 2013) Regarding the increasing momentum of China’s presence in Latin America, Chinese companies should increase greater community investment initiatives to change the profit-oriented and environmental indifferent approach by adopting a strong sense of ‘global responsibility’, being able to meet the expectations and requirements from the Brazilian general public and comply with the international commitments made by the Chinese government.

Fourth, the PRC must learn from the Japanese and South Korean companies in the way of accessing the Brazilian market. South Korea and Japan were pioneers in establishing a fruitful energy cooperation with Brazil and their experience deserves meticulous studies. From the cultural perspective, they all have an Asian cultural background and their accumulated knowledge facilitates the Chinese companies’ understanding and inspiration for the development of a favorable framework. With the advantage of an early developed shipbuilding industry, both made their headway into the Brazilian market earlier than many other Asian countries. Japan and South Korea de-
Cui Shoujun, Otávio Costa Miranda

Developed their shipbuilding industry earlier than China and despite the notable Chinese improvements in heavy industry and manufacturing, the formers had an important role in the Brazilian market since the early 1990’s, when the Brazilian shipbuilding industry was on the verge of bankruptcy due to the debt crisis.

To date, the Brazilian shipbuilding is quite sophisticated in manufacturing engineering and technology, but somehow the industrial capacity still cannot meet the increasing demand arise from the deep water oil and gas exploitation. The high pre-salt demand of ships, platforms and marine equipment has created enormous investment opportunities for foreign companies. Although the Chinese companies are intensively interested and involved in Brazilian shipbuilding and deep water drilling platform, the bilateral cooperation mainly is restricted to areas just as equipment purchasing and capital injection, focused on the Chinese State-Owned Enterprises and Banks, while Japan and South Korea focus on their national giants, prioritizing the private sector. (Myers and Viscidi 2014) In the meantime, Japanese and Korean companies became more involved in industrial chain integration.

Japan, more specifically, has been seeking for partnerships eagerly in the both upstream and downstream industrial chain collaboration, incorporating marine equipment construction, operation, management, shipbuilding technology, human resources, technology transfer and so on. In 2014 Shinzo Abe and the Brazilian government signed the “Joint Declaration on Cooperation in Shipbuilding to Facilitate the Development of Offshore Resources between Brazil and Japan”, seeking the enhancement of the marine cooperation between both countries in all directions. Despite the Petrobras’ ongoing crisis and disinvestment plans, Japan still has two important joint ventures in Brazilian shipyards: the Kawasaki-Estaleiro Enseada do Paraguaçu (EEP) and the Japan EAS Investimentos e Participações (JEI), between Ishika-Wajima-Harima Heavy Industries (IHI), JGC Corporation, Japan Marine Unites and Estaleiro Atlântico Sul.

Last, China must find a delicate way to pursue equilibrated triangular relations between Brazil, the US and China. Latin America has traditionally been under the US sphere of influence, and the rise of the Sino-Latin American relations naturally raises precautions on the US side. Besides the economic partnership, Latin America is also a vital area for the US regional security and stability. The US is part of several regional associations, banks and forums; however China is growing its ties with Latin America by joining existing associations such the Organization of American States (OAS) as an observing member and supporting the advancement of Latin American regional integration mechanism known as CELAC. More specifically, China is
viewed by the US as fairly aggressive in creating the China-CELAC Forum from the geopolitical lens, as the CELAC intentionally excluded the U.S. and Canada. (Ellis 2015)

In terms of energy cooperation, the links between Brazil and the US are still close, even though a recent relative decline in their cooperation can be noted. In 2013 Brazil exported 110 thousand barrels per day to the U.S., a 30 percent decrease over 2012, because of the shale revolution in the U.S. that significantly increased their energy autonomy. (EIA 2014) Concurrently, the Sino-Brazilian relations have a strong strategic feature, and has been developing quickly, as the Chinese participation in the energy fields have been rather successful in multiple areas, being a key investor for various important projects. Despite the relative slowing down of the Chinese economic growth in last year, China is the most robust economy in the world and is the world’s largest importer and consumer of crude oil, tending to keep increasing its imports, bringing Brazil into the spotlight of Chinese investments in the effort to diversify oil importation sources, to internationalize her energy and infrastructure companies and to strengthen the complementarity of the energy cooperation.

Since the beginning of the 21st century the bilateral trade has grown more than thirteen times. In 2009, China overtook the US as the largest trade partner, and since 2010 became Brazil’s largest foreign investor. Brazil’s strategic importance and its enormous economic potential determines that China will keep upscaling its investment in the country, encompassing mega-infrastructure projects as the the Trans-Oceanic railway between Brazil and Peru to the building of clean energy power plants.

Brazil and China, both emerging economies and developing countries, share the same goals and aspirations towards the world. Brazil was the first country that established a strategic partnership with China, and the two countries share similar points of view on many contemporary international matters. Both countries have been supporting each other in the multilateral organizations such as the G20, BRICS, BASIC, among others, coordinating in the most urgent global issues such as reforming the international financial system, climate change, the Doha Round negotiations, reduction of greenhouse gas emissions and so on, defending the common interests of developing countries by steadily advancing and promoting a more reasonable international order.

Brazil and China have different political and economic development models and being so their positive partnership creates a new paradigm and a positive demonstration effect to other countries. Energy has a political and global character and the balance of the China-US relations as well as the Bra-
zil-US relations are vital for a stable progress of the Sino-Brazilian energy cooperation.

**Conclusion**

The increasingly harsh situation of the Chinese energy security reinforces the strategic importance of the Sino-Brazilian energy cooperation, reducing the Chinese dependence on the Middle East oil imports and diversifying her energy supplying sources. Brazil is the largest and most populous Latin American country with abundant natural resources and advanced offshore drilling technology, and China is the second largest economy with an increasing consumption of energy. Both countries’ determination on enhancing the bilateral energy cooperation, where the benefits are not restricted to the local economy, will also serve as a new South-South cooperation model between China and Latin American countries.

In the recent decades, the international energy landscape has undergone a dramatic change and the Brazilian discovery of the pre-salt oil has raised the world’s attention and created a historical opportunity for the advancing China-Brazil cooperation. Even though, the energy cooperation is led by the oil industry, big investments in electricity, hydropower and clean sources of energy has been growing quickly in recent years, while natural gas, coal and nuclear energy remain as areas with a high potential. Besides that, the comprehensive industrial chains cooperation between the two counties’ oil industry has created a good prospect for a continuous future expansion, from the exploration to refinement, from the financing to technology transfer, from equipment manufacturing to infrastructure building, encompassing upstream, midstream and downstream of the oil production chains.

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ABSTRACT
With the booming of Brazil’s off-shore oil drilling, the Sino-Brazilian energy cooperation is facing historical opportunities, manifested in the fields of oil trade, market access, technology transfer and bioenergy exploration. To achieve a steady and robust development in bilateral cooperation, China should take a proactive energy diplomacy approach to overcome challenges arise from its increasing engagement.

KEY WORDS
Energy Diplomacy; Cooperation fields; Challenges.

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