

# Iran and the BRICS: The Energy Factor

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## Abstract

The global economy is undergoing a paradigm shift, from a Western-dominated economic model to one that is more complex and multi-polar. The centres of consumption, production, and innovation are no longer concentrated solely in the Western economies, but are shifting to new emergence economies in different continents, specifically China, Russia, Brazil, and India, as well as South Africa, named BRICS. One of the central issues for the future of this new coalition is energy security. This concept is a top priority of policymakers not only in the West hemisphere, but also in countries of the economically emerging world in current and also coming decades. Worldwide demand for primary energy will increase in next years either and based on international forecasts, hydrocarbon will still be the dominant source of energy. Consequently, widespread energy relationships with other oil and gas-rich countries outside BRICS like OPEC, in general, and Iran, in particular, seems much more significant. The latter, as the second country throughout the world in terms of combined fossil reserves, benefits an outstanding geo-economic position. Obviously, Iran would be able to play a prominent role in this respect. So, this question could be raised that what are the main challenges, as well as opportunities for Iran and BRICS in any actual and potential interactions in energy field?

Keywords: BRICS, Energy Policy, Global Economy, Iran, Energy Security

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## Introduction

Security of energy supply is a top priority of policymakers around the globe, especially in countries of the economically emerging world. Since oil became a crucial resource at the beginning of the 20th century as a fuel for industrialization and "fuel to power" for the economic engine, (the Korea Herald, 18 July 2006) it has been at the heart of geopolitical struggles and also gas has gained high position during recent years. And increasingly become the "fuel of choice" (Luft & Korine, 2009: 555; Eurostat 2010: 6). These policymakers follow three general goals for their energy policies, including securing the supply of natural energy resources, consuming and producing energy in an environmental sustainable way, and utilizing energy to allow for economic competitiveness (BRIC by BRIC, 2011: 47). However, it is the challenge of these officials to balance these targets with portfolios of policies to develop and utilize energy technologies, expand and extract energy resources, and clean and protect the environment. The International Energy Association (IEA) defines energy security as "uninterrupted physical availability of energy at affordable prices, while respecting environmental concerns."

The current global energy security system has emerged largely in response to the 1973 oil embargo. Since then, this significant concept has been based on: the strategic stockpiling of crude oil in cases of emergency and disruption; coordination on sharing oil supply; pursuing policies of energy conservation, promoting efficiency measures, monitoring and analysing the oil market; increased transparency in the oil market data; and, more recently, engaging in



constructive dialogue with oil producers (Fattouh, 2007: 23). This conjunction of the concepts of oil and gas dependency and vulnerability to serious disruptions in oil and gas supplies constitutes the basis for energy security concerns by technical failure, weather-related events, such as hurricanes and storms, strikes, terrorist attacks on oil and gas facilities, wars and civil strife, regime change that may restrict the capability of a country to export and a deliberate restriction of exports (Ibid: 7).

Energy security has many aspects: long-term energy security is mainly linked to investments to supply energy in line with economic developments and environmental needs. On the other hand, short-term energy security is the ability of the energy system to react promptly to sudden changes in supply and demand (BRIC by BRIC, 2011: 47). Another way to look at energy security is to study the different energy sources (coal, oil, gas, and renewable ones), intermediate means (electricity, refineries) and transportation modes (grids, pipelines, ports, ships). All of these have risks of supply interruptions or failures, challenging the security of undisturbed energy supply (Fattouh, 2007: 23). “Why is energy so important?” The question is very simple, and so is the answer. Everything in our civilization and in this industrial age depends on energy supply (Buzek, October 19-21, 2004: 59). For this reason, energy consumption has risen, especially in recent years in developed, as well as in developing countries.

Worldwide demand for primary energy will increase by 36% between 2008 and 2035, according to the International Energy Agency’s forecasts, and fossil fuels will still be the dominant source of energy in 2035. Solar and wind power structures are expensive, and geothermal energy often requires massive exploratory investments. Same goes for hydropower generators, which often require entire dams to be built, which many environmentalists have worried about the effects on ecosystems, agriculture, rivers and communities. So, the current world economy is centrally based on fossil reserves, and the



transition away from it will not be simple or easy (The Economist Online, Nov 9, 2010). The global energy mix will change between 2010 to 2030, primarily to renewable energy sources, followed by natural gas (BP 2012, Energy Outlook 2030: 31), which the latter increases nearly 50% by the end of the next decade (IEA Special Report, 2011: 7–8).

So, 99% of the countries in the world would be dependent on a small number of states for oil and natural gas supplies, namely Saudi Arabia, Iran, Iraq, Kuwait, UAE, and Russia; referring to security of energy supply as a major challenge in the years to come (Biro, October 19–21, 2004: 75–77). The need for securing supply routes, and also the necessity for investment in energy supply infrastructure are significant. As a result, the global energy system would require investments worth \$16 trillion worldwide. Based on official statistics issued by BP Statistical Review of World Energy, June 2011, global natural gas and oil reserves were a bit more than 6608 tcf/ 187 tcm and also 1,383 billion bbls at the end of 2010, respectively. As for figures, we are probably talking about no less than twice as much of an energy demand in thirty or forty years as compared to today. Due to China and India's consumption, by 2040, the global energy demand will have doubled. A doubling of demand represents enormous growth (Buzek, October 19–21, 2004: 59).

One of the central issues for the future of the BRICS, as a new alliance by economic emerging countries, is energy security that any this body's failure to work towards energy security will have massive impact on the energy security of their neighbouring nations and the countries surrounding them. So, this question could be raised that what are the main challenges, as well as opportunities for Iran and BRICS in any actual and potential interactions in energy field? It seems that any actual and potential interactions in energy field, notably oil and gas, have some opportunities, in addition to challenges for Iran.

On June 16, 2009, the leaders of the BRICS, comprising Russia,



China, Brazil and India, held their first summit in Yekaterinburg, and issued a declaration, calling for the establishment of an equitable, democratic and multipolar world order. Since then, they have met in Brasília in 2010 and met in Sanya in 2011. South Africa has joined the league of the top performing economies in the world since January 2011, so the group became known as “BRICS”, bringing Africa into this important organization of rising global powers from Asia, Latin America and Europe. China's successful efforts, in this regards, has potentially intensified the Asian giant's growing influence on the African continent (Smith, January 21, 2011). This ultra-regional economic cooperation within BRICS is based on what Fawcett and Hurrell believe that any economic interdependence would be toward increasing relations with other regions (Fawcett, 2004: 80/3).

Jim O'Neill of Goldman Sachs predicted that by year 2050, this economic tigers would become bigger than the six most industrialized nations in dollar terms and would completely change the power dynamics of the last 300 years (Biswas, May 26, 2011). These non-Atlantic powers have tended to focus on the rapidly growing economic realm and avoided seeking to change to any political alliance, such as the European Union or any formal trading association, like ASEAN. They contain 40% of the world's population and provide 15% of its economic output, as well as encompass over 25% of the world's land coverage (Hough, Jan 10, 2010). Nevertheless, all these five countries, as permanent or non-permanent members of the UNSC have taken steps to increase their political cooperation, in particular against the current dominant world order (Smith, January 21, 2011).

The BRICS countries continue their economic transition and during this period, their industries will demand affordable and reliable sources of energy feedstock and electric power, forcing the BRICS governments to rank securing and managing energy supply among their top national priorities, however, these five with the exception of the Russian Federation, have not fully achieved energy autonomy.



Hartley and Medlock (2006: 407–439), compared various gas holders worldwide, while they believed that the South American gas suppliers will be neither a gas importer nor exporter and will play the least important role in the global gas market in the future. The report from the National Petroleum Agency, ANP, in 2012 said Brazil that has natural gas reserves on land which can increase supply by 360% in the coming decade. On the other hand, natural gas constitutes only a small portion of Brazil's total energy consumption, according to EIA in 2013. This report unveiled that Brazil is the 8th largest energy consumer and 10th largest producer in the world, while this country imported 470 Bcf of its needed natural gas in 2012, a 27% increase from 2011. So, widespread energy relationships with other oil and gas-rich countries outside BRICS like OPEC, in general, and Iran, in particular, has been much significant.

### **I- Iran and the Geopolitics of Energy**

Iran is the only path between the Persian Gulf in the south and the Caspian Sea in the north and the route connecting the Indian subcontinent to the Mediterranean Sea, as well. Iran's coastline is 1259 kilometers long in the Persian Gulf, as well. The Strait of Hormuz, on the southeastern coast of this country, is an important route for oil exports from Iran and other Persian Gulf countries. At its narrowest point, the Strait of Hormuz is 21 miles wide and roughly two-fifths of all seaborne traded oil, flows through the Strait daily (Sajedi, 2009: 77-89). This country's northern borders and geographical, geopolitical and geostrategic location on the Persian Gulf have given it geopolitical value as a bridge between Central Asia and the Middle East (Patey, 2006: 4).

On the importance of the Persian Gulf, Mahan, as a classic geopolitics says: The control of the Persian Gulf by a foreign state through sizable marine forces and warships with a powerful military port will result in the domination over all ways that lead to Far East, India and Australia (Etat, 1998: 33). Iran may be seen as a corridor,



passageway or a kind of access route on the larger map of Eurasia. While northern parts of this country have always been parts of the heartland, Iran's plateau has always played the role of Rimland of the Heartland and, according to Nicola Spykman, Iran's shores in the Persian Gulf and Hormuz channel are in the state of Rimland (Taghavi-Asl, 2008: 49-52). While on the basis of Geoffrey Kemp, in his book authored in 1997, entitled "Strategic Geography and the Changing Middle East", Iran is situated in the centre of "Energy Ellipse".

Since 1913, Iran has been a major oil exporting country and, according to Oil and Gas Journal, as of January 2010, Iran has an estimated 137.6 billion barrels of proven oil reserves, or roughly 10 percent of the world's total reserves. It has 40 producing oil fields, 27 onshore and 13 offshore, found in three locations: The southwest in Khouzestan, near the Iraq border, is the major region, with lesser deposits along the Iraqi border in the north and one near Qom. Hence, the region east of the Shatt al-Arab is of critical importance to Iran (Oil and Gas Journal, January 25, 2010). It is not just oil that Iran possesses in great abundance, but also natural gas. According to the mentioned Journal, Iran has an estimated 940 trillion cubic feet of gas, or approximately 16% of total world reserves and only Russia, with 1,680 trillion cubic feet, has a larger supply. As it takes approximately 6,000 cubic feet of gas to equal the energy content of 1 barrel of oil, Iran's gas reserves represent the equivalent of about 155 billion barrels of oil. This, in turn, means that its combined hydrocarbon reserves are the equivalent of some 280 billion barrels of oil, just slightly behind Saudi Arabia's combined supply.

Therefore, Iran, as member of the Organization of the Petroleum Exporting Countries (OPEC), ranks among the world's top three holders of both proven oil and natural gas reserves, but gas accounts for 53% of Iran's energy balance, oil 44%, the hydropower industry 2% and coal 1%. According to the US Department of Energy's report, Iran owns the world's second biggest gas reserves



after Russia and will assume an important role in the future in supplying the gas needs (US Energy Information Administration, October 2007). South Pars, discovered in 1990, located 62 miles offshore in the Persian Gulf, is the most important natural gas field belonging to Iran. It has a 28 phase development scheme spanning 20 years and at the moment, phases 1-10 are online. It holds 50% of Iran's reserves, and 8% of known global reserves of natural gas. This deposit is a part of the North Dome deposit, the largest non-associated gas field in the world, situated in Qatar and Iran, however, about 62% of these reserves are located in non-associated fields. So, Iranian production of natural gas is expected to increase over the next few years due to continuing discoveries in the North Pars and South Pars regions (Oil & Gas Directory Middle East, 2011: 1075).

With the development of South Pars gas field with More than \$30 billion dollars since 2007-2008, the outlook for the country's natural gas sector remains positive. The field development project is expected to double the output, providing the investments of \$40 billion to remaining phases within 10 years (Dargin, January 2008: 4-5). The North Azadegan is another field in Iran and has reserves of about 33 billion barrels of crude, however, its geologic complexity makes extraction difficult. Iran's phases 1 and 2 of southern Yadavaran oil field is being brought online by Iran's National Oil Company (NIOC) and China's Sinopec and that is expected a flow rate to climb to a ceiling of 85,000 bpd by 2013 (Kennedy, July 14, 2011). Iran has an expansive domestic oil network, including 5 pipelines, and multiple international pipeline projects under consideration. Iran has invested in its import capacity at the Caspian port to handle increased product shipments from Russia and Azerbaijan, and enable crude swaps with Turkmenistan and Kazakhstan. In the case of crude swaps, the oil from the Caspian is consumed domestically in Iran, and an equivalent amount of oil is produced for export through the Persian Gulf.

The inauguration of the Dauletabad-Sarakhs-Khangiran pipeline



in early January 2010, connecting Iran's northern Caspian region with Turkmenistan's vast gas field. In December 2009, Azerbaijan inked an agreement to deliver gas to Iran through the 1,400km Kazi-Magomed-Astara pipeline (Bhadrakumar, January 08, 2010). Iran's been eager to deliver gas from its giant South Pars field through the long-delayed Iran-Pakistan-India pipeline. If China does become a full partner in the IPI pipeline, however, it will provide another opportunity to build on Beijing's string of pearls. Developments in the Iranian Gas Trunkline (IGAT) pipeline series, all fed by South Pars development phases, are important to Iran's natural gas transport, as well. IGAT-7 (2011) is supposed to transport up to 3 Bcf/d of gas along southern Iran, between Assaluyeh and Iranshahr. IGAT-8 (2012) will run nearly 650 miles to Iran's northern consumption centres, including Tehran. IGAT-9 is an estimated \$8 billion pipeline proposed to run from Assaluyeh to the northwestern city of Bazargan. IGAT-9 is unique in that for the first time, Iran is offering a build-own-operate contract for construction of its pipelines.

The 745 mile Iran-Turkey pipeline, completed in 2001, can transport up to 1.4 Bcf/d of natural gas. The 87-mile long Iran-Armenia pipeline is to transport 86 Mcf/d to Armenia in exchange for 3.3 billion kilowatt hours of electricity. A natural gas pipeline is being built from Khoi in NW Iran to Azerbaijan, started in 2001 either. In June 2009, the world's largest gas-reinjection project began on Iran's Agha-Jari oil field, as well. Approximately 3.6 billion cubic feet (Bcf) of gas is planned to be injected into Agha-Jari. Iran's LNG production will also come from different projects, each associated with a phase of the South Pars development: Pars LNG (South Pars Phase 11), Iran LNG (South Pars Phase 12), and Persian LNG (South Pars Phase 13). Currently, South Pars Phase 12 is slated to provide Iran LNG with feedstock.<sup>10</sup>

Exports could be either via pipeline or by LNG tanker, with possible LNG export terminals at Asaluyeh or Kish Island. Three



LNG plants are reportedly under construction. According to FACTS, Global Energy, Iran may reach peak LNG exports of around 1,462 Bcf as a lifetime ceiling. LNG projects in Iran lag behind neighboring Qatar, the world's largest LNG exporter. Iran has currently nine refineries and even partial success in completing the seven new refineries already under construction and it's expected that this country to become a gasoline exporter by 2012. Investments in the refinery capacity, as well as in other aspects of the sector are necessary to increase production levels. International sanctions and ageing oil fields have made it hard for Iran to raise production, but the Islamic Republic could do more to make investment in the sector attractive for foreign firms, as over 50 countries have invested in Iran during the period of 1992 to 2008 (Groot, 2010: 64-65). According to the IMF, Iran is among the 10 non-BRICS middle-income emergent countries that constitute the world's third-largest economic group, after the European Union and the United States (Walker, February 2, 2010).

What all this means, is that Iran will play a critical role in the world's future energy equation. This is especially true because the global demand for natural gas is growing faster than that for any other source of energy, including oil. Natural gas is also considered a more attractive fuel than oil in many applications, especially because when consumed it releases less carbon dioxide as a major contributor to the greenhouse effect (Klare, April, 11, 2005). There are two factors increasingly affecting the geopolitics of global energy: one is energy development, and the other is transport routes for energy delivery. With its geographic vicinity and the ability to offer energy transport routes, Iran has become an integral part of geo-energy rivalries in Central Asia and Persian Gulf (Akhlaghi, December 8, 2009). Despite the effect of foreign sanctions, the Iranian government has decided to invest \$18 billion in the country's southern oilfields to boost production over the next four years and Iran's newly appointed Oil Minister Rostam Qasemi stated that \$40 billion was needed for the



development of Iran's oil and gas fields, as well. As a result, the energy industry will need \$200 billion in investments in new oil, gas and petrochemical projects by the end of the fifth five year development plan in 2015. In the oil industry's needed investment for downstream sectors, the private sector must take action and make investments (Oil & Gas Directory Middle East, 2011: 1075). Despite pressure against Iran, this country ranked sixth globally in 2010 in attracting foreign investments (Tehran Times, January 3, 2011).

According to a 5-year development plan submitted to the Majles (Iran's Parliament) in January 2010, Iran plans to increase oil production capacity to 5.1 million bbl/d by 2015, but foreign assistance will likely be necessary. Despite some restrictions over the refinery capacity in Iran for the production of light fuels, a gasoline import has been decreased since the government decided to eliminate energy subsidies. Iran produced over 5 million bbl/d of oil in 1978, but since the 1979 Islamic revolution, some problems, such as war, limited investment, sanctions, and some decline in some Iran's mature oil fields, have prevented a return to such production levels. According to Iran Petrochemical Industries Company executive director Abdel Hoseyn Bayat, "four factors have created a number of problems in the petrochemical industry, though the current installed capacity at the petrochemical units has come close to 54.5 million tons per year, while the production program is 46 million tons per year: Twenty-five percent of this unused capacity is due to a shortage of feed, twenty-five percent is due to technological failures, thirty percent is due to defective equipment manufacture and twenty percent is related to other factors (Joao Peixe, August 25, 2011).

However, about 62% of Iran's natural gas reserves have not been developed yet. The global demand, pushed by significantly higher consumption in the United States, China, and India, is expected to rise by 50%. So, Iran has a considerable growth potential: It is now producing about 4 million barrels per day, but is thought to be capable of boosting its output by another 3 million barrels or so.



Few, if any, other countries possess this potential, so Iran is important as a producer.

## II- BRICS and Energy

At the end of the first Persian Gulf War in 1991, 55 percent of the 20 largest companies in the energy industry were American, and 45 percent belonged to the European countries, however, in 2007, 35 percent of the 20 largest energy companies were from the new economic tigers nicknamed the BRICS, about 35 and 30 percent were European and American, respectively (Lederer, June 26, 2007). Brazil's modest energy reserves, like a massive field off the coast of Rio de Janeiro discovered by Brazilian public company Petroleo Brasileiro SA (Petrobras) and the government's strong emphasis on alternative energy, mainly in the form of sugar-cane ethanol, are so important in Brazilian energy policy, particularly since the 1973 Arab oil embargo (Gal Luft, July 6, 2008). The Tupi field is also believed to contain from five to eight billion barrels, making it the largest find in the Western Hemisphere in the past 30 years. The Tupi field and smaller subsequent discoveries imply a stable if not lucrative energy security outlook over the short-to-medium term for this country. Libra prospect in the Santos Basin could hold up to 15 billion barrels of recoverable reserves as well, making it potentially larger than the country's massive Tupi (Brooks, Aug 23, 2009). If these conventional oil reserves estimates would be accurate, one likely scenario is that Brazil will be probably a major oil producer and even likely exporter within the next ten years (Kerr, November 1, 2010).

With the world's largest proven natural gas reserves, but the second-largest producer of natural gas, second largest coal reserves, and eighth largest oil reserves, Russia is poised to sustain energy independence. However, resource rents in Russia are much bigger than export income. So, control over the distribution of rents is the central problem of Russian political economy (Barry, May 14, 2011). As regards oil, Russia holds 75bn barrels or approximately 8% of



world oil reserves. Again, exclusive of yet-to-be-discovered oil reserves in the vast prospective onshore East Siberia region nor offshore in the north and Far East, however, some experts believe that Russia's future reserves are in hard to explore and also expensive places. One of the key success factors for Russia in winning the Asian market is Sakhalin Island, which holds vast amounts of fossil fuel reserves. Gazprom is accelerating the Sakhalin-3 gas project to come on stream during 2011.

The combined pressures of a growing reliance on energy imports, rising population, expanding economy, spiking domestic demand and a drive towards improved quality of life, India as the world's fourth largest economy and the sixth largest energy consumer in the world, is set to continue its dependency on foreign oil and gas consequently will seek to secure supply. That should be expected, India and China will compete over energy supplies in the future (Mihlmeste and Andersonsummer, 2010: 6). Cairn Energy's discovery of the Mangala field in 2004, which contains a wealth of over 1 billion recoverable barrels, is the largest discovery in India since 1985. The Barmer Basin field is expected to increase India's domestic oil production by 20%. (Fillingham, September 22, 2009). India's LNG imports also increased to 9.0 mtpa in 2010, then 14.0 mtpa by 2015, and 22.0 mtpa by 2020 (Fesharaki, July 12, 2007: 31-33).

Indian economy has grown by 8% p.a. recently and is expected to continue at the same till 2015, and 6% p.a. from 2015 to 2035, as well, however, according to IEA, 400 million of Indian population in 2009 were without electricity and it's expected that this number will decrease to 300 million in 2030. In addition, 70% of electricity in this country is from coal and its quality is poor, so, India's CO<sub>2</sub> emissions projected to triple by 2035. Hydropower is mostly in Himalayan & Northeastern region and it's so hard to shift away from coal in short-to-medium term (Chikkatur, May, 14, 2011). India is the world's eleventh-largest energy producer, with 2.4 percent of energy production, and the world's sixth-largest consumer, with 3.5 percent



of global energy consumption. Domestic coal reserves account for 70 percent of India's energy needs. The remaining 30 percent is met by oil. Demand for energy is expected to double by 2025; by then, 90 percent of India's petroleum will be imported. India currently imports 60- 70 percent of its oil needs, mainly from countries in the Middle East like Iran. Experts estimate that by 2025, India will be the third-largest importer of energy (India's Energy Dilemma, September 7, 2006).

Of all the BRICS countries, China's domestic energy demand is growing the fastest, making the need to secure oil and gas supplies a high priority for Beijing and this country is particularly concerned about China's over-reliance on shipping lanes through the Straits of Malacca for energy imports from the Middle East, because in the event of a conflict with the United States, Beijing fears being cut off from its energy lifeline by a U.S. naval blockade of the Straits. Thus, the Chinese government has been working to diversify and expand energy imports, and one of its priorities is to develop pipelines from Iran, passing through Central Asia and Russia and could alleviate this dependence on the chokepoint. Xinjiang, site of the Tarim Basin, continues to be a critical component of China's domestic energy supply. The province is home to 14 percent of China's oil output and over 40 percent of its coal reserves (Fillingham, September 22, 2009). Today, China is already the third largest importer of oil, after the United States and Japan. Conservative projections foresee a rise in Chinese oil consumption from the now eight percent of annual global output, to near fifteen percent in the next decade, since China's oil reserves will remain static at three million barrels per day (Ian Spiegel, May 16, 2008). China's three state-owned enterprises, namely SINOPEC, PetroChina, CNOOC, and a provincially owned enterprise, Shaanxi Yanchang Group, held 98.3 percent of China's crude oil proven reserves and 86.8 percent of China's refinery capacity as of the end of 2008. However, China's key challenge is implementation of energy efficiency activities (Mihlmeste and



Andersonsummer, 2010: 6).

In fact, India and China have measurable reserves, but their reserves-to-production ratios stand at 21 years and 11 years, respectively, at current usage rates. South Africa's energy sector is critical to the economy, too. The newest BRICS member has only small deposits of oil and natural gas, so it uses its large coal deposits for most of its energy needs. As a result, carbon emission and intensity levels are relatively high. The country also has a highly developed synthetic fuels industry, producing gasoline and diesel fuels from coal and natural gas (Background of South Africa Energy, March 2010). According to Oil and Gas Journal (O&GJ), South Africa had proven oil reserves of 15 million barrels in January of 2010, located offshore southern area in the Bredasdorp basin and off the west coast of the country near the border with Namibia. There are currently small producing oilfields off the South East coast of South Africa. A nearby gas field provides the raw materials for a synfuels plant at Mossel Bay. A gas field has been discovered off the west coast of South Africa and exploration continues in a number of offshore areas. Because of South Africa's abundant supplies of cheap coal, liquid fuels only provide 21% of the energy requirements of the country. Oil from coal synfuels plants provide a significant proportion of South Africa's liquid fuels. Natural gas currently plays a limited role in the South African electricity sector but the government plans to increase imports, and expand domestic production, which could diversify the energy mix and offset some of the country's overreliance on coal.

The BRICS countries together control almost 10 percent of global oil reserves, and more than 25 percent and 40 percent of natural gas and coal reserves, respectively. With regard to these fuel, Russia is the only net exporter among the BRICS. However, Eurasian and European markets largely depend on Russian natural gas and oil output. It's hard sometimes to imagine any of them adopting a serious alternative energy platform in the near future. The renewable energy



market consists of the consumption of electricity generated via Geothermal, Solar, Wind and Hydroelectric means (Mihlmeste and Andersonsummer, 2010: 6). Also by 2020, 15% of total energy should be non-fossil, including renewable and nuclear power (Watson, September 2010).

China has become a leader in producing photovoltaic cells and is working actively to make them more affordable. India is working actively to grow its solar and wind sector, and has even created a cabinet-level ministry for new and renewable energy. Russia has massive potential for tapping into hydro power and plans to begin exploration in the coming years and in total, the BRICS renewable energy market grew by 6% between 2005 and 2009 to reach a value of \$182.5 billion. In 2014, the market is forecast to have a value of \$190.5 billion, an increase of 0.9% from 2008. Although, Brazil is expected to lead the renewable energy industry in the BRICS nations with a value of \$ 87.9 billion in 2015, so this country is the most progressive of the five on alternative energy (The Economist, Nov 9, 2010). The BRICS countries continue their economic transition and during the transition, energy intensive industries will demand affordable and reliable sources of energy feedstock and electric power, forcing the BRICS governments to rank securing and managing energy supply among their top national priorities, despite of this fact, this bloc, with the exception of the Russian Federation, have not fully achieved energy autonomy (BRIC by BRIC, 2011: 8). The American National Security Council's 2009 report titled "Global Trends 2025: A Transformed World", recently recognized that the future will be a multipolar world, in which China and India will join the USA to form a trio of economic giants, while Russia and Brazil will grow much. The report notes that in the 2040s, the BRICS countries GDP will be bigger than that of the G-7 countries (Smith, January 21, 2011).

However, some disputes and challenges have been obvious amongst the BRICS, such as concerns about cheap Chinese imports,



Sino-Indian border disputes and their rivalry in Africa, China's support for Pakistan's nuclear and missile programs, as well as potential for discord in Sino-Russian relations (Borah, Jun 26, 2011). Despite of some disagreements, till now, co-operation and accommodation have been the strategic approach of BRICS (Biswas, May 26, 2011). Issuing the 2008 OECD Environmental Outlook, the rich country economic thinktank said "the primary energy consumption of Brazil, Russia, India and China together is expected to grow by 72% between 2005 and 2030, and unless ambitious policy action is taken, greenhouse gas emissions from just these four countries will grow by 46 percent in 2030, surpassing those of the 30 OECD countries combined (OECD Environmental Outlook, 2008). World primary energy demand will grow 40% between 2007 and 2030 and main driver is growth in developing Asia and Middle East and it's the most important point that fossil fuels will remain dominant (Watson, September 2010). In reality, many important resources are currently necessary to sustain economic growth, such as oil, natural gas, coal, other fossil fuels, and even uranium, before enough renewable energy can be developed, but hydrocarbons enjoy special position in this process.

### III- The Future

More recently, in a world where the rapidly growing economies of populous China and India, Brazil, and a resurgent Russia, have intensified competition for global energy resources, Iran's importance in international relations has been enshrined for many years to come with the huge oil and gas reserves (Patey, 2006: 4). Expanding ties with BRICS countries is Iran's first economic priority (IRNA, 21 April 2011). Without any reliance on the Middle East for energy supplies, Moscow can adopt a somewhat ambivalent attitude towards allies like Iran, as Russia and Iran control the most enormous global hydrocarbon reserves worldwide. China is now one of the biggest buyers of Iranian crude oil and the Chinese Customs Organization



has announced: "This country's level of oil imports from Iran during the first half of 2011 reached 134.7 million tons, a growth of 49 percent in comparison to the same time period last year." According to this journal, imports of Iranian liquefied petroleum gas (LPG) during June increased for the fourth consecutive month and reached more than 244,000 tons. Chinese imports of Iranian LPG during the first six months of 2011 increased 72.2 percent in comparison to the same period of 2010. In addition, as of May 2009, China and Iran concluded an agreement to construct 20 nuclear reactors.

In March 2004, China's state-owned oil trading company, Zhuhai Zhenrong Corporation, signed a 25-year deal to import 110 million tons of liquefied natural gas (LNG) from Iran. In October of the same year, Sinopec signed a 25 year deal, valued at 100 billion US dollars, that provides China with 150,000 barrels per day of crude oil and 250 million tons of LNG from Iran's Yadavaran oilfield. In 2006, the Iranian government and CNOOC signed a 16-billion US dollars natural gas deal, regarding potential LNG exports of 1.3 billion cubic a day and the development of Iran's Yadavaran oilfield. Sinopec signed a 2.6 billion deal in 2007 to develop the onshore Yadavaran oil field. In 2008, China National Petroleum Corp. (CNPC) has signed a deal to acquire a 70 percent stake in developing the onshore North Azadegan oil field in Khuzestan, in South-western Iran.

In 2009, CNPC signed a 4.7 billion US dollars deal to develop phase 11 of the giant South Pars gas field. As of 2009, CNOOC is active in exploration at the North Pars field. Iran's state interests, as they relate to Russia and energy, are to: Expand its oil and gas production capacity and develop its offshore gas fields, including monetizing the huge South Pars field in the Persian Gulf. In 2009, Iran has invited Gazprom to invest in a pipeline to connect Oman and the Caspian region. Gazprom Neft has signed an agreement to start the development of the Iranian Azar and Changuleh oil fields (Groot, 2010: 87-88). Gazprom has been participating in the development of the South Pars field's second and third stages



together with a couple of overseas companies to produce and process 20 billion cubic metre of gas annually (Groot, 2010: 70).

Russian Lukoil and Norsk Hydro have participated in the 2bn barrels Anaran block in western Iran next to the Iraq border. Rosneft and Zarubezhneft have also played a role in the massive Azadegan oil field near the Iraqi border (Groot, 2010: 48). The Indian government has signed a \$40 billion dollar gas deal with Iran, which guarantees India 7.5 million tons of LNG over a 25 year period. It also gives India development stakes in Iran's largest offshore oil field, Yadavaran, and in the Jufier oilfield (India's Energy Dilemma, September 7, 2006). Indian IOC and OVL companies own 40% each of Farsi offshore block. So, India is in a delicate position in its involvement with Iran. On the one hand, energy and social ties are crucial and on the other hand, there is increasing pressure from the US to lessen its involvement with the Persian nation (Fesharaki, July 12, 2007: 40).

Brazil is another member of BRICS that have had good relationships with Iran, especially in energy sector. Brazilian interest in supporting Tehran's nuclear program dates from the early 1990s when it considered selling equipment from its own failed program to Iran (Iran Brazil Nuclear Deal Off, January 6, 1992). Despite the vast reserves of oil and natural gas that both countries possess, the two began discussing such cooperation in energy sector back in the 1990s. In 2003, the National Iranian Oil Company granted Brazil's Petrobras rights to explore Iran's vast offshore oil reserves in the Persian Gulf (New York Times, July 7, 2004). Petrobras signed a second, larger exploration deal with Iran in 2004 to drill in the Caspian Sea (Associated Press, July 14, 2004).

Moreover, Iran and Brazil signed an MoU in May 2010, on the sidelines of the G15 summit in Tehran, so the two sides emphasized on cooperation in the exploration and production of hydrocarbon resources, using non fossil fuels and training forces, as well as Brazilian firms participation in modernization of Iran's oil sector (Iran



daily, May 22, 2010). In April 2010, the president of Petrobras announced that this Brazilian oil giant has invested some \$30 million in Iranian oil development despite of some commercial failure in testing wells. In recent years, Brazil has continued to engage in normal state relations with Iran and energy has been central, despite sanctions against the Iranian nuclear program; because Brasilia's position is that the International Atomic Energy Agency, not the UN Security Council or independent powers, should resolve the dispute over the program (Tehran Times, November 10, 2008).

South Africa economy, as a newest member to BRICS, has grown rapidly since the end of the apartheid era in 1994 and is now one of the most developed economies in Sub-Saharan Africa. This country has had broad relationships with Iran in energy field, so bilateral oil deals grew after 1995. Furthermore, this main African country has been one of the main proponents of Iran's nuclear energy program (Tehran Times, January 30, 2008). In 2007, Iran's oil exports to South Africa neared \$21 billion. As of 2006, South Africa received 40 percent of its crude oil from Iran, and despite interfering with its friendly relationship with the United States, South Africa agreed to store 15 million barrels of Iranian oil (Iran Daily, January 20, 2009).

In June 2009, the National Iranian Petrochemical Company announced that the South African Company, Sasoul, is one of the world's largest coal liquefaction plant, would be involved in Iranian petrochemical projects (Shana News, June 9, 2009). South Africa has an estimated 354,000 tonnes of recoverable uranium ores, accounting for 11 percent of the world's reserves. Though, this country is a net importer of oil and gas. South Africa is a significant coal consumer and exporter, but imports large amounts of oil and some natural gas. It has the second largest oil refinery system in Africa and imports the majority of needed oil from Saudi Arabia and Iran followed by Nigeria and Angola (Background of South Africa Energy, March 2010). The growing relationships between China, India, and Russia mark an evolving trend in the subject of Iran's hydrocarbon and



geopolitics. The energy demands of the two rising Asian economies and the reappearance of an independent Moscow in international relations, powered by its immense energy resources, have provided Tehran with alternative military and economic partners (Patey, 2006: 4).

Iran should attract the most modern, sophisticated oil and gas field technology available and in many cases that comes from international energy firms (Tishehyar, July 08, 2011). Tehran's international foreign policy is now oriented towards the east in particular, China, Russia and India, where energy hungry great powers arise. This shift over the Iranian foreign energy policy strategy has been toward securing of gasoline supplies and energy investment, the development of oil and gas markets and the development of strong energy ties with its neighbors; all these issues involve strategies in which China, India or Russia participate (Groot, 2010: 70). Russia and China enter into this regional scenario on account of their massive energy investments in Iran and their status as influential UNSC members. All five BRICS states — three of whom possess nuclear arsenals — will have considerable clout as members of the UN Security Council occupying five of 15 seats — temporarily for Brazil (until the end of 2011), India and South Africa (ending after 2012), and permanently of course for China and Russia (Smith, January 21, 2011).

They are not opposed to an independent Iranian nuclear fuel cycle, including an enrichment capability, so both will continue to oppose extensive sanctions against Tehran. They believe if Iran were to cross the line in order to manufacture and acquisition of nuclear weapons, however, their commitment to the NPT would incline them to support firm counter-measures. In addition, Russia, for example, has made clear on several occasions that any Iranian potential bomb would be incompatible with Russia's security primarily. However, China, like Russia, has encouraged Iran to lower tensions and reduce pressure for sanctions by engaging in regional confidence-building.



The imposition of the economic sanctions on Iran, has not halted the economic, as well as energy relations between Russia and Iran. As Russia and Iran will sign a road map, which outlines their long-term energy cooperation (Groot, 2010: 88).

That the BRICS countries would come down against Iran sanctions is no surprise, for all of them have a stake in protecting the Iranian energy sector. China and India need an unencumbered Iranian energy sector for their own imports, while Russia and Brazil are motivated by other political considerations (Fillingham, September 22, 2009). Given their energy security needs and rising crude prices, BRICS nations have decided not to snap ties with Iran, according to the trade ministers' meeting ahead of the BRICS leaders' summit in New Delhi on 30 March 2012. Energy is the area where India's independent foreign policy has the most immediate connection with its economic growth plans. The United States remains India's most important external friend, however, the area of overlap between Indian and U.S. strategic interests continues to grow. But, many of the areas where they are not in harmony have an important energy dimension (India's Energy Dilemma, September 7, 2006).

Moreover, through creating more linkages with Iran and China, it seeks to establish stability in the region. Russian foreign energy policy strategy towards Iran also takes into account the closer cooperation amongst Caspian Sea gas producing nations, as well as between Shanghai Cooperation Organization members (Groot, 2010: 55-56). During the SCO summit in 2006, Iran presented the proposed initiative to shape the energy cooperation between the members. Iran discussed that while the three countries of Central Asia, including Kazakhstan, Uzbekistan and Turkmenistan, along with Iran and Russia, are considered as the major oil and gas producers in Eurasia, other members of the organization, such as China, India, and Pakistan, are the largest energy consumers in Asia and even in the international level (Tishehyar, July 08, 2011). Hence, if Iran will be admitted as a member of this regional body, this will strengthen



China's ability to access Iran's energy sources, although India has been active as an observer member of this organization (Shenna, 2010: 13-15).

Russia, is home to 20 million Muslims and part of them are Shia, needs Iran's support in containing Sunni extremism in the Southern Caucasus and Central Asia as its backyard. With regard to the Caspian Sea, Iran needs Russia for a satisfactory juridical resolution of its territorial status, so unsatisfactory resolution could be detrimental to Iran's pipeline interests. The Russians, therefore, view their close economic and military ties with Iran as strategically critical. The Iranian relationship enables Russia to exert influence in Central Asia with greater ease, without a major US ally in the picture, except Turkey. With the current state of Russo-Iranian military and energy ties, Russia stands a chance to challenge the US in the heart of the Middle East, and together with China in the SCO, present a new global energy block (Akhlaghi, December 8, 2009). Iran's strategic manoeuvring in Latin America, as the US backyard, has entered a new phase of growing south-to-south relations, in particular with good relationship with some of the countries in this region, like Brazil.

While Iran is a regional superpower, sitting on a sea of hydrocarbon energy, with the help of Chinese and Russian technology, would also pump Caspian oil and gas south into Iran's existing transport network to be shipped to international markets via the Persian Gulf. This can further Iran's cause of leadership in both the Middle East and Central Asia. Iran is a member of OPEC and Russia is a non-member observer, so the latter seeks to maintain good relations with this international energy policymaker as the ultimate guarantor of oil price stability. This trend will strengthen more the position of Tehran in regional and even energy equation. However, at present, Iran is producing only a small share of its gas reserves, about 2.7 trillion cubic feet per year. This means that Iran is capable of supplying much larger amounts of natural gas in the future.

So, what could prevent the widespread of energy cooperation,



consisting of Russia, China, and BRICS as a whole with Iran? Amongst the biggest threats are the domestic development of contender forces, the rise of alternative energy sources, internal strife between Russia and Iran, China and India or China and Russia, leading to the inertia of the cooperation between these states and finally the challenges to economic integration (Groot, 2010: 97). While Russia develops strong ties with Iran and China, it also fears and competes with the influence of these states. Russia may consider the expansion of Iran's capacity to export energy in contrast with Russia's strong presence in the global energy markets, particularly in Europe. This, of course is inconsistent with the realities of international economy and interdependency between economies in the era of globalization. Moreover, while Russia's traditional energy customers are mainly among European countries, Iran's oil purchasers could mostly be from the South, South East and East Asian countries. Another obstacle has been sanctions against foreign companies, investing more than 20 million dollars in oil and gas industries of Iran (Tishehyar, July 08, 2011).

Another impediment to Iran's progress in increasing oil and gas production is related to the structure of buyback contracts. The rates of returns from existing buyback contracts are not adequate to attract and retain foreign investments, so there would need some modest changes in the contracts, including lengthening the number of years of buyback and more incentives for projects (Houshisadat, 2013). The growing national consumption of fossil fuel resources due to population growth exacerbated by the increased standard of living in Iran, constrains the profitability of the sector. Technical difficulties in parts of the energy industry, like in the world's largest gas-reinjection project on Iran's Agha-Jari oil field, have been another problem. In addition, political tensions over the Iranian nuclear issue have prevented direct approaches toward Tehran, such as we can observe over the construction of a branch of the Nabucco pipeline through Iran (Shenna, 2010: 6). Investments in the refinery capacity, as well as



in other aspects of the sector are necessary to increase production levels. Despite the fact that international sanctions and ageing oil fields have made it hard for Iran to raise production, the Islamic Republic could do more to make investment in the sector attractive for foreign firms (Groot, 2010: 64-65).

### Conclusion

The global economy is undergoing a paradigm shift, from a Western-dominated economic model to one that is more complex and perhaps multi-polar. The centres of consumption, production, and innovation are no longer concentrated solely in Western economies, but are shifting to new economies, emerging players in different continents, specifically China, Russia, Brazil and India. BRICS countries are increasingly becoming the major hubs of hydrocarbon reserves, production and consumption. They will further attract large amount of capital for the development and financing of new energy supply infrastructure. Over the next decade, it is likely that Brazil will become a major oil producer and exporter based on its new found reserves. Russia, in addition to being the largest gas reserve and production globally, will continue to be a dominant oil producer as its oil companies locate and exploit new reserves in order to thwart the decline of currently producing fields. As Chinese NOCs remain on the hunt for new reserves, they will add to an already increasing amount of oil production. Oil consumption and refining capacity will continue to head to Asia as emerging economies add to a growing middle class consumer base. Coal use will likely remain as the dominant fuel of choice for many emerging economies, but renewable energy and natural gas will increasingly gain on coal use. As major importers of fossil fuels, both China and India will be wary about their energy bills. As major producers and exporters, Russia and potentially Brazil will want to ensure that international energy commodities prices support the development of their resources.

Tehran must reinforce its energy ties, particularly with China



and India in both oil and gas fields, while keep supplying its oil to South Africa and its potential LNG in the future. In addition, Russian and Brazilian investments in Iranian hydrocarbons industries have been beneficial and could continue, however the former will be the main rival against Iran's gas and LNG export to its current and coming customers. As regards to the opportunities, Tehran must reinforce its energy ties, particularly with China and India, as the major importers of fossil fuels in the future, in both oil and gas fields, as well as its potential LNG. In addition, Russian, Chinese and Brazilian modern technologies and investments in Iranian hydrocarbons industries have been beneficial. As a result, with the help of BRICS' technology, Iran's existing transport network to international markets would be reinforced. Moreover, through creating more linkages with Iran and China, Russian, as well as India, further stability will realize in the region and closer cooperation with Shanghai Cooperation Organization. Iran is a member of OPEC and Russia seeks to maintain good relations with this international energy policymaker. This cooperation could transfer more within the Gas-OPEC.

On the other hand, some challenges could be perceived regarding Iran's relations with BRICS in oil and gas fields. Russia, as the most independent gas supplier, is the main rival against Iran's gas export and this competition could be observed in some projects, such as the Nabucco pipeline. Therefore, Iran could develop its LNG industries to export its products to different global destinations, mostly in Asian and littoral European importers. In addition, Tehran would enable to supply its piped gas to its regional and non-regional actual and potential importers, not being amongst Russian customers.

While South Africa holds a huge unconventional shell gas, ranking this country as the fifth in the world, and there is likelihood that Brazil will become a hydrocarbons producer and regional exporter in the near future, so the outlook of energy export to them would be less clear. Iran could continue exporting oil to South Africa



and, to some extent, its potential LNG in the future. Nevertheless, Tehran could interact with Brazil, mostly in technology field. China and India need an unencumbered Iranian energy sector for their own imports, and to some extent, South Africa, while Russia and Brazil are motivated by other political considerations.

## Notes

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