

Comparative Analyze of Energy Integration Initiatives of Foreign Policy from Brazil, China and India

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ABSTRACT: the objective of this paper is identify the commonalities of energy foreign policy from Brazil, China and India, based on the analysis of strategic alliances established with energy supplying countries. In the case of alliances, the intention is to assess the tendency of these three emerging countries initiatives give priority to the integration of energy infrastructure with neighboring countries as a way to ensure security of energy supply. Among other issues, must be verified the projects under negotiation and execution, the nature of projects undertaken and some political and economic regional impacts arising from the energy integration.

Brazil, China and India and the international energy order

A study by the International Energy Agency (2007) estimates that between 2005 and 2030, developing countries, which have the highest rates of economic growth and population, contribute 74% of the increase of energy consumption, of which China and India will responsible for approximately 45% of that increase. The forecast of the International Energy Agency confirmed, and China became the largest energy consumer in 2010, surpassing the United States - increased relevance if we consider that in 2005 the U.S. consumption was one third larger than the Chinese. Regarding India's projection indicates that from 2005 to 2030 the demand for primary energy will double, and in this same period, coal consumption is expected to triple¹.

The impact of Brazilian economic growth also brings reflections on his quest for primary sources of energy supply. According to a study prepared by the Ministry of Mines and Energy (Brasil, 2007a) between 2005 and 2030 the total consumption of natural gas in Brazil is expected to increase by over 350%. In the same period, the final energy consumption from petroleum has prospects for growth exceeding 100%, remaining at the forefront among the employed sources in energy consumption in the country (Brasil, 2007a).

The relationship between economic development and energy consumption is notorious because it is not difficult to see how much energy is a key input in the production chain, supports the consumption practices and lifestyle of the society as well as promotes the trade of goods and services domestic and international.

It is noteworthy that in Brazil, China and India energy resources extracted or produced domestically in these countries will not be sufficient to meet the

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¹ "Primary Energy: Products provided by nature in its simplest form, such as oil, natural gas, coal (steam and metallurgical), uranium (U3O8), hydropower, wood, cane products (molasses, sugar cane bagasse and straw) and other primary sources (vegetable and animal waste, industrial waste, municipal waste, solar, wind etc., used in power generation, steam and heat)" (BRASIL, 2007b, p. 110).

increased demand - as it no longer is today. In China it is expected that the internal need for imported oil will jump 50% to 80% between 2005 and 2030 (IEA, 2007). Before 2025, it is estimated that India will be the third largest net importer of oil, surpassing Japan, and only behind the United States and China (IEA, 2007). Although the Brazilian perspective is less dependence on external energy resources in comparison with the other two countries, it is projected that by 2030 Brazil will continue importing energy resources like coal, natural gas and electricity (Brasil, 2007a).

As noted by Gavin and Lee (2008, 2007), countries' dependence on imported energy is a factor of energy insecurity, as it calls into serious risks to their development. Given that reality, and Gavin Lee (2008, 2007) claim that the two countries tend to use traditional mechanisms to ensure energy security, including two specific categories: political and economic. The economic mechanisms are to promote the increase of energy efficiency in production practices, consumption and trade in society. In this case, the goal is to reduce dependence on imports from efficient energy use. Moreover, the political mechanisms basically addressed maintenance of power supply by establishing strategic alliances with producing countries, promoting foreign investment in the economy of supply markets and increasing control over the companies in the energy sector.

By analyzing the main energy policy document of Brazil (2007b), China (2007) and India (2006) can check various internal measures designed and implemented to ensure sustainable energy supply in these countries, for example, actions related and the technological aspects of energy rationalization, development of new and renewable sources of energy, besides the use of macroeconomic mechanisms on the national energy market that focus on price regulation, taxation and subsidies.

However, the forecast is that even with such measures, the three above countries will be dependent on imported energy and will be immersed in an international setting in which there is a dispute over energy resources, which requires the establishment of strategies to obtain the best possible conditions in the interactions that develop in the global energy market. As a way to achieve this goal, the energy policies of Brazil, China and India present strategies aimed at ensuring energy security in foreign markets and to foster national development.

With respect to strategic alliances with producing countries, Brazil, China and India have used instruments of international cooperation aimed at ensuring energy security and sustainable development from the global energy market. In general, strategic alliances to promote technical cooperation, direct access to energy resources and the integration of regional energy infrastructure to neighboring countries.

Brazil has agreements with Bolivia, Argentina, Trinidad & Tobago, Nigeria and Algeria to meet its demand for imported natural gas, with the possibility of new agreements with Venezuela (the country holding the largest reserves in South America and with whom the country has conducting studies for the creation of a pipeline) and Peru (after the discovery of reserves of Camisea). A portion of the electricity it supplies from Brazil is also import involving partnerships with Argentina, Paraguay and Uruguay (Brazil, 2007a; Brazil, 2007b). Moreover, the Brazilian government has supported projects for the integration of energy infrastructure in South America, mainly in the Union of

South American Nations (UNASUR) and the Southern Common Market (Mercosur) (Fonseca & Dutra, 2007; Arriagada, 2006).

From the mid-1990s, China has intensified its activities in order to secure energy supplies, among other reasons, have become a major importer of primary energy resources. Earlier this century established several agreements with Asian suppliers of oil and natural gas, especially the countries of Central Asia (Uzbekistan, Kyrgyzstan, Kazakhstan and Tajikistan) and Russia. Energy cooperation was also strengthened in this area with the creation of the Shanghai Cooperation Organization (SCO - The Shanghai Cooperation Organisation), promoting technical activities and projects to build oil and gas pipelines capable of integrating the energy infrastructure in this region (Leverett, 2005; Liao, 2006; Mommen, 2007; Gulick, 2007; Xuetao, 2006). In recent years, China still has considerably expanded its activities from energy policy to oil-producing countries in Africa (Nigeria, Angola and Sudan) and the Middle East (especially Iran and Saudi Arabia), in order to ensure their supply (Alden, 2008, Alden & Large & Oliveira, 2008a; Corkin, 2007; Daojiong, 2005).

Russia has been the target of actions of India, including trilateral approach with the participation of China (Batra & Khetani, 2004; Kumaraswamy, 2007; Yongxiang & Noronha, 2008). The bilateral actions have involved even the Gulf countries, especially Iran and Saudi Arabia. Also in this region, which also includes the Arabian Peninsula, there are intense and strategic relationships being developed with the Cooperation Council of Arab Gulf (GCC - Gulf Cooperation Council), whose members are UAE, Bahrain, Saudi Arabia, Oman, Qatar and Kuwait - major producers of oil and natural gas (Ahmad, 2007; Khan, 2005). India also seeks the integration of energy infrastructure in their region, as occurs, for example, with plans to build gas pipeline Iran-Pakistan-India (Batra, 2007, Dhungel, 2008). Some attempts to promote energy cooperation are also carried out by the South Asian Association for Regional Cooperation (SAARC) of which India is a member. Africa also has been the target of assaults of Indian energy policy, mainly involving the Sudan and Nigeria (Sharma & Jaswal, 2007; Riley, 2007).

Importantly, the energy policies of Brazil, China and India do not seem to establish strategies for energy security through the promotion of competing interests eminently spurious or instigation of international conflict. This attitude confirms the perception that energy security requires interactions more cooperative and less confrontational, trying to meet mutual economic and strategic interests between the parties (Bahgat, 1999). The promotion of energy security in these terms tends to increase dialogue and cooperation between countries, permeating geopolitical relations in a world increasingly characterized by interdependence (Verrastro & Ladislav, 2007).

The way in Brazil, China and India implement its strategic policies for security of supply of imported energy is not effected solely through intergovernmental agreements or negotiations for better terms of access to necessary resources. The injection of investment in these markets suppliers and increasing the participation of its companies in the energy sector in producing countries are increasingly applicants. Some of the multinational energy sector controlled by Brazil (Petrobras and Eletrobras), China (CNPC - China National Petroleum Corporation) and India (OIL - Oil India Limited) are investing their financial resources and technological capabilities focused on the exploration, production, refining and other activities of interest to this industry. These

companies also invest in works such as building roads, railways, power grids, pipelines, mines and port projects, in order to improve the network infrastructure that the energy sector demand. Financial institutions such as Banco Nacional de Desenvolvimento Econômico e Social (BNDES), the Industrial and Commercial Bank of China (ICBC) and the Infrastructure Development and Finance Corporation (IDFC) in India, complementing the contribution of investments in countries with which there are concerns related to energy (Fuser, 2007; Rigney, 2008, Sharma & Jaswal, 2007).

Given this scenario, the actions arising from concerns about security of energy supply in Brazil, China and India end up influencing the political, economic and strategic in the international energy order, causing impacts and constraints to the extent that they become effective.

Whereas the global energy market of the major primary sources (petroleum, coal and natural gas) is becoming more concentrated and less secure (Lovins, 2005), substantial engagement, proactive and multifaceted, worldwide, strategies energy policy in Brazil, China and India can change and impact on trade flows of international energy market, reflecting the strategic interests of some developed countries and interferes in the setting of regional and geopolitical relations between center and periphery in the international arena.

The idea of energy security has been incorporated into studies related to International Relations with greater force from the energy crisis experienced in 1973 (St. Peters, 2004). The so-called securitization of the energy debate is shaped by the 1980s, because of discussions about expanding the concept of international security beyond the strictly military-strategic aspect (Fuser, 2008a). As she points Fuser (2008a), a theme is described as "[...] a safety issue because if one can argue convincingly that this issue is more important than others on the political agenda and, therefore, deserves priority absolute. "In this sense, one must note that the energy dependence has taken such a condition, considering the fact that it is a determining factor for the survival and development of a country, and that its absence can be extremely damaging to the competitiveness of a country and reduce their ability to promote their national goals.

Oil is an emblematic case of the impact that instability in world markets can play in international energy security. For Amory Lovins (2005) the instability of supply and, therefore, oil prices imply initially measured in direct costs due to the rise of prices charged for various goods and services, adversely affecting consumers and increases the cost of living several countries. Moreover, the volatility of oil prices still generates indirect effects are difficult to be accounted for, which are related not only to the costs of purchasing the product but also the defense of stability in producer countries. According to the author, history and the qualitative and quantitative analysis show that the account gets paid by financial extravagance, political and economic instability, militarization and war industry growth, support the institutionalized violence, threat of terrorist acts, and other expense.

However, as highlighted by David L. Glodwyn (2006), concerns about the stability of international energy market due to increased global demand are not new. In his view, the issue that causes further concern is the increased dependency of the United States and its European and Asian allies, concomitantly with the increasing dependence of emerging powers like China

and India, which was rapidly causing upheavals in American power around the world.

From the political point of view, the concern of the United States refers to the possibility of loss or weakening of its influence in the countries supplying energy due to the actions of energy policy implemented by Brazil, China and India, besides the possibility of geopolitical alliances fostered frustrated by these countries, the predominance of U.S. strategic interests. As regards the economic aspect, the offensives of Brazil, China and India can result in preferential conditions and more favorable to these countries along with producers like Iran and Venezuela who challenge the hegemonic position of the United States. Likewise, the Brazilian multinationals, Chinese and Indian energy sector have been battling and winning market share with major U.S. multinationals, which may compromise its energy security due to the climate of competition that can press, for example, price stability (cf. Bader et al, 2008; Kalicki, Goldwyn, 2005, Klare 2009).

The advancement of Indian relations, for example, with Iran (with the possible creation of a pipeline, along with Pakistan) and Venezuela (during a visit in 2005, Hugo Chavez has signed six agreements with the Indian government, most dealing with energy issues) cause distrust in the government of the United States (Batra, 2007; Mitra, 2005). Similarly, the growth of Chinese investments in Central Asia, the Middle East and Africa Sub-Saharan Africa takes the attention of the United States, given the possibility of such shares being reflected in their economic and strategic interests in those regions (Leverett & Bader, 2007; Goldwyn, 2006). The alignment of the Brazilian government with the governments of Venezuela, Bolivia, Ecuador and Iran, who have divergent positions with the United States, is also viewed with some suspicion by U.S. policymakers (Fuser, 2008b and 2007; Arriagada, 2006).

Due to (1) forecasts of economic development in Brazil, China and India, (2) the prospect of its increasing energy demand due to this fact and (3) the probability of maintaining the dependence of these states on imported energy, not is difficult to see that energy policy seeks to ensure these countries better access to such resources in the global energy market. Although these actions have in order to serve national interests, they end up impacting the international order as a whole and in different ways.

Energy integration projects in Brazil, China and India

In the following pages are presented some basic information about energy integration projects developed by Brazil, China and India, listing those that actually already in operation and others being negotiated.

China

The proximity of China with Central Asia makes the region a natural place for the country above their demands for oil and gas in order to diversify its energy import routes - there are already initiatives mounts accordingly. In July 2009, completed a pipeline from the central part of Kazakhstan , through the west of this country ,where large oil reserves ,and arriving at the refinery located in

Dushanzi in China ,covering over 3,000 kilometers, reaching the mark of more than 10 million tons of crude oil transported during 2010. In December 2009, opened the gas pipeline linking Turkmenistan, Uzbekistan, Kazakhstan and China, which has around 1800 km, and maximum capacity of 40 billion cubic meters of gas per year.

In a few years after the collapse of the Soviet Union, Central Asia remained as an isolated land, whose energy resources of oil and gas were used primarily to meet the needs of European Russia, absent from virtually any type of interaction with the neighboring countries of Asian continent. Despite the arrival of Western companies to exploit the energy reserves of the region, they initially continued to favor the Soviet routes to distribute their products in order to capitalize on to further attacks in the future.

However, the first decade of this century, witnessed a heavy investment of Western companies in creating new routes to ensure the production of energy resources present in Central Asia, financed not only by Chinese companies. Chevron restructured Caspian Pipeline Consortium (CPC), and in 2003 began operating a pipeline that carries oil from Kazakhstan through that company, until its drain terminal in the Black Sea, which lies in the coastal Russian may take up to 1.2 million barrels per day at full capacity. In 2006, British Petroleum and its partners completed and put into operation the Baku-Tbilisi-Ceyhan (BTC), which part of the capital of Azerbaijan (Baku), passing through the capital of Georgia (Tbilisi), finally arriving at a port which lies in southeastern Turkey (Ceyhan) which is capable of sending more than one million barrels per day.

From an agreement signed in 2009, China has also invested in order to obtain Russia's energy resources, especially from eastern Siberia. China's government has joined a project called the Eastern Siberia-Pacific Ocean Pipeline, which consists in creating a pipeline that part of eastern Siberia and should reach the Pacific Ocean through the Chinese territory. The agreement stipulates that Russia should provide 30 million tons of oil annually to China over a period of 20 years, and in return, the Chinese government has committed to lend about \$ 25 billion. Moreover, in October 2009, signed a framework agreement between the Russian giant Gazprom and China National Petroleum Company (CNPC) to supply 70 billion cubic meters of Russian gas annually to China. However, the agreement has not yet entered into force due to differences in the establishment of the amount to be paid for that product.

China has a large Central Asian foreign policy challenge, given the need to find alternatives to the establishment of a secure and stable geopolitical space, which is likely to meet much of its energy vulnerability, which is increasing more and more Over the years (Xuetang, 2006). China's strong investment in construction of pipelines and deepening of political relations with Central Asian countries and Russia seems to be related to concerns of a strategic nature, specifically with regard to security of energy supply via sea routes (Xuetang, 2006, Chow & Hendrix, 2010).

Importantly, there is an apparent difference in Chinese investments in Russia and Central Asia. In the first case, Chinese efforts suggest that there is only interest in the supply of energy resources on the part of Russian territory, especially when the administration seems to be desperate for money or offering the products at favorable prices. In the case of Central Asia, Chinese investments appear to run in order to create a greater presence in that market

their employing equitable efforts to increase its influence is in oil and gas (Chow & Hendrix, 2010).

The Shanghai Cooperation Organisation (SCO) is also an important factor alongside the development of China's relations with the countries of Central Asia, and also with Russia. The deepening political and economic cooperation from the structure of the SCO has contributed to the acceleration of regional integration, and is seen as essential to maintaining security in the region, involving, of course, energy cooperation as a promoter of stability and approximation (Xuetang, 2006).

On the other hand, countries and Western governments should perhaps realize that the increased Chinese presence in Central Asia and Russia does not represent a threat but an opportunity to increase international energy security, as it is creating new routes or channels for the flow of energy resources in those areas to other markets like Japan, South Korea and the United States (Chow & Hendrix, 2010). Where now exposed, the issue of energy security which involves China should perhaps be viewed more in terms of an economic problem and market solutions, rather than in terms of military threats (Daojiong, 2005). Similarly, one cannot fail to notice that China is also perceived to some extent, as an attractive model of development and as a counterweight to other powers operating in the region as the United States, Europe and Russia (Chow & Hendrix, 2010).

India

Among the three countries under review now, India is the one who made less progress with regard to the development of international cooperation aimed at the regional energy integration, which is due not to lack of proper dialogue, but because it has not achieved the projects and agreements in this regard. What there is concrete so far is a minor cooperation for supply of energy produced from hydroelectric, and some negotiations and agreements for the construction of pipelines to meet high demand for gas in the Indian market.

India develops an incipient cooperation for supply of electricity from projects in three countries called South Asia: Bhutan and Nepal. The main source of hydroelectric part, but still have a very small production when faced with the enormous potential of the region to generate power from this array. The case is emblematic of Nepal, for an estimated capacity to generate energy through hydroelectric reaches 83,000 MW, which currently are generated only 650 MW, being part of this is exported to India. The export of electricity from Bhutan to India has hydroelectric project in Chuka, Kurichu Tala Hydropower and the main source, which was funded by the Indian government, which provided about 5,664 GWh during 2007. The expectation is that cooperation in this area prosper increasingly, given the increasing electricity demand by India and the generation capacity of the region's countries, where dialogues are also being established with Bangladesh (hydropower) and Myanmar (thermoelectric power) (EIA, 2010; Bird, 2008; Dhungel, 2008; Lama, 2008, USAID, 2002).

In relation to the projects, some of great importance and complexity that can be cited: (1) pipeline Iran, Pakistan and India, (2) pipeline Turkmenistan, Afghanistan, Pakistan and India, (3) Bangladesh-India pipeline; (4) the pipeline Myanmar-Bangladesh-India. India, for example, has worked to insert into the pipeline project between Turkmenistan, Afghanistan and Pakistan, also known

as Trans-Afghan Pipeline (TAP - Trans-Afghan Pipeline, and TAPI with the inclusion of India) to depart from the field Dauletabad gas from Turkmen land and coming to Indian Territory, a total of about 1700 km and capacity of the planned transport 27 billion cubic meters per year, to be funded by Asian Development Bank amounting to U.S. \$ 7, 6 billion. India officially became part of the project in 2008, but the project has not left the paper, among other things, the uncertainties regarding the safety of routes, due to instability in the Afghan and Pakistani territories, as well as uncertainties regarding the ability reserves of Turkmenistan to meet the projected demand for the pipeline (EIA, 2010; Bekieva, 2010; Foster, 2008).

The pipeline Iran, Pakistan and India has been under discussion since 1994, this will be the one on which they will talk in more arrested in this text. The project involves building a pipeline with an estimated capacity of transporting 55 billion cubic meters per year and about 2,800 km long, that part of Iran, specifically the coastal city of Asalouyeh (fueled by reserves of South Pars field) passing through Pakistan and finally, the Indian state of Gujarat.

While Iran is interested in exporting its abundant natural gas resources (the second largest world reserves) and India is searching for alternatives to meet its growing domestic demand (net importer of natural gas since 2004), a variety of economic issues and policies have delayed the shaping and execution of the agreement. The main concern has always been that Pakistan could interfere and stop the flow of gas to India in order to make it hostage in that country. The Indian authorities have made it clear that the progress of the project pipeline passing through Pakistan would have to be accompanied by a security guarantee from the authorities in Islamabad (EIA, 2010; Dhungel, 2008; Lama, 2008; Batra, 2007, Ahmad, 2007).

However, some other events also must be disclosed to a better understanding of political, economic and strategic about the consolidation of the pipeline project. In a text rather plain, R. K. Batra (2007), for example, exposes some of these factors, as is the case for some that appeared after the submission of a detailed design of the pipeline by the Anglo-Australian company BHP Billiton in 2003 with the initial cost of \$ 4 billion, and the next year that cost \$ 7 billion, due to the alleged increase in steel prices and the diameter of the duct. India has also started to worry about the ability of the Pakistani government to ensure the physical integrity of the pipeline and perform repairs in a short time in the area comprising the province of Balochistan (region where the pipeline is expected to pass), whereas this area of the territory of Pakistan was the target of insurgent action, especially against the Sui gas field. Iran's side, some modifications were made in the 2003 project to meet the increased domestic demand in Iran, which would result in diminished flow of the pipeline to 60 million cubic meters per day to 30 million.

Another interesting fact pointed out by R. K. Batra (2007) refers to the increase in the interest of Pakistan in creating the pipeline in the face of predictions of increased consumption of product in their domestic market and the depletion of their national reserves, and lowering by the Indian government as a result of completing the works terminal transfer of liquefied gas, which is meeting the demand of most consumers, and because of the discovery of the largest Indian countryside Krishna-Godavari gas Basin. Moreover, because of uncertainties involving the cooperation projects based on energy pipelines, the

11th Five Year Plan (2007-2012) of the Indian government provides no supply of gas to any of the projects cited in this study (EIA, 2010).

In general, the national, regional and global goals of energy security in India, like China, are also not marked by a dash of intense competition or conflict, which can lead to cooling of interest that might denote a military character to the addressing the issue. The foreign policy analysts have also highlighted India's energy that it has a dynamic character, to be a key vector of development for the country in order to help mitigate the imbalances were inequities in addition to the collaborative nature of their actions in bilaterally, regionally and internationally, despite some obstacles in the political, economic and strategic issue that hinders the execution of agreements to step up regional energy integration, as they were exposed. For such obstacles, one can see that competition policy and unconditional defense of national interests is not in itself constitute barriers imposed by the Indian government for the completion of pipeline projects, but the opposite, by supporting with financial, technological and human. In this sense, the performance of Indian companies like Oil India Limited (OIL) and Oil and Natural Gas Corporation (ONGC) has been an instrument of effective actions not only focused on the exploration, production and transportation of energy resources, but also roads, rail and port projects, with direct support from the Indian government through diplomatic channels of political action-specific, such as encouragement of partnerships with foreign companies for the achievement of such projects or the creation of technological know-how in this area (Bekieva, 2010 ; Foster, 2008; Dhungel, 2008; Lama, 2008; Batra, 2007, Ahmad, 2007).

Brazil

Brazil, among the three countries analyzed here, is one that has less dependence on energy imports today and the future prospects due to the discovery and exploration of new hydrocarbon fields point to a scenario of some tranquility in relation to supply Brazilian energy demands. Despite this current situation and prospective, Brazil has some projects of regional energy integration and works to expand the actions in this direction, aiming not only to ensure its domestic supply, but also promote greater cooperation among South American countries with the objective to foster development in the region.

Brazil currently has two major initiatives for energy integration to supply the demand of its market for natural gas and electricity. In the case of natural gas for the Brazil-Bolivia pipeline and to supply important part of Brazilian electricity demand existed for many years the power plant of Itaipu, a binational project between Brazil and Paraguay. With regard to projects to promote energy integration, the Southern Gas Pipeline connecting Venezuela, Brazil and Argentina has been subject of discussions between the three countries and made the agenda of external energy policy.

In relation to the Brazil-Bolivia pipeline transportation of natural gas, it is the largest project to import natural gas currently deployed in the country, linking the reserves of the Bolivian countryside of Rio Grande, located in Santa Cruz de la Sierra, Porto Alegre (RS), passing in five Brazilian states (Mato Grosso do Sul, Sao Paulo, Parana and Santa Catarina and Rio Grande do Sul), with a length of 2,593 km of pipes to transport Brazilian territory, and including the

Bolivian stretch reaches a total of 3,150 km. The administration of the Brazilian section is up to the Transportadora Brasileira Gasoduto Bolívia-Brasil S/A (TBG), while the stretch was established Gas Transboliviano S/A, both are responsible for commanding the largest pipeline in Latin America, through which is transported and sold natural gas that comes from Bolivia, making the delivery to the distribution companies in each state of Brazil, holding the distributorship.

The Brazil-Bolivia pipeline, also known as Gasbol, began construction in 1997 and had its completion in 1999, and currently caters mainly the southern and southeastern regions of Brazil, who are responsible for much of the energy consumption in Brazil, of great relevance economy and accounts for much of the country's industrial output. But part of the gas from Bolivia also supplies, for example, the Pipeline Integration Southeast-Northeast (Gasoduto da Integração Sudeste-Nordeste - Gasene) which is a pipeline that links the states of Rio de Janeiro and Bahia, Brazil's second largest, lost in extension only to the Gasbol.

Relations between Brazil and Bolivia have had some wince when on 1 May 2006, Bolivian President Evo Morales decreed the nationalization of the sector of oil and gas in the country, based on the referendum in July 2004 when the population ruled in favor the resumption of reserves by the State. With the nationalization by the government of Bolivia, all oil and gas in Bolivia were operated under the control of state-owned Yacimientos Petrolíferos Fiscales Bolivianos (YPFB). The action of nationalization took great care in the world due to the military occupation of refineries, including Petrobras, which is the company that occupies more space in the Bolivian energy market. Talks between representatives of both governments failed to overcome the problems arising from the nationalization, and the Brazilian government also negotiated the price increase of imported gas increased by about \$ 100 million the amount paid annually, resulting in the maintenance of supply and harmonious relations between the countries.

In the area of electricity, there is a binational project of the Itaipu Hydroelectric Plant located on the border of Brazil and Paraguay, using the waters of the Parana River. Construction began in 1975 and is now the largest hydroelectric plant with capacity of power generation in the world, reaching the 2010 mark of 85,970,318 megawatt-hours in 2010. The Itaipu dam is responsible for supplying 71.3% of the electricity consumed in Paraguay and 16.4% of which is consumed in Brazil. Most of the energy generated by Itaipu supplies the state of Sao Paulo.

After assuming the presidency in 2008 in Paraguay, Fernando Lugo has demanded reviewed the amounts paid by Brazil for imported energy from Itaipu, which led to a negotiation process that lasted about a year, ending in an agreement reached under President Luis Inacio Lula da Silva in 2009. Under the agreement signed between the two countries, Brazil would pay about \$ 360 million annually for the energy that corresponds to Paraguay on Itaipu power plant, increasing significantly compared to the previous value that was \$ 120 million. The agreement has not yet entered into force due to the Brazilian Congress has not ratified the treaty that established the readjustment, which has already occurred by the Paraguayan congress.

The Southern Gas Pipeline is a project that has been debated since the beginning of President Lula, which depart from Venezuela, the Orinoco River estuary, across much of the Amazon in Brazil and reaching the Argentine city of Buenos Aires. The project, therefore, is tripartite involving Venezuela, Brazil and

Argentina, plans to build a pipeline with an approximate length of 8,000 km, which would carry 150 million cubic meters per day of gas from Venezuelan territory for the other two countries, resulting in a venture worth U.S. \$ 20 billion. The discussions for the construction of gas pipeline South follow, but finds some resistance due to the economic viability of the project with the costs of constructing a pipeline of over 3,000 km, and the environmental impact that can cause, especially in relation to Amazon and Pantanal area.

Brazil, like China and India, conducts its external energy policy as an array of national development, with economic and strategic implications, based on a cooperative dialogue that has promoted closer ties with neighboring countries. Brazil also seeks to promote debate on energy integration in the regional organizations of which it belongs as Mercosur and the Union of South American Nations (UNASUR), and also guiding their actions based on the Initiative for the Integration of Regional Infrastructure, consisting during the First Meeting of Presidents of South America, held in 2000. Unlike the other two countries discussed earlier, the South American region is marked by a much more stable politically and militarily, that is, less prone to instability for the promotion of energy cooperation in comparison with Central Asia and South and East Medium (Hage, 2008; Fuser, 2008b, 2007; Quintanar & Lopez, 2003; Arriagada, 2006; Fonseca & Dutra, 2007).

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