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Energy Security Insights

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Foreword

There are major changes taking place in the global energy market with a significant increase in natural gas production particularly with exploitation of shale gas reserves in the US. In the global oil market too, there are some significant shifts with the share of OPEC oil declining as non-OPEC supply has increased significantly. In fact, projections indicate that the US will most likely surpass Russia and Saudi Arabia this year as the largest producer of liquid fuels in the world, including crude oil and bio-fuels. This is the result of increases in production in the US and production cuts on the part of OPEC countries. Significantly, Russia is likely to exceed Saudi Arabia in oil production, and collectively the US, Saudi Arabia and Russia will supply over a third of global liquid fuels according to authoritative analysis. The major oil companies have been taking the position for a long time that the hydrocarbon age is nowhere close to ending, and that unconventional petroleum fuels in remote areas which have not been explored yet would provide a substantial share of global oil supply in the future.

While current conditions certainly provide some respite and some degree of relief, it would be unrealistic to imagine that conditions will remain steady for very long. The oil market has exhibited considerable volatility in the past. In fact, when global oil prices quadrupled in 1973-74, very few analysts believed that prices would not remain at high levels for long. However, an increase in non-OPEC supply and major improvements in energy efficiency altered the market radically, such that prices crashed in 1985. They then continued at reasonably low levels for about 15 years, which provided the illusion of prolonged easy market conditions. Consequently, automobiles started becoming larger, energy conservation efforts slowed down, and the development of alternatives was put on hold. Prices then increased quite sharply reaching unpredictable levels well above US$120 per barrel.

The current lull, therefore, could be short lived, and given the experience that the world has had over the last 40 years, price stability and energy security would lie in the development of substitute sources of energy which are sustainable. Also, economic infrastructure will have to be improved to attain much higher levels of energy efficiency. In a country like India, where import dependence for both oil as well as coal is growing, a much longer term vision of energy supply is essential. President Obama in his State of the Union address has rightly emphasised the development of clean energy sources and improvements in efficiency. In fact, he stated categorically "I am also issuing a new goal for America. Let us cut in half the energy wasted by our homes and businesses over the next 20 years." India has a National Action Plan on Climate Change which is comprehensive and ambitious, but should we put in place a system of incentives and disincentives by which market forces can lead us to the fulfilment of the vision underlying the NAPCC? Energy security will be assured only if we are driven by a long term vision in policies and decisions.

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Geo-politics of India's equity investments in energy

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The 'geo-politics' of equity investments in energy in the last decade has largely focused on investments by China, and to a lesser extent, investments by India. Fears that China's and India's equity investments in oil and gas will limit availability for the rest of the world are often discussed on national security platforms. 'Resource competition' between India and China is projected to drive up prices in global energy markets and also lead to full-fledged conflict between the two nations.[1] India and China are accused 'propping-up' globally shunned repressive regimes in return for 'ethical discounts' on oil and gas assets.[2]

These allegations need to be qualified, if not contested. Energy equity investments by India and China are essentially meant to contribute to their energy security. India's current energy security strategy, if it can be called a 'strategy', is little more than a supply-centred list of 'doing everything possible'. One item that has been on this list for several decades is that of securing equity investments in oil, natural gas, and more recently, coal resources around the world. China's acquisition of overseas energy resources is also meant to contribute to the national interest of China's top leadership in obtaining overseas supply sources, but it is also expected to push Chinese energy companies towards global leadership positions (Downs 2004). The questions that arise at this point are: Do energy equity investments contribute to energy security and if so, does it reflect a lack of faith on the part of India and China in global energy markets to deliver 'energy security'? Do India and China have an inherent preference for 'regimes and empires' over 'markets and institutions' and if so will this destabilize the world energy order?

The answer to the first part of the first question is a simple 'no'. In a well-integrated and liquid global energy market, energy security is more about economic security rather than physical supply security. It is presumed that 'equity oil' from outside India is equivalent to oil produced domestically, and therefore, available to India at a lower price. This is an economically flawed argument. The world market prices oil according to its opportunity cost. Even if every drop of oil used by India is produced in India or obtained through equity oil, the opportunity cost of oil is the same as that of purchasing globally traded oil. As 'equity oil' is mostly sold into the global oil market, it may be presumed that the profits from the sale of oil will insulate India's economy from high world oil prices. But this too is not a credible economic argument. If we assume that foreign oil assets are priced fairly at the time of purchase, India would benefit only when the purchase helps smooth its income, i.e., increase in income when the economy is depressed and vice versa, but for a large country like India, oil prices are likely to be high when its economy is doing well and using plenty of oil and not the other way round (Ranjan 2008). In other words, equity oil will add to economic income when it is least needed and subtract from it when it is most needed. Equity investments may also be seen as commercial choices by State energy companies or as a hedge against foreign exchange exposure, both of which are logical. However, the extent of investment has to be far larger if it is to serve as a hedge against foreign exchange. India was fourth in oil consumption growth in 2011 behind China, Russia, and Saudi Arabia, and was also alongside South Korea in leading LNG demand growth at 5 billion cubic metres, which implies that the import component of oil and gas in India is growing at an unprecedented rate (BP plc. 2011). India, with 25 million tonnes of oil equivalent growth in coal

[1] See for example, (U.S. Joint Forces Command 2010) which predicts a severe resource crunch on account of growing demand for energy from India and China (pp. 28) and the possibility of countries militarily securing dwindling energy resources (pp. 26).
[2] See (Leverett and Bader 2005) (U.S. Department of Energy 2006) (Wayne 2005).

consumption, was second, but far behind China whose coal consumption growth was six times that of India. India and China together accounted for over 98% of net coal consumption growth in 2011. As growth in domestic coal production in India at 2.3% in 2011 lagged behind coal consumption growth by a wider margin, imported coal met most of the demand. In the next four years, India's share of globally traded energy is expected to overtake that of China (Adams 2012) and in the next eight years, India's domestic production is expected to fulfil only half of India's fossil fuel consumption compared to 60% today (Ebinger and Avasarala 2012). The cost of imported energy stands at about 6%–7% of GDP while equity oil accounts for less than 0.3% of India's oil consumption, which means that it is not a credible hedge against foreign exchange exposure. A simpler argument against oil equity is that most of the world's large energy-importing nations do not have national energy companies pursuing energy equity investments and yet they are not energy insecure. For example, Japan, which imports over 95% of its energy does not have a national energy company and is more energy secure than India. Energy imports account for about 3% of Japan's GDP, but a large current account surplus offsets the cost. India, with a large current account deficit, does not have this room for manoeuver and this is India's biggest energy security risk.

The rest of the questions posed in the paragraph above can be answered by investigating the drivers behind the strategy of energy equity investments. The underlying 'value' in the strategy of acquisition for both India and China is that of 'self-reliance'. 'Self-reliance' was central to post-colonial India, which was determined to insure itself from any external influence in all spheres, including energy. In the Indian energy context, it first appeared in the context of nuclear energy. India's Third Five-Year Plan (1960-65) reflected the global pre-occupation with nuclear energy and projected nuclear energy as an option for power generation and a means for improving India's 'self-sufficiency' in energy. Dependence on international oil companies and their reluctance to address India's domestic concerns during the oil crises highlighted the need for self-sufficiency. India's Sixth Five-Year Plan (1979-84), which followed the oil crises emphasized 'self-sufficiency' through the development of domestic oil resources and recommended pricing reforms to conserve energy. Subsequent plan documents continued to reiterate the idea of self-sufficiency through ownership of resources outside India.

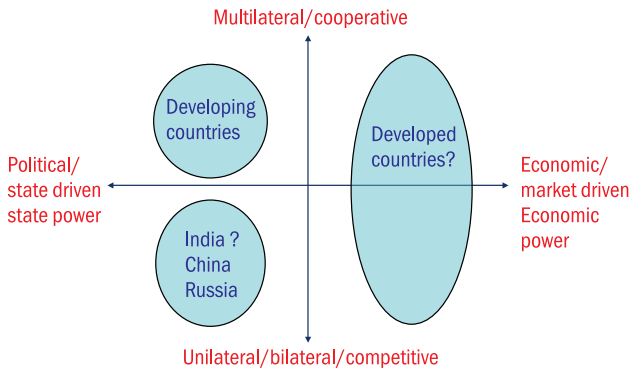
In 2000, the Hydrocarbon Vision 2025, commissioned by the Prime Minister of India to address the issue of energy security in the context of the hydrocarbon sector, recommended 'intensification of exploration efforts and securing acreages' in countries having 'high attractiveness for ensuring sustainable long-term supplies', such as Russia, Iran, Iraq, and North Africa (Powell 2012). *The Integrated Energy Policy Report* released in 2006 commented that 'obtaining equity oil, coal, and gas abroad do not represent adequate strategies for enhancing energy security beyond diversifying supply sources' (Expert Committee of the Planning Commission 2006). They also recommended 'investing in equity oil' to enhance energy security in subsequent sections (Expert Committee of the Planning Commission 2006). For China, self-sufficiency is a deeply held value that goes back thousands of years (Constantin 2005). China experienced the cost of dependence in the context of energy when it lost 50% of oil supplies and access to Soviet specialists during the 1960s Sino-Soviet split (Constantin 2005). China also adapted western responses to energy security. Its current 'moves' are classic moves used by industrialized nations, such as the United Kingdom and the United States when they first faced energy import dependence (Yishan, 2006). The only difference probably is that the United States and the United Kingdom 'owned' resource-rich countries rather than just the resource in the country.

In this light, the accusation that India (though to a lesser extent than China and energy exporting countries, such as Russia) is pursuing a state-driven 'realist' energy policy, presenting a major challenge to liberalized economies that prefer an economic system that is largely controlled by the market to secure their energy sources is flawed (Algemene Energieraad, Adviesraad Internationale Vraagstukken 2005). As a 2006 study by the Department of Energy of the United States concluded, overseas investment by Chinese oil companies, which are much larger in scale than that of India posed no threat to US energy companies or global energy security and if there was a

negative impact it was only in the fact that subsidized financial support to the oil companies from the Chinese government could distort open and fair competition for hydrocarbon assets to some extent.

The reason for India's (as well as China's and other energy exporting countries') choice of a state-driven system is supposedly its preference for 'weak globalization' as that would apparently guarantee 'national strategic interests' more effectively than 'globalization', which would require India to implement far-reaching political, judicial, and social reforms in addition to economic reforms. India is, thus, placed along with Russia and China in the worst offender's quadrant, which represents politically-driven systems that seek to maximize 'state' power (See Figure 1). States in this quadrant are said to have a preference for unilateral or bilateral contracts that are designed to compete rather than cooperate with the rest of the world. The evidence offered includes the global presence of state-owned Indian oil and gas companies and their perceived competition with Chinese oil companies for oil assets.[3]

The search for clues on strategies and policies that would substantiate the above allegations is likely to leave even the most persistent researcher thoroughly disappointed. India's policy and strategy documents reveal little or no consistency in its energy preferences and show no indication of proactive energy choices. Most of the 'energy security strategies' recommended, take India's preferences (doing everything possible) as given. Options are evaluated on the basis of contextual factors such as resource endowments, capabilities, and existing international and bilateral relationships (Betz and Henif 2010). Most of the proposed plans react to either domestic or global developments. Though the tendency to emphasize self-sufficiency and state-led development can be detected, the absence of a coherent and proactive energy policy is what stands out consistently in all documents.



Source Algemene Energieraad, Adviesraad Internationale Vraagstukken 2005

Policy documents in the last decade may seem to consider energy for economic growth as India's core preference. Economic growth has indeed become important both for domestic political wins and also for international power and prestige since the early 1990s. But in emphasizing energy for economic growth, India's policy documents were merely following a 'me-too' approach to strategy with the Tenth Plan document explicitly paraphrasing the 'energy policy focus and current energy policy objectives of China' (Planning Commission 2002). India's anti-imperialist stand, its resistance to foreign company participation, its insistence on an independent nuclear policy, and the dominance of state-owned energy companies have been cited as evidence of India's 'realist' energy security strategy that is behind energy equity investments. While these tendencies cannot be contested, they were not necessarily driven by security objectives, but were instead driven by internal political pressures and a general preference for a certain world order guided by foreign policy choices, such as non-interference and non-alignment (Betz and Henif 2010). 'Self-reliance', one of the few consistent 'values' mentioned in the policy documents is also being compromised out of necessity. India's growing reliance on imported oil, gas, coal, and nuclear fuel convey that India is neither idealistically committed to this 'value' nor can it realistically implement any of the suggestions towards 'self-reliance'. Even the nuclear industry known for its strategy of 'self-reliance' is likely to increase its reliance on imported Light Water Reactors and nuclear fuel in the future.

State-owned oil and coal companies are a product of India's socialist and centrally planned past and not India's supposedly 'realist' present. Most of the energy sectors, barring coal mining, have been open to private sector participation for over two

[3] Arguments in this section are from an unpublished paper on energy security by the author, parts of which have been used in weekly columns in the Observer Research Foundations weekly Energy Newsletter

decades. Private players are reluctant to participate in these sectors as they are heavily burdened with the weight of India's socialist redistributive policies. India's inability to introduce a role for the market in its domestic energy sector is the result of persistent social and economic inequalities rather than India's commitment to state power. In the hydrocarbon and power sectors, the price of products – diesel, LPG, kerosene, coal, and electricity – are regulated by the government, which means that returns in these sectors are often unattractive for private players.

As history has clearly shown, the distorted idea of national security and energy security offer an excellent allegory for using state power to protect narrow commercial interests. In 1948, when the United States became a net importer of oil, small high-cost domestic producers of oil argued that cheap imported oil disrupted local economies, and therefore, threatened 'national security' and that the Middle East from where most of the 'cheap' imported oil originated was too close a target for attack by the erstwhile Soviet Union, thus, exposing the nation to 'energy insecurity' (Powell 2008). On the other hand, international majors led by Standard Oil of New Jersey (currently Exxon), which produced most of the oil that was 'imported' into the United States suggested that spare domestic capacity was a good thing for military security and argued that the import of oil during peace time would conserve domestic capacity for emergency utilization, and hence, improve 'national security' and 'energy security' (Powell 2008). In essence, both big and small private oil companies clamoured for state protection using the convenient, but vague argument of energy security.

Indian oil and gas firms too use national and energy security arguments to further their own commercial goals. They promote the argument of 'equity oil' and 'energy security' to seek state support for their overseas ventures as it lowers transaction costs and also improves the probability of success. India's ultimate oil reserves have declined from 1,646 million metric tonnes (mmt) in 2008 to 1,544 in 2010 (Deloitte 2011). With probability of large hydrocarbon discoveries in Indian onshore and offshore prospects declining, partly due to discriminatory policies set by the government, Indian upstream oil and gas companies, irrespective of whether they are owned by the state or by private actors, prefer to acquire assets outside India to ensure their own commercial survival. Indian state-owned upstream companies have weak balance sheets (on account of social burdens imposed on them by the government) and do not have technological capabilities comparable to those of international majors. This puts them at a disadvantage when competing for prime hydrocarbon prospects around the world that are open to private participation. As a result, they resort to investing in what is available to them, which are assets that are disregarded by international majors in countries considered to be undemocratic or unreliable by western nations. The resulting commercial competition is misinterpreted by the national security policy community as developing nations being locked in a struggle for scarce resources with zero-sum outcomes.

In a globally integrated world, 'energy security', broadly interpreted as the 'availability of energy' is a public good. When any nation, be it a democracy or a dictatorship, invests in increasing the supply of energy, it contributes to global energy security. India's energy equity investments, or for that matter China's, are thus not 'non-linear' (disproportionate) responses to a perceived energy threat as they are presumed to be, nor are they deliberate attempts to thwart global economic order. They are merely sub-optimal compromises between competing international and domestic compulsions.

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The Geopolitical Import of Rare Earths Policy for India: The India–Japan Cooperation Agreement and the Current WTO Disputes

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India–Japan Cooperation

On 25 October 2010, at a summit meeting between Prime Minister Manmohan Singh and then Prime Minister Naoto Kan held in Tokyo, both leaders made a commitment to strengthen India–Japan relations as they signed the *Comprehensive Economic Partnership Agreement* (CEPA) that would eliminate tariffs on 97% of imports from India into Japan, and some 90% of tariffs the other way. On the sidelines of that meeting, India and Japan had agreed to cooperate strategically on the supply of *rare earth elements* (REE)[1] by India to Japan and the Indian government had committed Rs 1.4 billion in funding to state-owned Indian Rare Earths Limited to restart and ramp up production of monazite sand (see Figure 1) that could yield up to 5,000 metric tonnes of REE in Odisha (formerly referred to as Orissa).[2]

Figure 1 Monazite sand

A short reference to this agreement was included in the summit leaders' *joint communiqué* in paragraph 6:

> ... Recognizing the importance of rare earths and rare metals for future industries, the two Prime Ministers decided to explore the possibility of bilateral cooperation in development, re-cycling, and re-use of rare earths and rare metals and in research and development of their industrial substitutes (Joint Statement 2010)

This was followed up in more concrete terms during the state visit of Prime Minister Yoshihiko Noda to Delhi in December of 2011:

> Recognizing the importance of rare earths and rare metals in industries of both countries, the two Prime Ministers decided to enhance bilateral cooperation in this area by enterprises of their countries. They decided that Japanese and Indian enterprises would jointly undertake industrial activities to produce and export rare earths at the earliest (Joint Statement 2011).

In November 2012, on the sidelines of the ASEAN Plus Summit Meetings in Cambodia, the Prime Ministers formally announced that an intergovernmental memorandum had been signed, paving the way for the actual export of *rare earths* through a joint venture of Indian Rare Earths Limited and the Toyota Tsusho Corporation, and that long term strategic cooperation between the two countries

[1] According to (US Geological Survey 2011) rare earth elements (REEs) refer to 17 metallic elements, which are essential components in a diverse and expanding array of high technology and clean-energy products . . . high-strength magnets, metal alloys for batteries and lightweight structures, and phosphors. . . emerging alternative energy technologies, such as electric vehicles, photovoltaic cells, energy-efficient lighting, and wind power , . . key defence applications (…) See also *The Rare Earth Handbook* and (TERI 2010)..

[2] See, (Mukherjee 2010).

on *rare earth elements* investment and technologies was being undertaken (Bagchi 2012; Currie 2012).

Strategic significance to India

While the trigger for Japan's strategic partnership with India was its need to diversify its sources of REEs — as a result of its territorial conflict with China and the temporary ban imposed by China on REE exports to Japan in 2010 and continuing restrictions, price fluctuations, and shortages — the strategic value to India, on the other hand, lies in the potential for expanding and acquiring advanced technologies that Japan is able to provide that will greatly enhance the soundness and capacities for environmental best practices of the Indian natural resource extraction industry, given the high profile criticisms by environmental and civil society organizations of their environmental record.

Secondly, one of the stated goals and objectives of the CEPA was to expand economic development, employment, trade, and investment opportunities; and rare earths related trade, investment, and technologies ought to result in multiplier and synergistic impacts, if properly focused. As reported, Japanese investments are already present in the operations in Odisha in the form of Toyota Tsusho, which has a wholly owned Indian subsidiary with a monazite sand production base in India (Bagchi 2012; Currie 2012).

The third strategic import of rare earths for India goes beyond the economic and business interests of the two nations and extends to the geopolitical impact that technological cooperation on rare earth elements may yield. There are reports that India-Japan cooperation could extend as well to rare earth elements production and processing in strategic third country locations, particularly Afghanistan, where a consortium of Indian state-owned mining interests have already presented bids for concessions (Bagchi 2012; Currie 2012; Mukherji 2012). The United States Geological Survey (USGS) had estimated in 2011 that at least 1 million metric tonnes of REEs could be found in the Khanneshin area of the Helmand province of Afghanistan. According to the report, "the Khanneshin carbonatite are comparable in grade to world-class deposits like Mountain Pass in California, and Bayan Obo in China".[3]

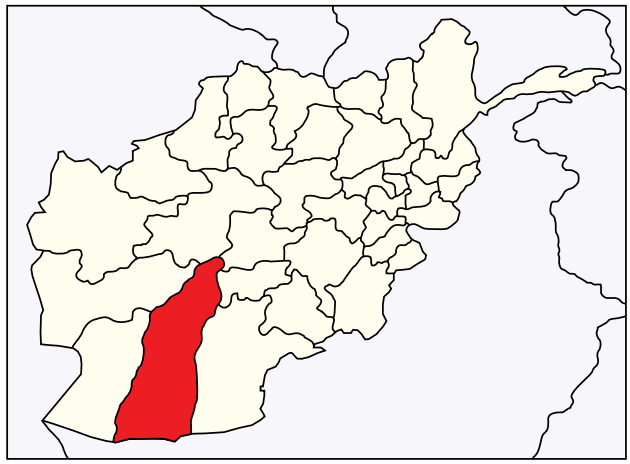

Figure 2 Helmand province of Afghanistan

The geopolitical import of fostering economic growth and development in Afghanistan has far-reaching consequences in the South and Central Asian region as well as globally, towards which India — as a leader in the region and as an emerging world leader — would have great responsibility.

Uranium extraction technology and heavy REEs

In addition, the security implications of finding or developing new sources of REEs is highlighted by the recent announcement that the Central Asian Republic of Kazakhstan's state-owned nuclear company, Kazatomprom, has entered into a $30-million joint venture with Sumitomo Corporation to produce heavy REEs, commencing with 1,500 tonnes a year and increasing to 3,000 tonnes by 2015 (Paxton 2012).

According to the World Nuclear Association, uranium is also found in mineral resources with heavy REEs and "higher uranium prices and geopolitical developments have enhanced the economic potential for recovering these."[4] This provides another strategic aspect on the sensitive nature of rare earth technologies that impact on nuclear energy and safety, and therefore also have a correlation to India–Japan negotiations on the normalization of their nuclear energy relations.[5]

[3] Khanneshin carbonatite contains light rare earth elements, such as lanthanum, cerium, and neodymium. (US Geological Survey 2011)\
[4] See, http://www.world-nuclear.org/info/uranium_rare_earth_deposits_inf130.html.
[5] See (Joint Statement 2010) at paragraph 6: "establishment of a Nuclear Energy Working Group ... to exchange views and information on their respective nuclear energy policies from the energy, economic, and industrial perspectives".

Legal battles over rare earths and minerals at the WTO

In 2009, the United States, the European Union, and Mexico challenged China's export restrictions regime as regards to certain minerals — bauxite, coke, fluorspar, magnesium, manganese, silicon carbide, silicon metal, yellow phosphorous, and zinc (the 'raw materials') — and this led to a ruling by the WTO Appellate Body (AB) in February of 2012. China was found in violation of its accession and WTO commitments and an agreement was reached for China to comply with the WTO recommendations within a reasonable period of time (Reports of the Appellate Body, 2012).

In the *raw materials* case, China had adopted various measures as regards these raw materials, and the questioned measures included, (i) export taxes, (ii) export quotas, and (iii) administrative regulations like licensing procedures, exporter qualifications and bid price mechanisms. I have provided a broader discussion of the salient legal arguments presented in this case in the *TERI GALT Update* issue of March 2012.[6]

Fresh from the adoption of the *China Raw Materials* ruling, the United States, Japan, and the European Union filed, in March of this year, three new cases before the World Trade Organization, officially titled – *China: Measures related to the exportation of rare earths, tungsten, and molybdenum.*[7]

Similar to the raw materials case, China's measures to restrict the export of rare earth elements, plus the refractory metals tungsten and molybdenum, is being questioned. The measures that have been questioned include export duties, export quotas, minimum export price requirements, export licensing requirements, and administrative procedures and requirements, all of which are claimed to be in violation of Articles VII, VIII, X, and XI of the GATT 1994 and China's Protocol of Accession.

The case has attracted a lot of attention, and significantly India, along with Argentina, Australia, Brazil, Canada, Colombia, Indonesia, Korea, Norway, Oman, Peru, Russia, Saudi Arabia, Chinese Taipei, Turkey, and Vietnam, has signified its participation in the proceedings as an interested third party. The Panel to hear this case was composed on 24 September 2012 and submissions by parties are now in progress with hearings to be held in 2013. A decision is likely, at the panel level towards the middle of 2013, and at the Appellate Body level in 2014.

Coherence and conflict of environmental, trade, and natural resource policies

It would not be appropriate at this point to predict how the WTO will dispose of the complex web of legal issues that the parties to the disputes, and intervening third parties, will present to the panel. The following points are only meant to highlight the important strategic concerns that will be subject of the discourse that involves environmental and natural resources, as well as trade and investment, and political security and policies.

As rare earth elements are among the non-renewable and exhaustible natural resource endowments of China, and since the measures of China are in part related to strategic resource management and conservation, health and the environment-, and development- related policies, the case becomes significant for many commentators focusing on the treatment of environmental issues in the WTO[8] well as experts on natural resource policies that are concerned about countering the so-called *Dutch Disease*, as well as the *Resource Curse*, economic phenomena that are dealt with extensively by leading economists, such as Nobel laureates Joseph Stiglitz and Paul Krugman.[9]

In dealing with the rare earth complaints, both the Panel and the Appellate Body of the WTO will determine whether the general public policy exceptions under Article XX could provide appropriate justification to allow China to derogate from its WTO commitments on export duties, export

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[6] See (Teehankee 2012); (TERI 2010).

[7] WT/DS431, WT/DS432, WT/DS433. See, http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds431_e.htm. Tungsten and Molybdenum are refractory metals that are characterized by their extremely high melting points, which range well above those of iron, cobalt, and nickel. For an interesting discussion of these critical metals, see http://www.steelforge.com/nonferrous/refractorymetals.htm.

[8] See, e.g., (Charnovitz 2007); Weinstein and Charnovitz (2001).

[9] See, e.g., (Krugman 1987);(Auty, 1993); Stiglitz (2009); Warner (1995). For an analysis related to China, see Yuxiang and (Chen 2011)

quotas, and export administration regulations. Article XX had assumed increasing importance for environmentalists, as the Appellate Body in its prior decisions qualifiedly upheld the use of Article XX to justify import bans and trade restrictions founded on the need to conserve exhaustible natural resources, such as in *US gasoline* and the provisions of the Clean Air Act or relating to the protection of animal or human health, such as in *US shrimp turtle* relating to practices that harmed turtles, and *EC Asbestos* relating to a ban on materials with the carcinogen asbestos (Reports of the Appellate Body, 1996, 1998, 2001, 2007) and even more recently, such as in *China Audio-visual*, to protect public morals (Report of the Appellate Body, 2009).

Article XX, therefore, in the general scheme of things, provided a lever to prevent conflict or provide a balance between the liberal trade agenda and non-trade concerns by allowing domestic environmental and resource management regulators sufficient policy space to frame their action plans with a view to international and domestic best practices and in terms of furthering their strategic goals for their country's development, both in terms of sustainability and enhanced growth, while at the same time stringently prohibiting protectionist conduct. Article XX of GATT 1994 provides, in part:

Article XX: General Exceptions

> Subject to the requirement that such measures are *not applied in a manner which would constitute a means of arbitrary or unjustifiable d iscrimination between countries where the same conditions prevail, or a disguised restriction on international trade*, ***nothing*** in this Agreement [the GATT or the WTO Treaty] shall be construed to prevent the adoption or enforcement by any contracting party of measures:
>
> a) Necessary to protect public morals
>
> b) Necessary to protect human, animal, or plant life or health
>
> (…)
>
> f) Imposed for the protection of national treasures of artistic, historic, or rchaeological value
>
> g) Relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption.

In the raw materials case, the WTO Panel did review a whole series of administrative measures, not easily identifiable as trade measures, such as bidder qualifications and minimum export price bid requirements, which were imposed for various resource management objectives. The Appellate Body of the WTO side-stepped these issues by reversing and mooting large parts of the Panel Reports as it related to these matters and so Article XX remained mainly in the background with regard to whether it would have been able to provide a safety net for good faith measures relating to exhaustible natural resources or safety and health concerns.

Sustainable development and sovereignty over natural resources

The 1994 preamble (updated from GATT 1947) of the WTO Treaty affirms sustainable development as a fundamental goal:

> expanding the production of and trade in goods and services, while allowing for *the optimal use of the world's resources in accordance with the objective of sustainable development, seeking both to protect and preserve the environment and to enhance the means for doing so* in a manner consistent with their respective needs and concerns at different levels of economic development.

Sustainable development will provide a frame and context for the examination of China's policies and measures on rare earth elements,[10] and their rationale and wisdom or germaneness to China's natural resource and economic development policy mandates.

Another issue that will arise is the apparent conflict between *open access* trade rules and the *principle of permanent sovereignty over natural resources*, espoused by many developing countries, including India, since the beginning of the period of decolonization. As stated by Brazil, and echoed by Ecuador and the Kingdom of Saudi Arabia:

[10] See (Information Office of the State Council, the People's Republic of China 2012); (Chen 2011); (Wei and Maughan 2013).

> Nothing in the WTO Agreements seems to impose the *shared use of the world's natural resources as an obligation to Members*. Therefore, the right of Members to consider their own developmental needs in the use of their resources is endorsed by WTO law, in a manner consistent with the ***principle of Permanent Sovereignty over Natural Resources***, but without prejudice to the obligation of a Member claiming justification of a measure under Article XX (g) to demonstrate its full compliance with the requirements contained therein, including its chapeau. *These requirements ensure that conservational measures adopted pursuant to Article XX (g) relate to a legitimate conservational policy objective*; that they do not target exclusively foreign suppliers or consumers; and that they do not constitute a protectionist restriction.[11]

On balance, the principle of permanent sovereignty is still un-tested in the WTO, and there is a countervailing *principle of shared resources* referred to in sub-section (j) of Article XX:

> … nothing in this Agreement shall be construed to prevent the adoption or enforcement by any contracting party of measures…
> (j) essential to the acquisition or distribution of products in general or local short supply; *Provided* that any such measures shall be consistent with the *principle that all contracting parties are entitled to an equitable share of the international supply of such products* . . .

Concluding Comments

Strategic policy alternatives and measures relating to investment and technologies for *rare earth elements* ought to provide a treasure trove of issues for research by geopolitical governance experts.

In political security and technology transfer aspects alone, India has a special opportunity for enlarging cooperation and strategic partnership with Japan and other nations, whether it be within India and in neighbouring countries like Afghanistan, where a large rare earth resource has been discovered.

In terms of national and transnational strategies in the fields of trade and investment, and environment and natural resources, and green growth and sustainable development economics and imperatives, there will be much policy debate in the years to come on how competing norms can be reconciled or prioritized, not least of which will be the balancing of the principle of *permanent sovereignty over natural resources* and the fostering and preservation of the global commons.[12]

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[11] See (World Trade Organization 2011)

[12] For a comprehensive discussion on the subject of natural resources issues and trade, a suggested starting point is (World Trade Organization 2010).

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Geopolitics in Cross Border Power Trading South Asia: Emerging New Paradigms

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Energy security in South Asia has seriously remained entangled in the geo-politics of the region. India's centrality in the South Asia region is triggered by both its size and its exclusive geographical location that shares a common border with almost all countries in the region. No other two countries in the region have common borders. More seriously, seventeen provincial states of India (out of 28) have international land borders. These borders on the one hand, represent the abundance of opportunities that South Asia can harness collectively. On the other hand, it shows how various cooperation / integration ventures, including various energy-related ideas, projects, and linkages, could be hindered by narrow politico-strategic interpretations of these borders.

Cooperation always implies that certain resources, geographical locations, and even physical and social infrastructures are shared, and thus, there is national control over those resources. However, the abandoning of national control on these resources in turn could also imply a loss of national sovereignty. This is more so for countries like Bangladesh (gas) and Nepal (hydel resources). This brings an element of reluctance and is likely to lead some of these countries to withdraw from the regional cooperation process. This has been amply reflected in an array of negotiations on gas with Bangladesh (Lama et al. 2005) (Lama and Rais 2001) and hydel power projects like Karnali, Pancheswar, and Rapti in Nepal (Lama 1985) (Lama and Bahadur 1995). Therefore, tackling this perception of national sovereignty itself is a major question. It demands extending a new form of cooperation that not only builds confidence among these countries to cooperate, but also addresses their concerns comprehensively.

This is equally true of a big country like India. In a 2005 Tripartite Ministerial Meeting between India, Myanmar, and Bangladesh held in Yangon, India agreed to import natural gas through a pipeline from Myanmar via Bangladesh (Trilateral Joint Press Statement, 2005). It mentioned that the "Government of Myanmar agrees to export natural gas to India by pipeline through the territory of Bangladesh and India to be operated by an international consortium (…) The route of the pipeline may be determined by mutual agreement of the three Governments with a view to ensuring adequate access, maximum security, and optimal economic utilization." It was considered a major policy shift in the Indian approach to issues of cooperation in the neighbouring region on two grounds. Firstly, it was a clear move away from the traditional bilateral approach to a new tripartite (multilateral) approach. Secondly, this was a deal which was negotiated and managed by the line agency i.e. Ministry of Petroleum and not by the Ministry of External Affairs.

The deal however, could not be implemented purportedly because India did not agree to Bangladesh's demands of i) transmission of hydro-electricity from Nepal and Bhutan to Bangladesh through Indian territory; ii) corridor for supply of commodities between Nepal and Bhutan and Bangladesh through Indian territory; and iii) to take necessary measures to reduce trade imbalance between the two countries (Joint Press Statement, 2005). Though this was discussed in the sidelines of the tripartite deal and even a formal joint bilateral press statement was issued by the Indian and Bangladeshi Ministers with some very positive views on these demands by the former, entire deal collapsed. It essentially became a deal between India and Myanmar that never took off.
Bangladesh's demands looked very reasonable, particularly in the context of the conspicuous trend of steady liberalization and economic integration the region has recorded in the last decade or so. The Singh-Hasina agreements of 2010 and 2011 have in

fact proved that Bangladesh was asking for what India would have in any case agreed upon.[1]

Though this tripartite agreement looks fizzled out at the moment, India could do so now only at a very heavy cost of diverting this gas pipeline through its own territory in Assam. It has also forgone a good opportunity to make substantive geo-strategic and socio-economic gains in the long run. The good will and diverse stakeholders generated by this project could have been used by India to resolve its longstanding demands vis-à-vis Bangladesh. This includes getting a better access to energy projects in Bangladesh and transit facilities to reach its North East states. It could have triggered a number of projects in Bangladesh with large-scale development impact. This could have in turn hindered the cross border movement of people in search of better livelihood. The Bangladesh transit corridor could have been used as a major route to enter into the fray in South East Asia via Myanmar, as part of the Look East policy.

A transit corridor through Bangladesh is very vital for India. The 11th Five Year Plan (2007-2012) clearly mentions that the North East region had a much higher per capita income than the rest of India before 1947. It has steadily gone down and is much lower than the national average today (Planning Commission 2006). Assam's Chief Minister was more emphatic when he said, "Assam, which was once a prosperous state at the dawn of independence became gradually a backward state. The history of woes began with the partition of the country, which made Assam a totally landlocked region with a narrow corridor to connect it with the mainland. All transit routes through Bangladesh were closed to the state and access to Chittagong and Dhaka ports was denied to us. The traditional trade relations with the neighbouring countries were disrupted" (Gogoi 2006).

Borders, Sub-region, and Power Trading

International borders are the key to any cooperation dynamics in this sub-region. Borders have been the central issue in the entire national power and security dynamics of the sub-region. In addition, national security issues emerge largely from varieties of borders that have stunted the growth of any meaningful cooperation. At the same time, informally these borders have remained a symbol of vibrant social, economic, and cultural exchanges.

It is only in the last decade or so that security has assumed wider connotations going beyond militarised borders. This is more so in this sub-region, which is largely connected and facilitated by the "chicken neck", a 14-mile wide strip of land that connects Bhutan, Nepal, Bangladesh, and North East India. Several reasons could be attributed to this. Firstly, it is, largely, because of the agents and forces of globalisation that interact closely among these countries directly, and through other countries indirectly. Secondly, the new generation that is gradually taking over the decision making process in these countries are willing to widen the scope and nature of interactions and exchanges. Thirdly, there has been a realisation that the stakeholders on both sides of the borders have mostly remained on the negative side, which exploit and work for prolonging adverse situations for very limited gains. Fourthly, the nature of global discourse on military-centric border management is gradually transforming into a lively and refreshing debate bringing in factors and issues that are more near and dear to public at large.

There have been institutions, either national (private apex bodies, cultural agents), regional (SAARC, ASEAN), or global (WTO, World Bank, IMF) that have come into play in this sub-region and are penetrating with liberal thinking and actions into the wherewithal of these systems. This has further eased the situation. Besides there are abiding domestic compulsions for these countries to make their borders friendly, accessible, and commercially useful.

At the same time, the uniformity and single-mindedness that seemingly prevail in the perception and handling of border concerns at the national level are very often diluted and blunted by local and micro understanding, and interactions at border areas.

[1] In the post - Manmohan Singh - Sheikh Hasina Meeting of Jan 2010 the MOU signing has been done and a high level Steering Committee has been set up. A joint interconnection study (Ishurdi, Bangladesh to Berhampur, India) is being done. A power import of at least 500 MW from Western Interconnection (Bangladesh to West Bengal) and a power import of at 300–500 MW from Eastern Interconnection (Bangladesh to Tripura) is being considered. The construction of a regional grid for power trade has been decided upon.)

Many times, local conditions and essentialities are so different that national policies and institutions very often are not able to take into account these micro-nuances. These include cooperation potential, age-old socio-economic exchanges, and non-traditional security threats related to natural resources, environmental dislocations, insurgency and terrorism, migration, cross-border crimes, and other developmental deprivations. These could be of major significance to the security of the people at the local level, if not at the national one.

There have been several attempts in a country like India to revisit and renegotiate its border management approaches and development strategies from various perspectives. This has been again attributed to a number of factors. Firstly, the issues of non-traditional security threats including terrorism, human-trafficking, smuggling of small arms and drugs, illegal migration, energy and water security, and also cross-border environmental injuries have increasingly emerged as major security concerns. This has brought forward not only a fresh thinking process in the entire national security dynamics and related institutions but also injected newer measures of border management. This has highlighted the need for more diverse cross border interactions and more critically wider cooperation on issues that are essentially non-traditional in nature.

Secondly, re-linking and re-establishing varied kinds of contacts with the people across the border through various means including trade, tourism, energy, sharing of natural resources, and physical connectivity have been noticed.

One can see strikingly similar approaches to borders taking place in other countries in the sub-region. A major driving force for China to open its border for more trade and investment intercourse has been the urgent need to bring its own provinces in the periphery – mainly the western region – to the national mainstream.[2]

For instance, India has also been consciously promoting its border trade with Bangladesh, Bhutan, Nepal, and Myanmar. There are very high prospects for both creating newer infrastructural and civic amenities including roads, bridges, warehousing, drinking water, electricity, hotels and restaurants, communications, and in making more effective use of existing facilities.

Security – Militaristic Plane

On the other hand, from the security-militaristic level, energy insecurity could also bring large-scale instability among these countries thereby threatening their sovereignty and identity. This could happen on both, the domestic and external front. On the domestic front, if access to energy is poor, all social and economic indicators could suffer and it could lead to social instability. In South Asia, access to electricity is still at a nascent stage.

In the external front, this happens when a country is predominantly dependent on external sources for its energy supplies. The supply and the price risks are the two piquant situations that can inject insecurity through socio-economic instability and economic hardships. Economic vulnerabilities are increasing. South Asian countries are steadily moving to this vortex of insecurity as they have largely remained energy importers and increasingly faced a serious energy shortfall. Energy has figured as a crucial factor in economic, foreign, and security policy of these countries. Yet there is very little interconnection among these issues in the political discourse in this region. Except in the case of Bhutan, foreign policies of South Asian countries within the region never tend to get integrated with energy issues.

Therefore, from both the conceptual perspectives, the essentiality of rational management of natural resources in the South Asian countries aimed at optimizing the socio-economic benefit and minimizing the security-militaristic instabilities are very germane and critical. This directly implies that the choice is singularly limited to cooperation and integration, both because of the very structures of the market and the distributions of factors of production including natural resources in the region. This becomes starker as the cost of non-cooperation has steadily impinged upon political stability, primarily triggered by dismal development performance and the fast growing aspirations of the masses.

[2] China's 27 provinces are divided into four regions : Northeast (3) : Liaoning, Jilin and Heilongjiang Middle (8) : Shanxi, Hebei, Henan, Hubei, Hunan, Guangdong, Guangxi and Hainan Eastern (6) : Jiangsu, Zhejiang, Anhui, Fujian, Jaingxi and Shandong Western (10) : Sichuan, Gansu, Guizhou, Ningxia, Qinghai, Shaanxi, Tibet, Xinjiang and Yunnan in addition to Chongqing Municipality

Power Trading: New Paradigm of Energy Security

There are quite revealing variations in the installed capacities of power utilities in South Asia. These variations also reflect the potentialities as based on their natural endowments. Hydro power has been the most vital source of total installed capacity in Bhutan (100 %), Nepal (90 %) and Sri Lanka (65 %) whereas the thermal power dominates in Bangladesh (95 % gas based), India (72 % mainly steam based) and Pakistan (71 %). In some South Asian countries, the composition of installed capacity has been changing. The contribution of hydroelectric sources in the total electricity generated has reduced very steadily in India and Pakistan.[3]

South Asian countries are largely energy importers. Most of these countries have increasingly faced a serious power shortfall because of excessive industrial and residential demand over their power-generating capacities. For the South Asia region as a whole, it is estimated that on an average the demand for power has increased at an annual rate of 9 percent, doubling its magnitude every eight years, whereas the supply side has recorded both smaller and erratic growth pattern. This has increasingly led to power cuts and rationing. A major chunk of demand could come from the rural areas. The large rural population in the region is gradually demanding more and more power.

The seasonality factor in both generation and demand is highly noticeable in South Asian countries. This has in turn generated a lot of interest in cross-border power trading in the region. In case of Bangladesh, two distinct trends are available as far as pattern in power demand are concerned. Firstly, there is a reduction in demand during December to February, and from March to May load- shedding becomes a common feature. Even the day peak of the system cannot be maintained in this season. As a result, industrial, commercial, and agricultural activities suffer. Secondly, the demand for electricity increases sharply during the evening mainly because of typical evening shopping culture. This is a critical problem in the power system operation. A sizable generation capacity to the tune of at least 1200 MW remains unutilized during off-peak hours and in effect, the plants remain closed during these hours. If possible, this available capacity can be a ready source for regional cooperation for import-export of electricity from neighbouring countries. In India also, there exists clear seasonality in power generation. It particularly becomes clear in hydel power generation. The peak months for hydropower generation are August to September while the lean remains from January to June. It is during these peak months in India that the hydel power projects in Bhutan and Nepal generate their maximum power.

Integrated Power System is usually available during December and January. This is the period when generation from the hydro power plants is low. Though February to April is the driest period, the demand in these months is relatively lower. Since it is an integrated single system, the region wise seasonality characteristic loses its identity as the interconnections transfer power from the surplus region to the deficit region. South Asia region needs a new paradigm of cooperation in the energy sector based on exclusive commercial harnessing of the natural resources. The instrument chosen here is "cross border power trading" which has become a major success in many other regional groupings including in Europe (Union for the Coordination of Transmission of Electricity – UTCE and Nord Pool) and Africa (Southern African Power Pool-SAPP created in 1995). This instrument is now being operationalized in the ASEAN region also.

Economic gains based on regional cooperation in the energy sector have become a firmly established practice across regional groupings. Many developing countries, because of their low income and resulting small market size, are unable to capture by themselves the inherent economies of scale of major infrastructure investments. Cross border exchanges and power trading will bring the entire issues of cooperation in the energy sector on a regional basis to the forefront.

[3] For example in India, hydro sources constituted as high as 43 percent of the total installed capacity in 1970-71, which steadily went down to present level of 25 percent. This is despite the fact that the installed capacity of hydel power recorded a 44-fold increase from a mere 575 MW in 1951 to almost 25407 MW. In Pakistan, also the share of hydel power in the total installed capacity has gone down from 44 percent in 1980-81 to 30 percent in 1999. In Pakistan, the earlier installed capacity of 15996 in 1997 was shared by WAPDA (72 % including Kot Addu), private producers (17 %), KESC (9.5 %) and Karachi Nuclear Power Plant (0.85 %)(Government of Pakistan 1997–98) (Central Statistical Organisation 1997).

In SAARC, hope and conviction lies in the fact that there are very emphatic mentions about the provisions of cross border power trading in the power sector reform measures operationalized by all the member countries. This is effectively backed by the reality that this region has one of the richest regional potential in hydel power out of which only a very small proportion (hardly 10-15 percent) has been exploited so far.

On the other hand, interconnection of power systems of contiguously located countries and their coordinated operation provide immense technical and economic benefits also. This is widely feasible in this region, as there already is a considerable network of inter-connections among South Asian countries. The India-Bhutan power exchange, widely regarded as a major success story, is a case in point. The enlargement of regional profile with the increasing possibility of accessing the Chinese, Burmese, and Afghan markets makes this power-trading network more attractive and robust.

This paradigm aims at depoliticizing discourse on harnessing energy-related natural resources, including water and gas, in the region. It takes advantage of the positive aspects of the geo-politics in the region. It not only promotes effective utilisation of natural resources but also consolidates market integration process. It increases the threshold of energy security through reliability of power supply and large-scale transformation in the sectors contributing to economic growth. It demonstrates as to how durable infrastructures and diverse stakeholders created by such arrangement help in both building the confidence and strengthening the geo-political dynamics at the regional level. It tries to ultimately drive and direct the entire discourse to a much wider, sustainable, and beneficial situation of exchange of energy (mainly electricity) on rational-commercial principles. All in all, it addresses the core of conceptual framework of energy security raised above.

A number of organizations in the region and outside have been consistently working towards fostering cooperation in the energy sector in South Asia. SAARC has set up an Energy Centre at Islamabad and BIMSTEC has decided to establish a BIMSTEC Centre for Energy for facilitating energy studies and exchange of expertise.

Cross-border power trade on a bilateral basis already takes place widely between India and Bhutan, and to a certain extent between India and Nepal. This can even be extended to Bangladesh. The reopening of the Nathu La trade route between Sikkim in India and Tibet Autonomous Region in China has generated immense scope for exporting power to the high demand vicinity of South-West China and expanding activities in the trade route at Tamu and Moreh further expanded the power market between India and Myanmar. Pakistan's informal offer to India in 1998 of selling surplus power very much matched the demand in the northern and the western regions of India. Pakistan's transmission system, extending from Jomshoro in the south to Tarbela and Peshawar in the north, runs near adjoining borders of India. This may not require complex transmission extensions to the Indian borders. Joint Study Group of Indian and Sri Lankan Governments (2003) has strongly proposed a regional power pool between these two countries. Afghanistan is already laying a transmission line to Pakistan and Uzbekistan.

A strong possibility of power trade is emerging in South Asia region. There are four very reinforcing and solid factors that are bound to promote power trading in South Asia region in near future. Huge power crises are leading to long hours of load shedding in many South Asian countries, thereby affecting social, economic, and commercial activities. This could even lead to political instability. There have been tremendous public pressures on governments to act to improve the situation. Most people are willing to pay for the electricity. There is no short-term solution within the power shortage country. Some of the newspapers reported:

Bangladesh

"Energy crisis puts economy at risk"
"Bangladesh PM Orders 1hr Outage Every Alternate Hour"

The Daily Star, Dhaka, April 6 and 8, 2010

Nepal

"Power cut back to 12 hours"

Republica, Kathmandu, April 3, 2010

Pakistan

"Power crisis: Punjab government decides to cease commercial activities after sunset"

The Business Recorder, Karachi, April 22, 2010

The only immediate option is to import power from the neighbouring countries.

There are increasing realizations among the leadership of South Asian countries to expedite the process of energy exchange. They have increasingly moved forward towards this as indicated by declarations in various SAARC Summits. Of late, the Summit declarations have pointed out on the need to take effective actions on the decisions taken by the SAARC Summits. Energy exchange idea could be one of the major areas where these decisions would be implemented.

Islamabad Declaration 2004: Concept of Energy Ring was discussed

Dhaka Declaration 2005: Decided to establish the SAARC Energy Centre to promote development of energy resources and energy trade in the region

Colombo Summit 2008: Concept of Regional Inter-governmental Framework was discussed

Colombo Meeting of Energy Ministers 2009: Decided to pursue Energy Ring and Formation of Sectoral Expert Groups (e.g. gas, electricity, renewable energy etc.)

Thimphu Summit 2010: Authorized the SAARC Energy Centre in Islamabad to prepare an Action Plan on Energy Conservation and noted India's proposal to prepare a Roadmap for developing SAARC Market for Electricity (SAME) on a regional basis.

Male Summit 2011: It directed the conclusion of the Intergovernmental Framework Agreement for Energy Cooperation and the Study on the Regional Power Exchange Concept as the work related to SAARC Market for Electricity.

There are various levels of sensitisations and preparations for energy trading that have been undertaken in the past decade that have started bearing fruits now. A number of organizations in the region and outside have been consistently working towards fostering cooperation in the energy sector in South Asia. This includes technical and professional public-sector organizations including Petrobangla, Power Grid and Power Trading Corporations of India, Electricity Authorities of Nepal, Sri Lanka, and Pakistan. On the other hand, international agencies like the World Bank, ESCAP, Asian Development Bank, USAID (SARI-E initiatives), and UNDP have also been fairly active in the last few years in the arena of power exchanges and trading. The SAARC has set up a Technical Committee exclusively on energy sector cooperation under its Integrated Programme of Action and has set up an Energy Centre in Islamabad.

The private sector's role in energy cooperation issues in the region is emerging rather slowly. This is both because of their marginal role in the past in their respective national energy sector and overwhelming public sector domination in energy related activities. After the reforms initiated in the energy sector in the last decade or so, the private sector could now play an active role both at the national and regional level. The SAARC Chambers of Commerce and Industries, a recognized apex body of the federations of chambers of commerce and industries in all South Asian countries, is now emerging as a major agency bringing energy cooperation issues to the forefront. The independent power producers have started actively exchanging cooperation notes across the border.

Laying and consolidating transmission lines across the country in most South Asian countries is taken up steadily. For instance in India, this has led to two varieties of exchanges viz. Inter-state i.e. scheduled and unscheduled inter-state exchanges within the region and also bilateral exchanges that are mostly seasonal e.g. Himachal Pradesh to Delhi in summer months (100-150 MW) and also Inter-regional i.e. inter-regional transfer from Eastern Region to the neighbouring regions.

A large number of studies have been conducted and policy suggestions by several academic and professional organisations have been brought forward. A number of studies have already been conducted on various aspects of energy cooperation in the region. These are conducted by research organizations such as the South Asia Network of Economic Research Institutes (SANEI), Coalition for Action on South Asian Cooperation (CASAC), South Asian Centre of Policy Studies (SACEP), Bangladesh Unnayan Parishad in Dhaka, Centre for Policy Dialogue in Dhaka, Institute for Integrated Development Studies in Kathmandu, Centre for Policy Research in New Delhi, and Tata Energy Research Institute, New Delhi. Premier universities like Jawaharlal Nehru University, New Delhi; BUET, Dhaka; Quad-i-

Azam University, Islamabad; Lahore University of Management Sciences; Tribhuvan University, Kathmandu; and Colombo University. Some of these institutes and universities have played very active roles in advocating cooperation issues on both water and energy in the region. Similar work has been done by professionals and international institutions such as the World Bank, Asian Development Bank, and USAID. In addition, several training programmes and capacity building projects are conducted at various levels for governmental institutions and private agencies in different SAARC countries, including by USAID's SARIE project.

All these together have brought to the foreground a strong urge, demand, and willingness to undertake power trading in a commercial and sustainable manner.

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‘Unconventional’ Gas and Oil: The Changing Contours of Energy Security

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In his 2004 bestseller *The End of Oil,* Paul Roberts argued persuasively that “oil production is likely to hit a peak sooner rather than later” and that “if we factor in the price of oil’s cousin, natural gas, which has climbed recently to more than triple its historic average, it looks as if the long, blissful era of cheap energy is over” (Roberts 2005). It may now be necessary to revisit some of the conclusions presented in this widely acclaimed book. Recent advances in hydraulic fracturing (‘fracking’) and horizontal drilling technologies have transformed the global energy outlook. The availability of natural gas will be much greater than previously expected and this is true of oil (albeit in a more modest degree) than previously anticipated.

The new ‘fracking’ and horizontal drilling technologies have made it economically feasible to extract natural gas and oil trapped in shale (shale gas/oil) or other rock formations (‘tight’ oil/gas). This has already resulted in a dramatic seven-fold increase in the production of shale gas and a spurt in ‘tight’ oil production in the United States. A major importer of natural gas until recently, the United States now has the option of emerging as a net exporter within the next few years. Extensive deposits of shale gas have also been identified in many other regions including, in particular, China and Australia. India is endowed with rich deposits of yet another variety of ‘unconventional’ gas – methane trapped in underground coal seams (coal-bed methane). It is also known to have significant shale gas deposits, though the full extent of these deposits has yet to be explored.

In the light of these developments, the Paris-based International Energy Agency (IEA) radically revised its estimates of global natural gas deposits in 2009, doubling the estimate presented the previous year. IEA followed this up in 2011 with the release of a special report suggesting that we could be entering a “Golden Age of Gas” (IEA 2011). The report highlighted the fact that “unconventional natural gas resources are now estimated to be as large as conventional resources”. In the agency’s revised base scenario projection, the “share of natural gas in the global energy mix increases from 21% [in 2008] to 25% in 2035, pushing the share of coal into decline and overtaking it before 2030”. Oil would continue to be the dominant fuel in the primary energy mix but its share falls from 33% in 2008 to 27% in 2035 (IEA 2011). The projection thus suggests that oil would be closely followed by natural gas, which would displace coal to occupy the second position.

As noted earlier, the production of ‘unconventional’ oil is also expanding rapidly. In addition, recent advances in offshore drilling technology have made it feasible to exploit deposits in much deeper waters than was previously possible. The US Energy Information Administration (EIA) reported last year that US oil production has been increasing since 2008, reversing the declining trend witnessed after 1986. According to EIA, since the new technology is still at an early stage of development, future US production could vary significantly, ranging from 5.5 mbd to 7.8 mbd for crude oil and 0.7 mbd to 2.8 mbd for unconventional oil by 2035 (EIA 2012).

Some other projections are more euphoric. Thus, a new discussion paper issued by Harvard University’s Belfer Center for Science and International Affairs bears the dramatic title, *Oil: The Next Revolution*. The paper opens with the assertion that “contrary to what most people believe, oil supply capacity is growing worldwide at such an unprecedented level that it might outpace consumption. This could lead to a glut of over-production and a steep dip in oil prices” (Maugeri 2012).

Going by experience, prudence dictates treating energy forecasts with a degree of caution bordering

on agnosticism. However, it seems reasonable to draw some broad conclusions. First, the transition from hydrocarbons to a new energy order based on renewable and/or nuclear energy will be significantly slower than previously expected and much slower than hoped for by the climate change community. There are already some indications of a reduction in R&D investment in the US renewable energy sector as a consequence of the decline in gas prices. Second, 'unconventional' oil and gas will account for a significantly increased share of production of these fuels. Third, natural gas will account for a much larger share of the fuel mix, overtaking coal and nearly catching up with oil. Finally, international trade in gas will register a major advance, requiring massive investments in infrastructure (pipelines, LNG terminals, and tankers).

Implications for energy security

Currently, the price of natural gas is linked to oil prices in many long-term international contracts. The projected abundance of natural gas will not only result in lower gas prices in all regional markets but is likely also to snap the existing links between gas and oil prices, thus protecting gas markets from the sharp price fluctuations that have characterised global oil prices. This would serve the energy security interests of all gas importing countries.

The extent of the decline in gas prices will be heavily influenced by US export policy. US legislation requires a case-by-case approval from the Department of Energy for all gas and oil exports. Legislation requires a determination by the Department of Energy as to whether an export application is consistent with the US national interest but does not provide a set of criteria on which to base the determination; only in the case of countries with which the US has a Free Trade Agreement will it be presumed that the public interest is satisfied. In the current policy debate in the United States, advocates of restricting gas exports argue that this would help maintain low domestic energy costs, revive energy-intensive manufacturing industries (e.g. steel and chemicals), create new jobs in these in these industries, and promote exports. Supporters of a liberal trade regime point out that arbitrary export restrictions are not only incompatible with GATT obligations but would also entail loss of export earnings from gas as well as revenues and jobs associated with creation of new export-oriented infrastructure (LNG export terminals, pipelines, etc.).

In fact, the stakes in terms of US national interests are even greater, involving the future of its role as a global leader. Can a country claim to be a leader in promoting a liberal multilateral trading system while also imposing arbitrary restrictions on exports of a critically important commodity? Moreover, US sanctions against Iran have extra-territorial provisions that prevent energy-deficit countries from freely accessing Iran's vast gas and oil deposits. Can these sanctions be effectively enforced in the long run if the US simultaneously denies deficit countries market access to its own shale gas? Thus, the outcome of the current US debate may have far-reaching systemic implications.

The energy security implications of the new projections of oil and gas production will vary from region to region. North America will be the biggest beneficiary. Ever since the 1973 Arab-Israeli War, when the Arab countries imposed oil sanctions against the West, the major goal of Washington's energy security policy has been to reduce and, if possible, eliminate altogether the US' dependence on the politically volatile Gulf region for critical energy supplies. The United States has steadily been reducing this dependence and is now poised to achieve its maximal objective. By the end of this decade, it will be able to meet all its oil requirements from domestic sources, supplemented by imports from other countries in the Americas – principally Canada, Mexico, Venezuela, and Brazil. Imports from the Gulf will be negligible.

Gulf oil will flow mainly to east and south Asia, with China as the major destination, followed by India, Japan, and South Korea, in that order. Western Europe will be the other major destination for Gulf oil. We may expect to see a corresponding increase in China's political stakes in the Gulf countries, together with an enhanced interest in the security of maritime routes in the Indian Ocean through which oil and gas tankers will pass. The Chinese navy will maintain its focus on the western Pacific but will increasingly raise its profile also in the Indian Ocean.

India will remain dependent on imports of oil and gas, as well as coal and will therefore continue to

face a formidable energy security challenge. Its geo-strategic location is unfavourable from the point of view of its requirements for importing oil and natural gas. Since it does not share a common land border with any of the leading exporting countries, oil and gas pipelines from the Gulf or Central Asia must run through one or more transit states (Pakistan and/or Afghanistan) lying in a particularly turbulent region.

The geographical disadvantage is currently aggravated by a political factor. The sanctions against Iran not only restrict access to Iranian gas and oil but also effectively close the shortest and most economical route for bringing Caspian and Central Asian oil and gas to India. The Iran sanctions have led to a major distortion in the flows of Central Asian energy resources to international markets. East-West pipelines carry the region's huge oil and gas exports to distant markets in Europe and the Far East but sanctions currently preclude the possibility of building a pipeline through Iran - the shortest route to the sea and Indian Ocean markets.

Finally, we should note that energy security does not always go hand in hand with environmental or food security. 'Unconventional' oil may have negative local and global environmental impacts. The carbon emissions resulting from exploitation of Canadian oil sands, for example, have serious implications for not only the local environment but also global warming. Shale gas, if substituted for coal in power generation, will reduce carbon emissions in the short-run but it may have an adverse long-term impact if it delays a transition from hydrocarbons to a new energy order based on environmentally benign renewable sources. Indeed, there are some initial indications that, with the availability of cheap shale gas in the United States, there has been a decline in investment in R&D in renewable energy. 'Fracking' also makes heavy demands on water resources and, additionally, involves risk of polluting water sources in the absence of stringent regulations (IEA 2012). Shale gas exploitation presents major environmental challenges, particularly in water-stressed regions. This has obvious implications for agriculture and food security. The triangular relationship between energy, environment, and food security will impose difficult choices for all countries.

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