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New Partnerships in Energy in Asia between India, Japan, and Singapore

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Introduction

Energy supplies are the achilles heel of booming Asian economies such as India and China. Without assured supplies at affordable prices, the Asian economic boom would soon fizzle out. It is obvious that energy supplies are directly linked to geopolitics. Energy issues figure prominently in key relations between The United States-China, Russia-China, Russia-Japan, Japan-China, India-Pakistan (especially pipelines issues), the Middle East-South Asia, Iran-India, as well as in maritime security issues involving sea lanes of communications such as the Straits of Malacca, the Straits of Hormuz, and finally pipeline issues such as TAPI, IPI, the Trans-peninsular across Northern Malaya, from Central Asia outwards, and from Siberia to China and Japan. Much of the competition on energy access is based on a zero-sum game approach. An interesting question is whether (and how) we can turn such an approach into a win/win approach.

THE EAS FRAMEWORK

Both India and Singapore are members of the East Asia Summit (EAS). Singapore was host to the EAS in late 2007, and was looking for ideas to add substance to the EAS. Energy cooperation is one obvious area. In fact, the EAS Cebu Energy Declaration, issued in January 2007, includes mention of such cooperation. One likely area is in energy efficiency.

Between India and Singapore, there are no formal energy cooperation programmes bilaterally. The bilateral Free Trade Agreement, or CECA, has no provision for such energy cooperation. It would seem logical to include such energy cooperation in the next revised CECA, as Singapore has announced plans to focus on clean energy and as India needs to greatly increase its energy production, including that from renewable sources.

At the India-ASEAN level, there does not seem to be any formal energy cooperation, apart from ministerial meetings held at the 25th ASEAN Ministers of Energy Meeting (AMEM) plus Six (which included Australia, China, India, Japan, South Korea, and New Zealand) in Singapore from 20–24 August 2007. A technical study visit by the SAARC Energy Centre to the ASEAN Centre for Energy in Jakarta was organized in June 2007. Perhaps some plans for energy cooperation may have materialized out of these contacts. ASEAN itself has identified six areas for intra-ASEAN energy cooperation, namely, the ASEAN Power-grid, the Trans-ASEAN Gas Pipeline, Energy Efficiency and Conservation, New and Renewable Sources of Energy, Coal Technology and Trading, and Regional Energy Policy and Planning. Indian energy expertise could fit in one or two of these areas, such as energy efficiency or renewables.

In the Cebu EAS Energy Declaration, the EAS agreed to focus on:

- energy security;
- renewable and alternative energy sources;
- energy efficiency and conservation; and,
- climate change.

The Cebu Declaration aims to achieve several goals, as stated *inter alia*:

- We welcomed the various project proposals made on cooperation in energy security, including Japan's four-pillar initiative entitled "Fueling Asia: Japan's Cooperation Initiative for Clean Energy and Sustainable Growth".
- We agreed to establish an EAS Energy Cooperation Task Force, based on the existing ASEAN Energy Sectoral mechanisms, to follow up on our

discussion and report on its recommendations at our next Summit. We welcomed Singapore's offer to host an EAS Energy Ministers Meeting to consider ways to enhance energy cooperation.

India-Japan Energy Dialogue

The India-Japan Energy dialogue already exists: the question is whether we can extend it to all EAS members. We do not need to discuss the Indo-Japanese energy dialogue in detail, except to take note of certain aspects. On 4 July 2007, the Indian Minister Shri Montek Singh Ahluwalia (Deputy Chairman of Planning Commission) stated that:

We would also like to expand our cooperation so that the best practices in Japan can be utilized for formulation and implementation of policies and projects in India, through activities such as training of trainers in India; introduction of Top Runner Program, capacity building of energy service companies, and information dissemination and demonstration of new energy-efficient technologies.

India proposes that the two countries undertake joint research, design and development in specific areas such as MW scale biomass, integrated gasification, combined cycle power generation systems, solar voltaics, and solar thermal systems.

India is ahead of the curve in setting up energy cooperation projects with Japan, which Singapore, ASEAN, and the EAS should take note of. Here we can see the potential of a tripartite India-Japan-Singapore energy efficiency cooperation programme, as all three are deeply interested in this area, and each partner can bring their respective strengths to the alliance. All three countries have strong and friendly relations and are already cooperating in areas such as naval exercises — for example — Exercise Malabar in August 2007. It could be done under the EAS framework, of which all three are members.

Japan Leads in Energy Efficiency

Take this as an example: a Matsushita fridge claims it will use 160 kilowatt-hours a year, one-eighth of old models ten years ago. Between 1973 and 2007 Japan's industrial sector tripled its output, but kept its energy consumption nearly flat. Japan leads in hybrid cars. Its firms produce fifty per cent of the world's solar PV panels. Japan has set targets for further reducing power

consumption of the home's four main appliances: TVs, PCs, air-conditioners, and fridges. We can learn from Japan since they had offered the Cooperation Initiative for Clean Energy and Sustainable Growth at Cebu EAS in January 2007. Japan leads specifically in energy conservation measures in industrial, commercial, residential, and transport sectors; improving equipment efficiency with the Top Runner Programme, and in the Energy-Saving Labelling System.

An EAS Network of Energy-efficient Cities?

Singapore's former Prime Minister and now Senior Minister Goh Chok Tong has proposed building an eco-city in China, leveraging the success of the earlier Suzhou Project, and also leveraging Singapore's expertise in environmental protection, such as water desalination and the recycling of waste water into potable water, as part of urban planning for livable cities. So why not set up Energy-efficient Partner-Cities, comprising a network of major Asian cities, to implement various energy conservation and efficiency measures, and sharing best practices? Eventually, the network should include all capitals of the sixteen member states of EAS. The implementing mechanism could be the Energy Ministers of EAS.

Singapore's Value Added

Singapore has enough experience in planning and implementing various mega-projects such as industrial parks (eight in different countries), special economic zones, and entire cities. It has also the credibility, trust, and knowledge earned and demonstrated by success in its developmental record. Hence it can add value by its proven ability to conceptualize, implement, monitor, and guide massive new projects. Most of its projects are executed on time and under budget. So it brings valuable assets into this idea of setting up a String of Diamonds — or energy-efficient cities — especially with such strong partners as India and Japan. India has the need and a vast consumer market, Japan has the technology, and Singapore brings its experience in project management, its credibility, and reputation. Singapore is a sought-after partner, for instance, it is participating in the Nalanda Project, which seeks to restore the ancient Buddhist centre of learning in India.

Another indicator of Singapore's well-regarded expertise is its water management. In August 2007, the World Health Organization (WHO) signed an agreement with Singapore to help improve public health worldwide

through the proper management of potable water. Singapore also received the Stockholm Industry Water Award for its integrated approach to water management the same month.

Singapore is now focusing on clean energy development. Its Economic Development Board (EDB) has laid out a vision of setting up new Energy Verticals in: oil and gas, clean energy, comprising solar, biomass, gas, hydrogen and fuel cells, and in developing energy solutions in an urban environment. In Singapore, there is a comparative advantage in producing low-cost thin-film solar panels as it has a strong electronics industry, capabilities in precision engineering, chemical industries, and strengths in systems integration and in supply-chain management. The EDB also plans to nurture an Energy Services Ecosystem, which means that a variety of private firms will provide all kinds of clean and green energy services. Such firms are also called “Escos” or Energy Service Companies.

SOLAR POWER

Around Singapore, there are about one billion people who are not connected to electricity grids. This represents a massive deprivation as well as a huge business opportunity. Consider the huge numbers of poor people deprived of electricity. In India 579 million; Pakistan 65 million; Bangladesh 104 million; Nepal 20 million; Sri Lanka 7 million; and in Indonesia 98 million. In Thailand, Philippines, Cambodia, and Vietnam, the combined number is 50 million, while Myanmar has 45 million. This represents a vast number of humanity stagnating in darkness, ignorance, and poverty. We recall what Lenin said during the early years of the USSR: that electrification plus Soviets (or worker councils) equals Communism. A modern-day equivalent would be: electrification plus education equals progress and prosperity.

India’s power sector had a total installed capacity of about 102,000 MW by 2002, of which 60 per cent was coal-based, hydro was 25 per cent, and about 15 per cent was nuclear. There are serious power shortages, and another 100,000 MW are proposed, most of which would be coal and hydropower. In order to protect the environment, the government has planned for accelerated development of renewable energy resources under the Indian National Environment Action Plan. India is located in the Sunbelt and, in most regions, sunny weather is experienced for about 250 to 300 days, with the highest solar radiation in Rajasthan and Northern Gujarat. Not surprisingly, a huge power station producing 140 MW of electric power has been built in Rajasthan using solar thermal parabolic troughs to produce steam to drive turbine generators. Project costs are estimated at about US\$200m.

There is great interest and demand for solar photovoltaic electricity in rural India. One Indian company trying to meet part of this huge demand is SELCO (Selco Photovoltaic Electrification Pte. Ltd.). It was set up in 1995, with initial funding from the Rockefeller Fund, to market, install, and service solar home systems in South India. It aims to provide reliable electricity services to rural customers using TATA-BP modules to power lights, TVs, radios, in states like Karnataka and A. Pradesh. It also provides financial programmes.

One idea is for Singapore companies, which are now producing thin-film solar photo-voltaics, to supply to Indian companies such as TATA, which in turn work with other Indian firms such as SELCO. The rural Indian demand for electricity is as huge as the demand for clean, potable water, which the Proctor and Gamble product "Pur" produces. Similarly, rural India has huge demands for affordable healthcare, quality education, and excellent housing, all of which Singapore can supply.

WIND POWER

Wind power is quickly emerging as a serious energy alternative in India and China. India had already installed more than 1,500 MW of wind power capacity in 2001, and is now the third largest wind power producer in the world after the European Union and the United States. The potential for wind energy in India is estimated at around 45,000 MW. Some estimates expect that of the proposed capacity addition in India of 100,000 MW in the next ten years, ten per cent should come from wind-power. Asia has a total installed wind-capacity of 5,618 MW in 2005.

Some of the major Indian wind power companies include Suzlon Energy, Reliance, the Essar Group of Mumbai, and TATA. Reliance is proposing a 150-MW wind farm in Maharashtra, while TATA is proposing a 100-MW wind power farm. The three biggest states with wind power are Rajasthan, Maharashtra, and Tamil Nadu. Suzlon runs a big wind farm in Khorl, which is a bid project with more than 300 wind turbines. About seventy per cent of the demand for wind power comes from industrial users looking for alternatives to reliance on the electricity grid. One estimate is that wind power in India will remain competitive as long as the price of oil remains above \$40 per barrel. The demand for wind turbines has quickened in India, where installations rose by forty-eight per cent in 2006. In China, such demand rose by sixty-five per cent. India is ahead of China in wind power and is also building more wind turbines quickly. According to Indian Minister for Commerce and Industry Kamal Nath, India is ideally suited

for wind energy. The costs work out well and India has the manufacturing capacity. But experts are sceptical that wind-power will displace coal in any significant way.

Singapore is the site where Vestas, a leading Danish wind power company, has a regional Rresearch and Development (R & D) operation. It had thirty-five per cent of the world market share in 2005. It appears that there are possibilities for wind power cooperation between Vestas and some Indian wind power companies, especially in third markets such as China and Southeast Asia.

ANTI-POLLUTION PROGRAMMES

Another area where Singapore has expertise is environmental protection and enhancement. It has a well-deserved reputation as a clean and green garden city, and has been ranked as one of the best quality-of-life cities in Asia. This is thus another sector where India and Singapore can work together. Traffic management and reduction of car emissions through such programmes as the Electronic Road Pricing are Singaporean innovations that might interest Indian cities, just as London and New York have adopted these concepts and systems.

Specifically, we are referring to the well-known Asian Brown Cloud phenomenon. This is a layer of air pollution covering South Asia, the Indian Ocean, China, and Southeast Asia. It is created by airborne particles and pollutants coming from wood-fires, car emissions, and factories. It is most visible from December to April, during which there is no heavy rain. It was first observed in 1999 by a UNDP Indian Ocean Experiment expedition (Inodex). Some observers believe that it has a warming effect on Himalayan glaciers and on rainfall patterns. In order to combat this huge pollution cloud, multi-country and multi-year programmes are needed. Thus rural electrification and clean water and education programmes are vital factors. Just as Singapore tries to assist Indonesia in fighting the haze, it might think about this Asian Brown Cloud problem and how it could also assist South Asia.

INDIAN REFINING EXPANSIONS

The details of plans to turn India into a major refining centre are available in other chapters, so there is no need to replicate these details. It would be more useful to comment on their impact on Singapore, which is a huge refining centre.

First, the new Indian refineries are meant to serve the Indian domestic market, which is expanding due to huge growth in Indian car-ownership and high Indian growth rates. Many other countries, such as China and those in the Middle East, are also planning and building new refineries. But like India, these countries are basically trying to meet expanding domestic demands. India's Reliance has built a giant new refinery which is profitable at about US\$10,345 (in terms of refinery investment per barrel per day of refining capacity) as compared with Kuwait's refinery costs at US\$27,000 per barrel per day. The low costs are largely due to the low cost of operations in India.

But very few countries can play the roles that Singapore performs, such as a swing role in meeting unsatisfied demands at certain times from various countries. This role stems largely from the skilled oil-trading services found in Singapore, its excellent logistics (shipping), and financing (banks, insurance). Singapore's refineries are more efficient compared with Indian refineries: thus its Gross Refining Margin stands at US\$4.84 in the first quarter of 2007, as compared with Reliance's which stands at US\$12.25.

Secondly, Singapore has already migrated upstream into the manufacturing of sophisticated petrochemical products. So Singapore is not just a big refining hub, but also a major petrochemical hub, based on Jurong Island.

In fact, Singapore has become what we might describe as an Energy City, as it has oil refineries, petrochemical complexes, vast storage facilities, major oil trading expertise, Energy R & D, presence of international and national oil companies, major bunkering businesses, world-class oil rig manufacturing, growing energy sectors such as biofuels and solar, and energy logistics, and financing. In terms of energy infrastructure, Singapore ranks second in the world after Iceland, according to the IMD (International Institute for Management Development, based in Lausanne, Switzerland) World Competitiveness 2007 Yearbook. Singapore also plans to build a major oil refinery in the next few years as well as an LNG terminal, thus enhancing its energy comparative advantage. India can thus tap the energy expertise available in Singapore for its needs.

There is still enough room for Singapore in this higher value-added role in petrochemicals. India will be an important market for Singapore's petrochemical products. Singapore could play a role in the management of the new refineries and in trading oil products in order to match supply and demand so as to meet regional needs. In fact, Singapore's forte is in oil trading, and these skills might be called upon to meet the booming demand generated by the dynamic growth of India and China.

U.S.-India Civil Nuclear Agreement

The second chapter of this book deals with this agreement in detail, so I shall make three general points. It is clear that there is no free lunch for India in this civil nuclear deal, and that India should not ride on U.S. assistance to achieve higher great power status. One way for Great Powers to win respect and support is to bring peace to their region, and this is one great challenge facing India. Secondly, no country should securitize its energy policies as the United States is trying to do via this agreement. Thirdly, the U.S.-India agreement does complicate India's relations with other third countries such as China, Iran, and Pakistan. Next, I shall simply reflect on the implications for Singapore and Southeast Asia.

First, the overall impression is that both the United States and India have taken their strategic cooperation one level higher. India will obviously struggle to maintain its independence of action in sensitive areas such as energy cooperation with Iran, for example, through the IPI pipeline. The effects will largely depend on how India will calculate and order its national priorities: what is more important to India — its new relations with the United States, which has implications for its global status, or its reputation for independence and neutrality, as a leader of the Third World. In other words: realism versus morality.

Second, the impact of India leaning to one side (the United States) will be less traumatic for pro-western ASEAN states than for the others. Singapore already cooperates closely with India and the United States in many areas, such as defence, economics, and politics, so for Singapore, this will be a matter of degree rather than a total reversal of orientations and policies.

Third is the adjustments that China will have to make in order to compensate for this closer U.S.-India relationship, and the impact of this on China-ASEAN relations. China operates a very sophisticated foreign policy, based on thousands of years of history and dealing with external powers. In the past, when Imperial China followed its policy of using one barbarian-country to counter another, it was bad news when some of the external powers collaborated. One such example was when the Western Powers ganged up against Manchu China to demand trade concessions, extra-territorial legal exemptions, etc. China was then weak and could not resist effectively these western demands and had to sign the Unequal Treaties. Now China is much more powerful in its economic, political, and defence sectors and has more room for manoeuvre and could turn to Russia, Iran, or use mechanisms like the Shanghai Cooperation Organization (SCO) and Sino-Africa ties. (SCO, an inter-governmental organisation, founded in Shanghai in June 2001 by

China, Kazakhstan, Kyrgyz Republic, Russia, Tajikistan, and Uzbekistan, aims to strengthen mutual confidence and good-neighbourly relations.) China can also see the emerging shape of the counter-China grouping centred around the United States and Japan, and including, to varying degrees of reluctance, Australia, and perhaps, India. China will strive to break out of this circle, and two obvious regions are Central Asia and Southeast Asia. So ASEAN can anticipate some Chinese initiatives to further solidify China-ASEAN linkages, such as more Chinese FDI, tourism, exchange programmes, etc.

Conclusion

This brief chapter discusses possible areas of cooperation in energy areas between India and Singapore.

Looking forward, we may see the United States involving India more actively in Southeast Asian affairs, for instance, through naval exercises and in maritime security issues, including the Straits of Malacca. In East Asia, the role and presence of the United States and Japan are already strong, and so there is less need and opportunity for India to develop a higher profile. Besides, China will be highly sensitive to such an enhanced Indian security profile, just as much as India is highly sensitive to a greater Chinese role and profile in South Asia and in the Indian Ocean.

The cooperation between India, Singapore, and Japan in energy efficiency within an EAS framework will help add more substance to the nascent EAS. It will also enable India to enhance its profile within Southeast Asia. Most ASEAN members will welcome India to play a greater role as it enlarges the spectrum of options for them, especially since most perceive India as fairly benign. In turn, India should add more substance to India-ASEAN relations (such as through trade and more FDI) and project more effectively its soft power.

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