

中國與印度： 重新定義能源安全的範例

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關鍵字：中國、印度、能源安全

中文摘要

本文是以「傳統安全討論範圍正在擴大與深化，能源安全已被視為國家安全研究的關鍵成分」為背景。這些議論已使國家安全遠遠超過西發利亞（Westphalian）國家使用武力此一工具的範疇（政治結構與實體安全），擴大到含括「資源、環境與人口的問題」。換言之，即在處理對「一國住民生活品質」的威脅而非對國家的結構的威脅。因而在確保安全方面，人類已躍升為最重要的核心目標與最關鍵的構成成分，也使得國家的主權從「權力」轉變到「責任」。儘管批判者憂心如此擴大與改變傳統國家安全概念將會「破壞知識的凝聚力，而使其更加難以謀劃出得以解決任何這些重要問題的方案」，但是此一發展中安全議論卻正好為本文所要聚焦的中國與印度如何攜手改變能源安全範例的理論辯論提供了更寬廣的背景。

China-India: Redefining Energy Security Paradigm

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Key Words: China, India, energy security

This paper is located in the backdrop of widening and deepening of traditional security discourses which have made energy security a critical component of national security studies. These discourses have since broadened national security much beyond the domain of physical security for political structures using military as instrument of the Westphalian State and expanded it to include “resources, environment and demographic issues” and in terms of dealing with threat to “the quality of life for the inhabitants of a state” rather than state structures.² Security is now defined as “existential threat to a referent object, by a securitizing actor, who thereby generates endorsement of emergency measures beyond rules that would otherwise bind.”³ Humans have emerged as the most important central referent object and development

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 - ² Jessica Tuchman Matthew, “Redefining Security”, *Foreign Affairs*, Vol. 68, No. 2 (1989), p. 163; Richard H. Ullman, “Redefining Security”, *International Security*, Vol. 8, No. 1, (1983), p. 133.
 - ³ Barry Buzan et al., *Security: A New Framework for Analysis*, (London: Lynne Rienner, 1998), p. 5.

most critical component in ensuring security thereby turning State sovereignty from 'power' to 'responsibility'. Critics, of course, fear that such expansion and transformation of conventional concepts are going to "destroy its intellectual coherence and make it more difficult to devise solutions to any of these important problems."⁴ It is this evolving discourse on security that provides the broader backdrop for this paper's theoretical debate on how China and India are together transforming the energy security paradigm.

The empirical side of this story begins from the oil embargo of 1972 which had unleashed debates about the "strategic dimensions" of energy.⁵ The coal-fired industrial revolution's global imperial powers of 19th century were for the first time challenged, not by war, but by a suppliers' cartel of the major oil exporting countries. The knee-jerk reactions of the coal-fired imperial powers had been to use military force but they also tried to infuse petrodollars, oil exploration technologies and human resource to build partnerships with these oil rich non-European countries. Meanwhile, this new experience triggered by this oil embargo also awakened coal-fired imperial powers to begin working towards diversifying their sources and suppliers of energy for ensuring uninterrupted supply of energy for their national development needs. Meanwhile, given that hydrocarbons have since remained as most versatile and efficient source of energy, their scarcity has

⁴ Stephan M. Walt, "The Renaissance of Security Societies", *International Studies Quarterly*, Vol. 35, no. 2, (1991), p. 213.

⁵ Girijesh Pant, *India: The Emerging Energy Player*, (New Delhi: Dorling Kindersley India Pvt Ltd., 2008), p. 1.

come to occupy the very center of energy security discourses. Especially, the combination of high energy-density and easy transportability of oil makes it especially attractive as a source of energy around the world.⁶ The securitization though has been facilitated by the persistent reality where major oil consuming countries are not the same as major oil producing countries. The securitization has been further reinforced by that fact that much of these hydrocarbons reserves remain located in conflict zones of 20th century; have had problematic supply lanes with vulnerable chock-points, making energy security a concept that continues to hover around ensuring imports of hydrocarbons, especially oil, for major and emerging economies where demand for import of gas and oil had expanded exponentially and will continue to do so.

At the dawn of 21st century, however, this securitization of energy (read oil and gas imports) has been further compounded by concerns about threats of climate change and maritime terrorism making use of imported hydrocarbons still more cumbersome input to dominant development models. In face of these uncertainties and sharply fluctuating (read rising) oil prices, these concerns about ensuring energy security while at the same time cutting on carbon emissions have triggered a new era of nuclear renaissance which has already begun to transform the very contours of this 20th century energy security paradigm.

⁶ Vaclav Smil, *Energy at the Crossroads: Global Perspectives and Uncertainties*, (London: The MIT Press, 2003), p. 15.

Asia represents a major new theatre for expansion of nuclear power generation with China and India taking a clear lead in this transformation. Considering that there remain serious concerns about rising purchasing power and demand for energy in these two countries – which threatens to metamorphose international energy markets, discourse, and even the very understanding on energy security paradigm – security discourses are increasingly debating on how expansion of nuclear power generation in these two states will transform the very connotations of not only energy security paradigm but also all the nuclear nonproliferation norms and regimes of 20th century. In spite of Fukushima tsunami tragedy of March 2011, both Beijing and New Delhi remain determined to expand their nuclear power generation capacity respectively to 20 GWe by 2030 and 40 GWe by 2020. It is in this backdrop of China and India transforming their energy basket that this paper seeks to examine their respective nuclear power generations policies and to crystal gaze their implications for their bilateral equations as also for the future of energy security discourses.

Energy Security Paradigm

To begin with, energy is normally understood as “the capacity to work” and from that logic sufficient energy supplies are required for both national security and national development. From this minimalist perspective itself, energy becomes *sine quo non* for national power and this only gets further stimulated by the largely power-driven international system. More specifically though, energy security has been privileged in most national

discourses as “securing an uninterrupted supply of energy remains critical for the functioning of an economy” and it is believed to provide “assurance of the ability to access the energy resources required for the continued development of national power.”⁷ Successive reports of International Panel on Climate Change (IPCC) have also popularized energy security discourses around the world by securitizing carbon emissions that potentially poses existential threat to human survival. Almost all projections of world energy consumptions patterns, according to IPCC, are expected to see an absolute increase in carbon emissions coming times. The energy and emission scenarios of the IPCC expect energy consumptions to rise by a factor varying between two and seven times by the end of 21st century, depending on various demographic, technological assumptions.⁸

The patterns of energy consumptions and carbon emissions present a very interesting case of securitization as well. Just four countries namely, China, the US, Russia and India produce more than half of world’s total carbon emissions. But of these for only China and India are expected to witness steep rise in their consumption as well as their carbon emissions. Even if India contributes only a

⁷ Jan H. Kalicki and David L. Goldwyn, *Energy and Security: Towards a New Foreign Policy Structure*, (Washington DC: Woodrow Wilson Center Press, 2005); Bert Druyt et al., “Indicators for Energy Security”, *Energy Policy*, No. 37, p. 2167.

⁸ N. Nakicenovic and R. Swart, *Emissions Scenarios, IPCC WG III*, (London: Cambridge University Press, 2000) cited in Vaillancourt et al., “The Role of Nuclear Energy in Long Term Climate Scenarios: An Analysis with the World-TIMES Model”, *Energy Policy*, Vol. 36 (2008), pp. 2296-2307.

low 4.46 per cent of it as of now, nearly one-third of India lacks access to electricity and this segment of Indian populations is expected to achieve access to power during the 12th Five Year Plan of 2012-2017.⁹ While both China and India are trying to work on alternative energy resources, they have made ambitious plans to expand their nuclear power generation capacity which will transform their basket of energy as also their understanding on energy security. From its perennial less than 3 per cent share India's nuclear power is expected to go as high as to about 10 per cent of India's total power generation. But this will make India's energy security paradigm much more vulnerable not only to threats that exist from India's suppliers or its sea-lanes but also from nuclear technology control regimes. The same is also true of China though China is a nuclear weapon state (NWS) and signatory of nuclear nonproliferation treaty that places it in a very different category.

The fact that China and India are seen as the fastest expanding consumers of energy and are particularly noticed for fastest expansion of their nuclear power generation capacities, their energy profiles and policies are widely expected to have determining influence on future evolution of energy security paradigm. Already, thanks to the major expansion and procurement plans in China and India, nuclear energy has come to be projected

⁹ Bernhard May, "Energy Security and Climate Change: Global Challenges and National Responsibilities", *South Asian Survey*, Vol. 17, No. 1 (2010), p. 27; International Energy Agency, "Independent Statistics and Analysis", 7 February 2010, <http://www.eiadoe.gov/cabs/India/NaturalGas.html>

as the potential savior of energy security paradigm.¹⁰ World's nuclear power generation, for instance, is expected to triple by 2050 and help save this world between 0.8 to 1.8 billion tons of carbon emissions each year thereby stabilizing global greenhouse gas emissions.¹¹ But at same time nuclear energy continues to be surrounded by various uncertainties. Bulk of India's nuclear reactors are not under safeguards and even after Indo-US nuclear deal four of these will remain for military purposes and not open to International Atomic Energy Agency (IAEA). So, while tilt towards nuclear power promises to help in mitigating and cutting emission levels, procurement of nuclear materials and technologies have their own challenges.

India's Energy Security Profile

Prima facie, India seems well endowed with vast energy reserves and has developed substantial technical expertise in a whole range of energy sectors from coal, oil and gas to renewable sources like hydro, wind, solar and even nuclear power generation. As on 2010, power generation from different sources were coal 53.3 per cent, gas 10.5 per cent, nuclear 2.9 per cent, oil 0.9 per cent and renewable sources together 7.7 per cent.¹² India's

¹⁰ Peter Beck, *Prospects and Strategies of Nuclear Power: Global Boon or Dangerous Diversion*, (London: Earthscan Publications, 1994), p. 22.

¹¹ Karl Duestch and Ernest J. Moniz, "The Nuclear Option", *Scientific American*, September 2006, p. 45.

¹² Ministry of Power, Government of India, "Power Sector at a Glance", accessed 8 Feb 2011 at http://www.powermin.nic.in/JSP_SERVLETS/internal.jsp

growing respectability in manufacturing windmills, refining crude oil, and its participation in the six-nation International Thermonuclear Experimental Reactor (ITER) group since 2005 has clearly established India's credentials in the frontiers of research and development in energy sciences and technologies.¹³ But it is not these vast reserves and technologies but global consumption patterns, the geopolitics and even mismanagement of India's energy policies that make it an interesting country with multiple implications for energy security paradigm. This juxtaposed with the fact that India is the fourth largest energy consumer of oil; that its economy has clocked impressive growth rates for last decade and that the insatiable rising demand for energy of its 1.21 billion people has become so noticeable has implications for major powers, as also for its peers and neighbouring countries.

Secondly, as we talk of energy security in terms of increasingly unavailability of hydrocarbons sources, their fluctuating prices, their uncertain supplies, India imports about two-thirds of its total oil each year and two-third of it comes from Persian Gulf countries. Internally as well, India's expanding energy deficit portends to emerge as one most critical national challenge to its continued and peaceful rise. Put together with projections about expanding global and regional energy scarcity, India's energy security threatens to further complicate India's

¹³ R. Ramachandran, "India in ITER: all-round support helped", *The Hindu* (New Delhi), 9 December 2005, p. 13; also Tatiana Sinitsyna, "A thermonuclear future", *The Hindu* (New Delhi), 25 November 2005, p. 11; M. R. Srinivasan, "The ITER project and energy security", *The Hindu* (New Delhi), 27 July 2005, p. 10.

relations with its immediate neighbouring countries. This is especially true of China which has demonstrated much faster pace of rising energy consumptions as also much stronger leverages in procuring energy, often by undercutting New Delhi. Either by sharpening their mutual skepticism as also creating new opportunities for external actors to put one against the other and this energy politics presents a whole new challenge for China-India ties with implications for regional peace and security. While focusing on cooperative strategies and alternative sources remain part of their energy strategies yet, in the immediate, it is the ever shrinking international availability of energy resources that is expected to create a specter of intra- and inter-regional imbalances between supply and demand, further complicating China-India ties.

Emerging Global Trends

In coming years, emerging economies and increasingly dynamic societies of China and India are all set to be the major energy importers along with resurgent Russia and the dominant US, and will have to learn to evolve newer formulations on coordinating their energy procurement strategies. At the global level, the growing Russian activism perhaps most aptly explains these new trends in energy becoming the future currency of power.¹⁴

¹⁴ Vladimir Likhachev, "Russia's Potential as an Energy Producer and Exporter", in Patrick L. Clawson (ed.), *Energy and National Security in the 21st Century*, (Washington DC: National Defense College, 1995), pp. 33-36; Vladimir Rudyuhin, "Russia Consolidating to Conquer", *The Hindu* (New Delhi), 17 November 2006, p. 10; also Vladimir Rudyuhin, "Russian as energy superpower", *The Hindu* (New Delhi), 29 July 2006, p. 11.

In January 2006, the successful Russian standoff with Ukraine leading to a steep upward revision of the prices of its gas supplies to Ukraine from a mere \$61 ptcM (per thousand cubic metres) to \$230 ptcM – with Germany picking up the difference – had demonstrated the rising power of energy in inter-State relations.¹⁵ News of Russian energy monopoly State firm, *Gasprom*, arm-twisting other recipients into such upwards price revisions or, Russia dictating for more severe environmental norms on its foreign investors in energy sector, continue to come.¹⁶ Several European countries import gas from Russia – Germany 33%, Italy 29% France 27%, Ukraine 80% and so on – and Britain and Spain also remain energy-dependent on Belgium and Norway. Broadly speaking, Russian monopoly company, *Gazprom*, supplies 25 per cent of Western Europe's gas which makes Russian "energy sources as political weapons" against the West and symbol of Russia's standing amongst the G-8 countries.¹⁷

The United States, of course, has always been a major player in global trade in hydrocarbons with New York Mercantile Exchange, International Petroleum Exchange (IPE) and Organisation of Petroleum Export

¹⁵ Vladimir Radyuhin, "Ukraine stealing gas: Russia", *The Hindu* (New Delhi), 3 January 2006, p. 13; Vladimir Radyuhin, "Russia, Ukraine end gas row", *The Hindu* (New Delhi), 5 January 2006, p. 14.

¹⁶ "Russia's Sakhalin-1 project 'respects environmental norms': Rosneft", at *Yahoo News* (on 15 October 2005) at http://news.yahoo.com/s/afp/20061003/sc_afp/russiausoil

¹⁷ Vladimir Rudyahin, "Putin pushes a wider agenda for the G-8", *The Hindu* (New Delhi), 28 July 2006, p. 10; also Christian Lowe, "Russia switches off gas to Ukraine", *The Economic Times* (New Delhi), 2 January 2006, p. 16.

Countries (OPEC) dominating the international energy scene. The US military involvement in West Asian conflicts is often described as guided by their energy interests.¹⁸ Indeed, the US has been the most critical player in “securitizing” energy (especially hydrocarbons and nuclear fuels and technologies) and in bringing energy politics to the center-stage of inter-State relations. The United States is also only country which has focused on importing hydrocarbons while saving its domestic reserves for posterity. Also, unlike most other countries per capita consumptions of energy in US has been very high. All this clearly portends the potential to make energy the major flashpoint in 21st century war and peace making US a major factor in China-India ties.¹⁹ Conversely, it also provides an opportunity where three can cooperate in nuclear power generation that is seen to carry the potential to replace nuclear weapons as the future ‘currency’ of power in 21st century world politics.²⁰

Energy in China-India Equations

What is particularly interesting from Indian standpoint is that most of the hydrocarbon energy flashpoints seem to surround China and India, and the most important emerging new player in global energy markets – China – happens to be India’s largest neighbour and the one with which India shares rather complicated

¹⁸ Vito Stagliano, *A Policy of Discontent: The Making of a National Energy Strategy*, (Tulsa, Oklahoma: PennWell Corporation, 2001), pp. 212-213.

¹⁹ Swaran Singh, “Multilateralizing Chindia”, *Asia-Pacific Bulletin* (East West Center Washington DC), 28th April 2011, p.2.

²⁰ note 9.

history.²¹ What is already known is that both China and India are getting concerned about their rising energy deficit and thought the two find themselves in a similar predicament their responses have been a mix of cooperation and competition. Both differ fundamentally on their preferred prescriptions on how to resolve this. China not only seems to be far more successful in procuring foreign assets and oil/gas fields around the world but also outsmarts India in engaging India's neighbouring countries. China's special ties with several smaller neighbours of India, in energy sector, have often negatively impacted upon India's China policy.²² Such skepticism in New Delhi flowing from examples like the Chinese lowering of their bid for the PetroKazakh Oil in 2005 bid. But these two have also had examples of coordination in their energy policies. Their oil majors – the ONGC Vedesh Limited and the China National Petroleum Corporation – had created history by putting up a joint bid for 38 per cent stake in PetroCanada's operations in *Al Furat* gas and oil fields in Syria in December 2005 and it was granted to this first ever China-India joint venture in third countries – aptly called the Himalayan Corporation.²³

²¹ S. Enders Wimbush, "Challenges of Energy Security", in Jasjit Singh (ed.), *Oil and Gas in India's Security*, (New Delhi: Knowledge World, 2001), p. 6.

²² K. A. Badarinath, "Cabinet panel to look into FDI filter plan", *The Economic Times* (New Delhi), 18 October 2006, p. 26; also Jay Raina, "Proposed FDI law in trouble", *The Economic Times* (New Delhi), 16 October 2006, p. 9. India has lately expanded the spectrum of its 'security considerations' to disallow China's investments in several sectors.

²³ Soma Banerjee, "Unity pays, oilcos learn at their cost", *The Economic Times* (New Delhi), 7 December 2005, p. 23; "ONGC-CNPC bag Syria deal", *The Economic Times* (New Delhi), 21 December 2005, p. 1; Siddhartha Vardarajan, "India, China and the Asian axis of oil", *The Hindu* (New Delhi), 24 January 2006, p. 10.

Some of these initiatives have been important component of building a China-India 'strategic and cooperative partnership' in the hydrocarbons sectors – especially relating to their bidding for overseas oil reserves – the oil companies of China and India had firmed up their plans in MoU signed during the January 2006 visit of India's Petroleum Minister, Mani Shankar Aiyer to Beijing.²⁴ This, however, does not ensure that China will not continue with its buying spree which clearly impacts on India's energy security prospects. During January 2006 visit to Beijing by India's Petroleum Minister itself, China had inked a deal with Myanmar to buy gas from latter's fields which are jointly owned by Indian companies. No doubt, India has, at least partly, to blame itself for such an outcome. India's energy acquisition being underbid and acquired by Chinese companies has not been one-way exercise; sometimes India's reluctance and cautious behaviour has also facilitated China becoming the beneficiary. China, for example, had managed to buy major stakes in Nigerian oilfields in 2006 because Government of India had shot down an ONGC's proposal to acquire a 45 per cent stake in a Nigerian oil and gas field for approximately \$2 billion, calling it "too risky" a venture.²⁵

Cooperative versus Competitive strategies

²⁴ "Aiyar seeks tie-ups with China", *The Hindu* (New Delhi), 11 January 2006, p. 14; Soma Banerjee, "Indian oil cos to explore China for JVs", *The Economic Times* (New Delhi), 20 December 2005, p. 11.

²⁵ "OVL's Nigeria field plan spiked", *The Times of India* (New Delhi), 17 December 2005, p. 19.

As regards energy being a factor in China-India equations India's nuclear deal of October 2010 with the United States seems to have emerged as a major irritant in their efforts to evolve cooperative energy security strategies. Even at the initial stage of these India-US nuclear negotiations, China had responded by making an offer of putting eight nuclear power reactors to Pakistan promising to commission these plants starting by 2015 and complete them all within next 10 years.²⁶ The fact that all nuclear technologies between India and Pakistan remain interwoven into their nuclear deterrence perceptions makes any China-Pakistan nuclear cooperation an anti-New Delhi initiative. Similarly, Chinese cite how India has revived nuclear technologies from former Soviet Union and its state, the Russian Federation. India today has the distinction of being an important investor (\$2.7 billion) in Russia's Sakhalin oilfield where India's ONGC Videsh Limited holds 20 per cent equity and is expanding.²⁷ In fact, the crude from Sakhalin-I had begun arriving in Indian refineries in Mangalore from December 2006 and India was negotiating with Russia for buying stakes in Sakhalin-III fields in the far eastern Russia.²⁸

²⁶ "Pakistan may buy six nuclear reactors from China", *The News*, Pakistan, January 4 2006 available at <http://www.jang.com.pk/thenews/jan2006-daily/04-01-2006/main/main11.htm>

²⁷ "Russia open to more oil projects: Aiyar", *The Hindu* (New Delhi), 2 October 2005, p. 11. Russian state owned company Rosneft has since returned India's loan of \$ 1.5 billion. This leaves India's current investment in Sakhalin to only \$ 1.2 billion which means India is looking for making new investments in these gas and oil fields.

²⁸ Raviprasad Kamila, "From Sakhalin to Mangalore, a new route of integration", *The Hindu* (New Delhi), 3 December 2006, p. 10; also T.S. Subramanian, "India will take part in Sakhalin-III: Russian envoy", *The Hindu* (New Delhi), 3 December 2006, p. 10.

Nearer home, Myanmar's gas fields have been other issue of concern in China-India ties. In January 2006, Myanmar had signed an MoU with PetroChina to supply 6.5 trillion cubic feet (tcf) of gas from Block A for coming 30 years – where India's ONGC and GAIL respectively hold 20 per cent and 10 per cent stakes. This did stoke India's skepticism about energy becoming an issue in India's equation with China in the context of their immediate neighboring countries. Compounding its effect was the fact that this deal was to come to light on the eve of Indian Petroleum Minister's visit to China which was being undertaking to sign deals "to cooperate and submit joint bids" for energy sources available in the international market.²⁹ What is interesting to note is that Yangon did not even inform India about this deal with PetroChina which has beaten India's ONGC Videsh Limited on several international bids. However, this does not halt India from continuing its solitary explorations and India continues to participate in putting joint bids with China and in joint explorations in Myanmar (alongwith Dewoo of South Korea) and in Bay of Bengal (with Russia's Gazprom).³⁰

As regards developing joint or cooperative strategies involving their immediate neighbours, such disjunctions have only further sharpened their political differences which make energy another most critical

²⁹ "Myanmar deals a blow to Aiyar's oil diplomacy", *The Times of India* (New Delhi), 11 January 2006, p. 17.

³⁰ "ONGC: Rich gas reserves in Myanmar block verified", *The Times of India* (New Delhi), 30 December 2005, p. 10; "GAIL begins drilling in its Bay of Bengal offshore block", *The Times of India* (New Delhi), 30 December 2005, p. 10.

stumbling bloc to evolving any common understanding. At bilateral level though, there exist few successful examples of ad hoc, one-time and even lasting initiatives in China-India energy cooperation. But by and large, given China's engagement with India's neighbours, New Delhi feels constrained not only in working towards successful sub-regional efforts but even in exploiting its energy rich northeastern region. Indeed the impact of these complex equations goes into other sectors of energy generation. For example, plans to generate hydroelectric power through damming and re-routing several river systems also get delayed by disputes with downstream countries. Pakistan, for instance, has been pushing for an international arbitration to resolve dispute over the Baglihar dam.³¹ Similarly, disputes with Pakistan had put on hold India's \$40 billion deal with Iran to import 7.5 million tons of liquefied natural gas annually for 25 years for their inability to construct the Iran-Pakistan-India gas pipeline. Over years, there have also been cases where India has been found equally reluctant and cautious when it comes to external initiatives like the one by Unocal trying to build a South Asia Integrated Gas (SAIG) project of multiple pipelines.³²

Nevertheless, there have also been positive developments in South Asian Association for Regional Cooperation (SAARC). In their November 2005 SAARC

³¹ Praveen Swami, "Baglihar dam work will go on: J & K official", *The Hindu* (New Delhi), 6 December 2006, p. 13.

³² Aparajita Biswas, "Cooperation and Conflict in the Hydrocarbon sector in Indian Ocean Region", *Journal of Indian Ocean Studies* (New Delhi), Vol. 12, no. 1 (April 2004), p. 83.

summit in Dhaka, the Heads of States or Government welcomed the Joint Statement of the First SAARC Energy Ministers meeting in October 2005 in Islamabad. The Energy Ministers had agreed to the recommendations to establish the SAARC Energy Centre in Islamabad; to promote development of energy resources, including hydropower; and energy trade in the region; to development renewable and alternative energy resources; and promote energy efficiency and conservation to constitute a South Asian Energy Dialogue process, involving officials, experts, academics, environmentalists and NGOs, to recommend measures to tap potentials of cooperation in energy sector to provide inputes to the Working Group on Energy. It is in this new context, that New Delhi has revived its talk about evolving an integrated energy security strategy especially in relation to its immediate periphery and to dwell upon its linkages and impact on similar strategies of other major players in wake of the emerging scramble for limited international energy sources against the ever growing demand and purchasing power amongst the South Asian countries.

India's Energy Security Strategy

At the very outset, something that clearly underlines the low priorities given to energy sector so far is established by the fact that India's energy mix has undergone but little change during the last three decades. Coal, that constituted 28 per cent share in India's total energy consumption, stood at 55 per cent share in 2001 and oil that comprised 30 per cent of India's total energy consumption in 1970 was 31 per cent by 2001. This is

despite the fact that, during these three decades, both these sectors had witnessed an annual growth of 5.1 and 5.5 per cent per annum.³³ But for last five years India has been majorly focused on expanding nuclear power generation though the ground reality has been changing but slowly. Gas has seen another visible growth sector from being negligible share to reaching 2.5 per cent share in India's energy consumptions witnessing an impressive annual growth. Despite India's impressive credentials as also in spite of so much focus on this sector, the share of nuclear power has also remained dismal all these years.

The fundamental limitation in evolving an effective energy strategy for India has been the problem of lack of overall coordination which has particularly proved to be a stumbling block in encouraging public-private partnership which has been hallmark of all experiments at economic reforms and opening up around Asia.³⁴ Several components of energy policy making in India involve ministries of Coal, of Power, of Non-Conventional Energy Sources, of Petroleum and Natural Gas, of Environment and Forests and so on as also Department of Atomic Energy. Besides, successive governments have resorted to setting up experts committees and advisory councils. The first such committee was set up in 2004 under Ministry of Power while the second was set up in mid-2004 i.e. soon after the new United Progressive Alliance

³³ Leena Srivastava and Megha Shukla, "The Present Status and Future Prospects of Energy in India", in *Asian Energy Markets: Dynamics and Trends*, (Abu Dhabi: The Emirates Center for Strategic Studies and Research, 2004), p.317.

³⁴ *Ibid.*, p. 318.

government took over power and this second committee had issued a draft integrated energy policy by mid-2005. In late 2005, another Advisory Committee on Oil Diplomacy was created which was subsequently tasked with preparing the India Energy Security Vision 2025. In July 2005, Prime Minister had announced establishment of an Energy Coordination Committee to guide India's energy policy.³⁵

Nevertheless, despite this multiple initiatives in creating ministries, departments, regulatory commissions, and advisory committees, the fundamental operational problems remains one of lack of coordination, corruption and political interference which clearly mars all progress not only in India but in most South Asian countries.³⁶ This also creates problems of developing mutual cooperation and, in the long run, an integration South Asian energy security strategy. Apart from setting up India's own house in order, it also remains intertwined with the imperative of integrating it with the larger South Asian energy market. Indian strategy has to begin by appreciating that, in South Asia, there remain significant variations in resource availability and technological skill to harness these resources. Conversely, this also means that, for South

³⁵ International Energy Agency, *Energy Policies of IEA Countries: 2005 Review*, (Paris, 2005), p. 244.

³⁶ Peter Meier and Mohan Munasinghe, *Sustainable Energy in Developing Countries: Policy Analysis and Case Studies*, (Cheltenham, UK: Edward Elgar Publishing Ltd., 2005), pp. 256-257; Abdul Latif, *The Implementation of Energy Policy in Pakistan*, (Karachi: Royal Book Company, 2004), pp. 301-302; Farzana Naqvi, *Energy, Economy and Equity Interactions in a CGE Model for Pakistan*, (Singapore: Ashgate, 1997), pp. 230, 232.

Asian states, there lay large economic benefits to be obtained by pooling of resources to reduce the costs of per unit of energy.³⁷

For Indian energy policy makers, therefore, the first step in evolving their energy strategy should be to appreciate how regional integration should be seen as complementary to India's wider goal of economic liberalization. Secondly, all future forecasts about India's energy requirements must be projected keeping in view India's (a) extremely low levels of per-capita energy consumptions, (b) sizeable economic growth rate patterns with annual growth now touching 8 to 9 per cent per annum, (c) decreasing energy elasticity to the GDP ratio due to increase in services sector and increasing efficiency in manufacturing techniques, and (d) rapidly growing population of youth who drive consumption levels.³⁸ There remain several lacunae that also need to be addressed in developing an integrated approach to dealing with its expanding energy deficit.

Firstly, there are experts who make a clear distinction between buying and/or occupying international gas and oil fields and buying energy from open market sources. They believe that indiscreetly trying to buy foreign energy stakes may not necessarily be the best strategy. They cite several examples like Japan which has

³⁷ R.K. Pachauri and G. Vasudeva, *Energy in the Indian Sub-Continent*, (London: Petroleum Economist, 2000), p. 108.

³⁸ B. K. Chaturvedi, "Domestic Resources of Energy, Gulf and Future of Global Energy II", in S. N. Malakar (ed.), *India's Energy Security and the Gulf*, (Delhi: Academic Excellence, 2006), p. 7.

flourished by buying rather than owning foreign energy reserves. Conversely, US companies had once owned much of giant oilfields in the Gulf but were expropriated; they are now buyers and investors, not owners.³⁹ Similarly, there are suggestions that a wholesome strategy should be dynamic. For instance, with the rising crude prices should imply looking afresh at alternatives like exploiting tar sand, oil shale and so on which may now become cost-effective compared to rising prices of oil.⁴⁰ This may enhance autonomy in case of India, that has substantial reserves and other advantages on these alternatives. The same is also true of renewable resources like Solar and Wind sources which are found in abundance in India both in its resources as well as its expertise.⁴¹

Secondly, in view of the rising volatility of international crude markets, the concept of a strategic crude reserve has been under consideration for several years.⁴² India has already has build crude reserves starting from 15 to 30 days and the thinking to expand

³⁹ Swaminathan S Anklesaria Aiyar, "Avoid unreliable energy suppliers", *The Times of India* (New Delhi), 20 November 2005, p. 20.

⁴⁰ Ashok Parthasarathi, "Renewable energy sources coming of age", *The Hindu* (New Delhi), 17 August 2005, p. 10; also Amit Bhandari, "On An Alternative Fuel Hunt", *The Economic Times* (New Delhi), 26 August 2005, p. 13.

⁴¹ P. R. Shukla, "Future Energy Trends and Carbon Mitigation Strategies for India", in Pierre Audinet, P. R. Shukla, Frederic Grare (eds.), *India's Energy: Essays on Sustainable Development*, (New Delhi: Manohar, 2000), pp. 42-43.

⁴² "India to seek Saudi help in building strategic oil reserve", *India Daily* online (retrieved on 15 October 2006) at <http://www.indiadaily.com/editorial/2092.asp>

these further has been echoing in recent past. In January 2006, Government of India announced its decision to expand its current 30-day reserves to over five-million tons with additional reserves being built at Mangalore and Vizag with costs of Rs. 11, 267 crores.⁴³ These strategic reserves can not only be used in time of embargoes or other such crises but can also be released to mitigate sudden rising in international oil prices. This is especially critical as India's reliability on imported oil has been rising rapidly in recent years. Currently, India imports over 70 per cent of its crude oil and its cost has recently risen exponentially from Rs. 83,528 crore for 2003-04 fiscal to Rs.171,702 crores for 2005-2006 fiscal.⁴⁴ Thus building crude reserves have strong strategic and economic logic and makes political sense as it does not negatively impinge on India's relations with its immediate neighbours.

Thirdly, India's increasing global collaborations remain aimed at procuring and implementing advanced technologies. And, this does not apply only to the nuclear power sector which has been in public debate following India-US nuclear deal of March 2006. This remains equally relevant for traditional sectors including oil, coal and hydropower sectors. In October 2005, for instance, British Petroleum and India's HPCL had signed partnership for upgrading India's oil refinery at Bathinda

⁴³ "Strategic crude reserves gets nod", *The Hindu* (New Delhi) 7 January 2005, p. 16.

⁴⁴ Richa Mishra, "IndianOil plans to import 40.9 mt crude oil in '06-07", *Business Line* online dated 04 June 2004, available at <http://www.thehindubusinessline.com/2006/06/04/stories/2006060402590200.htm>

(Punjab) where the former not only plans have a 50:50 partnership for the above refinery but also bring in world class technology to develop alternative energies as also evolve joint ventures in other energy sectors, including overseas.⁴⁵ Similarly, India has achieved high standards in design, development, manufacture and installation of solar photovoltaic cells (SPV) systems and has been supplying a whole variety of SPVs to Nepal and Sri Lanka which will create positive atmospherics for joint strategies. India has also been working on collaborating with Sri Lanka on deep-water exploration on their shores which has become a thriving sector in India in recent years' public-private partnership.

Fourthly, on the negative side, one also often sees a misplaced complacency and self-confidence in India's coal resources – geological resources of 247 billion tons (bt), proved reserves of 93 bt, reserve-to-production ration of over 200 years. India's Tenth Plan Document (available online), however, has fixed the target for coal production for year 2006-07 that leaves an unfilled gap of 30 million tons of coal.⁴⁶ As a result, despite India having the third largest coal reserve, it still continues to depend on imports to fill in a deficit of over 8 per cent of coal consumption each year. All this speaks volumes for the real cause being the mismanagement of India's energy establishment rather than lack of resources being the culprit. Similarly, nuclear power generation is another sector which remains

⁴⁵ "BP may tie up with ONGC for KG Basin", *The Economic Times* (New Delhi), 14 October 2005., p. 14.

⁴⁶ T.L. Shankar, "Reality of coal security", *The Economic Times* (New Delhi), 5 December 2005, p. 14.

equally neglected. Despite having focused and allocated national resources and attention on nuclear science and technologies from the highest level from year 1948, India's success in sectors like Wind energy has been far more impressive than what has been India's experience in nuclear power generation.

And finally, there is strong need to overhaul India's internal institutional set up to gear up to deal with future challenges. Experts have cited examples of the United States which has an independent, integrated and powerful Department of Energy. Similarly, France has Electricity de France (EDF). Experts have also proposed that efforts be made to achieve 'sustainable' approach to energy sector from grassroots to the national level. There has been much criticism of the pace of power sector reforms and State-level power regulatory bodies which are expected to become dynamic and independent are believed to becoming far more bureaucratic.⁴⁷ Even at the national level vested interests remain dominant and especially vulnerable have been India's rural regions and poor people. Accordingly, there has been talk about UPA government planning to 'purge' the 'existing inefficient regime' and the Tenth Five Year Plan document talks about creating a "independent regulatory authority credible with consumers and producers for ensuring level playing field between incumbent public sector and the new private sector

⁴⁷ See for example S. K. Chopra, *Energy Policy for India: Towards Sustainable Energy Security in India in Twenty First Century*, (New Delhi: Oxford & IBH Publishing, 2005)

entrants” which is expected to bring dynamism to India’s energy entrepreneurs.⁴⁸

Conclusion

Recent decades have witnessed China’s global overdrive to buy gas and oilfields and energy being seen as central motive of the United States’ successive and devastating wars in the Middle East leave underlined the rising significance of energy in international politics. Notwithstanding this continued contentions in China-India relations have not allowed the evolution of joint strategies to tackle their energy security deficit. Meanwhile, there sure have been some efforts and initiatives that have put energy deficits at the center-stage of their security discourses. Even outside these two countries, China and India are increasingly identified as the emerging largest importers of hydrocarbons as also of nuclear fuel, reactors and other technologies which promises to make both Beijing and New Delhi major players in global energy politics in the coming years.⁴⁹

⁴⁸ Sudha Mahalingam, “Power regulation: remedy worse than the malady?”, *The Hindu* (New Delhi), 5 October 2005, p. 10.

⁴⁹ What makes ‘energy’ a security issue is the rapidly growing demand for ‘clean’ and ‘efficient’ energy sources which can not be provided domestically. Given that most of the hydrocarbons happen to be mostly in conflict zones and nuclear technologies remain under strict controls as also complicated, rapidly developing countries face an ever-expanding demand and ever-shrinking availability of nuclear technologies and hydrocarbons and this threatens to become critical factor for their domestic stability and international equations. For details see Paul Roberts, *The End of Oil: On the Edge of a Perilous New World*, (New York: Houghton Mifflin Company, 2004), especially chapter “Energy Security”, pp. 237-258.

As regards India, all these hiccups in global and regional energy politics have clear and direct lessons for New Delhi's policy perspectives and planning to deal with its own ever expanding energy deficit.⁵⁰ While India can continue to work towards evolving cooperative energy security strategies, it has clearly prioritized diversification of its energy basket – both in terms of its suppliers and as also its resources. Similarly, India will have to coordinate its energy policies with its immediate neighbours, especially with China and Pakistan where noble initiatives are often circumscribed by their complicated politics. It is this integrated regional approach that can help India mitigate political hurdles and ensure that China and India do not work at cross-purposes as also make economic sense by making energy supplies a cost-effective proposition. Besides, in its unilateral vision and initiatives India continues to focus on exploring alternatives in renewable energy sources, it is this sector of nuclear power generation that promises to provide India with that unique advantage in surmounting its future energy-related challenges.

To sum up, given the nature and experience with nuclear weapons that have dominated the last eight decades of nuclear age, the discourse on nuclear power generation has always been contentious with emotional undercurrents about nuclear technologies being diverted to military purposes dominating most national responses. Secondly, nuclear accidents like Three Miles Island in

⁵⁰ Soma Banerjee, "Moster In The Pipeline", *The Economic Times* (New Delhi), 13 January 2006, p. 15.

1979, Chernobyl in 1986 and now Fukushima in 2011 have contributed to negative public perceptions about nuclear technology. To the least nuclear energy is increasingly seen becoming expensive for reasons of safeguards, security, safety, quality controls and inability. On the other hand, ever rising demand for energy in face of depleting nonrenewable resources, volatility of prices and security of supply lines, mitigations of carbon emissions have revived nuclear renaissance which seems irreversible process having a direct impact on transforming energy security paradigm for 21st century. Presently world has 439 reactors producing approximately 16 per cent of world's electricity. In nine states nuclear energy contributes more than 40 per cent and while 30 states today operate nuclear power plants a total of 50 states had already made requests to International Atomic Energy Agency for similar facilitations.⁵¹ This clearly speaks on how China and India are on the lead in this transformation but the process of this evolution will have its own share of hiccups thanks to complicated China-India ties.

⁵¹ International Atomic Energy Agency, "Nuclear Power Worldwide: Status and Outlook", 23 October 2007 at <http://www.iaea.org/newscenter/pressreleases/2007/prn200719.html>; International Atomic Energy Agency, "Power Reactor Information System", 11 February 2010 at <http://www.iaea.org/programmes/a2/>; United Nations, "Atomic Energy", 9th February 2011 at <http://www.un.org/en/globalissues/atomicenergy/index.shtml>