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The Geopolitics of America's Energy Independence:

Implications for China, India
and the Global Energy Market

SHEBONTI RAY DADWAL



INSTITUTE FOR DEFENCE
STUDIES & ANALYSES

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Contents

1. INTRODUCTION	5
2. AMERICA'S ROAD TO ENERGY 'INDEPENDENCE'	11
3. CHINA'S ENERGY DILEMMA.....	31
4. INDIA'S ENERGY SELF-SUFFICIENCY - A DREAM OR DISTANT REALITY?.....	56
5. THE GEOPOLITICAL CONSEQUENCE OF THE US' ENERGY INDEPENDENCE.....	73

I

INTRODUCTION

As the world struggles to emerge from a global recession and financial crisis, nations are looking for solutions to improve their economic performance. Even though the energy sector constitutes a relatively modest share of GDP in most countries, its impact on the economy is considerable given that energy and the economy have a symbiotic relationship¹ since energy is an input for nearly all goods and services and a country requires access to reliable and affordable energy resources to sustain economic activities. On the other hand, those countries with less access to energy display a slower rate of economic growth. More importantly, energy creates jobs and value by extracting, transforming and distributing energy goods and services.

Three factors are fundamental to energy security: availability of energy resources; access to energy resources, particularly hydrocarbons, as they are not evenly distributed geographically; and affordability, as lower energy prices reduce expenses for consumers and businesses, increasing disposable income that can be spent in other ways. As a result, countries have embarked on a scramble to access oil and, over time, it has increasingly been linked with the foreign policies of the great powers, to ensure their continued control of oil resources. There is sufficient literature that documents the contribution of, or lack of access to, oil supplies that contributed to the defeat of the German and Japanese armies during the Second World War. During the Cold War, the West Asian region were a major theatre of confrontation between the two superpowers, with the US seeking to deny the Soviets access and influence in the region to preserve its own and its allies access to oil.

¹ Peter Voser, 'Energy: The Oxygen of the Economy', Energy for Economic Growth Energy Vision Update 2012, World Economic Forum, http://www3.weforum.org/docs/WEF_EN_EnergyEconomicGrowth_IndustryAgenda_2012.pdf.

After the Cold War and the demise of the Soviet Union, Russia, particularly under Vladimir Putin who was determined to restore Russia to the status of a great power, viewed energy as a tool to strengthen its position in the international arena. By denying alternate transport routes to come up, Moscow has tried to retain its stranglehold over the region as well as the energy reserves of the land-locked Central Asian states, even cutting off gas supplies to states, which showed any inclination of moving closer to the West.

The US policy towards the region, and indeed other regions as well, on the other hand, is to push for an open door policy, which would not only allow American energy firms to enter the energy sector, but would also encourage the resource-rich governments to adopt more independent, and preferably pro-Western foreign policies, both for commercial as well as strategic considerations. Given the Middle East's (West Asia's) centrality in the world's energy sector, mainly oil, it was not surprising that Washington ensured that its control over the region's oil resources was sustained.

It is important to underscore at this point that although following the 1970s, when the US despite being a major producer nevertheless became a net importer of oil due to its increasing consumption, was not dependent on West Asia oil supplies, Europe and Japan were almost entirely dependent on the region's oil supplies. Hence, the US policy of exerting influence on the region and its oil production was to a large extent to ensure that its allies' oil supply lines were secure, in terms of both, adequate production as well as transportation. At the same time however, problems arising from any disruption to oil supplies led to sharp price spikes, which, given the fungible nature of the oil market, affected the oil-dependent US economy.

From the beginning of the new millennium, however, the theatre of confrontation shifted to the Asia-Pacific region, which is seen as critical for the revival of the US economy that has been affected by the financial crisis. Announcing the Rebalance to Asia policy, President Obama said at the APEC summit in November 2011,

‘... the Asia Pacific region is absolutely critical to America's economic growth. We consider it a top priority....we are not going to be able to put our folks back to work and grow our

economy and expand opportunity unless the Asia Pacific region is also successful. This region includes many of our top trading partners. This is where we do most of our trade and where we sell most of our exports. It is also the fastest growing region in the world. And as a consequence, the Asia Pacific region is key to achieving my goal of doubling US exports and creating new jobs.²

Prior to that, the West Asian region and its conflicts kept the US mired there for decades, to ensure Israel's security and survival, and to retain its control over the region's vast oil resources. The latter included ensuring the survival of friendly regimes like Saudi Arabia, to remove threats to its oil interests like Saddam Hussein, tackling radical Islamism, and most recently to prevent Iran from acquiring nuclear weapons and thereby claiming regional supremacy. Nevertheless, since the 1990s, and particularly after 9/11, relations between the Washington and the Gulf regimes have come under strain, strengthening the voices in the US, which have been calling for an end to America's dependence on imported oil, particularly from the Middle East.

With the advent of the commercial viability of the hydraulic fracturing or fracking, as this is the more commonly used term referring to technology in the US which allowed its vast shale gas and oil reserves to be exploited, the US for the first time since the 1970s, was finally able to put into practice what its leadership had been advocating for decades – the opportunity to not only be energy independent, but more importantly, to free itself from dependence on oil imports from the troublesome Middle East. From 2008, the US began to cut its oil imports, partly due to growing fuel efficiency and a concurrent drop in consumption due to the recession, and partly because of growing domestic oil and gas production.

² Opening Remarks by President Obama at APEC Session One, The White House, Office of the Press Secretary, November 13, 2011, <http://www.whitehouse.gov/the-press-office/2011/11/13/opening-remarks-president-obama-apec-session-one>.

The timing of the fracking-induced energy revolution of the US could not have been more opportune. It provided Washington with the leverage to announce its impending energy independence, and the space to revise its strategic reorientation towards the region it now saw as the key to its economic and political revival.

However, the announcement of the new ‘rebalance towards Asia’ caused consternation as well as excitement around the world. For instance, several Chinese scholars believe that the US is employing a dual strategy. According to them, the US will try to maximise its strategic interests by utilising its constructive cooperation with China as well as Russia and with India to some extent and at the same time, contain and prevent these countries from challenging its hegemonic status. In fact, Beijing’s view of Washington’s “Pivot to Asia” policy is seen as an attempt to contain China and prevent it from growing stronger, and constitute a challenge to the US’ vested interests.”³

At the same time, it raised the concern of the West Asian regimes allied to the US, setting off a debate on whether Washington would leave the region with its myriad problems to fend for itself. More importantly, it also raised the larger question about what it would mean for the energy, and particularly the oil, market. For even though the traditional oil market had tilted towards the emerging economies from its traditional Western markets, the onus on ensuring safe passage of oil supplies to the rest of the world was with the US.

It is pertinent at this point to state that although the change in the energy sector has been set off by the shale *gas* “revolution” due to the use of fracking, it does have an impact on the global *oil* market as well, given that fracking also allows the recovery of large, untapped reserves of oil. Although the current “revolution” focuses more on the availability of gas from shale plays, the potential availability of large volumes of oil due to the application of fracking also allows previously

³ Shen Qiang, “Duality and Difference of US Strategies towards China, Russia and India”, *Foreign Affairs Journal*, Winter 2011, pp 53-65.

untapped oil reserves to become commercially available. In fact, according to the IEA, the US is poised to overtake Saudi Arabia as the largest producer of oil on the back of its oil shale reserves.⁴

However, over the last two decades, natural gas is gradually gaining in importance vis-à-vis oil. From a marginal, difficult-to-transport-over-long-distances energy resource, which was confined to regional markets, gas is fast becoming the fuel of choice for more and more consumers. This is mainly due to its relatively low environmental impact as well as the fact that liquefaction and re-gasification technology has brought down costs substantially, making LNG more global in nature. Moreover, while previously, gas was used more in the power and industrial sector, it is now being increasingly used in the transport sector as well.⁵ Today, world gas consumption is projected to more than double over the next three decades, surpassing coal as the world's number two energy source and potentially overtaking oil's share in many large industrialised economies.⁶

As one of the two largest energy consumers, the other being China, the changing role of the US from an energy importer to an energy exporter is expected to have far-reaching consequences on not only their energy sectors, but also politics as a consequence of the changing global energy geopolitics. According to the International Energy Agency's (IEA) Medium Term Oil Market Report (MTOMR), North America's hydrocarbon revolution will dominate the supply outlook and is forecast to account for an even larger share of non-OPEC supply than estimated in the 2012 MTOMR. It states that the spread

⁴ Oil shale is a petroleum precursor, which is organic matter in the rock called kerogen. By applying heat, it can be transformed into oil and gas. Shale oil, or "tight oil" on the other hand, is a conventional crude oil created naturally and trapped in shale deposits — requiring modern drilling and recovery technologies to produce. Shale gas is similarly produced from shale deposits.

⁵ Choi DooHo, "The effect of shale gas revolution on oil industry", The Institute of Energy Economics (IEEJ), January 2013, <http://eneken.iej.or.jp/data/4682.pdf>.

⁶ Amy Jaffe and David Victor, "Geopolitics of Gas", The James A. Baker III Institute for Public Policy, Rice University, Working Paper Series, 2004, http://iis-db.stanford.edu/pubs/20699/Gas_Exec_Sum.pdf.

of technologies being used to tap tight oil in the US, whether in prospective shale formations or in low-permeability conventional crude plays elsewhere, may improve yields and production worldwide and lead to a broad reassessment of reserves. Although the report warns that there is little information at this point about the size and quality of global tight oil resources or whether shale plays or other tight oil formations will be developed outside the US before the end of the forecast period (2012-18), unconventional technologies used in shale extraction may nevertheless significantly boost production in conventional plays where they can be applied to enhance recovery.⁷

This monograph attempts to study the energy landscape that has emerged with the advent of the technological revolution in the US oil and gas sector. The study will look at the geopolitical consequences and strategic implications of the new US energy policy on the global oil and gas markets, and analyse whether the claim of the US of energy independence, terminating all imports from the Persian Gulf region can be achieved, and if so, whether there will be political consequences thereof. It will also study the impact of the Pivot to the Asia policy on the West Asian region and the implications thereof. Moreover, given that China and India are emerging as the two largest and growing energy markets, the study will focus on the energy policies and dilemmas of these two nations, and the implications of the shale gas revolution in the US on their energy strategies. Despite the fact that Russia is also a major gas producer, it has not been included in this monograph for two reasons- the focus of this monograph is on the impact of the US' potential emergence as a major energy exporter in the global energy market, both in terms of oil as well as gas, and second, because Russia's main client is the EU, and the impact of the US' gas revolution will have an impact on the EU in an oblique way in terms of the pricing, which has been mentioned.

⁷ Overview of IEA's Medium-term Oil Market Report 2013, p.13, http://www.iea.org/media/news/MTOMR_2013_OVERVIEW.pdf.

II

AMERICA'S ROAD TO ENERGY 'INDEPENDENCE'

Introduction

Till recently, when China overtook the US as the largest consumer of energy and the largest importer of oil, a large part of American foreign policy was focused on the issue of energy security, *not only for itself, but also for its allies*. Given that the West Asian region held the largest reservoir of oil, and the huge investments American companies had made in the region's oil sector, the US foreign policy understandably was focused on the need to ensure that its investments were safe and that the supply lines for the world's oil market were open and secure.

The impact of the 1973 Arab oil embargo and the oil price shock that followed thereafter had a profound and lasting impact on all oil-importing countries. Successive leaders and US presidents have since then been advocating the need for 'energy independence'. Essentially, what this means is the need to reduce America's dependence on oil imports, particularly from the Middle East (West Asian) region. In his January 1974 State of the Union address, President Nixon stated, 'In all of the 186 State of the Union messages delivered from this place in our history, this is the first in which the one priority, the first priority, is energy'. Alluding to his 'Project Independence' goals, he stated, '...the United States will not be dependent on any other country for the energy we need to provide our jobs, to heat our homes, and to keep our transportation moving'.¹

¹ Richard Nixon, State of the Union Address, January 30, 1974, State of the Union Addresses by United States Presidents, A Penn State Electronic Classics Series Publication, pp. 43-56, www2.hn.psu.edu/faculty/jmanis/poldocs/uspressu/SUaddressRNixon.pdf

Policies of the US Presidents on Energy Independence

It is important to note that although the US was not dependent on West Asian oil per se given that a large part of its oil imports were sourced from countries in its region, the fungibility of oil nevertheless meant that irrespective of where the disruption, if any, of supplies occurred, the stability of the entire oil market was affected as it led to a spike in prices. Hence, although primary sources of the US' oil imports was not the West Asian oil producers, the instability of the region had an impact on the US' economy as it meant higher oil import bills.²

However, it was the next President, Gerald Ford, who American analysts believe, actually tried to usher in real energy independence. According to them, he was the first president who 'proposed firm but necessary measures designed to achieve energy independence for the US by 1985, and to regain our position of world leadership in energy'³ based on a ten-year plan to build 200 nuclear power plants, 150 coal-based power plants, 30 big oil refineries and 20 synthetic fuel plants. Moreover, the Trans-Alaskan oil pipeline was approved, along with stringent fuel efficiency standards for the automobile industry.⁴

Ford's successor, Jimmy Carter, despite being perceived by his detractors as a 'weak' President, adopted a more aggressive policy towards energy independence, which in fact reflected that of Nixon's. In his Crisis of Confidence speech on July 15, 1979, he stated, 'I am tonight setting a clear goal for the energy policy of the United States. Beginning this moment, this nation will never use more foreign oil than we did in 1977 — never. From now on, every new addition to our demand for energy will be met from our own production and our own conservation. The generation-long growth in our dependence on foreign

² Stephen P.A. Brown, Hillard G. Huntington, 'Assessing the U.S. oil security premium', *Energy Economics*, Vol. 38, 2013, pp. 118-127.

³ Thomas Friedman, 'The First Energy President', *New York Times*, January 5, 2007, www.nytimes.com/2007/01/05/opinion/05friedman.html.

⁴ Daniel Yergin, 'The Prize: The Epic Quest for Oil, Money and Power', Free Press, 2009, pp. 642.

oil will be stopped dead in its tracks right now and then reversed as we move through the 1980s, for I am tonight setting the further goal of cutting our dependence on foreign oil by one-half by the end of the next decade'.⁵

Carter's aggressive posture was in many ways instigated by the events of late 1979. Iran, a valued US ally and one-half of its 'two pillar' Middle East policy, had been taken over by an anti-West Islamic regime under Ayatollah Khomeini, and the Shah was in exile. In Saudi Arabia, the other 'pillar', armed radicals opposed to the Saudi regime stormed the Great Mosque in Mecca. What was of even more concern was the Soviet invasion of Afghanistan, which brought the Cold War closer to the Persian Gulf theatre. The threat to the oil security of the US and the world was under greater danger than ever.

Therefore, the Carter Doctrine, delivered by President Jimmy Carter at the State of Union Address in January 1980, underscored his foreign and energy policy and was driven by three factors, namely, '...the steady growth and increased projection of Soviet military power beyond its own borders; the overwhelming dependence of the Western democracies on oil supplies from the Middle East; and the press of social and religious and economic and political change in the many nations of the developing world, exemplified by the revolution in Iran'. Alluding to the Soviet invasion on Afghanistan, and wider concerns that Moscow may someday occupy the Persian Gulf's oil fields, Carter went on to state, 'An attempt by any outside force to gain control of the Persian Gulf region will be regarded as an assault on the vital interests of the United States of America, and such an assault will be repelled by any means necessary, including military force'.⁶

⁵ Jimmy Carter, 'Primary Resources: Crisis of Confidence', televised speech, July 15, 1979, American Experience, www.pbs.org/wgbh/americanexperience/features/primary-resources/carter-crisis/.

⁶ Jimmy Carter, State of the Union Address 1980, Top Speeches of Jimmy Carter, January 23, 1980, <http://www.jimmycarterlibrary.gov/documents/speeches/su80jec.phtml>.

It was therefore, clear that a key objective of the US foreign policy in the Persian Gulf region was the protection of the oil-rich monarchies, particularly Saudi Arabia, against any external threat, which in turn was to ensure that the western world's oil system was secure.

When Ronald Reagan succeeded Carter, he replaced his predecessor's muscular energy policy with a more domestically oriented one, focusing on greater reliance on domestic resources and increasing the productivity of America's energy sources through deregulation, as opposed to Carter's policy of centralisation.

The next president, George H.W. Bush took over the presidency at a time when significant geopolitical shifts were taking place in the world. The Cold War was coming to an end, the Soviet Union was dismantled and the US was emerging as the sole super power. In 1991 President Bush unveiled an energy policy, which like that of many of his predecessors, promised to reduce the dependence of the US on foreign oil by increasing domestic oil production, including that from environmentally sensitive areas, and the use of nuclear power. In continuation of the Reagan policy, it advocated greater reliance on the marketplace and competition in energy sectors as against more controls.⁷ However, his presidency will be remembered more for its role in the 1991 Gulf war, which was seen as an attempt at containing Iraq's attempt to control the region's oil and preserving Saudi Arabia's position as guarantor of the world's oil supply at affordable prices. The fact that US oil companies were the largest beneficiaries in the post-war period in Iraq, led to speculation on the real purpose of the US' decision to go to war, particularly given President Bush's linkages with the oil industry.

In many ways, the next President, Bill Clinton's energy policy, is seen as a blueprint on which the current Obama administration's energy policy is based, wherein environmental goals were integrated into a larger

⁷ An Energy Overview - Governmental Energy Policies, Library Index, <http://www.libraryindex.com/pages/1484/An-Energy-Overview-GOVERNMENTAL-ENERGY-POLICIES.html>.

economic policy. It was with the Clinton administration that the concept of green energy was pushed, with focus being on restricting the use of fossil fuels and encouraging the development and use of renewable energy, and increasing energy efficiency. It was also under Clinton that the Kyoto Protocol was negotiated and signed, under which the US was required to reduce its greenhouse gas emissions to seven per cent below 1990 levels by 2012, although congressional opposition blocked the protocol from being submitted for ratification.⁸ In fact, it was during his presidential campaign that Clinton said that he wanted to wean the nation from its reliance on coal and oil and move the nation to a cleaner, less costly alternative energy path based on natural gas, and was keen on encouraging the development of renewable resources. At the same time, he wanted an expanded American role in the global market for pollution control equipment and services, the long-term goal being to make the US more competitive vis-à-vis its competitors.⁹

When George W. Bush took over as President in 2001, the US oil imports had increased, provoking great concern about the country's long-term energy supply. Hence, when the terrorist attack on September 11, 2001 took place, and subsequent events saw fissures emerging between US-Saudi relations, it prompted the US to expand its West Asia policy to a war against terrorism, under which it attempted to promote democracy, seen by many as an attempt for regime change, to advance the principle of market economy across the region; to ensure that its oil supplies, and more importantly, its access and control over the energy-rich region was secure.¹⁰

⁸ Frances B. Smith, 'Energy Dependence and the Role of Government', A paper prepared for Hillsdale College's Free Market Forum, September 25-26, 2008, www.hillsdale.edu/images/userImages/.../Page.../Smith_2_Final.doc.

⁹ Keith Schneider, 'The Transition: Energy Policy; Clinton to revamp Energy Dept. Role', New York Times, November 23, 1992, <http://www.nytimes.com/1992/11/23/us/the-transition-energy-policy-clinton-to-revamp-energy-dept-role.html?pagewanted=all&src=pm>.

¹⁰ Pierre Noel, 'The New US Middle East Policy and Energy Security Challenges', *Politique étrangère*, February, 2006.

In May 2001, the National Energy Policy, better known as the Cheney Report, named after the vice president and the person the President put in charge of the country's energy security policy, was released. While the Plan made all the right noises about conservation, energy efficiency and the development of renewable energy in seven out of its eight chapters, the last chapter, titled 'Strengthening Global Alliances: Enhancing National Energy Security and International Relationships' gives a different picture and in fact became the hallmark of the US energy and foreign policy. On page 3 of chapter 8, the report states:

We should not, however, look at energy security in isolation from the rest of the world. In a global energy marketplace, U.S. energy and economic security are directly linked not only to our domestic and international energy supplies, but to those of our trading partners as well. A significant disruption in world oil supplies could adversely affect our economy and our ability to promote key foreign and economic policy objectives, regardless of the level of U.S. dependence on oil imports. Our energy security also depends on an efficient domestic and international infrastructure to support all segments of the energy supply chain. We can strengthen our own energy security and the shared prosperity of the global economy by working cooperatively with key countries and institutions to expand the sources and types of global energy supplies.¹¹

The report then went on to state that given that 55 per cent of the US' oil is supplied by four countries, namely, Canada, Saudi Arabia, Venezuela and Mexico, the security of the US energy supply is enhanced by, among others, several factors characterizing our diplomatic and economic relationships with our four top suppliers. These factors range from geographic proximity and free trade agreements to integrated pipeline networks, reciprocal energy-sector investments, 'shared security commitments, and, in all cases, long-term reliable supply relationships'.¹²

¹¹ National Energy Policy, Report of the National Energy Policy Development Group, May 2001, <http://www.wtrg.com/EnergyReport/National-Energy-Policy.pdf>.

¹² Ibid.

Finally, in its recommendations, the report states, 'The NEPD Group recommends that the President make energy security a priority of our trade and foreign policy'.¹³

Although the US was less dependent on the Persian Gulf region for its oil supplies, and had steadily been reducing its dependence on the region, it did not prevent it from consistently viewing the region to be of strategic significance for two reasons. First, its major allies were, and continue to be, largely dependent on oil imports from the region, and second, because of the region's position as a key exporter of oil and hence prices. Any disruption in production due to local or regional issues would have an immediate impact on world oil prices, and for a large oil importer like the US, it was in its interest to ensure that prices were kept at affordable rates.¹⁴ Moreover, to serve its energy security, Washington was ready to do whatever was required, including undertaking military interventions.¹⁵

When Barack Obama took over the presidency in 2009, the US was already reeling under the impact of the economic recession that had taken over the western countries. Although the US, hit by the European financial crisis, was less dependent on oil imports, having cut consumption, high costs at the pump was a matter of concern for the economy. Hence, Obama's campaign rhetoric focused on economic recovery as well as the re-emergence of America as a global energy leader.

The energy policy adopted by him during his first term underscored the point that a global race was underway in taking over the leadership over the development and manufacture of clean energy technologies, with countries like China and even India playing to win. He exhorted the American people to don the mantle of energy leader again. In his

¹³ Ibid.

¹⁴ Ibid.

¹⁵ Michael T Klare, *The Bush/Cheney energy strategy: Implications for U.S. foreign and military policy*, *International Law and Politics*, Vol 36, 2004, pp 395-493.

State of the Union address, the President proposed an ambitious but achievable standard that by 2035, the US would generate 80 per cent of electricity from a diverse set of clean energy sources – including renewable energy sources like wind, solar, biomass, and hydropower; nuclear power; efficient natural gas; and clean coal, and called for investors to move billions of dollars into the clean energy economy, creating jobs across the country, and reducing air pollution and greenhouse gas emissions. In his 2011 Blueprint for a Secure Energy Future, the administration outlined the government's priority as maintaining America's leadership in R&D, which was critical to winning the future and deploying innovative technologies that would create quality jobs and move towards clean energy economy that would further reduce the country's reliance on oil.¹⁶

Despite the focus on renewable and alternative energy resources, hydrocarbons, particularly oil, and the need for imports, would continue to be an important area for the country's energy policy. Obama, like his predecessors, has talked about the need to free America from oil import dependency, especially from the Persian Gulf region, and advocated increasing domestic production of hydrocarbon resources by opening up environmentally fragile areas in Alaska and the Gulf of Mexico.¹⁷ But, as he stated in his first address to the nation after winning his second term, his strategy towards achieving 'energy independence' was based on the natural gas boom in North America, and not on the need to reduce energy imports from other regions.¹⁸

What had changed? Essentially, the change lies in the breakthrough in horizontal drilling techniques combined with developments in hydraulic fracturing (fracking) technology, which increased the economic feasibility

¹⁶ Blueprint for a Secure Energy Future, The White House, March 30, 2011.

¹⁷ 'Obama Announces Plans to Achieve Energy Independence', The Washington Post, January 26, 2009, www.washingtonpost.com/wp-dyn/content/article/2009/01/26/AR2009012601147.html?sid=ST2009012601175.

¹⁸ Obama's 2013 State of the Union Address, The New York Times, February 12, 2013, <http://www.nytimes.com/2013/02/13/us/politics/obamas-2013-state-of-the-union-address.html?pagewanted=all>.

of shale gas. As the US has substantial shale formations, and has seen a rapid increase in the production of shale gas, there are reports from their Department of Energy (DoE) that with a combination of energy efficiency measures and huge production of shale gas as well as oil, it would not be long before a gas-driven US would be able to reduce, indeed even end, its oil imports from the conflict ridden Persian Gulf region, and restrict its import sources to its neighbourhood.

As a result, despite the fact that almost all US presidents since Nixon have been talking about the need for energy independence, or rather, the need to reduce dependence on the Persian Gulf for its oil imports, it is for the first time that the goals are perceived to be realisable over the next two or three decades. This has been based on a policy that combines a number of factors including a resurgence of oil production in the US, including from areas that were hitherto closed due to the fragility of the environment, the commercial viability of US shale gas production as well as Canadian unconventional oil and gas resources, along with greater efficiency standards in energy consumption across the board and the wider spread of renewable energy.

Is this goal of energy independence achievable?

In May 2012, Maria van der Hoeven, the IEA Executive Director, referred to North American oil supply as a real 'game changer' and said that the supply growth looked higher than expected in both absolute and relative terms.¹⁹ However, what about the US? Van der Hoeven did not specify the US per se.

The US consumes roughly 19 mbd of oil, which though less than the 20.8 mbd it consumed in 2005, is almost double that of China, the second largest consumer of oil.²⁰ From 1970 to 2008, the country's

¹⁹ Maria van derHoeven, at launch of the Medium-Term Oil Market Report 2013, London, May 14, 2012, <http://www.iea.org/newsroomandevents/speeches/MTOMR2013Launch.pdf>.

²⁰ Short-term Energy Outlook, US Energy Information Administration, March 12, 2013, http://www.eia.gov/forecasts/steo/report/us_oil.cfm.

crude oil and natural gas liquids production declined from 11.3 mbd in 1970 to 6.7 mbd in 2008. After 2008, production started picking up and during 2009-2011, the production increased by over 1.1 mbd to 7.8 mbd in 2012 with half of the increase comprising crude oil. The balance has to be imported. The decline in consumption was possible due to a combination of high prices and increase in production from tight onshore formations, which followed the rapid growth of natural gas production from similar types of resources, made accessible by employing hydraulic fracturing (fracking) and horizontal drilling techniques.²¹ Although the sustainability of future production will depend on a number of factors such as the actual level of resources, the geological formations and the difficulty in extracting them, and the evolution of the technologies and associated costs involved to recover them, the EIA Reference case projects continued growth in production, followed by a decline after 2020, although the high growth scenario indicates that production will continue to grow beyond 2020.²²

The report further states that the net imports of liquid fuels of the US will be eliminated in the mid-2030s, and that it will become a net exporter of such fuels by 2040. Given that the US will continue to be one of the largest consumers of oil, it will achieve the above by a combination of increased production of liquid fuels, switching to natural gas fuels for transportation (road, rail, and sea), as well as significant improvements in the fuel efficiency of new vehicles beyond 2025, as well as greater market penetration of biofuels and other non-petroleum liquids. In fact, it is in the gas sector that projections of increased production are most encouraging. The EIA 2012 report states that due to the application of new technological advances in shale plays, shale gas production (in the US) has increased from 23 per cent or 5

²¹ Howard Newman, 'The U.S. Energy Revival in a Global Context', The Aspen Institute Program on the World Economy, Aspen Institute & Pine Brook, August 20, 2012, <http://pinebrookpartners.com/wp-content/uploads/2012/09/The-U-S-Energy-Revival-in-a-Global-Context.pdf>.

²² Annual Energy Outlook 2013, US Energy Information Administration, April 15 - May 2, 2013, http://www.eia.gov/forecasts/aco/IF_all.cfm#petroleum_import.

trillion cubic feet per year (tcf/y) in 2010 to 49 per cent or 13.6 tcf/y in 2035, with the potential to go up to 2.5 tcf/y.²³

However, the report cautions that regardless of how much the US is able to reduce its reliance on imported liquids, it will not be entirely insulated from price shocks that affect the global oil market.²⁴ Given that oil prices are set by global markets, regardless of where it is produced, any disruption in production or supply would lead to price hikes that would still be felt by American consumers. Therefore, some analysts advocate another means by which the US' energy independence could be assured – by ending reliance on oil altogether by employing a clean energy strategy, which could cut America's oil consumption by 7 mbd by 2030. The Obama administration has taken a substantial step in that direction. In November 2011, the president announced new efficiency standards for passenger cars and light trucks beginning 2017, which would reduce America's oil consumption by 1.7 mbd, according to the US Environmental Protection Agency. If this is extended to medium and heavy-duty trucks, and large numbers of heavy trucks were switched from diesel to natural gas, this would result in more savings.²⁵

With regard to the US' shale revolution, which formed the basis of America's 'energy independence' strategy, while it will allow the US to cut imports drastically, it will not be able to meet the country's overall demand. According to the US EIA 2012 estimates, the country has undeveloped shale gas reserves of 750 trillion cubic feet (or 20 trillion cubic metres) over and above conventional and other unconventional gas reserves of 300 tcf (8.5 tcm). Based on these reserves, several statistics are being put out on the amount of liquid fuels that the US can produce, ranging from 3 mbd to 7.5 mbd by 2019, and although production is set to decline after that, crude oil production is expected

²³ AEO2012 Early Release Overview, [http://www.eia.gov/forecasts/aeo/er/pdf/0383er\(2012\).pdf](http://www.eia.gov/forecasts/aeo/er/pdf/0383er(2012).pdf).

²⁴ Ibid.

²⁵ Ibid.

to remain above 6 mbd through 2040.²⁶ Moreover, this is contingent not only on the price of oil being around the \$60-80 per barrel range, but will also entail around 20,000 wells in order to produce 1 mbd. Given that each well costs \$5 million, the investment required will be between \$100 -500 billion, as well as additional capital for rigs, infrastructure etc.²⁷

A report published by Credit Suisse, while painting an even more optimistic picture of the US energy sector, nevertheless questions whether the US can indeed become energy independent over the next two decades. While the report states that the US oil production could reach up to 10 mbd by 2020, including shale plays, sustaining such production levels would depend on the price of oil being around \$95 a barrel to fund the capital expenditure required. However, given that oil recoveries, as distinct from gas recoveries, would be less substantial, the chances of oil prices falling below the break-even benchmark price of \$80 a barrel are less.²⁸ On the other hand, since much of the US energy independence projections rests on the revolution in gas production, gas prices, ironically, as a consequence of the volumes expected from shale gas, may have an impact on the US economy. However, if the price of gas remains low, there will be little incentive for the gas sector to invest in further growth, which in turn will cause shale gas development to slow down, unless the gas market grows significantly.²⁹

Nevertheless, the EIA has projected that the US will become a net exporter of LNG from 2016 with exports increasing to 4.6 bcf per day in 2027. Moreover, it will also become a net exporter of natural

²⁶ Ibid.

²⁷ Ibid and AEO 2013 early release overview, US Energy Information Administration, December 5, 2012, http://www.eia.gov/forecasts/aeo/er/early_production.cfm.

²⁸ Edgar Ang, 'Energy Independence Day', Bakken Oil Business Journal, September 11, 2012, <http://bakkenoilbiz.com/oil-drilling/energy-independence-day/>

²⁹ Gal Luft & Anne Korin, 'The Folly of Energy Independence', The American Interest, July/August 2012, www.the-american-interest.com/article.cfm?piece=1266.

gas from 2020 (to Mexico). Exports will be facilitated due to a combination of an increase in the use of LNG in markets outside North America and low US natural gas prices in comparison to other global markets.³⁰

For example, natural gas prices in North America declined from more than \$12 per million metric British thermal units (mmBtu) in 2008 to less than \$3/mmBtu during 2012, although prices in Asia and Europe remain high.³¹ Asian prices at the end of 2012 was around \$12.80 (mmBtu), albeit down from \$18/mmBtu in May 2012,³² while in Europe, natural gas prices were \$11.8/mmBtu at the end of 2012.³³ These large price differences have made foreign buyers pay due consideration to US supplies.

No doubt, there are some downsides to this changed energy scenario, such as a drop in nuclear, solar and wind powered energy generation, which formed the bedrock of the US energy policy under the first Obama administration. Moreover, the adverse environmental consequences of fracking have caused some American states to oppose the development of shale resources.

However, according to Adam Siemenski who has been nominated by President Obama to head the US Energy Information Administration, the increased oil output, together with slower consumption, has already reaped some dividends. Increased domestic output of oil and gas has led to a fall in imports and will cut the US' trade deficit and buttress the dollar. For example, a drop of 4 mbd in oil imports at around

³⁰ Ibid.

³¹ Deloitte studies the global impact of US LNG exports, Oil & Gas Financial Journal, January 8, 2013, <http://www.ogfj.com/articles/2013/01/deloitte-studies-the-global-impact-of-us-lng-exports.html>.

³² Oleg Vukmanovic, 'Global LNG-Asian prices steady as supply tightens', Reuters, October 12, 2012, <http://www.reuters.com/article/2012/10/12/markets-lng-idUSL5E8LCLQL20121012>.

³³ Europe Natural Gas Import Price, Y Charts, February 2013, http://ycharts.com/indicators/europe_natural_gas_price.

\$100 per barrel around 2020, would cut \$145 billion off the deficit. More importantly, the change in the energy sector has provided a fillip to employment. According to a report that consultants IHS Global Insight prepared for America's Natural Gas Alliance, in 2010 the industry supported more than 600,000 jobs, with a concurrent drop in unemployment.³⁴

However, whether the US will be able to convert itself into a major oil and gas exporter, will depend on several issues. Currently, the US' capability to export is severely limited as it only has one export facility, which is in Alaska, while a recently approved LNG export terminal in Louisiana will add only one other terminal once it is completed in 2015. Many more are on the anvil, with Cheniere Sabine Pass, which has converted its import terminals into liquefaction terminals for export, planning to export around 16 million tonnes per annum (mtpa) between the years 2015-18. It has already signed contracts with BG, Gas National, Kogas and GAIL India, and has plans to set up a second liquefaction terminal in October 2013 with a three-train facility, which will be ready for exporting 13.5 mtpa by 2017. Apart from Cheniere, other companies have applied for seven more LNG projects, while another five potential projects are also being planned.³⁵

However, the success of the US' status on a potential gas exporter is contingent upon obtaining clearance from government regulators. While there are several agencies which have to grant clearances associated with various environmental clearances, the most important ones are the Federal Energy Regulatory Commission (FERC), which permits the construction and operation of LNG terminals among others, and

³⁴ Rich Miller, Asjlynn Loder and Jim Polson, 'Americans Gaining Energy Independence With U.S. as Top Producer', Bloomberg Businessweek, February 7, 2012, www.businessweek.com/news/2012-02-07/americans-gaining-energy-independence-with-u-s-as-top-producer.html.

³⁵ James Henderson, 'The Potential Impact of North American LNG Exports', The Oxford Institute for Energy Studies, NG68, October 2012, <http://www.oxfordenergy.org/wpcms/wp-content/uploads/2012/10/NG-68.pdf>.

the Department of Energy Office of Fossil Energy (DoE/FE), which gives the right to export products, after ensuring that it is in the public interest. Furthermore, approval is required for countries with which the US has signed Free Trade Agreements (FTA) and is usually automatic, while the other is for countries with which there are no such agreements. The second is understandably more complex, although there is a provision that conditional authorisation for exports to non-FTA countries can be granted, which however can be revoked. Since Cheniere obtained both the FERC and DoE/FE clearances, it can export to non-FTA countries, including India.³⁶

Yet another factor that may have an impact on the US LNG gas exports is Canada's export potential. Canada has a reserve base of 70-119 tcf (2-3.4 tcm) apart from huge unconventional reserves, which according to the government is around 78 tcf (2.2 tcm), although these may be underestimates. Given that Canada's exports to the US are declining following the latter's discoveries, Canada is keen on exporting to other markets, although pricing, could present a hurdle. While Canada is keen to sign contracts that are oil-linked rather than Henry Hub (HH)-related prices in order to cover the high capital costs of greenfield projects, in contrast with the US' lower HH-linked prices, its clients, mainly Asian buyers, are reluctant to pay oil-linked prices as they are higher. Unless a compromise pricing can be worked out, this may defer exports from 2015 to 2017.³⁷

Therefore, while North America may become independent by 2030, BP forecasts that the US per se may not. This is buttressed by the EIA forecast, which states that the US will continue to be dependent in oil imports, at least for the foreseeable future; and with regard to its shale gas revolution, the EIA says that while there is a very good possibility of the US becoming a net gas exporter, the volumes, which in turn are dependent on a number of technological, financial and environmental factors, will depend on how the shale gas industry progresses.

³⁶ Ibid.

³⁷ Ibid.

Impact of Energy Independence on the US Foreign Policy

An important aspect of the energy 'independence' of the US is the way it will change the perception in which it is viewed in the foreign policy domain. Prior to the shale revolution, the US, hit severely by the financial crisis, was being seen as a descendant power, unable to deal effectively with the many crises emerging in various regions, most notably in the West Asian region. It is important to remember that the free flow of oil from that region was a key imperative of the US foreign policy. Now, poised to become a potential oil and gas exporter over the next decade, it has removed that concern, and it will be able to take decisions based on its interests alone, without energy supply pressures weighing in.

Secondly, the US' freedom from oil imports will have a significant impact on the Middle East policy. Until the First World War, the US had largely ignored the region, and in fact, until 1940, the region's oil production amounted to only five per cent of the world oil, compared to the 63 per cent from the US. This changed during and especially after the US entered the Second World War, when concerns were expressed that the US was running out of oil. However, it was only towards the end of the war that Washington forged a close relationship with the Saudis, with a report in the *New York Times* stating that Saudi oil alone could make the country more important to American diplomacy than almost any other smaller nation.³⁸ Part of this was the explosion in oil demand following the war and the huge production from the Saudi concessions of the US companies there. Meanwhile, with the onset of the Cold War, and the Soviet expansion in the Gulf, the region was brought to centre stage. For the US, it became imperative that the region's oil be preserved and protected for the economic survival of the Western world, which was reeling under the impact of the war. Saudi Arabia, in particular, was seen by the US as the 'richest

³⁸ Yergin, 'The Prize', Chapter 20, pp 373-387.

economic prize'.³⁹ Since then, notwithstanding presidential rhetoric on the need to free America from the tyranny of Persian Gulf oil imports, a special relationship was forged between the US and Saudi Arabia, which continues till today, albeit with stresses and strains, brought on by incidents such as the 1973 oil embargo, the 1991 Iraq-Kuwait war and the deployment of US troops in the Kingdom, which triggered off an internal debate about Saudi independence, and was seen as a conflict between the West and Islam, and finally the 9/11 attack on the US by Arab fundamentalists, the majority of who were Saudi nationals.

However, the energy revolution brought on by shale reserves and fracking technology has raised concerns whether this relationship can endure. Several Western voices have hailed the advent of a new era of independence that will allow the Western world to free itself from the shackles of Arab oil. However, the US' commitment to ensure the free flow of oil from the region be it for adequate supplies to their allies, to ensure that the price of oil remained affordable as well as for keeping the sea-lanes safe, have prevented them from abandoning the region. The US has denied shifting its attention away from the West Asian region, and in fact, according to a Department of Defense report on its budget priorities, the US plans to 'rebalance its force structure and investments toward the Asia-Pacific and the Middle East regions while sustaining key alliances and partnerships in other regions'.⁴⁰

Given the huge Chinese dependence on West Asia for its energy supplies, it is unlikely that the US will give up the region, leaving it open for the stronger Chinese influence. Moreover, the US has, under the 1974 US-Saudi Arabia Joint Commission of Economic Cooperation, committed to a special relationship with the Saudis. Following the 1973 Arab oil embargo and price increases, the agreement was signed on June 8, 1974, under a Joint Statement issued by the US Secretary of State and the Crown Prince and Deputy Prime Minister of Saudi Arabia, wherein

³⁹ Ibid. Chapter 21, pp 391-412.

⁴⁰ 'Defense Budget: Priorities and Choices', Department of Defense, January 2012, http://www.defense.gov/news/Defense_Budget_Priorities.pdf.

both sides agreed to forming a close bilateral political relationship, whereby the US would assist Saudi industrialisation and development while recycling petrodollars, and facilitate the flow of American goods, services, and technology to Saudi Arabia. In a statement before the subcommittee on the Near East and South Asia, House Committee on Foreign Affairs, on August 7, 1974, the Assistant Secretary of State for Near Eastern and South Asian Affairs noted that ‘in helping the Saudis to find a way to invest their large and growing financial reserves, we will give them added incentive to continue to produce oil in the quantities needed to meet world demands at stable, and hopefully lower, price levels’.⁴¹

The Pivot Asia Policy:

The energy independence factor of the US may have contributed to the timing of the US’ announcement of its ‘rebalancing’ or ‘pivoting’ from West Asia to the Asia-Pacific region. The rationale provided by the US for its rebalance or return to the Asia-Pacific region are the following:

- Asia is the destination of six of the ten fastest growing major export markets of the US, and 60 per cent of the US goods exported go there.
- The region is home to five of the eight states possessing nuclear weapons.
- Three of the countries located in the region have the world’s top six defence budgets, six of the world’s largest militaries (the US, China, Vietnam, North Korea, South Korea and India), two conflict areas from the Cold War era (the Taiwan Strait, the Korean Peninsula), continuing tensions between India and Pakistan, and territorial disputes stretching from Japan through the East and South China Seas, into South Asia.

⁴¹ The U.S.- Saudi Arabian Joint Commission On Economic Cooperation , Report of the Comptroller General of the United States, United States General Accounting Office, March 22, 1979, P2, <http://www.gao.gov/assets/130/126054.pdf>.

- Events in Asia are defining the security and prosperity of the world; Americans have identified Asia as the most important region to US interests as against Europe until 2011.⁴²

In fact, President Obama recently stated that Asia marked the future and was crucial to restoring America's ailing economy, which is reeling from a \$15 trillion debt burden. Moreover, with a planned \$487 billion cut in defence forces over the next decade, the US will have to do more with less.⁴³

Nevertheless, the popular perception is that the US' rebalancing is directed against China, which has challenged the global status of the US by narrowing the economic and strategic gap between them. Hence, the US wants to deploy/strengthen its military forces, particularly its naval forces, to counter a rising China that is displaying an increasingly aggressive stance in the region that it considers its backyard, notwithstanding the US denial and claims that the new focus of its military and political attention is meant to refresh its relations with its Asia-Pacific allies that have complained of being neglected in recent years. However, China's rapid military modernisation over the last decade, particularly its navy, and the clashes that are increasingly taking place between Beijing and several of the regional nations, including Japan, Vietnam, and the Philippines, have raised concerns in Washington about China's intentions. Hence, as a recent press statement put out by the State Department says, 'The United States has a national interest in the maintenance of peace and stability, respect for international law, freedom of navigation, and unimpeded lawful commerce in the South China Sea. We do not take a position on competing territorial claims over land features and have no territorial ambitions in the South China

⁴² David J. Berteau, Michael J. Green, et al, 'U.S. Force Posture Strategy in the Asia Pacific Region: An Independent Assessment', Center for Strategic and International Studies, August 2012, http://csis.org/files/publication/120814_FINAL_PACOM_optimized.pdf.

⁴³ Jonathan Pearlman, 'US will shift focus from Middle East to Asia Pacific, Barack Obama declares', The Telegraph, November 17, 2011, <http://www.telegraph.co.uk/news/worldnews/barackobama/8895726/US-will-shift-focus-from-Middle-East-to-Asia-Pacific-Barack-Obama-declares.html>.

Sea; however, we believe the nations of the region should work collaboratively and diplomatically to resolve disputes without coercion, without intimidation, without threats, and without the use of force'.⁴⁴

Nevertheless, the shale gas revolution has given the US the opportunity to recalibrate its strategy without being too concerned about its own energy supplies. Decades of pursuing a foreign policy in which energy security was a major factor, will undergo some changes. There is no doubt that the US is unlikely to give up its control over the global energy market. On the other hand, its adoption of a supplier's avatar will only strengthen its own position while at the same time providing more energy security to its allies and partners will be an important economic and strategic asset.

⁴⁴ Patrick Ventrell, South China Sea, Press Statement, US Department of State, August 3, 2012, <http://www.state.gov/r/pa/prs/ps/2012/08/196022.htm>.

III CHINA'S ENERGY DILEMMA

Introduction

China's policymakers believe that their country's political future and regime stability is premised on the sustenance of the country's economic performance and steady rise in their standard of living. As Premier Wen Jiabao said during the National People's Congress in March 2011, that ensuring GDP growth of around 8 per cent annually and containing inflation was a top priority of the government. 'This problem concerns the people's well-being, bears on overall interests and affects social stability. We must, therefore, make it our top priority in macroeconomic control to keep overall price levels stable'.¹ Wen's remarks came at a time when reports of protests have become increasingly frequent, with workers demanding higher wages or better conditions, causing concern in policymaking circles. According to a report, China was rocked by an estimated 180,000 protests and mass riots in 2011, an increase of more than four times the tally of a decade earlier, triggered by, according to some reports, the economic slowdown as employees demanded payment of overdue wages from financially struggling companies, or compensation following the closure of factories in coastal provinces and their move to lower-cost cities.²

It is in this context that the critical role played by energy in industrial and economic growth has to be seen. As has been outlined in the introductory chapter, access to energy resources, therefore, is one of

¹ 'China's social inequalities, a "serious problem", says Wen Jiabao', AsiaNews.it, March 5, 2011, <http://www.asianews.it/news-en/China%E2%80%99s-social-inequalities,-a-%E2%80%9Cserious-problem%E2%80%9D,-says-Wen-Jiabao-20949.html>.

² Tom Orlik, Unrest Grows as Economy Booms, Wall street Journal, September 26, 2011, <http://online.wsj.com/article/SB10001424053111903703604576587070600504108.html>, and David Barboza and Keith Bradsher, Riot at Foxconn Factory Underscores Rift in China, New York Times, September 24, 2012, http://www.nytimes.com/2012/09/25/business/global/foxconn-riot-underscores-labor-rift-in-china.html?_r=0.

the most important drivers of the Chinese government's policy, and should be seen more as a means to achieve its economic goals, and not seen as a means for garnering geopolitical influence. In that sense, China's approach to energy security is quite different from that of the US. While self-dependence is the mantra of the Chinese leadership which emanates from an intrinsic distrust of the international market which is perceived as being controlled by the US and its Western allies, China has realised that domestic hydrocarbon resources will not be sufficient to fuel its economic growth and that it would have to rely on energy imports. Second, it would need to ensure that its energy imports are transported safely to its shores. And finally, the impact of the growing use of fossil fuels on its environment is also an area of concern. Hence, the third component of its energy security policy is demand management and reducing the use of fossil fuels in its energy basket.

China's energy scenario

A quick glance at China's energy demand as against its domestic energy reserves in conjunction with its growing appetite reveals the need for urgency to gain access to energy resources.

China's energy demand growth is projected to grow at 3 per cent annually from 2010 to 2030, compared to 6.6 per cent during 1990-2010, due to slowing GDP growth and rapid improvement in energy intensity. However, this is almost double the projections of world primary energy consumption, which is projected to grow by 1.6 per cent per year, making China the highest energy consumer in the world.³

No doubt, China has huge reserves of coal, which in 2011 were estimated at some 128 billion tonnes, which is equivalent to about 13 per cent of the world's total coal reserves. However, with consumption at around four billion tonnes per year – the largest in the world, and projections that China will run out of reserves in less than 50 years⁴,

³ BP Energy Outlook 2030, January 2012, P 47, http://www.imemo.ru/ru/conf/2012/03022012/03022012_RUL_B.pdf.

⁴ Coal: Resources and Future Production, EWG Paper No. 1/07, Energy Watch Group, March 2007, p. 13, at <http://www.energywatchgroup.org/files/Coalreport.pdf> (Accessed Jan 5, 2013)

the country has had to perform turn to imports from 2009. In 2011, China imported 240 million tonnes of coal, about 18 per cent higher than 2010 levels.⁵

However, it is the country's lack of sufficient oil and gas reserves that is a bigger source of concern for Chinese policymakers. According to the BP 20130 World Energy Outlook, the demand for oil in China will grow by 7 mbd to 17 mbd in 2030, surpassing the US in 2029.⁶ Despite having some 20.4 billion barrels of proven oil reserves as of January 2012, and producing an estimated 4.3 million barrels a day (mbd) of crude oil, China requires access to huge amounts of resources to feed its fast-growing economy. In 2009, it replaced Japan to emerge as the second largest consumer of oil, as well as overall energy resources, so much so that in 2012, it produced 4.16 mbd and imported 5.43 mbd. According to projections, imports will be around 6 mbd in 2013, and domestic production is expected to come down to 4 mbd by 2015. However, worried about growing pollution levels, a five-year plan released in January 23m 2013, states that China will limit its reliance on crude imports to 61 per cent, and replace it with cleaner fuels, such as natural gas.⁷

As in the case of oil, China became net gas importer too, albeit only in 2007, with imports increasing gradually. Although the share of gas is limited in its overall energy basket, China imported around 16 per cent of its total gas consumption in 2010— about 12.7 billion cubic metres (bcm) in the form of LNG and 4.4 bcm via pipeline from Turkmenistan. In 2011, imports rose by 31 per cent over 2010. LNG imports comprise around 16.6 bcm, with Australia accounting for the

⁵ China Analysis, Energy Information Administration, US Department of Energy, September 4, 2012, <http://www.eia.gov/countries/cab.cfm?fips=CH> (Accessed Jan 5, 2013).

⁶ BP Energy Outlook 2030, January 2013, http://www.bp.com/liveassets/bp_internet/globalbp/globalbp_uk_english/reports_and_publications/statistical_energy_review_2011/STAGING/local_assets/pdf/BP_World_Energy_Outlook_booklet_2013.pdf.

⁷ China, Petroleum Intelligence Weekly, Vol. LII, No. 4, January 28, 2013.

largest share at round 30 per cent, and Qatar accounting for 19 per cent, Indonesia for 16 per cent and Malaysia for 13 per cent. However, with gas usage expected to increase, the government has devised an emergency policy in case of natural gas disruption. (Is the policy “for natural gas disruption” or in case of natural gas disruption?) Consequently, gas pipeline networks have been increased all over the country, as well as its LNG re-gasification capacity. There are currently five LNG terminals in operation with a total re-gasification capacity of around 29 bcm, and six more terminals are reported to be under construction/expansion, which would increase China’s total LNG re-gasification capacity from around 29 bcm to over 50 bcm in a few years.⁸ Moreover, it has also constructed gas storage facilities in 2010. Three facilities with a total capacity of 1.4 bcm have been built, while 10 more facilities, with a total storage capacity of 24 bcm, are under planning/construction.⁹ China has also reportedly ordered four LNG tankers to cater for its growing LNG demand, and plans to have 10 more by 2016.

There are, therefore, three major challenges facing China’s energy security dilemma, which is not very different from the challenges faced by other large energy consuming, yet energy-deficient countries. The challenges are ensuring reliable supplies of energy resources, particularly oil and natural gas; ensuring secure access to these energy resources, and coping with the environmental impact as its use of fossil fuels increase.

While the challenge of energy supply has forced the Chinese leadership to seriously adopt the country’s long-term energy and resource security in the 12th Five-Year Economic and Social Development Programme for 2011-2015, China’s traditional path of industrialisation, which is based on high capital input, cheap labour, resource and energy intensive manufacturing, which causes damage to the environment, cannot be sustained due to pressure from the international world for a more

⁸ Ibid.

⁹ Ibid.

responsible and efficient use of energy. Hence, managing its energy security while trying to sustain its economic growth, which is crucial for regime continuity, remains one of the most serious tasks for the Chinese leadership.

China's energy strategy

China's energy security strategy can broadly be divided into two periods, the first, from 2001 to 2007, and the second from 2008 to the current period. After becoming a net importer of oil in 1993, the government launched the 'Going Out' strategy in 2001, encouraging Chinese companies to explore overseas opportunities to compensate for dwindling domestic oil and gas production. At the same time, the government was wary of the role played by the US in the international energy arena, perceiving events like the 2003 invasion of Iraq and its sanctions policy on Libya and Iran as attempts to control access to oil resources in West Asia/North Africa region. Moreover, the US' opposition to China National Offshore Oil Corporation's (CNOOC) bid to procure Unocal was also viewed as a hostile act.¹⁰

The basic themes of China energy strategy as enunciated in its 2007 energy policy was to give 'priority to thrift, relying on domestic resources, encouraging diverse patterns of development, relying on science and technology, protecting the environment, and increasing international cooperation for mutual benefit'. With regard to its 'going out' strategy, its states, '...it will, step by step, change the current situation of relying too heavily on spot trading of crude oil, encourage the signing of long-term supply contracts with foreign companies, and promote the diversification of trading channels'. Furthermore, China will support direct overseas investment by domestic firms. However, its concern over rising prices as well as its wariness over the US' stance is clear when it states, 'Every country has the right to rationally utilize

¹⁰ Christopher Burke, Johanna Jansson, & Wenran Jiang, 'Formulation of Energy Policy in China: Key Actors and Recent Developments', Centre for Chinese Studies, 2009, www.ccs.org.za/wp-content/uploads/2010/07/Burke-et-al-2009-Formulation-of-Energy-Policy-in-China.pdf.

energy resources for its own development, and the overwhelming majority of countries could not enjoy energy security without international cooperation’ and ‘it is necessary for the international community to foster a new concept of energy security characterized by mutual benefit and cooperation, diversified development and coordinated guarantee. In recent years, sharp fluctuations of oil prices on the international market have affected the development of the world economy’.¹¹

The second policy document on energy was released in late 2012. Despite some similarities from the earlier document, there is a marked difference in its tone, and certainly more confident. Affirming ‘China is now the world’s largest energy producer’, it goes on to state ‘China has built up a comprehensive energy supply system’ comprising of both hydrocarbons and new and renewable energy resources, and that ‘its universal energy service and civil energy use conditions have markedly improved’. It reiterates that its energy sector continues to face several challenges, including low resource endowment and environmental damage due to high consumption of fossil fuels. For instance, China’s per-capita share of coal, petroleum and natural gas account for 67 per cent, 5.4 per cent, and 7.5 per cent of the world averages, respectively. The energy security strategy would therefore, be focused on energy conservation and emission reduction, which would stress on scientific and innovative approach to energy consumption for economic development.¹²

The following issues are listed among the ‘grave challenges’ in the document: increasing dependence on foreign energy sources, particularly petroleum, which has risen from 32 per cent at the beginning of the 21st century to the current 57 per cent, sea-based transportation

¹¹ ‘China’s Energy Conditions and Policies’, Information Office of the State Council of the People’s Republic of China, December 2007, en.ndrc.gov.cn/policyrelease/P020071227502260511798.pdf.

¹² China’s Energy Policy 2012, Information Office of the State Council, The People’s Republic of China, China Daily, October 2012, www.chinadaily.com.cn/cndy/2012-10/25/content_15844539.htm.

of petroleum and cross-border pipeline transmission of oil and gas, price fluctuations in the international energy market, and weak emergency response capability. Finally it states that the problems faced by China in its energy sector are a result of the international energy competition.¹³

The document outlines the strategy to be adopted as giving priority to conservation, relying on domestic resources, encouraging diverse development, such as developing clean, low-carbon fossil energy and non-fossil energy in the energy mix as well as promoting efficient and clean utilisation of coal along with substitute energy resources in a scientific way. It promotes speeding up the optimisation of energy production and consumption mix, protecting the environment, promoting scientific and technological innovation, deepening reform, expanding international cooperation, and improving the people's livelihood.¹⁴

As in the 2007 document, with regard to its policy on external energy strategy, it states that China gives simultaneous consideration to both domestic and international energy development, works to increase the scope, channels and forms of international cooperation, enhances its capability to 'introduce' and 'go global', propels the establishment of a new international energy order and promotes mutually beneficial cooperation. Finally, as in the earlier document, it states that 'China upholds a policy of opening to the rest of the world in the field of energy', that is most likely an indication of its continuing wariness with regard to the US.¹⁵

While the 2012 document reflects more confidence, it does reflect some of the earlier issues, which it sees as a challenge, viz., energy transport and pricing of oil, both of which it perceives as being controlled by forces out of its control. Second, despite the emphasis on efficiency and conservation in its energy policy, as stated in the 2012 Energy White Paper, 'China will focus on curbing excessive

¹³ Ibid.

¹⁴ Ibid.

¹⁵ Ibid.

consumption of energy resources and achieve the comprehensive, balanced and sustainable development of the economy, society and ecology, (China will continue to strengthen) its efforts in energy conservation and emission reduction, and strive to raise the efficiency of energy utilization'.¹⁶

It was thereby acknowledged that fossil fuels would continue to be the mainstay of China's energy sector. More importantly, not only would domestic resources of fossil fuel be important, imports of the same would continue to play a major role in the country's energy policy and strategy. As a result, China's current energy security strategy, while in many ways is a continuation of its earlier one, is more nuanced, now.

To ensure guaranteed supplies for the long term, China's national oil companies (NOCs) have been instructed to purchase or gain access to oil and gas reserves across the globe. Since 2008, China has been pursuing bilateral oil-for-loan deals with several countries including Russia, Kazakhstan, Brazil, Bolivia, Venezuela, Ecuador, Angola and Ghana as well as gas-for-loan deal with Turkmenistan. China's crude oil imports grew rapidly over the last few years and peaked at 6 mbd in May 2012, compared to 5.1 mbd in 2011 and 4.8 mbd in 2010. While this comprises more than 50 per cent of overall consumption (China produced around 4 mbd of crude in 2011), according to projection, China is expected to import about 75 per cent of its crude oil by 2035.¹⁷

Like other major oil-importing countries, the West Asian region remains China's largest supplier of crude, although African countries, particularly Angola, are now being increasingly tapped as a part of China's energy supply diversification policy. In 2011, the Gulf region supplied 2.6 mbd or 51 per cent, while Africa provided 1.2 mbd or 24 per cent, the Asia-Pacific region 173,000 b/d or 3 per cent, and 1.1 mbd or 22

¹⁶ Ibid.

¹⁷ China Analysis, US Energy Information Administration, Department of Energy, September 4, 2012, www.eia.gov/countries/analysisbriefs/China/china.pdf.

per cent came from other countries, including Venezuela and Russia. In fact, Russia, along with Kazakhstan, are two sources of oil supplies that feature prominently in China's energy investment plans over the long term, as they both are neighbouring countries with common borders with China, and China is therefore, the obvious market for both. However, of the two, Russia is the more important, particularly because of the oilfields in East Siberia. Half of the current output of some 600,000 b\&d from these fields goes to China through a dedicated pipeline. More importantly, there are some 100 billion barrels of oil as well as substantial amounts of gas reserves under Russia's Arctic waters, according to estimates, albeit available only after a decade or more, which China would like to gain access to.¹⁸

Nevertheless, energy purchases from diverse sources are only a part of China's overall energy security strategy. Since the early 2000s, Chinese NOCs, with extensive political and financial support from the government, have been acquiring oil (and gas) through overseas investments and long-term contracts¹⁹ as part of its strategy to diversify and ward off future supply constraints as well as a hedge against price volatility. According to some analysts, another factor in its equity acquisition policy is to spread its risk by moving some of its foreign exchange reserves to higher-yielding assets from lower-yielding financial instruments.²⁰

Earlier, Chinese NOC strategy appeared to prefer doing business with states that had hostile relations with Western governments, thereby enabling them to gain access to resources more easily, and they often paid a premium for these assets.²¹ Recently, Chinese companies have

¹⁸ Focus, 'China looks outwards for energy', *Oil and Energy Trends*, Volume 38, Issue 1, January 2013, pp. 3-6.

¹⁹ See Note 17, EIA.

²⁰ ZhongXiang Zhang, 'China's Quest for Energy Security: Why are the stakes so high?', *Review of Environment, Energy and Economics*, January 31, 2013, <http://www.feem.it/userfiles/attach/2013131122104Re3-ZhongXiangZhang-20130131.pdf>.

²¹ John Lee, 'China's Geostrategic Search for Oil', *The Washington Quarterly*, Vol. 35, No.3, pp. 75-92.

also been seeking assets in North America, the first after the failed 2005 bid to acquire the American company Unocal. In a \$15.1 billion deal, CNOOC Ltd. has got clearance from the Canadian government to acquire Nexen Inc. The acquisition will not only give China access to Canada's oil sands, but will also allow it access to Nexen's production in the North Sea's Buzzard asset. Since Nexen is a major contributor to Brent production and hence a price setter, it will allow China to get timely information on Brent movements and develop a hedge against oil price volatility. At the same time, it gains international exposure that extends from North America's unconventional energy sector to West Asia and North Africa, given Nexen's assets in the Gulf of Mexico and Africa, besides adding billions of barrels to CNOOC's total reserves. Another Chinese NOC, Sinopec has also bought a 49 per cent stake in Talisman's UK North Sea business for \$1.5 billion.²²

China's asset acquisition policy is two-pronged. Part of it, particularly where it seeks to be a part of a consortium, is aimed at gaining technical know-how in areas where the Chinese NOCs lack such expertise, so that these NOCs will be able to explore and develop China's domestic resources located in difficult geological blocks, including for accessing coal bed methane and shale plays.

The second and more important motive is to influence global energy trading in both oil and gas. Given its huge demand, and growing imports, the price of energy resources is a matter of concern. With North American oil and particularly gas supplies expected to surge over the next few years, WTI and Brent benchmarks, as well as North American gas assets in that region will influence international prices. Therefore, it should not come as a surprise that Chinese NOCs are investing in North American, including US, assets, be it in companies with large reserves of oil and gas or hydrocarbon blocks. In fact, it is in Beijing's interest to see as much energy resources coming into the international market in order to keep prices affordable. China is spending \$17 billion

²² Justin Jacobs, 'North Sea deal gives CNOOC a supporting role in global oil trade', and Damon Evans, 'The rise of Chinese oil on the world stage', *Petroleum Economist*, September 2012, Vol 79, No.7, pp 22-23.

annually on natural gas imports, about half in the form of LNG, and is setting up a number of LNG receiving terminals in 2013.²³

Moreover, the safe passage of energy imports through sea lanes and chokepoints where the US is the dominant power is also an issue of concern. As a result, China's military, particularly its naval modernisation strategy, which hitherto was related to its Taiwan policy, is now increasingly oriented toward other issues such as asserting or defending China's territorial claims in the South China Sea (SCS) and East China Sea (ECS); enforcing China's view that it has the legal right to regulate foreign military activities in its 200-mile maritime exclusive economic zone (EEZ); protecting China's sea lines of communications, including those running through the Indian Ocean to the Persian Gulf, on which China relies for much of its energy imports; displacing US influence in the Pacific, and asserting China's status as a major world power.²⁴

China has recently adopted a more assertive policy on the South China Sea (SCS) area over which it stakes a historical claim, much of which is related to its energy security and the US' 'Pivot to Asia' policy.²⁵ It is also concerned that China could be easily blockaded by a foreign power due to its naval weakness.²⁶ After World War II, China, Indonesia, Malaysia, the Philippines and Vietnam have all staked claims to either all, or parts of, the SCS, with some nations even attempting to occupy some of the islands therein. But the disputes accelerated, particularly between China and Vietnam, following reports of substantial oil and gas reserves in the 1990s, with a number of confrontations having

²³ Benjamin Haas and Rakteem Katakey, 'China's Shale Gas No Revolution as Price Imperils Output: Energy', *The Washington Post*, February 19, 2013, <http://washpost.bloomberg.com/Story?docId=1376-M15S2M6K50XS01-0GK4G1LNJKV5RE8LMSKBJ4OADB>.

²⁴ Ronald O'Rourke, 'China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress', Congressional Research Service, December 10, 2012, www.fas.org/sgp/crs/row/RL33153.pdf.

²⁵ See LanxinXiang, 'China and the 'Pivot'', *Survival*, vol. 54 no. 5 | October–November 2012 | pp. 113–128

²⁶ Michael Pillsbury, *The Sixteen Fears: China's Strategic Psychology*, *Survival*, vol. 54 no. 5 | October–November 2012 | pp. 149–182

taken place between the navies of the two countries. According to some estimates, the region may hold up to 7.5-28 billion barrels of crude oil and 145-266 trillion cubic feet of natural gas, including undiscovered resources.²⁷ In August 2012, China raised the stakes by inviting foreign firms to bid for offshore blocks in an area which Vietnam claims lies within its exclusive economic zone, leading to a string of protests from Vietnam. It also set up an expanded army garrison on Xisha Island, the largest of the Paracels and more popularly called the Woody Islands.²⁸ On January 10, 2013, Chinese media reported that Beijing had also unveiled a plan to survey all marine and island territories for marine resources, and although the report indicated that the survey would be carried out throughout the country, it specifically mentioned the South China Sea, including all disputed marine territories. The report stated that the survey is expected to be completed by December 2016.²⁹

While some analysts believe that the move was aimed to allow Beijing to exercise its sovereignty over all land features in the South China Sea, which are also claimed by Vietnam, Malaysia and the Philippines, others believe it was linked to internal politics ahead of the leadership transition that took place in December.³⁰ However, following the announcement of the new Asia-centric policy of the US, the SCS has become linked with wider Sino-US strategic issues.³¹ In December 2012, India too jumped into the fray with the Indian Naval chief, Admiral D. K. Joshi,

²⁷ Henry Philippons, "Fueling China's Maritime Modernization: The Need to Guarantee Energy Security," *Journal of Energy Security*, December 14, 2011, www.ensec.org/index.php?option=com_content&view=article&id=332:fueling-chinas-maritime-modernization-the-need-to-guarantee-energy-security&catid=121:contentenergysecurity1111&Itemid=386

²⁸ Damon Evans, "Fresh storms bre in South China Sea", *Petroleum Economist*, September 2012, Vol 79, No. 7, pp. 26-27

²⁹ Xinhua News Agency, 10 Jan 2013, available at http://news.xinhuanet.com/2013-01/10/c_114317329.htm, last accessed on 10 January 2013.

³⁰ Damon Evans, "Fresh storms bre in South China Sea", *Petroleum Economist*, September 2012, Vol 79, No. 7, pp. 26-27

³¹ Leszek Buszynski, *The South China Sea: Oil, Maritime Claims, and U.S.-China Strategic Rivalry*, *The Washington Quarterly*, Vol. 35, Issue2 pp.139-156

after expressing concern over the rapid modernisation of Chinese forces, stated that the Indian navy was making contingency plans to protect Indian economic interests in the SCS and that it was prepared to deploy assets if required to protect the country's interests, particularly the oil assets allocated to it by Vietnam.³² China's 'rapid modernization' includes the DF-21D anti-ballistic missile designed to hit moving ships at sea, anti-ship cruise missiles, Russian-made Kilo-class non-nuclear-powered attack submarines as well as indigenously built nuclear-powered ballistic missile submarine of the Jin class or Type 094 and the Shang class nuclear-powered attack submarine, aircraft carriers – the Liaoning, which was purchased from the Ukraine. It may also have begun building its first indigenous aircraft carrier, which could achieve operational capability after 2015, and carrier-based aircraft such as the Russian Su-33 fighter, as well as surface combatants such as destroyers, corvettes, frigates and fast attack craft.³³

Nevertheless, despite its rapid naval modernisation, China realises that it will not be able to match the US' naval power for several years, and its vulnerability regarding the security of its sea-lanes, particularly through the Strait of Malacca, is a matter of concern, more importantly, following the announcement of the US' Pivot Asia policy. As a result, as part of its energy security strategy, China has been increasingly turning to its west. Long before the concept of a 'pivot west' policy, or 'march west'³⁴ was proposed by Wang Jisi, a prominent and influential international relations scholar, which essentially called for a re-set in China's focus from East Asia to Central, South and West Asia to avoid a military confrontation with Washington, China had been slowly but surely increasing its footprint in this region.

³² Manu Pubby, "Ready to protect Indian interests in South China Sea: Navy Chief", The Indian Express, December 4, 2012, <http://www.indianexpress.com/news/ready-to-protect-indian-interests-in-south-china-sea-navy-chief/1040119>

³³ See Note 10, O'Rourke.

³⁴ Yun Sun, 'March West: China's Response to the U.S. Rebalancing', Brookings, January 31, 2013, www.brookings.edu/blogs/up-front/posts/2013/01/31-china-us-sun.

The West Asian region has always been of strategic importance for Beijing because of its hydrocarbon resources. As its energy demand increases, despite its policy of diversification of sources, it will remain crucial for Beijing's energy security. Therefore, China has made huge investments in the region, and formed energy partnerships with resource-rich countries such as Saudi Arabia, Iran and Iraq. But even as the US is re-balancing its focus towards the Asia Pacific region, providing China with the opportunity to replace the US in the region as the most important player, there are concerns that now with West Asian oil no longer crucial for the US on the back of its shale revolution, it will provide Washington with more flexibility to deal with the region, and pursue regime change policies, which in turn will affect Chinese interests there.

China's policy, which has stood it in good stead with most governments thus far, may however be facing some stress in the post uprisings and upheavals that have taken place from 2011. While Beijing has always reiterated that its long term energy security requirements will prevail in pursuing bilateral relations with any country in the region, it may now be facing geopolitical consequences for retaining such ties. Therefore, while it continues to maintain relations with Iran and Syria, despite strong western pressure, it may entail jeopardising relations with other regional energy players, such as Saudi Arabia and Qatar, who are opposing the Syrian regime and trying to contain Tehran's influence in the region.³⁵ It remains to be seen, however, if the lure of the Chinese market will prevail over regional political dynamics.

Second, the US may no longer be as keen to ensure the safety of the energy sea-lanes, which worked to the advantage of Beijing and other oil importing nations. China does not have the wherewithal yet to take over the role of protector of safe passage through the tricky waters

³⁵ Jareer Ellass, Kylie Miller and Amy Myers Jaffe, 'The Rise of China and its Energy Implications:China's Relations with OPEC:Challenges for Sino-US Relations', Energy Forum, James A. Baker III Institute for Public Policy, Rice University, September 26, 2012, pp 12-13, www.bakerinstitute.org/publications/EF-pub-ChinaOPECRelations-092612.pdf.

of the region. Moreover, as the potential for increased instability in the region grows, China is looking for safer alternative sources of energy resources.

Earlier, as a buffer against any potential interdiction of its sea-based energy imports, since the mid 2000s, China has been importing oil and gas through pipelines, as an alternative to sea-based energy transportation. In May 2006, the first pipeline project, a joint venture between CNPC and the Kazakh state-owned company, Kazmunaigaz, bringing 200,000 b/d of Russian and Kazakh oil from Kazakhstan to Xinjiang was inaugurated. The pipeline will double its capacity by 2014. Around the same time, another agreement to build a pipeline, which would be a part of a larger project known as the Eastern Siberia-Pacific Ocean Pipeline (ESPO), was signed with Russia. This line meant to carry 300,000 b/d from Siberia to China's Daqing oil field through a spur line, became operational in 2011, delivering 300,000 b/d under a 20-year supply deal.³⁶

Apart from pipelines carrying oil, China also began constructing gas pipelines. The first was the Central Asian Gas Pipeline (CAGP), which brings natural gas to China from Turkmenistan, Uzbekistan, and Kazakhstan. In December 2009, the CNPC signed an agreement to develop natural gas resources at Turkmenistan's South Yolotan gas fields, and signed a deal with Turkmengaz to import the gas. The pipeline began operations in December 2009 with initial volumes at 200 billion cubic feet (bcf) a year, and links to the second West-East pipeline in China. In June 2010, CNPC also signed an MoU with Uzbekistan to deliver over 350 bcf a year through a transmission line which would connect with the CAGP, while Kazakhstan and China also signed a joint venture agreement at the same time to jointly construct the second phase of the Kazakh-China gas pipeline, linking to the CAGP. The CAGP was expected to begin deliveries in 2012, having a transmission capacity of 25 bcm a year. It is not clear whether apart from Turkmenistan, gas deliveries from Uzbekistan and Kazakhstan have

³⁶ China Analysis, US Energy Information Administration, September 4, 2012, www.eia.gov/countries/analysisbriefs/China/china.pdf.

begun. When complete, the CAGP is expected to deliver 25-30 bcf per year.³⁷

Several other pipelines that could contribute to Chinese natural gas imports in the future are also proposed. CNPC signed MoUs for two pipeline proposals in 2006, one from Russia's western Kovykta gas field to northwestern China with a capacity of 1-1.4 tcf/y by 2015, and another called the Eastern pipeline, which would connect Russia's Far East and Sakhalin Island to northeastern China, and would have 1.1-1.4 tcf/y capacity, although pricing issues are yet to be worked out.³⁸

However, in line with its diversification policy, and given Russia's proclivity to gain monopoly over Eurasian energy resources as well as routes in order to control energy markets, China is also pursuing alternative pipeline imports. Hence, China has constructed a 982-km pipeline carrying oil from West Asia and Africa to Kyaukpyu Port on the western coast of Myanmar's Arakan state to Kunming in its Yunnan province. A deep underwater crude oil unloading port and oil storage facility is also being constructed on the Arakan Coast to unload the tankers coming from West Asia and Africa, before being fed into the pipeline. Concurrently, another pipeline is also being constructed which will deliver 12 bcm of natural gas per year from Shwe Gas field off the Arakan coast to Kunming. The purpose of these pipelines is to enable China bypass the Strait of Malacca. Not only will this shorten the shipping distance by 1200 km, it will also allow China to counter the American naval presence in the Indian Ocean region. In fact, China is planning to bring in some 240,000 b/d of crude oil through Myanmar.³⁹

³⁷ Ibid.

³⁸ Ibid.

³⁹ Shivananda H., 'China's Pipelines in Myanmar', IDSA Comments, Institute for Defence Studies and Analyses, January 10, 2012, http://idsa.in/idsacomments/ChinasPipelinesinMyanmar_shivananda_100112.

Apart from Myanmar, Beijing has also acquired operational control of Gwadar port in Pakistan's Baluchistan province, which can serve as a storage and shipment hub for West Asian energy supplies, thereby allowing China not only another alternative to sea-based transport through the Strait of Malacca, but also cutting distances by several hundred kilometres to its eastern sea ports. According to the development plan, the port will connect to Xinjiang province in China's west via road and rail links. China is also planning to re-launch a refinery project in Gwadar, which was halted in 2009, from which energy supplies could be transported through pipelines to its western provinces.⁴⁰

China is also increasing its refining capacity. In 2012, it added 764,000 b/d of new crude refining capacity, thereby bringing its total refining capacity to 11.6 mbd, with plans to increase its capacity to over 16 mbd between 2011 and 2020. Chinese NOCS have also entered into joint-ventures with firms from Kuwait, Saudi Arabia, Russia, Qatar, and Venezuela to build integrated refinery and petrochemical projects in cross-investment ventures. Moreover, it allows Chinese refineries to move away from traditional processing of light sweet crudes and gain expertise in refining all kinds of crude blends, including heavy and sour blends. China is also attempting to set itself up as a refining hub, which will allow it to position itself as an alternative to the current leader, Singapore.

In a further attempt to protect itself from supply disruptions, China has also constructed strategic petroleum reserves (SPR) to further strengthen its energy security. Although there is ambiguity surrounding China's plans on the construction of SPR, it is generally accepted that China embarked on a three-phased project to build SPR in 2001 with a capacity goal of 500 million barrels of crude oil, the second largest after the US' 700 million barrels, by 2020. According to reports, China

⁴⁰ Syed Fazl-e-Haider, 'A Great Game Begins as China takes control over Gwadar port', *The National*, October 7, 2012, www.thenational.ae/thenationalconversation/comment/a-great-game-begins-as-china-takes-control-of-gwadar-port.

has completed the first phase and is nearing completion of the second. The third and final phase is scheduled to be completed by 2018, after which the crude will be filled by 2020.⁴¹ Moreover, the government encourages domestic oil companies to increase commercial reserves. According to the China International Capital Corporation (CICC), the estimated crude oil commercial storage capacity stood at around 310 mb in 2010 and planned projects suggested that it could increase by a further 150 mb by the end of 2012. Refined products storage capacity was estimated at around 400 mb in 2010, and is seen to be rising to almost 500 mb by 2015. However, there are differing reports as to actual reserves. In fact, the National Energy Administration stated in its report on China's Energy Development for 2011 that the capacity of commercial oil reserve has reached around 167 mb by 2010, while the CNPC said that the total commercial storage capacity in China reached 220 mb by the end of 2011.⁴² Whatever be the actual amount of reserves, much of the huge demand for crude over the last few years has been attributed to the filling up of China's SPR.

Strategy for Development of Unconventional Energy

While the above strategies are aimed at enhancing its energy security in the short and medium term, China's long term strategy is to develop its unconventional energy resources and renewable energy. Although Beijing does not suggest that it will endeavour to achieve energy independence by developing its substantial unconventional resources, it has been focusing on this sector for a while now.

China has technically recoverable shale and tight gas potential of 25.1 tcm and 12 tcm respectively, although some analysts state that China

⁴¹ Javier Blas, 'China stops filling strategic oil reserve', Financial Times, November 23, 2012, <http://www.ft.com/intl/cms/s/0/c7090954-347d-11e2-8b86-00144feabdc0.html#axzz2GEvPPYk7>.

⁴² People's Republic of China, Oil and Gas Security: Emergency Response of IEA Countries, IEA, 2012, http://www.iea.org/publications/freepublications/publication/China_2012.pdf.

could be producing as much as 150 bcm of gas from shale by 2030.⁴³ The total production in 2010 was 315 bcf/y, and is expected to rise to 1,060 bcf/y by 2030, according to the 12th Five-Year Plan. In the case of shale gas, technically recoverable resources are 1,275 tcf, with plans to produce 230 bcf/y of shale gas by 2015 and 2,100 bcf/y by 2020.⁴⁴ Chinese companies are in discussion with several international firms for partnering in potential shale gas projects to gain the technical skills needed for developing these resources. China held its first shale gas licensing round in 2011, which was open to state-owned companies as well as private-owned foreign firms, albeit only under production sharing contracts with participating Chinese firms.

Currently, the focus is more on developing its Coal Bed Methane (CBM). According to the National Development and Reform Commission (NDRC), China's potential reserves of CBM are estimated at 36.81 tcm, with proved reserves hitting 273.4 bcm. By 2015, China will try to extract 30-90 bcm, both to develop cleaner alternative to coal and also as a part of the country's efforts to reduce coalmine accidents.⁴⁵ Several Chinese NOCs have entered into this sector, including the CNPC, Sinopec and the CNOOC.

However, China's success in developing its unconventional resources will depend on whether it can successfully deal with the several challenges associated with their development, including access to requisite technology and investment. There are some difficulties associated with China's shale deposits. They are more complex than those in the US and are more deeply located, which may make it difficult for hydraulic fracturing techniques used in the US to unlock Chinese shales. Nevertheless, many believe that China will be able to overcome

⁴³ 'Asia's gas thirst sees region turn to unconventional', *Petroleum Economist*, July/August, 2012, Vol. 79, No.6, pp 36.

⁴⁴ China, US Energy Information Administration, September 4, 2012, <http://www.eia.gov/countries/analysisbriefs/China/china.pdf>.

⁴⁵ China eyes increased coalbed methane output to reduce coal mine deaths, *Xinhua*, January 2, 2012, http://news.xinhuanet.com/english/china/2012-01/02/c_131339681.htm.

these challenges over time. Given that the country currently does not have the technical expertise to develop these resources, China's strategy to address this challenge is similar to the one employed in the conventional energy sector, viz., its overseas asset acquisition strategy. Instead of outright purchase of supplies, the government is encouraging its companies to invest directly in foreign markets or to collaborate with foreign investors both in the country and abroad, the objective being to acquire the technological expertise that is the key to unlocking these resources. For example, the CNPC recently announced a joint venture with the Canadian company Encana to develop some of its holdings in two of North America's major shale plays, which contain an estimated 240 tcf of recoverable natural gas, projected to contain enough to supply China for almost 90 years at 2008 levels of consumption. The deal will give the CNPC a chance to gain insight from a company that has some of the longest experiences with hydraulic fracturing and horizontal drilling to extract gas from shale formations. Sinopec too acquired nine per cent of ConocoPhillips' stake in Syncrude, an oil sand project in Alberta, Canada, while Petrochina, together with Shell, bid on Arrow Energy, a CBM producer in Australia. At the same time, the CNPC and Shell signed an agreement to explore jointly for gas in Sichuan province, which contains a large shale gas play.⁴⁶

The Clean Energy Path

While the above acquisitions have raised concerns in some quarters regarding China's energy strategy, it is the country's record in the renewable energy sector that has generated the most concern. In what is being referred to as a 'green energy race', between the US and China, Beijing has come under substantial pressure. According to the US government as well as numerous experts, China is attempting to dominate the global market for green or renewable energy technology, even exporting it to the US and thereby diminishing the ability of

⁴⁶ Saya Kitasei and Haibing Ma, 'China's Presence Grows in Unconventional Gas and Oil Markets', Worldwatch Institute, January 3, 2013, <http://www.worldwatch.org/node/6465>.

American companies to compete with Chinese firms, and depriving the US of the economic opportunities that a 'green economy' can offer, both at home and abroad. Losing out in this 'race' would have serious consequences for national supremacy and wealth, and eventually the loss of its superpower status.⁴⁷

Whether the above is true or not, there is no doubt that China has ambitious long-term national targets for renewable energy. That its drive in the renewable energy sector may have strategic underpinnings cannot be dismissed given that in the 2012 document, while stating that developing its renewable energy sector is due to an 'an urgent need in the protection of the environment, response to climate change and achievement of sustainable development',⁴⁸ the fact that it also states it is a 'key strategic measure for promoting the multiple and clean development of energy, and fostering emerging industries of strategic importance'⁴⁹, does lend some credence to the US perception.

Its earlier forays in the 1990s in this sector were not impressive, with RE consumption accounting for only 3 per cent of the country's total energy consumption by 2003. By 2012, it had an installed generation capacity of 6.2 GW of solar power and 68.3 GW of wind power, and more importantly had wrested control of RE industries invented in the US and commercialised by Germany. According to an EU estimate, nine out of the top 10 solar energy companies are Chinese, with a 65 per cent share of the PVC supply market worldwide, while its wind turbine manufacturers have also been taking some market share away from its Western competitors.⁵⁰

⁴⁷ Joel B. Eisen, 'The New Energy Geopolitics?: China, Renewable Energy, and the "Greentech Race"', *Chicago-Kent Law Review*, Vol 86, No.1, 2011, pp. 9-58, www.cklawreview.com/wp-content/uploads/vol86no1/Eisen.pdf.

⁴⁸ China's Energy Policy 2012, Xinhua, October 24, 2012, http://news.xinhuanet.com/english/china/2012-10/24/c_131927649.htm.

⁴⁹ Ibid.

⁵⁰ Ehren Goossens, 'The Downside of China's Clean Energy Push', *BusinessWeek*, November 21, 2012, www.businessweek.com/articles/2012-11-21/the-downside-of-chinas-clean-energy-push.

How did this country, where renewable energy till 2003 comprised a miniscule share of the total energy consumption, manage this feat?

In 2005, China enacted the Renewable Energy Law, which required power grid operators to purchase resources from registered renewable energy producers, and offered financial incentives, discounted lending and tax preferences for such projects. Moreover, incentives were given for projects that had a larger component of domestically manufactured equipment. For example, at least 70 per cent of all wind turbines have to be purchased domestically, and all wind turbines have to be assembled within China. These requirements succeeded in attracting foreign investments and saw not only the number of local wind turbine manufactures increase, but a drop in the use of coal for power generation.⁵¹

By 2008, renewable resources supplied 9 per cent of China's total energy consumption. In 2009, the government adopted an amendment to the law which required power generating companies to buy all the power produced by renewable energy generators. Those enterprises which refused to buy power produced by RE generators would be liable for fines up to an amount double that of the economic loss of the RE company.⁵²

Furthermore, in its 12th Five Year Plan, finalised in August 2012, China committed to spend \$290 billion for renewable (clean) energy, whereby it plans to increase the installed capacity of renewable energy to 20 per cent by 2015.

However, whether China can sustain its leadership in RE has raised some concerns. First, a competition has ensued between China and the

⁵¹ 'China's renewable energy policies: Finding a green engine for economic growth', Low Carbon Green Growth Roadmap for Asia and the Pacific : Case Study - China's renewable energy policies, ESCAP, http://www.unescap.org/esd/environment/lcgg/documents/roadmap/case_study_fact_sheets/Case%20Studies/CS-China-Renewable-Energy-Policies.pdf.

⁵² Li Huizi, 'China amends law to boost renewable energy law', China View, December 26, 2009, http://news.xinhuanet.com/english/2009-12/26/content_12706612.htm

erstwhile leader in RE technology — the US. In November 2011, the US Department of Commerce launched anti-dumping and countervailing investigations on Chinese solar companies following complaints by US solar panel manufacturers that the Chinese companies were receiving subsidies from their government and exporting them to the US at prices below their costs. China exports around 10 per cent of its solar cells to the US and 80 per cent to Europe. In early 2012, the US expanded the dispute from solar power to wind power products as well.

Second, the slew of subsidies and incentives by the Chinese government has led to an over-investment by Chinese solar panel manufacturers, which has ironically placed not only Chinese manufacturers at risk, but also the future of the rest of the world's manufacturers, as participants are finding it difficult to operate at the required levels of production. Even though the demand for solar panels has increased threefold since 2009, manufacturing capacity has increased by five times, which has pushed prices so low that it is causing losses to Chinese manufacturers, making operations unsustainable.⁵³ It has also advanced rapidly in the private sector spending on renewable energy technology and research and development spending. Although China is maintaining its position as the leader in the RE market,⁵⁴ developments in the fossil fuel international sector may have important consequences for its energy scenario.

The Dilemma

It is clear that achieving energy security is one of the key policies of the Chinese government. However, unlike the US, Beijing realises that, despite holding vast hydrocarbon resources, its demand projections

⁵³ Bill Dickenson, "China, the U.S., & Future of Renewables", National Journal, October 9, 2012, <http://energy.nationaljournal.com/2012/10/china-vs-the-us-whats-at-stake.php>.

⁵⁴ Renewable energy country attractiveness indices, Vol.36, Ernst & Young, February 2013, [http://www.ey.com/Publication/vwLUAssets/Renewable_energy_country_attractiveness_indices_February_2013/\\$FILE/Renewable_energy_country_attractiveness_indices.pdf](http://www.ey.com/Publication/vwLUAssets/Renewable_energy_country_attractiveness_indices_February_2013/$FILE/Renewable_energy_country_attractiveness_indices.pdf)

will not allow it the luxury of attaining independence from hydrocarbon imports, at least in the foreseeable future. Nevertheless, it is clearly focusing on becoming increasingly self-reliant in several areas of the energy sector, and even becoming a net exporter, namely in renewable energy

Therefore, following the developments in the US shale sector, the Chinese government also showed its interest in capitalising on this new energy revolution. A policy to develop shale resources has been formulated and finalised by the National Energy Administration and the Ministry of Land Resources and is expected to be released soon, outlining guidelines regulating the award of mineral rights and bids for acreage. The new policy is expected to address technology, research and infrastructural aspects of shale gas development to support continued investment, followed by invitations to potential investors. As a pointer to the importance with which China views its shale resource potential, the Ministry of Finance announced in November 2012 that a subsidy of Yuan 0.40/cubic meter (6 cents/cu m) of shale gas production would be given to domestic producers from 2012 to 2015 in a bid to promote exploration and incentivise production.⁵⁵ Nevertheless, China will be unable to capitalise on its huge shale gas potential without access to US fracking technology. As of now, the development and production of China's shale resources face numerous challenges, such as geological difficulties, lack of drilling technology and a shortage of midstream pipeline infrastructure to bring gas to the market. High production and development costs may also hinder potential investors given that domestic prices of natural gas prices are controlled by the government.⁵⁶

In the meantime, China is trying to ensure that it acquires the requisite technological knowledge it currently lacks by investing in US and Canadian shale formations, besides pouring money into domestic R&D

⁵⁵ 'China to release new policies to support shale gas development: report', Chinamining.org, March 20, 2013, <http://www.chinamining.org/Policies/2013-03-20/1363749842d60800.html>.

⁵⁶ Ibid.

under the 'National Key Technologies Research and Development Program' (1983) and other recent initiatives.⁵⁷

However, how far it will be able to exploit its shale resources and achieve its goal of energy self-sufficiency is still debatable. According to the EIA's initial projections in 2011, China's recoverable shale resources are larger than those of the US, even taking Chinese geologists' more modest estimates at 30.6 tcm.⁵⁸ Therefore, although China has the option of importing shale LNG from the US, one of its main energy security concerns is that the US navy, which controls the Pacific Ocean routes through which most Chinese energy imports are transported, may be blockaded in the event of any hostility.

Ironically, therefore, despite China's attempt at weaning itself away from any dependence on the US-controlled global energy system, China may seek cooperation with the US, be it for ensuring the safety of its sea lanes or for developing its unconventional energy resources, before it can hope to become more energy independent. However, given its intrinsic wariness of US intentions and lack of faith in the existing US and Western dominated international energy market, China will have to face difficult choices with regard to its path towards energy self-sufficiency.

⁵⁷ Elliot Brennan, 'Shale Gas: The Key in the US' Asia Pivot?', China US Focus, March 8, 2013, <http://www.chinausfocus.com/energy-environment/shale-gas-the-key-in-the-us-asia-pivot/>

⁵⁸ Fan Gao, 'Will there be a shale gas revolution in China by 2020?', Oxford Institute for Energy Studies, NG 61, April 2012, <http://www.oxfordenergy.org/wpcms/wp-content/uploads/2012/04/NG-61.pdf>.

IV INDIA'S ENERGY SELF-SUFFICIENCY - A DREAM OR DISTANT REALITY?

Like China, India's energy policy is linked to its development agenda. Although India has achieved impressive levels of economic growth in recent decades, which has placed its economy in the fourth place globally when measured by purchasing-power-parity and a GDP of approximately \$4 trillion (2010), its per capita income remains low, and around 30 per cent of its population is living below the poverty line. To attain its goal of development, India needs a sustained Gross Domestic Product (GDP) growth of 8-10 per cent per annum, as against its current average growth rate of 6-7 per cent over the last two decades. However, although India embarked on a policy of opening up the economy, it could not do away entirely with its traditional socialist past, which came in the way of its liberalisation programme. For instance, the hesitation to do away with the fuel subsidy policy and failure to ensure proper revenue collection along the energy value chain, some of it due to the policy of providing free power to certain sectors has impacts on not only the financial capacity of energy producers and distributors, but also discourages investment. As a result, many of India's economic sectors, particularly the energy sector, finds itself trapped between a market-oriented sector and an under-performing, monopolistic one, which is starved of both investment and technology. Moreover, the inability to complete the process has led to innumerable internal security problems, from left wing extremism to high and growing crime and corruption, all of which have an impact on its investment climate as well as development.

The sustainability of India's economic growth is premised on its access to energy resources, among others, and this is where India can face several hiccups. With low per capita energy consumption, high and growing population and economic advancement leading to better standard of living of its citizens, albeit gradually, India's energy demand is expected to increase by five to six times over the next few decades.

Despite having large natural resources, lack of reforms, poor infrastructure and inadequate hydrocarbon reserves have seen India increasingly insecure in the energy sector.

Yet, in 2006, former Indian President A.P.J. Abdul Kalam stated that India should achieve energy security by 2020 and energy independence by 2030 based on hydro, nuclear and renewable energy.¹ Recently, the power minister said that it was possible for India to achieve energy independence, albeit by 2030. He further added that a road map for this goal was being worked out with targets that would, on the one hand, reduce import dependency by 50 per cent by 2020, 75 per cent by 2025 and 100 per cent by 2030, and on the other strive to increase domestic production of hydrocarbons, both conventional and unconventional, including coal bed methane and shale gas, accelerate the acquisition of overseas energy assets, and undertake 'a sustained campaign for conservation'.²

Interestingly, at the same time, he stated that India will continue to import 'greater quantities of crude oil' and that given that natural gas will see the 'maximum action in the years ahead' as 'we try and increase our current share of around 9 per cent to around 23 per cent, and referred to the huge finds of natural gas in other parts of the world', thereby indicating that gas (LNG) would be a major import.

Therefore, despite the rhetoric by various political leaders, India is, and will remain, dependent on the international energy market for the near future as long as it continues to be dependent on hydrocarbons.

However, while energy independence may be a chimera, at least for the foreseeable future, can India be energy secure over the next few decades?

¹ 'Strive for energy independence, Kalam urges scientists', *The Hindu*, Sep 23, 2006, www.hindu.com/2006/09/23/stories/2006092313650100.htm.

² Rajeev Jaiswal, 'India can achieve complete energy independence by 2030: Oil Minister Veerappa Moily', *The Economic Times*, January 4, 2013, http://articles.economicstimes.indiatimes.com/2013-01-04/news/36148822_1_natural-gas-mmcmd-rlng.

India's energy challenges

The foremost challenges for the Indian government in ensuring its energy security are gaining access to energy resources as well as ensuring that all its citizens have access to modern forms of energy. Today, despite substantial electricity capacity, both installed and generated, nearly a quarter of the population lacks access to electricity. Second, stagnating production of hydrocarbons has resulted in increasing dependence on imported fuels. Apart from having an impact on its exchequer, increasing import dependence also exposes the country to greater geopolitical risks and international price volatility. Third, the dependence on hydrocarbons has taken a toll on the environment, with a rise in pollution levels. Many of India's major cities are some of the most polluted in the world, and apart from affecting the health of the people, India has come under considerable pressure to contribute to climate change mitigation. The dilemma that successive governments have to face therefore is how to balance economic growth and development, for which a large amount of energy is required, with the least cost to the environment. If this challenge is not dealt with skillfully, it can interrupt India's growth agenda. The problem becomes compounded as India is, and will continue to be, largely dependent on fossil fuels.

Until the 1990s, energy as a security imperative, did not find place in India's national security agenda, even though the need to pursue energy security was realised as far back as the 1970s. The 1973-74 oil shock, which resulted in the sharp rise in international oil prices, saw India's import bill rise from 11 per cent in 1972-73 to 26 per cent by 1974-75. While this was overcome as a result of a combination of devaluing the rupee and increasing exports, the country's balance of payments (BoP) once again came under stress during the 1980s, which coincided with the second oil shock. By now, India's oil imports had increased to about two-fifths of India's imports. Although a slew of fiscal measures were taken to address the problem, the 1991 Gulf War, which led to a sharp increase in the oil prices, exacerbated India's external debt situation. India stood at the brink of a BoP crisis, with its foreign currency assets dipping below \$1.0 billion, which covered barely two weeks of imports. The government undertook a combination of policies, including pledging of its gold reserves, discouraging non-essential imports, accessing credit from the IMF and other multilateral

and bilateral donors. Soon after, the liberalisation and reform policy was adopted, which saw the economy growing faster than it had since its independence.³ Today, India is the fifth largest energy consumer and the fourth largest importer of crude oil, with its dependence on imports growing year-on-year as its domestic production of oil, gas and coal are unable to keep up with demand. As a result, India has to rely increasingly on energy imports, which in turn exposes the country to greater geopolitical risks and economic challenges due to the international price volatility. What led to this pass?

Following the launch of the liberalisation policy in the early 1990s, India's economy began to surge, registering growth levels of 6 per cent per annum. However, this led to a huge demand for energy. While at the time, India did not require to import coal and gas, it did see a huge increase in its oil imports, partly because of growing demand as well as low domestic production due to a combination of domination of E&P activities by inexperienced state-owned firms and lack of investment. As a result, India's oil imports, which comprised around 30 per cent of overall demand in the 1980s, now began to increase year-on-year. Today, India imports nearly 80 per cent of its oil requirement. In the case of natural gas and coal, until 2004 India did not import any gas, while coal imports were minimal as India had substantial coal reserves, albeit of poor quality. However, following the advent of liberalisation, India's demand grew exponentially, thereby necessitating increasing imports of both gas as well as coal. Today, India is one of the largest importers of energy resources, which has enormous consequences for its energy security.

Domestic Energy Scenario

As of January 2013, the total installed power capacity was 2,11,766.22 MW, with thermal generation (1,41,713.68 MW) accounting for 66.9 per cent of total capacity, dominated by coal-based power plants

³ Deepak Mohanty, 'Perspeictives on India's Balance of Payments', Speech delivered at the School of Management, KIIT University, Bhubaneshwar, December 7, 2012, www.rbi.org.in/Scripts/BS_SpeechesView.aspx?id=757.

(1,21610.88 MW) with a 57.42 per cent share. This is followed by gas-based generation (18,903.05 MW) with at 8.92 per cent share in the overall energy sector, and oil (1,199.75 MW) with a 0.56 per cent share. Hydropower accounts for 18.61 per cent (39,416 MW), nuclear power 2.25 per cent share (4780 MW), and renewable energy, including small hydro with a 12.20 per cent share (25,846 MW).⁴

Despite this enormous capacity, actual generation is far less at around 110 GW, due to low plant load factor as well as 25 per cent transmission and distribution losses.⁵

Hence, India continues to be power deficient with an overall power shortage of 8 per cent, which goes up to 10 per cent during peak demand. Moreover, nearly 25 per cent of the population, that is over 300 million people, do not have access to electricity.⁶

The government's target is to have an installed generation capacity of 800,000 MW by 2030 to ensure total coverage of the country. However, a number of issues have to be dealt with before this can be achieved.

Although India's GDP growth rate has declined over the past few years, it is still growing over 5 per cent, despite the global slowdown. Moreover, it is expected that once the global economy picks up, India would be targeting the growth path it had witnessed before the slowdown, that is, at 7-8 per cent, to satisfy the aspirations of a huge and growing, and more importantly, a young population. With a below world average per capita energy consumption level at present, this is

⁴ 'Power Sector at a Glance - all India', Ministry of Power, January 31, 2013, http://powermin.nic.in/JSP_SERVLETS/internal.jsp.

⁵ D.K. Singh, 'People are ready to pay for 24x7 power. It should be affordable, accessible and available', Interview with Jyotiraditya Scindia, Indian Express, April 7, 2013, <http://www.indianexpress.com/news/-people-are-ready-to-pay-for-24x7-power.-it-should-be-affordable-accessible-and-available/1098703/0>.

⁶ Minhaz Merchant, 'Powerless in India', Times of India, July 12, 2012, http://articles.timesofindia.indiatimes.com/2012-07-12/edit-page/32634073_1_outages-nuclear-power-power-crisis.

expected to go up sharply. Moreover, the government is also focusing on expanding and modernising the inadequate infrastructure, all of which will require a huge amount of energy.

However, the current output of domestic energy production will be unable to achieve the targets; hence, India has to resort to importing hydrocarbons which is the bedrock of the energy sector, and will remain so for years.

According to the Economic Survey 2012-13, the consumption of energy from conventional (non-renewable energy) sources show that from 1970-01 to 2010-11, the overall consumption of coal, lignite, crude oil, and electricity (thermal, hydro, and nuclear) increased at a rate of 5.30 per cent, 6.05 per cent, 11.25 per cent and 6.63 per cent respectively, while the per capita consumption of energy grew at an average annual rate of 5.30 per cent during this period. The Survey also states that at current levels of production, domestic resources can only meet 71 per cent of demand over the Twelfth Plan period (2012-2017), and 69 per cent for the next Plan period (2017-22).⁷ A further break-up of the import figures of respective hydrocarbon resources is of more concern.

The import dependence for crude oil will be about 78 per cent by the end of the Twelfth Plan period, while import of coal is projected to be about 22.4 per cent.⁸ In the case of natural gas, a report quoting Petroleum Ministry sources, states that while India is already importing 25.5 per cent of its demand, which will increase to 41 per cent by the end of the 2012-13, and to 50 per cent by the end of the next fiscal year, due to a dip in output from the Krishna-Godavari (K-G) basin.⁹

⁷ Economic Survey 2012-13, Energy, Infrastructure and Communications < Chapter 11, Ministry of Finance, Government of India, <http://indiabudget.nic.in/survey.asp>.

⁸ Ibid.

⁹ 'Natural gas imports will surpass domestic production in 2 years', Indian Express, December 6, 2012, www.indianexpress.com/news/natural-gas-imports-will-surpass-domestic-production-in-2-years/1041162.

Energy Security Strategy

The main thrust of India's energy security strategy is two-pronged: the development and enhancement of its domestic resources - both non-renewable and renewable — as well as the development and access to renewable and non-renewable technology. In other words, without the luxury of choosing one resource over another, India is pursuing the development of all energy resources.

Enhancing production from domestic resources is over and above imports, either through direct purchases or through overseas equity acquisitions. In its direct purchases, India has, like other energy-importing countries, been trying to diversify its import sources, particularly in the case of crude oil. As a result, while the West Asian countries continue to remain its largest suppliers, it has also been purchasing from other regions, including Africa and Latin America.

India is also pursuing the acquisition of overseas oil, gas and coal assets. In the case of oil and gas, India's flagship overseas company, ONGC Videsh (OVL) had set a production target of 20 million tonnes of oil and gas by 2020 from its overseas assets spread over 31 explorations and production projects in 15 countries. This has now been advanced to 2018. Furthermore, a target of 60 million tonnes was set to be achieved by 2030. OVL's success has prompted other national oil companies such as Bharat Petroleum's exploration firm, Bharat PetroResources, Indian Oil and Oil India (OIL), either individually or jointly to pursue overseas assets as well.¹⁰ More recently, the coal ministry has also decided to acquire overseas coal assets, although the private companies have been acquiring overseas coalmines for captive fuel supplies for their power plants for some time now.

At the same time, in order to diversify its gas (LNG) imports, mainly from Qatar currently, India has for some time, been looking at the

¹⁰ Ajay Modi, 'Is OVL making the right acquisitions?' *Business Standard*, December 7, 2012, http://www.business-standard.com/article/companies/is-ovl-making-the-right-acquisitions-112120700118_1.html.

feasibility of participating in trans-national pipeline projects from neighbouring, gas-rich countries. In the late 1990s, a project to buy piped gas from Iran that would transit Pakistan, known as the IPI project was initiated. However, after almost two decades India is yet to make up its mind whether to go ahead with the project, citing security and pricing differences with the other partners. The second project was to bring piped gas from Myanmar's offshore gas fields, in which India had a stake, with Bangladesh as the transit country with the option of feeding in its own excess production. However, this too was shelved after India's indecision caused Myanmar to dedicate all the gas from the fields to China. Finally, and the only project which is still being pursued, is the project sourcing gas from Turkmenistan transiting Afghanistan and Pakistan, known as TAPI. However, the same issues that saw the IPI deal floundering, at least in the case of India since recent reports have stated that Iran and Pakistan are going ahead with the project, are now plaguing the Turkmen project as well.

Other aspects of India's energy strategy include the construction of strategic petroleum reserves (SPR), to prevent any supply disruptions. At present, India has crude reserves to support 74 days of consumption. The Indian Strategic Petroleum Reserves Ltd, a subsidiary of the Oil Industry Development Board, is constructing three strategic storage facilities at Visakhapatnam, Mangalore and Padur with a combined capacity of 5 million tonnes. The crude oil from these reserves will be released in a situation when there is a short-term supply disruption, natural calamity or global event such as a war that may lead to an abnormal increase in prices. However, India is now planning to increase the storage capacity of the SPR and has initiated studies to construct space to store an additional 12.5 million tones.¹¹

Finally, India is also pursuing strengthening diplomatic ties with energy-exporting countries as well as developed countries that have developed energy efficiency technologies in order to access the same. To facilitate

¹¹ 'India mulls quadrupling strategic crude oil stockpile', *The Economic Times*, April 17, 2012, http://articles.economictimes.indiatimes.com/2012-04-17/news/31355594_1_indian-strategic-petroleum-reserves-mangalore-and-padur-storage.

the above, the government established an energy security division within the Ministry of External Affairs (MEA) in 2007. India has entered into strategic energy partnerships with a large number of countries, both for energy supplies and assets as well as for technology cooperation.

Policies in Pursuit of Energy Self-sufficiency

In order to develop self-sufficiency, the government undertook a number of initiatives to increase production of renewable and non-renewable energy resources, albeit as late as the mid-2000s. Although the five-yearly exercise undertaken by the Planning Commission under the Five Year Plans did set out projections and targets for the energy sector, they were patchy at best, with unattainable targets, which were rarely, if ever, achieved. For instance, the Electricity Act of 2003, was an attempt at restructuring the vertically integrated segments into independent ones by unbundling the state electricity boards (SEBs) and recognising the need for competition in generation and distribution to provide quality power to consumers. However, the attempt has not been as successful as was envisaged, as the issues related to fuel supplies were not addressed, thereby limiting the benefits of competition reaching to the end consumers. Monopoly in coal production and lack of reforms in the coal sector along with the absence of an independent regulator have affected the private sector investment in the generation segment. The concept of open access, which is critical for a truly competitive market has not been implemented effectively so far. As a result, the power sector continues to be plagued by power shortfalls and blackouts.¹²

Other attempts at reforms in various sectors across the energy spectrum were also made, without much success, mainly because they were approached in a piecemeal manner. The first attempt at conceptualising and articulating a holistic policy came in 2004 when the Planning Commission was asked by Prime Minister Manmohan Singh to set up an expert group to outline a roadmap for the energy sector. The

¹² V.S. Ailawadi and Bhawna Gulat, 'Ensuring Electricity to All: Promoting Competition in the Sector', www.iica.in/images/Electricity%20Sector.pdf.

Integrated Energy Policy (IEP) was published in August 2006, which for the first time attempted to look at the energy sector in its entirety, with recommendations aimed at enhancing India's energy security. The Cabinet finally approved of the report in December 2008. Perhaps the most significant contribution of the IEP was the recommendation of far-reaching pricing reforms and opening up of various sectors to the private companies, including the power and coal sectors, and a strong emphasis on demand-side management.

In 2008, under the aegis of the Prime Minister's Office (PMO), the government next brought out the National Action Plan on Climate Change (NAPCC), to outline a development path that was sustainable, in order to advance the country's economic and environmental objectives. Under the eight 'missions' that were adopted, the development of solar energy under the Jawaharlal Nehru National Solar Mission (JNNSM) and the implementation of energy efficiency measures under the National Mission for Enhanced Energy Efficiency (NMEEE), were two that were given primary focus. The exercise was undertaken to send out the message that India was serious about addressing climate change and environmental issues and that it was ready to behave as a responsible member of the international community with regard to controlling its carbon emissions. The NAPCC however, reiterated that while India was committed to not exceeding its per-capita emissions beyond the level of the developed countries, it was premised on receiving financial and technological assistance from the developed countries to mitigate emissions and it would not compromise on its development path.

However, while there has been some progress, constraints remain, the chief being a lack of pricing reform. Several attempts were made to formulate a pricing formula for hydrocarbons, particularly gas. But while some progress has been made in the case of petroleum pricing, with petrol (gasoline) being decontrolled, and diesel partially, in the case of natural gas, despite recommendations by several expert committees to implement a more market-oriented pricing mechanism, the price of gas – both domestically produced as well as imported LNG, continues to be controlled. Fuel pricing is perceived as a politically sensitive issue and while successive governments have stated the need to rationalise prices and move gradually towards a market-based system

of pricing that would be more in conformity with global prices, no government is ready to implement the same.

The coal sector is a case in point. Despite the clamour for introducing reforms in the coal sector in order to attract private sector participation, production continues to be monopolised by state-owned firms like Coal India Ltd and Singareni Collieries. However, private firms are allowed to invest up to 100 per cent for captive mining, where they can sell washed coal to raw coal producers for power plants and processing units. Moreover, up to 75 per cent investment is also allowed for other captive consumption, but private producers are not permitted to sell processed coal in the open market. In 2007, the New Coal Distribution Policy was introduced to facilitate supply of assured quantities of coal to consumers of core and non-core sectors at pre-determined prices. However, due to inadequate coal production as well as price disparities in domestically produced and imported coal, CIL was unable to keep its supply commitments. Though some changes were sought to be brought in to streamline supplies and reduce CIL's burden, problems persist in the sector.¹³ The result of these anomalies is evident from the frequent blackouts that persist throughout the country, which in turn has an impact on every sector of the economy.

In the oil and gas sector, a programme of enhancing its domestic hydrocarbon production was introduced as far back as 1999, which was called the New Exploration Licensing Policy (NELP). The rationale was to accelerate domestically produced oil and gas. Competitive bidding was opened up for exploration blocks, allowing 100 per cent participation under production sharing contracts to both domestic and foreign companies as against the earlier policy of allocating upstream projects to state-owned firms. Thus far, nine rounds of NELP have been implemented, albeit with mixed results, with very few of the big international companies participating, partly because of the distorted pricing of fuels. Realising this, the 2013 Economic Survey states, "The

¹³ 'Understanding Energy Challenges in India: Policies, Players and Issues', IEA, 2012, www.iea.org/publications/freepublications/publication/India_study_FINAL_WEB.pdf.

government appreciates the economic role of rational energy pricing. Rational energy prices provide the right signals to both the producers and consumers and lead to a demand-supply match, providing incentives for reducing consumption on one hand and stimulating production on the other'.¹⁴

The problem with regard to pricing is particularly contentious in the gas sector. With the disparity in pricing between domestically produced gas and imported LNG, the steep fall in domestic production from the KG basin, which is operated by the Reliance Industries Ltd (RIL) is seen as the main cause. However, India, which is seen as one of the largest markets for gas in the coming years, both for transport, residential and industrial sectors, and current(?), requires increasing amounts of natural gas, both for its economic growth as well as for climate change considerations.

Hence, in his 2013-14 Budget, Finance Minister P. Chidambaram stated that the government was reviewing the gas pricing policy and would address the anomalies therein. Given that the majority of the domestically produced natural gas, which is priced between \$4.2 per million British thermal units (mmBtu) and \$5.6/mmBtu — which is far less than the cost of imported LNG at \$13-14/mmBtu, it has discouraged potential investors from entering the Indian gas sector.¹⁵ To resolve this problem, and in the face of falling domestic production from the KG fields, the government announced at the end of June 2013 that it would be increasing the price of domestically produced gas to \$8.40/mmBtu from April 1, 2014, which will not only make LNG imports more attractive, but would also provide incentives for domestic gas producers.¹⁶

¹⁴ "Economic Survey 2013: Call for clarity in New Exploration Licensing Policy", *The Economic Times*, February 27, 2013, http://articles.economictimes.indiatimes.com/2013-02-27/news/37331031_1_global-prices-natural-gas-rational-energy

¹⁵ Sujay Mehdudia, 'Review of gas pricing policy in the offing: Chidambaram', *The Hindu*, February 28, 2013, www.thehindu.com/business/Economy/review-of-gas-pricing-policy-in-the-offing-chidambaram/article4462705.ece?css=print.

¹⁶ 'China, India gas price reforms open door to more LNG imports', *The Economic Times*, July 4, 2013, http://articles.economictimes.indiatimes.com/2013-07-04/news/40372035_1_petronet-lng-lng-import-capacity-regasification.

Can Alternative Energy Resources Resolve Energy Shortage?

New and renewable energy (RE) was perceived as the answer to India's energy security problem that would allow the country to become self-sufficient. With the increase in oil prices in '70s, the government set up the Commission for Additional Sources of Energy in the Department of Science and Technology in 1981, to formulate and implement policies and programmes for the development of new and renewable energy. In 1982, a new department – the Department of Non-conventional Energy Sources, was created in the then Ministry of Energy, which was converted into the Ministry of Non-conventional Energy Sources in 1992. In October 2006, the Ministry was re-christened the Ministry of New and Renewable Energy (MNRE). Its charter as enunciated in its vision statement was:

To develop new and renewable energy technologies, processes, materials, components, sub-systems, products and services at par with international specifications, standards and performance parameters in order to make the country a net foreign exchange earner in the sector and deploy such indigenously developed and/or manufactured products and services in furtherance of the national goal of energy security.¹⁷

However, although the development of renewable energy began fairly early, it was only during the 11th Plan period (2007-2011) that RE could contribute significantly towards energy security, and in fact became the fastest growing sector in the energy spectrum, albeit starting from a miniscule base. According to data put out by the MNRE, India's grid installed generation from renewable sources as of January 2013 is 26,920 MW, is around 11 per cent of overall installed capacity, while generation from off-grid comprises 819.082 MW.¹⁸

¹⁷ Vision, Ministry of New and Renewable Energy, Government of India, www.mnre.gov.in/mission-and-vision-2/mission-and-vision/vision/

¹⁸ Ibid.

Although several forms of RE are being developed, the major contribution and focus is on wind energy, which dominates the sector, with biomass, small hydro, and more recently solar energy, both photo voltaic and solar thermal also gaining importance. Interestingly, although the government, through various schemes and the NAPCC have made RE a major focus of its energy policy, the RE sector is driven mainly by the private sector.

India's renewable energy target by 2030 is around 30 per cent of overall generation capacity. However, despite these encouraging statistics, the fate of the RE sector remains uncertain for a variety of reasons including challenges with regard to financing RE projects due to high interest rates, and lack of clarity with regard to policies. Moreover, even if large strides are made in the sector, it cannot replace fossil fuels, which dominate three-fourths of the energy sector. As a result, fossil fuels will continue to remain the main source of energy for India for a variety of reasons. First, transiting from traditional energy structures takes several years, and at the rate at which India's demand for energy is growing, it is not possible for RE to supplant traditional energy infrastructure.

Second, despite the fact that advances in technology has brought down the cost of RE and power from clean energy sources, they are still not competitive when compared with hydrocarbons.

Third, the poor legal and regulatory delays in land acquisition, delayed clearances, both financial and environmental for projects, maintaining cost, and the reluctance of Indian financial institutions to finance renewable energy projects, as well as recent tax-related developments preventing large foreign investment in the RE sector, all affect the rapid growth of RE in India.

The Unconventional Energy Revolution: Whither India?

The common consensus is that renewable and clean energy solutions should be India's goal to both, ensuring energy security as well as self-sufficiency. However, as has been established, this will take several decades. In the meantime, for the short and middle term, an increase in the use of gas as a bridge resource, would allow India to meet its

twin goals of attaining energy security with the least cost to the environment. However, given the problems related to the gas sector in terms of production as well as pricing, this will be difficult, although not impossible, provided reforms that have been recommended are implemented.

Therefore, when the US successfully applied hydraulic fracturing techniques, as against conventional fracturing techniques, to extract shale gas in 2002, thereby setting off the revolution in the US' energy sector, India too began to explore the idea of developing its considerable unconventional energy resources.

Exploiting unconventional energy resources to meet its energy demands is not new for India. A policy for the exploration and development of Coal Bed Methane (CBM) was approved in 1997, and thus far 30 CBM blocks have been awarded through competitive international bidding under four rounds. However, a fresh policy for exploiting CBM is also being planned. To date, 8.9 trillion cubic feet of reserves have been established in 33 blocks, which have the potential to produce more than five million standard cubic metres per day (mmscmd).¹⁹ The government is also exploring gas hydrates, and has set up a National Gas Hydrate Programme (NGHP), that is steered by the Ministry of Petroleum & Natural Gas and technically coordinated by Directorate General of Hydrocarbons (DGH) and has set itself a deadline of mid-2015 to commence commercial production.²⁰

However, the US shale gas revolution has prompted Indian companies in the public as well as private sector to foray into this sector as well. While the US Department of Energy's 2011 statistics state that India has recoverable shale gas reserves of 63 trillion cubic feet,²¹ the ONGC

¹⁹ 'India to hunt for shale gas in 6 basins', Business Line, May 10, 2011, www.thehindubusinessline.com/industry-and-economy/article2006833.ece, accessed on June 5, 2011.

²⁰ Gas Hydrates, Directorate General of Hydrocarbons, Ministry of Petroleum & Natural Gas, www.dghindia.org/NonConventionalEnergy.aspx?tab=2, accessed on June 4, 2011.

²¹ World Shale Gas Resources: An Initial Assessment of 14 Regions Outside the United States, US Energy Information Administration, Analysis and Projections, April 5, 2011, <http://www.eia.gov/analysis/studies/worldshalegas/>

reported the discovery of the country's first shale gas reserve at Durgapur in Burdwan district of West Bengal, which is said to hold reserves that could last up to 50 years.²² The government is planning to launch the shale gas policy by end-2013 under NELP, on terms that would address some of the problems associated with the current programme for conventional hydrocarbon exploration and production. The government is hopeful that with the new gas-pricing regime that will come into force from April 2014, and more price revisions taking place every quarter in alignment with global prices, it will attract investment in the shale gas sector as well, and allow India to move closer to its goal of cutting all gas imports by 2030.

However, despite the optimistic scenario, the exploration and development of shale gas in India may throw up several problems. Unlike in the case of US, operating conditions in India could make the extraction and production of shale resources difficult. First, large quantities of water are required for development, which in India can become a contentious issue, particularly given the reports of ground water contamination occurring during the fracking process. Moreover, large tracts are required for developing shale gas, and given the population density in India, environment and land clearances are a difficult and long drawn process. Third, unlike in the US, Indian landowners do not own mineral rights and are required to get permission from state governments, which are often mired in controversies.²³ Finally, given that environmental considerations have substantial contribution to increasing the share of gas in India's energy basket, the verdict is still out on whether shale gas would increase or lower emissions and/or air pollution levels. According to a recent Rand study, large-scale production of shale gas would add significantly to air pollution.²⁴ On the other hand, another study by the Pennsylvania

²² 'ONGC finds India's First Shale Gas', *Petroleum Economist*, February 3, 2011, www.petroleum-economist.com/Article/2778274/ONGC-finds-Indias-first-shale-gas.html, accessed on June 4, 2011.

²³ Gaurav Semwal, 'Shale Gas – A New Promise', *Energy Digest*, Vol. 3, No.1, April 2011, pp. 17-19.

²⁴ Aimee E. Curtwright, 'The Environmental Costs of Emissions from Shale Gas Extraction', *Rand Corporation*, February 14, 2013, <http://www.rand.org/blog/2013/02/the-environmental-costs-of-emissions-from-shale-gas.html>.

Department of Environment Protection, states, ‘...emissions from drilling represent a small fraction of air pollution in the state, which has gone down considerably since shale gas development began in earnest several years ago’.²⁵

Nevertheless, the revolution in shale resources technology may prove beneficial for India’s energy security. If and when the US begins to export gas, it will have an impact on the Asian gas market. It will also free up gas supplies meant for export to the US, thereby bringing down prices. Several Indian firms have also invested in shale plays in the US, and GAIL India has signed a memorandum of understanding (MoU) with the French company, EDF Trading, to jointly acquire and develop upstream oil and gas assets in North America and plans to partner with US marketing firms in trading and optimisation, including swap deals, of the US supplies.²⁶

Similarly, in the case of oil, the new energy dynamics emanating from the US energy revolution will bring new production from tar sands and shale oil/oil shale in North America into the international oil market and assist in countering any bullish impact on prices from traditional sources like West Asia or Africa. This would not only be financially beneficial for large importing countries like India, markets would become preferential destinations for OPEC/West Asian producers.

Hence, even if though it may take a while for India to develop its own energy resources whether conventional, renewable or unconventional, to a point where it may succeed in achieving its goal of becoming self sufficient, events that are taking place in the international, and particularly in the global energy market, in large part due to the revolution in shale technology in the US, can certainly contribute to India’s energy security.

²⁵ DEP Releases Unconventional Drilling Emissions Inventory Data, Pennsylvania Department of Environment Protection, February 12, 2012, http://files.dep.state.pa.us/Air/AirQuality/AQPortalFiles/rls-DEP-AirInventory-021213_FINAL.pdf.

²⁶ Shine Jacob, ‘GAIL gears up for global gas swap by FY16’, Business Standard, March 13, 2013, http://www.business-standard.com/article/companies/gail-gears-up-for-global-gas-swap-by-fy16-113031300010_1.html.

V THE GEOPOLITICAL CONSEQUENCE OF THE US' ENERGY INDEPENDENCE

At the end of the Cold War, the US emerged as the most powerful state in modern times. Now, despite and perhaps because of its economic woes and military disappointments, which have somewhat, but not fully, undermined its superpower status, it is determined to continue to lead the world economically, politically and militarily. With the countries of the Asia-Pacific region now emerging as the 'strategic and economic center of gravity of the world in the 21st century', and vital for the US economic prosperity, the US' 're-balancing' to this region where it was seen less committed over the last few years, was expected. To this end, the US has strengthened and even expanded its existing alliances, in what is perceived as an attempt to contain China.

However, will this re-balancing have an impact on the US' relations with West Asia, whose vast oil riches have tied it closely with the US foreign policy since the days of the Cold War? Questions are being raised on whether Washington's commitment to the region will endure following the recent developments in the US energy sector.

For years, the US leaders have raised the issue of the dependence of the country and its allies on oil imports, particularly from West Asia, and the recycling to the region, of petrodollars that have been used to fuel terrorism, including against the US. It has tried to project other regions, such as Central Asia following the demise of the Soviet Union and the emergence of the newly independent and energy-rich states there as an alternative to the Persian Gulf. However, while the region's resources did not hold out the promise of the reserves as per the estimates given out by the US, its geographical location – landlocked position, proximity to Russia and China and dependence on Russian transport network, threw up challenges that have yet to be resolved. Africa too, where huge discoveries of oil and gas reserves have elicited interest of several countries, including America, has seen China, and to a lesser extent India, stealing a march over other countries.

Now, for the first time, the US is within reach of being in a position where it is not only reducing and even trying to cease its oil imports, but is also projecting itself as a future energy exporter. The question however, remains whether this would be in the US' interest to do so, and what implications this would have on the world's geopolitics.

Impact on West Asian (Middle East) Geopolitics

Since the discovery of oil in the Persian Gulf region, the huge reserves attracted international oil companies (IOCs), which though privately controlled, provided the main supply source to not only the western nations, but to the entire world. Moreover, Western and particularly American companies, benefited immensely from oil production in the Arab countries. Even after several of these nations nationalised their oil sectors, the special relationship that the US shared with these countries, most notably Saudi Arabia, ensured that oil production was maintained in keeping with the international oil market's demands. It was therefore in the interest of the US, which was and is the largest consumer of oil in the world, to ensure that no major disruptions in oil supply took place in the region, both in the interest of ensuring that the world oil market was kept adequately supplied, and more importantly to ensure that oil prices were kept stable. There have been several instances when the price hawks within OPEC were prevented from escalating prices by Saudi Arabia, which used its position as a swing producer to prevent such price hikes. Hence, although the region was never the largest source of US oil supplies, with import dependence coming down from around 21 per cent in 2006 to around 16 per cent currently,¹ the fact that its allies in Europe and Japan were hugely dependent on Persian Gulf oil, ensured that the US remained engaged in the region. Let us not forget that the West Asian region has been the largest contributor to the oil supply disruptions that have taken place over time due to the numerous conflicts that have taken place. Given that the oil market is globally integrated and oil is a fungible commodity, any disruptions in supplies have an impact on the entire market due to

¹ N. Godfrey, 'Paradox in US seaborne crude oil imports', Lloyd's List Intelligence, August 16, 2012, <http://info.lloydslistintelligence.com/llnews-aug12-seaborne-crude-oil-imports/>

a spike in prices. Moreover, the Gulf region is, and will remain, the largest source of conventional oil as well as natural gas for the foreseeable future besides having the lowest production costs.

Therefore, the US strategy for ensuring its energy security and that of its allies was three-fold. First was to prevent prices from escalating to a level that would have an impact adversely on the global economy; second, to ensure that friendly regimes in the Persian Gulf region, particularly the oil-rich nations, survived in order to sustain production;² and third, to ensure that the sea lanes through which energy was transported were kept open and secure.

Hence, if the US were to withdraw from the region, the consequences would be far reaching. First, many of the Gulf regimes, which have survived largely due to the protective US umbrella, would be withdrawn. Long before the 'Arab Spring' took place, there have been voices being raised in many of these countries for a more inclusive and participatory government. These have been quelled by distributing generous social and monetary incentives to the people, which in turn have been possible due to the huge revenues accruing from oil sales. Now with several of the entrenched regimes being toppled, and the region becoming more turbulent with demands for sweeping changes being called for, more such changes cannot be ruled out.

Second, every oil-consuming nation would seek to recalibrate their energy policies and form new alignments. In fact, for the last two decades, such changes have been taking place as the traditional oil market has been tilting away from the developed nations to the emerging economies, whose voracious appetites for energy resources have made them the future markets for the energy producers. If the US withdraws or disengages from the region, this could lead to a scramble for influence and control by these new players, particularly China, which is known to have little faith in the international system created and controlled by the western powers. Beijing would almost certainly expand its ties with

² *Pierre Noël*, 'The New US Middle East Policy and Energy Security Challenges', *Politique Etrangere*, February 2006.

the region, and could even establish a military presence in the region. India too may raise its profile and linkages with the region, given that it continues to be its largest source of oil and gas imports. Even though the US per se was not dependent on the region's oil resources, it did have a stake in ensuring that the region's resources and oil supplies were adequately sustained for the global market in general, if only for the sake of the energy security of its allies. Now, this may change, with individual nations looking out for their individual interests. This would make for a new and potentially more unstable energy landscape.

Third, with the US demitting from the region, Iran would emerge stronger and would probably increase its support for Shias in other Gulf countries, including in eastern Saudi Arabia where most of its oil reserves are situated, and Bahrain. Moreover, Israel would become more isolated and hence more belligerent, further destabilising the region.

Finally, no other power is likely to be able to replace the US in ensuring the safety of the sea-lanes, which are vital for ensuring the world's oil supplies. Despite the ties of China and India with the region, neither is currently in a position to take the US' place as guarantor of the security of the sea-lanes, particularly at a time when events emerging from the developments of the 'Arab Spring' indicate that the region will face increasing instability.

Therefore, the US will continue to remain engaged in the Persian Gulf region, be it to keep Iran in check, to maintain the safety of the energy sea-lanes in the region, or for the US' continuing its commitment to Israel's security. As has been brought out in the document outlining the US' defence priorities:

“(The US) defense efforts in the Middle East will be aimed at countering violent extremists and destabilizing threats, as well as upholding our commitment to allies and partner states. Of particular concern is the proliferation of ballistic missiles and weapons of mass destruction (WMD). US policy will emphasize Gulf security, in collaboration with Gulf Cooperation Council countries when appropriate, to prevent Iran's development of a nuclear weapon capability and counter its destabilizing policies. The United States will do this while standing up for Israel's security and a comprehensive Middle East peace. “To support these objectives, the United States will continue to place a

premium on US and allied military presence in and support of partner nations in and around this region.”³

It therefore does not come as a surprise that despite the fall in its oil demand, the US has increased its oil imports from the region since the summer of 2012, if only to ensure that oil prices do not surge as a result of decreased Iranian production due to the US pressure, although some analysts are of the view that this increase in imports will last only till more Canadian and Gulf of Mexico oil supplies come on line.⁴

Implications for China

Despite its huge and growing demand for energy, which has seen China overtaking the US as the largest consumer of energy within a few decades, Beijing has no illusions about achieving energy *independence*. However, its focus is on energy *security*, and while it relies on the US to ensure the safe transportation of energy through turbulent sea-lanes and chokepoints, it is inherently wary of depending on a market that is controlled by the US. China sees the US’ policy on rebalancing towards the Asia-Pacific as a means to counter China’s rise in the region. Many Chinese analysts perceive that the recent spate of conflicts between China and some South and East China Sea littorals is deliberate provocation to bring Washington’s focus back into the region on the one hand while on the other it is a part of Washington’s policy to contain China’s rise in the region through strengthened military alliances with the ASEAN countries and undercutting its effort at regional economic integration. To this end, they point to the US’ push for a Trans-Pacific Partnership (TPP), which excludes China.⁵

³ ‘Sustaining U.S. Global Leadership: Priorities for 21st Century Defense’, US Department of Defense, January 2012, www.defense.gov/news/Defence.pdfse_Strategic_Guidance.pdf.

⁴ Clifford Kraus, ‘U.S. Reliance on Oil from Saudi Arabia Is Growing Again’, New York Times, August 16, 2012, www.nytimes.com/2012/08/17/business/energy-environment/us-reliance-on-saudi-oil-is-growing-again.html?pagewanted=all&_moc.semityn.www.

⁵ Yun Sun, ‘March West: China’s Response to the U.S. Rebalancing’, Brookings, January 31, 2013, <http://www.brookings.edu/blogs/up-front/posts/2013/01/31-china-us-sun>.

However, while accessing energy resources is a part of China's energy security strategy, what is more important for Beijing is ensuring that prices do not escalate to a point where it constrains its economic growth. Given its focus on addressing its environmental and pollution challenges, which have seen Chinese cities being smothered in smog recently, China sees natural gas as the energy vehicle, which will meet much of its energy demand in the coming years. Therefore, with the US expected to become a major energy, particularly gas, exporter, China is trying to ensure that it has a stake in the emerging gas-based energy landscape. More importantly, it wants a stake in future pricing mechanisms, as imports will have major implications for its economy. This is also the reason why it has been seeking ownership of oil and gas assets around the world, from West Asia to Latin America and Africa. It is also the reason for China's vigorous assertion of territorial claims in its neighbourhood, leading to clashes with other countries in East and Southeast Asia.

Nevertheless, the US' growing energy profile may have benefits for China if it manages to deal with the emerging situation deftly. Rather than countering the US, China welcomes increasing supplies of gas in the international market, including those sourced from North America. For after all, North America is poised to become the 'swing market' for the gas market, as Saudi Arabia is for the oil market, and if China can maneuver increasing amounts of cheap North American gas towards the international market, it will benefit economically. Similarly, in the case of oil, cheaper oil coming into the market, no matter what source, the better for the world's second, some say the — largest oil consumer and importer.⁶

It is therefore not surprising when China's sovereign wealth fund, China Investment Corp (CIC) invested in Cheniere Energy's Sabine Pass LNG plant in 2012⁷ or that in 2012, China's state-owned CNOOC bought

⁶ Mathew Hulbert, 'Why China Will Stop U.S. Energy Independence', Forbes, August 23, 2012, <http://www.forbes.com/sites/matthewhulbert/2012/08/23/why-china-will-stop-u-s-energy-independence/>

⁷ Henry Sender, 'China Fund invests in US gas export plant', Financial Times, August 12, 2012, <http://www.ft.com/intl/cms/s/0/6dbe3abc-eb18-11e1-afbb-00144feab49a.html#axzz2PHsC9F5k>.

the Canadian company Nexen Inc. an oil sands firm, for \$15.1 billion - the largest overseas acquisition by a Chinese company – which is seen as a major step by China to not only diversify geographically, but also to use Nexen's ability to break down heavy oil through technological advancement. The deal also includes 43 per cent of Nexen's North Sea Buzzard oil field. The deal not only allows China a foothold in the North Sea oil and gas business for the first time, but also has important financial implications for it. About 2 mbd of China's oil imports comprises Brent crudes, which influences prices as far as Africa. A rise in Brent prices by \$1 a barrel pushes China's oil import bill up by \$720 million per annum. Hence, the more oil China can extract from the Buzzard field, the less it has to pay for its oil imports.⁸

With the Nexen deal, China's investment in Canada surpassed \$25 billion in 2012. A year earlier, CNOOC had also acquired Opti Canada Inc, Nexen's partner in an oil sands project, while Sinopec bought Daylight Energy Ltd for \$2.2 billion. Moreover, in 2012, PetroChina became the first Chinese State-owned firm to take over Athabasca Oil Sands Corp for \$674 million.⁹ More importantly, Sinopec also bought a stake in the American company, Devon Energy¹⁰ as well as a 49 per cent stake in the UK unit of Canada's Talisman Energy. Furthermore, ENN Group Co. Ltd, one of China's largest private companies, is planning to establish a network of natural gas fueling stations for trucks in the US.¹¹

⁸ Tom Bawden, 'Why China is taking a burning interest in North Sea oil and gas', *The Independent*, March 12, 2013, <http://www.independent.co.uk/news/business/analysis-and-features/why-china-is-taking-a-burning-interest-in-north-sea-oil-and-gas-8531845.html>.

⁹ Zhang Yuwei, 'CNOOC answers "What's next?"' *China Daily*, March 29, 2013, http://usa.chinadaily.com.cn/epaper/2013-03/29/content_16357041.htm.

¹⁰ Elliot Brennan, 'Shale Gas: The Key in the US' *Asia Pivot?*, *China US Focus*, March 8, 2013, <http://www.chinausfocus.com/energy-environment/shale-gas-the-key-in-the-us-asia-pivot/>

¹¹ Nichola Groom, 'Chinese firm puts millions into U.S. natural gas stations', *Reuters*, March 15, 2013, <http://www.reuters.com/article/2013/03/14/us-enn-Ing-usa-idUSBRE92D09Y20130314>.

Apart from its strategy to influence global trade and hence, prices in gas, China's interest in acquiring companies in Canada's shale oil and the US shale gas plays is to acquire the technology to exploit its own massive shale gas resources, which are projected to be larger than those of the US and Canada put together. However, to do so would require US cooperation in terms of access to fracking technology, currently available only with American companies.

Hence, while China may shift its focus on strengthening ties with traditional oil exporting states in the short term, its long-term energy policy, which seeks greater energy security through self sufficiency may provide the opportunity for more cooperation with the US.

Implications for India

Like China, India's dilemma is in ensuring that it has access to sufficient energy resources to meet its growing demand, with least cost to its environment. Hence, India has to look for alternatives for its coal (for the power sector) and oil (for the transport sector)-based economy. With renewable energy unlikely to make any significant dent in its overall energy basket, India is looking at natural gas to replace coal and oil. Given its inadequate domestic resources and diminishing production from its erstwhile promising east coast Krishna-Godavari gas fields, India is staring at a future when its growing import dependency on oil will be replicated in the gas sector as well. The fact that India is constructing a number of LNG terminals over and above the two existing ones is an indication that India is planning to increase its gas consumption. Since the natural gas pipeline projects are mired in price and security controversies, LNG will be the resource of choice for the short and medium term.

Currently, India has three operational gas import terminals, all on the west coast, with a total capacity of 18.6 million tonnes a year. Another terminal is being constructed on the east coast, which is scheduled to begin operations shortly, with 5 million tonnes capacity. However, with two more terminals being constructed on the east coast and West coast each, and 13 more terminals and floating gasification units being planned on both the eastern and western coasts in the next five years, the country's LNG receiving capacity is expected to reach 71.5 million tonnes by 2022, which would make India the third largest LNG importer by

2025, behind Japan and China, from its current sixth position.¹² However, this would be contingent upon whether India can resolve its gas pricing differences. While domestic gas is priced at \$4.2 per mmBtu, LNG imports from Qatar are priced at \$12/mmBtu including transportation cost, marketing margins, taxes and local levies).¹³

Currently, India imports gas in liquefied form from a number of sources. While term contracts have been signed with Qatar's RasGas for 7.5 million tones per annum (mtpa), and Australia for 1.5 mtpa, which will commence towards the end of 2013, India also sources LNG in the spot market from Nigeria, Oman, Trinidad & Tobago, Malaysia, Australia, Egypt, the UAE, Russia, Equatorial Guinea, the US, Algeria, Yemen and Norway.

Therefore, the US' shale gas revolution and its prospective emergence as a gas exporter, has been welcomed in India. More so in terms of prices as North American LNG will be based on Henry Hub (HH) prices, which are lower than the prices in the Asian markets that are based on the Japanese Crude Cocktail (JPP) formula, and is linked with oil prices. According to some energy analysts, US LNG can be supplied at around \$10/mmBtu when landed on the Indian west coast.¹⁴ Hence, if the US LNG were available, it would benefit India in terms of a lower gas import bill.

To capitalise on the US gas revolution, Indian companies, both in the private and public sector have already bought into shale gas assets in the US and Canada. GAIL, through its subsidiary unit, GAIL Global (USA), bought a 20 per cent stake in Carrizo Oil & Gas's Eagle Ford

¹² Abhishek Shanker & Rakteem Katake, 'Billionaire Sees Profit as Gas Shortage Worsens: Corporate India', Bloomberg, March 26, 2013, <http://www.bloomberg.com/news/2013-03-25/billionaire-sees-profit-as-gas-shortage-worsens-corporate-india.html>.

¹³ Richa Mishra, 'Gas price should be remunerative to producer, affordable to consumer', Business Line, April 1, 2013, http://www.thehindubusinessline.com/industry-and-economy/gas-price-should-be-remunerative-to-producer-affordable-to-consumer/article4570513.ece?homepage=true&ref=wl_ho.

¹⁴ Anilsh S Mahajan, "The Pipe Runneth Over", Business Today, January 20, 2013, <http://businesstoday.intoday.in/story/energy-security-india/1/191045.html>

shale acreage in Texas in September 2011; Reliance Industries has invested in three US shale joint ventures since April 2010 - one of them in the promising Marcellus Shale of Pennsylvania; an OVL-led consortium of Indian companies is in talks with Houston-based ConocoPhillips to buy a stake in six oil sands in Alberta, Canada and Oil India Ltd and Indian Oil Corporation have teamed up to acquire a 30 per cent stake in Carrizo Oil & Gas's Niobrara shale-oil acreage in Colorado, USA.¹⁵ Like China, India too has substantial reserves of shale formations, and would like to gain access to fracking technology. Hence, it is tying up with American firms with the requisite expertise, to be applied when the government announces the opening up the exploration policy in shale oil and gas, which is expected by April 2013.

In the meantime, Indian companies are trying to access shale gas based LNG from the US. OVL and GAIL are also looking to take up some equity in the LNG terminals once they get export approval. In the meantime, India has already signed a 20-year contract with Cheniere Energy to buy and ship 3.5 mtpa of LNG from the company, with the first despatch expected in 2016¹⁶, future supplies could face some problems, including the extension of waivers to other companies in the US, which are barred from trading with countries that do not have free trade agreements with it.

Even if US unconventional gas and oil do not reach Indian shores in bulk, the fact that the US has the potential to become a major energy exporter, has implications to India's advantage. Several of the OPEC producers are negotiating with large consuming countries, including India, to tie up term deals to ensure that they have a secure market in a potentially over-supplied future. Countries like Saudi Arabia, Kuwait and Iraq are ready to provide India with extra supplies, in keeping with their policy of tying up with countries with large refining capacity.

¹⁵ Ibid.

¹⁶ Ibid.

With India's crude oil imports from Iran looking increasingly difficult, the OPEC's offer provides a buffer for any shortfall in supplies.¹⁷

Global Implications

The most, and perhaps real benefit of increased production from North America from both conventional and unconventional resources will be more supply and hence a downward pressure on prices. It would also mean less dependence on the OPEC and other producers who have in the past used their resources for political leverage. More importantly, if, as the IEA predicts, the US does indeed become the largest oil producer, the drop, even termination, in its oil imports will exert a downward pressure on prices, as supply will outpace demand. For the West Asian oil producing and exporting states, a dip in their oil revenues will make it difficult for them to sustain their generous social welfare schemes and general largesse, which they have used effectively to keep opponents at bay. Although the recent spate of unrest and overthrow of seemingly well entrenched regimes has not had an impact on the oil-rich regimes as yet, it cannot be ruled out in the future, which would then render an already unstable region into greater turmoil. Whether an energy independent America would continue to prop up these regimes is a question that only time will answer.

Outside the region too, including Russia and the Central Asian states, falling oil prices would have significant consequences. An immediate consequence, which is apparent even now, is their strengthening of relations with China. Therefore, if the US wants to preserve its current position at the global high table, it would have to remain engaged in regions, which are critical for their oil resources, even if Washington no longer requires these resources per se.

Similar would be the case of the gas market, where the impact of the US' energy revolution will be felt the most. Although the US has yet to

¹⁷ Pratish Narayanan, 'India Said to Line up OPEC Alternatives to Iranian Supply', Bloomberg, March 13, 2013, <http://www.bloomberg.com/news/2013-03-12/opec-producers-said-to-be-in-talks-to-replace-iran-oil-for-india.html>.

begin exporting gas, LNG importers are already benefiting as LNG cargoes destined for the US market are being diverted to the spot market since the US no longer requires to import gas. This excess supply has contributed to creating a more competitive LNG market for other consumers, which in turn has caused a downward pressure on the JPP contracts.

Even in the case of piped gas, the potential availability of US LNG in the spot market would provide consumers with an alternative. For example, Europe, which is largely dependent on Russian gas, and has been at the receiving end of Russian political and economic pressures from time to time, now has the option of diversifying its gas sources, and at cheaper rates.

However, despite the optimism being projected on the basis of an energy surplus America, there are several issues that have to be resolved before any benefits accrue from North America's oil and gas bonanza. The first is how this will affect the US per se.

For the US to become a major exporter of LNG and /or oil, it will have to establish the production volumes and their sustainability in order to justify the costs of setting up sufficient export infrastructure. Building an LNG facility requires billions of dollars in investment and years of planning. Therefore, prospective exporters are required to undergo a thorough regulatory process to ensure that they have the interest and capability to invest in such infrastructure for two or more decades.¹⁸

Second, given the huge demand for gas within the US, the government has to study the impact of exports on the domestic market. In the event of over supply in the domestic market, which may cause prices to fall further, the case for exports would be strengthened. For example, although the first permit was granted to Cheniere to export gas to nations without free-trade agreements almost two years ago, the US

¹⁸ Charles K. Ebinger, 'The Department of Energy's Strategy for Exporting Liquefied Natural Gas', Brookings, March 19, 2013, <http://www.brookings.edu/research/testimony/2013/03/19-liquefied-natural-gas-ebinger>.

government suspended reviews of all other applications to study the potential impacts of exports on domestic energy prices. As a result, 19 proposed LNG projects are awaiting export permits.¹⁹

According to a study by Brookings for the US Department of Energy, there will not be much of a difference in prices if the US did not export LNG. The study states that prices will be between \$5.28-\$7.09 per mmBtu if the US did not export, and between \$5.78-\$7.21 per mmBtu if it did export. It also cannot be taken for granted that US LNG will be available in the export market at the US domestic rates given the large costs the exporters will have to bear to set up the costly infrastructure, in addition to the additional freight costs to distant markets.²⁰

Furthermore, the decline in the rate of production from shale gas formations are much faster than conventional gas.²¹ Although data from producing fields are still incomplete, and technological improvements may extend the recovery and life of the fields, current studies indicate that sustaining production levels over the long term may be difficult. Hence, the US' shale gas revolution may be short-lived.

One of the reasons for the marginal difference in prices is because from 2015 to 2020, the global LNG market is expected to be over supplied due to the number of Australian projects as well as other new supplies from Africa that are expected to come on stream. Moreover, from 2025, the possibility of other countries, particularly China, producing their own shale gas reserves could have an impact on international gas trade.²²

¹⁹ Joe Carroll & Rebecca Penty, 'Canada Seen Beating U.S. in \$150 Billion Asia LNG Race', Bloomberg, April 3, 2013, <http://www.bloomberg.com/news/2013-04-02/canada-seen-beating-u-s-in-150-billion-asia-lng-race.html>.

²⁰ Charles K. Ebinger, 'The Department of Energy's Strategy for Exporting Liquefied Natural Gas', Brookings, March 19, 2013, <http://www.brookings.edu/research/testimony/2013/03/19-liquefied-natural-gas-ebinger>.

²¹ Rafael Sandrea, 'Evaluating production potential of mature US oil, gas shale plays', Oil & Gas Journal, December 3, 2012, <http://www.ogj.com/articles/print/vol-110/issue-12/exploration-development/evaluating-production-potential-of-mature-us-oil.html>.

²² Ibid.

In the case of the oil market, however, despite greater production from unconventional North American formations, the benefits will be less than that in the case of gas. Given the fungible nature of the oil market, there may be some downward pressure on prices. Nevertheless, since the cost of production of unconventional oil requires a price band of around \$80 a barrel, the producers would require a higher price to sustain production, thereby giving the advantage to conventional producers. Moreover, as in the case of shale gas, tight oil from shale plays have faster depletion rates than conventional oil reserves.

Finally, it is still uncertain whether and to what extent the US energy production boom will play out in global geopolitics. While it may allow Washington to pick and choose its alliances and partnerships without worrying about its energy security and that of the world's, as in the case of the Persian Gulf region, on the other hand, it may strengthen its presence and adopt a more aggressive posture for the same reason. For example, it may not adopt a more balanced position vis-à-vis the Arab states and Israel, on the grounds that it will have an impact on supplies from the region. Similarly, its position towards Iran may harden further as concerns about spikes in oil prices may be lower now than before its changed energy scenario.

Conversely, it may also initiate some states, which took advantage their energy resources to adopt a more belligerent position on security-political issues, to be more cooperative. It may also allow other nations, whose energy security imperatives forced them to align with or support energy-supplier states, often against their will, to adopt a more independent position.

However, while energy-based considerations may affect the behaviour of some nations, it works more as a force multiplier, with other factors being the prime motivators for actions taken. Ironically, in many ways, the US' 'pivot' or 'rebalance' towards the Asia-Pacific could be perceived as a reflection of its erstwhile policy towards containing the Soviet Union to prevent Moscow from expanding control over the energy-producing Persian Gulf states. Given the fact that Washington sees the Asia-Pacific region to be of vital importance to the US' economic and trade interests, it wants to ensure that the region, and more importantly, its sea-lanes remain free and secure. This has become more important following the recent spate of territorial disputes that have taken place

in the South and East China Seas, and China's growing influence and proclivity to display its diplomatic and military strength in asserting its claim on disputed territories in the South and East China Seas.

Prior to the recent energy freedom of the US, concerns about the impact of conflict in the West Asian region and particularly on oil prices, was a major factor in Washington's continued focus on that part of the world. Today, the US has greater room for maneuverability in that respect, and can take a more robust stand on issues, ranging from Iran's nuclear posture to terrorist threats, and reassertion of its interests in the Asia-Pacific region, which were perceived to have been diminishing to China's benefit. However, the US' interests at a global level has always been much more than about ensuring access to energy. It is about ensuring larger issues such as free markets, and ensuring free flow of goods, including energy resources, through secure sea-lanes, and sustaining the political and security architecture it put in place after the end of the Second World War. It is therefore unlikely, that the US will adopt an isolationist stance; on the contrary, it will most likely use its energy bonanza to recover and indeed strengthen its profile on the global geopolitical canvas.

The US' claim that it will become energy independent shortly on the back of the revolution in its shale resources technology has been followed by Washington's announcement of its 'rebalancing to Asia' policy. These two factors have set off a debate on the tectonic shifts that may accrue in the geopolitical landscape of the world's energy sector as well as global geopolitics. This monograph looks at the sustainability of the shale revolution, and whether the US' claims are indeed justified and the geopolitical consequences and strategic implications thereof on the global energy scenario. It will also look at the impact of the 'shale revolution' on traditional energy producers, particularly the West Asian oil and gas producers and exporters on the one hand, as well as the impact and implications of these changes on the energy security policies of the large Asian energy consumers and importers, such as China and India, on the other.



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