

**CHINA AND INDIA:
THE ENERGY POLICIES**

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Executive Summary

1. China and India are the second and third largest economies in Asia, respectively. Rapid economic development, industrialization, urbanization and improved lifestyles are driving the two countries' energy demand higher and making them increasingly reliant on world energy markets.
2. In comparison, the energy situation of China is better than that of India in terms of energy consumption structures, international reserve status, and quest for energy supply abroad.
3. Both countries currently rely on international markets for over half of the oil they consume. But India's dependence on foreign oil has a longer history than that of China.
4. Although India has a longer record of promoting energy conservation, the current Chinese energy efficiency campaign under the leadership of the country's top leaders is likely to generate more impressive results than the corresponding campaigns in India.
5. For both China and India, production overseas is an effective way to hedge against high oil crisis and ensure energy security. But it is believed that China is more successful than India in its oil investment abroad for a number of reasons.
6. Firstly, China has central energy authority in charge of formulating and adjusting its overall energy development strategy. There is no single central ministry for energy in India however. Instead, there are a number of ministries and groups that are responsible for policymaking related to various energy sources.
7. Secondly, Chinese National Oil Companies (NOCs) get more support from government and state-own banks. While crisis-hit international oil companies

have been reining in their overseas expansion, China's top oil giant CNPC has recently inked a US\$5 billion financing deal with Kazakhstan's state oil company KazMunaiGas.

8. China's generous funding has taken other forms as well. Its banks have been making headlines for showering tens of billions of loans and funds on emerging markets in Africa, Latin America and Central Asia.
9. India pales in this regard; its NOCs receive no government support for their overseas investment. They evaluate investment areas and go into specific deals independently and with their own funds.
10. Thirdly, China's energy diplomacy plays a more effective role in its energy quest abroad. These years saw China channeling diplomatic efforts into cultivating relations with oil and gas-exporting countries. Yet India's energy diplomacy has been restricted by its conflicting interests that may indeed clash with its energy expansion efforts.
11. Lastly, India's quest for energy supply is also being impeded by its sometimes tense relations with energy suppliers, energy transit countries and energy competitors. India needs to overcome more serious geopolitical and security challenges than China before it can realize its overland pipeline dreams.

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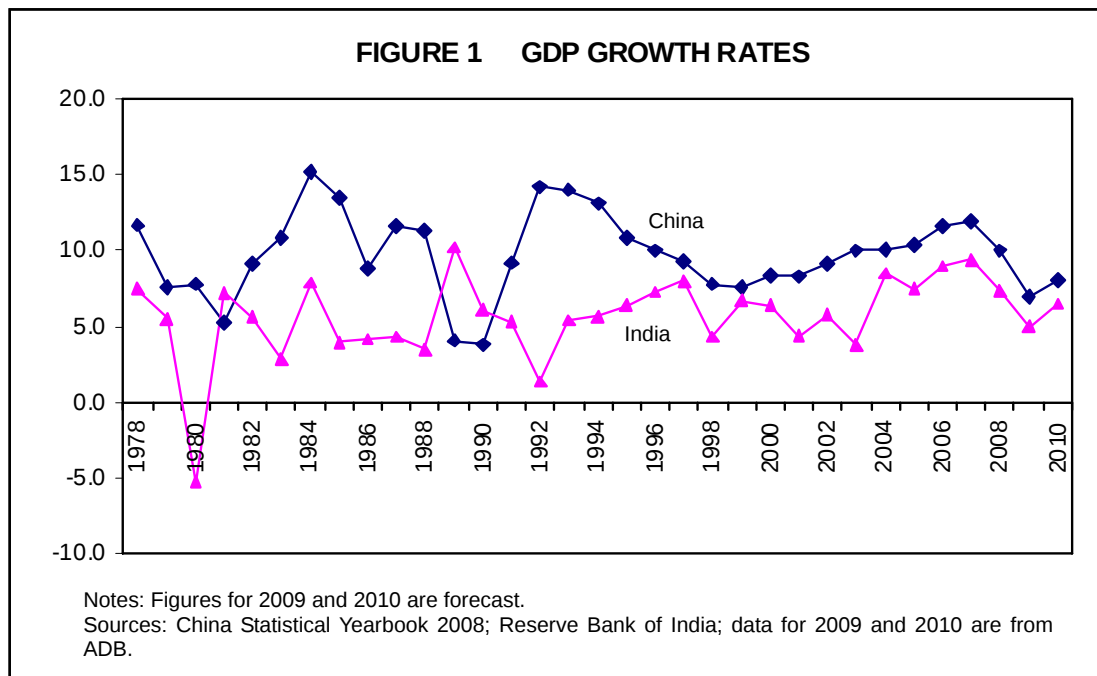
Economic growth and energy demand

- 1.1 Over the past decades, China and India have been emerging as economic giants in the world. During 1978-2007, the average real GDP growth rate was 9.9 percent in China and 5.6 percent in India (Figure 1). Though India is still lagging behind China in terms of economic performance, it has caught up with China in the past decades, particularly these years. With both countries' governments being fully committed to the goal of high economic growth and poverty reduction, the current development momentum is expected to continue for decades to come. The uncertain global economic environment may slow the two Asian giants in the short run but their remarkable economic transformation is a long-run trend.
- 1.2 China and India are at a stage in their economic development in which oil consumption has just taken off and is not likely to decelerate in the foreseeable future. According to ADB's (Asian Development Bank) calculation, the income elasticity of oil consumption has historically been about 0.5; 1 percent economic growth therefore translates into 0.5 percent growth in oil consumption.¹ China currently consumes 7.9 million barrels of oil per day (2007), which accounts for 9.3 percent of the world's total consumption; India

* Zhao Hong is visiting senior research fellow at EAI. He would like to thank Professor John Wong for going through the various drafts of this brief and for his useful comments and suggestions.

¹ Asian Development Bank Outlook 2009 Update, <http://www.adb.org/Documents/Book/ADB/2008/update/default.asp>

consumes 2.8 million barrels of oil per day, accounting for 3.3 percent of the world's total consumption.²



1.3 According to World Bank's prediction, in spite of the current global financial crisis, India's GDP growth in 2008 was 6.3 percent, and hovering at 5.8 percent in 2009 and 7.7 percent in 2010; China's GDP growth was 9.4 percent in 2008, and likely to remain at 7.5 percent in 2009 and 8.5 in 2010.³ Thus according to the calculation of ADB, as the economies keep growing at this rate, the average annual oil demand growth of China from 2007-2015 will be 0.41 million barrels per day, and that of India will be 0.125 per day.⁴ Both countries' rapid growth and structural transformation will continuously fuel rapid growth of oil consumption for some time to come.

² International Energy Outlook, 2008, Energy Information Administration, Washington, www.eia.doe.gov/oiaf/ieo/index.html

³ Global Economic Prospects 2009, World Bank, http://publications.worldbank.org/econcommerce/catalog/product?item_id=8903320

⁴ Asian Development Bank Outlook 2008 Update, <http://www.adb.org/Documents/Book/ADB/2008/update/default.asp>

- 1.4 It is widely believed that the current deterioration of the global economic outlook will have a negative impact on world's oil demand in the short run. However, the slow but still healthy growth of developing countries will help prop up demand. In the coming years, global oil demand growth will increasingly come from developing Asia, in particular China and India.
- 1.5 Developing Asia accounted for about 40 percent of the positive demand shock in 2004 and is likely to account for up to one half of global demand growth in the future in spite of the sharp slowdown of growth in the U.S., Europe, and Japan which will curtail demand growth. In these emerging countries, the positive income effect associated with robust economic growth is overwhelming the driving effect of higher oil prices. For example, in the gasoline markets of China and India, the rise in demand due to large numbers of first-time car buyers is deterring the fall due to higher prices.
- 1.6 As the two biggest developing economies in Asia, the primary concern for China and India is to ensure that they have sufficient energy to support high economic growth and prevent debilitating energy shortfalls that could trigger social and political turbulence. Domestically, they are taking measures to diversify their energy structures and improve energy efficiency. Internationally, they are expanding oil investments and cooperation overseas in an attempt to hedge against high oil prices and increase energy security in the long-run.

Comparison of China's and India's energy demand and supply

Composition of energy demand

- 2.1 Compared with India, the composition of China's energy demand is more diversified. Although both economies rely heavily on domestic coal resources, especially for power generation, the share of coal in primary energy use was much higher in China at 73 percent in 2005 and possibly hitting 55 percent in

2030, as compared with 55 percent and 45 percent in India respectively [Figures 2(A) and 2(B)]. China relies more on coal because it has so much of it. Compared with only 1 percent of the world's proven oil and gas reserves, nearly 13 percent of all the known mineable coal still in the ground is in China.⁵ Through most of its history, tapping these reserves has allowed China to remain energy independent, and is likely to continue for decades ahead.

FIGURE 2(A) CHINA'S ENERGY CONSUMPTION STRUCTURE

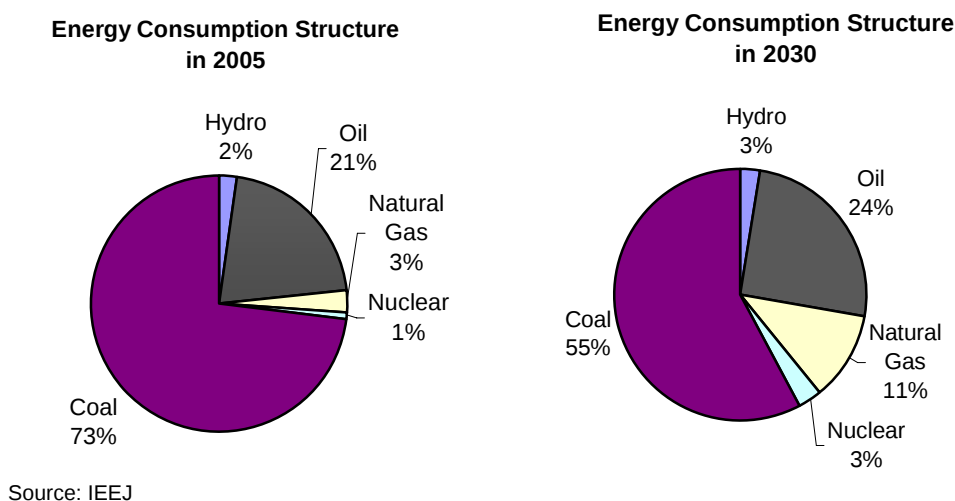
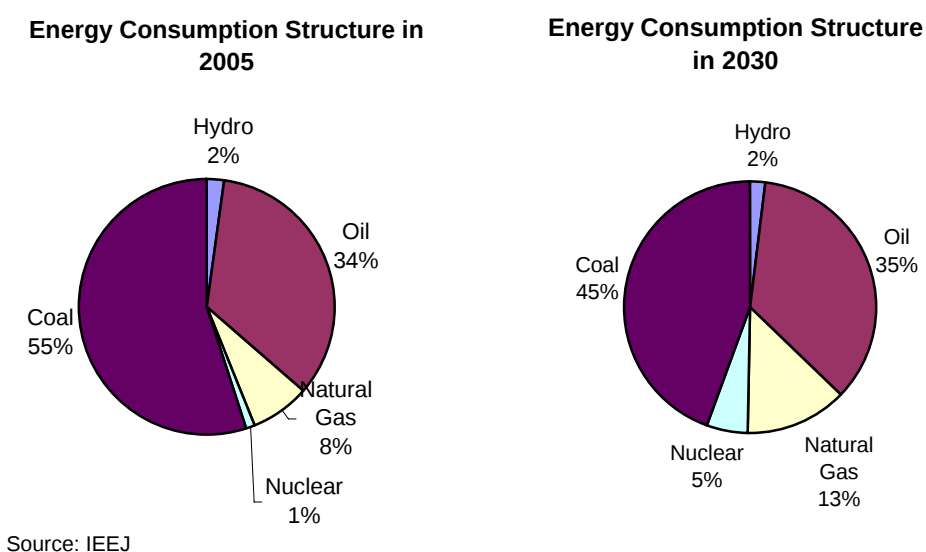


FIGURE 2(B) INDIA'S ENERGY CONSUMPTION STRUCTURE



⁵ Daniel H. Rosen, "China Energy: A Guide for the Perplexed", Peterson Institute for International Economics, May 2007,

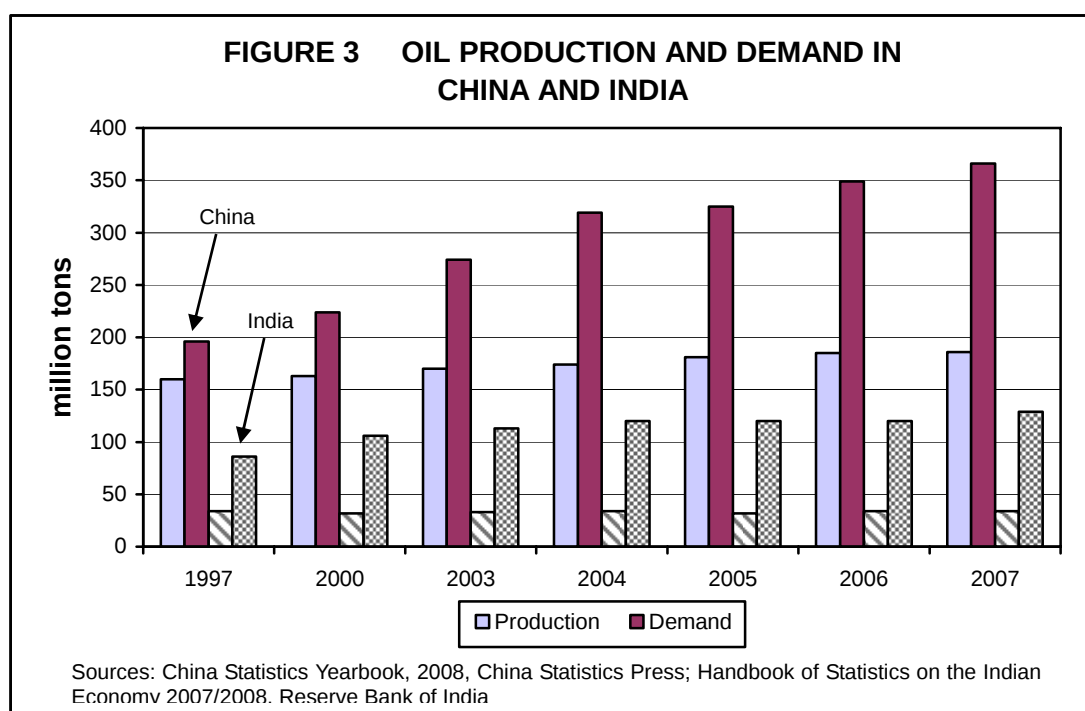
- 2.2 China's coal production capacity growth is far greater than the projected consumption expansion under the 11th Five-year Plan (2006-2010) for Coal Industry Development. This is because coal price spikes in 2004 led to a rapid rise in investment in the coal industry. To ensure sustainability of the coal industry, the 11th Five-year plan calls for further consolidation, integration and orderly development of the coal industry to develop a competitive, stable production system. China is also introducing more foreign investment in the coal sector, particularly in the modernization of existing large-scale mines and the development of new ones, concentrating on new technologies, especially technologies with environmental benefit.
- 2.3 China's coal consumption is projected to expand at an average annual rate of 2.8 percent from 1881 million tons in 2004 to 3867 million tons in 2030, while its coal production is projected to expand from 1960 million tons to 3927 million tons in 2030.
- 2.4 India's coal output cannot meet its domestic demand, as its consumption is projected to expand at an average rate of 3.3 percent from 441 million tons to 1020 million tons from 2004 to 2030, while its coal production is to grow from 413 million tons to 937 million tons. This indicates that India will have to rely on imports to meet its coal supply/demand gap. The Institute of Energy Economics, Japan estimated that India's coal import dependence ratio (coal import ÷ coal demand) will rise from 8.6 percent in 2006 to 15.3 percent in 2024.⁶ Unlike China, India's coal industry is dominated by state-owned companies. Public coal companies such as Coal India Limited (CIL) and Sigareni Company Ltd (SCCL) accounted for 94 percent of coal output in 2005.⁷ India needs to develop an efficient coal industry and form a sound coal market by opening the coal industry wider to the private sectors, including foreign direct investment.

⁶ Institute of Energy Economics Japan, November 2007, <http://eneken.ieej.or.jp/en/>

⁷ Tanvi Madan. "Energy Security Series: India", The Brookings Foreign Policy Studies, 2006.

Oil demand and supply in China and India

2.5 Oil continues to play an important role in meeting both countries' energy needs. Yet neither China nor India currently produces enough crude oil to meet its needs. China's demand for oil doubled over the past decade, increasing from 196 million tons in 1997 to 368 million tons in 2007. On the other hand, its oil production increased slightly from 160 million tons to 187 million tons (Figure 3). China's oil production totaled 3.7 mb/d in 2006. Its output is expected to level off at 4 mb/d early in the next decade and then decline to about 3.4 mb/d in 2030. Most of China's oil fields already in production have reached or passed their peaks. Increased output from fields in western China and offshore is likely to only slightly offset production declines in China's oldest and largest oil fields in the northeast, including Daqing.



2.6 Figure 3 shows that India is also facing a problem of decreasing oil production and increasing demand. During 1970-81, India imported two thirds of its oil needs. By the mid 1980s the balance had flipped, with two thirds of oil coming from domestic sources. But the domestic oil sector went through a period of stagnation with little competition, increasing inefficiency, outdated

technology and insufficient funding. By the beginning of the 1990s, India was again more dependent on imported oil. India's current oil production totaled 0.69 mb/d in 2006, and is projected to decrease to 0.62 mb/d in 2015 and 0.39 mb/d in 2030.⁸

Oil import dependence

- 2.7 With limited reserves and relatively flat domestic production, China and India currently rely on international markets for over half of the oil they consume. According to the International Energy Agency, the share of China's oil import represents 52 percent of its total oil consumption at present with this share projected to reach 80 percent in 2030; the share of India's oil import on the other hand represents 70 percent of its total oil consumption, and is projected to reach 92 percent in 2030. Although import dependence has grown slightly less rapidly in India, it remains proportionately more dependent on oil imports than China's in 2030.
- 2.8 India's dependence on imported oil has a longer history than that of China. India either buys its oil through spot purchases (for example, from Nigeria), short-term contracts (generally of three months) or longer-term contracts (of a year, for example, from Saudi Arabia). India currently imports about 100 million tons (fiscal year 2005/06), or 2 mb/d, of crude oil, about 67 percent of which comes from the Middle East, 25 percent from Africa and 8 percent from other suppliers. Saudi Arabia is the largest supplier, accounting for 25 percent of India's crude oil imports. China currently imports 3.7 mb/d of crude oil, about 45 percent of which comes from the Middle East, 32 percent from Africa, 8 percent from Asia Pacific, and 15 percent from America and other regions.
- 2.9 In terms of financial means to weather oil shortages, China has more advantages than India. China's foreign exchange reserves stood at US\$1,953 billion in March 2009, while India's stood only at US\$255 billion as of the

⁸ World Energy Outlook 2007, International Energy Agency, Paris.

fiscal year 2009. Moreover, its trade deficit in fiscal year 2007/2008 reached US\$25.9 billion. In 2007-2008, oil imports (petroleum, crude and products) cost India US\$79.6 billion (up from US\$57.1 billion in 2006-2007), accounting for 33 percent of its total import expenditures that year.⁹

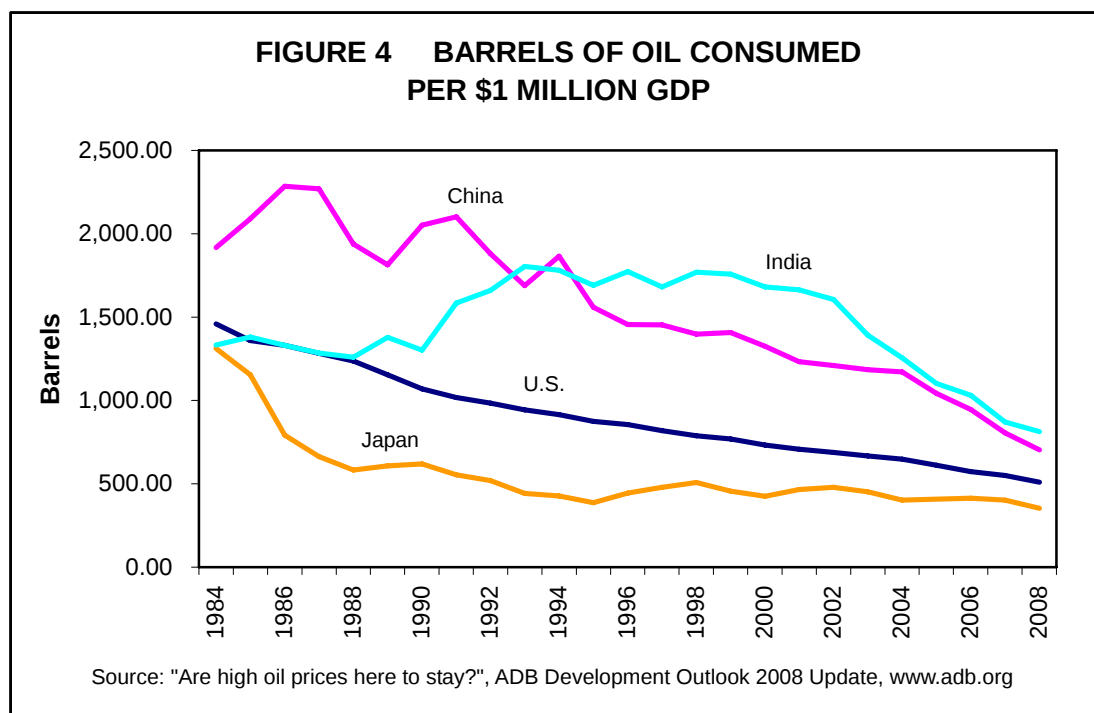
- 2.10 In the case of China, apart from a strong balance of payments situation, the percentage of net oil import in its total imports is much smaller than that of India. From 2000-2007, energy (petroleum, crude and refined products) made up 29 percent of India's total import expenditures, whereas in China (2000-2005), the share was 10 percent.¹⁰ From this index, China is thus less dependent on oil import than India.

Energy efficiency

- 2.11 Evidence suggested that China and India have accelerated their efforts to improve the efficiency with which they use energy. The amount of oil required to produce one dollar of output has been falling in both countries even though they still has a lot of catching up with Japan and Western Europe in energy efficiency. In China, barrels of oil consumed per \$1 million GDP fell from 1,917 barrels in 1984 to 703 barrels in 2008, and in India, during the same period, this ratio fell from 1,332 to 813 (Figure 4).
- 2.12 In China, energy efficiency has been improving at a faster rate than that of India. Apart from industrial structural adjustments from heavy industries to light and service industries, the government's policies play a very important role in this regard.

⁹ Handbook of Statistics on the Indian Economy 2007/2008, Reserve Bank of India, www.rbi.org.in

¹⁰ Handbook of Statistics on the Indian Economy 2007/2008, Reserve Bank of India, www.rbi.org.in; 潘成夫, “国际油价上涨对中国构成的经济风险评估”, 《世界经济与政治论坛》2007年第1期。



- 2.13 In 2004, the Chinese government published the *China medium-and-long-term energy conservation plan* to emphasize the principles and objectives of energy conservation. Through the 2006 11th 5-year plan, the central government targeted a decrease in energy intensity by 20 percent by 2010 from the 2005 level. The central government has also launched various programs aimed specially at industrial sectors, buildings, and the general public.
- 2.14 Other policies, including stringent vehicle fuel economy standards and a new car-tax regime, that penalizes large cars, were introduced in 2006. The public has also been called to help save energy. In August 2007, the central government implemented the comprehensive work plan for energy conservation and pollutant discharge reduction campaign to emphasize the importance of lifestyle change, education, and new technologies.
- 2.15 India has a longer record of promoting energy conservation, and its energy efficiency was once better than that of China (partially because of its industrial structures). Yet the current Chinese energy efficiency campaign, under the leadership of the country's top leaders, is likely to generate more impressive results than the corresponding campaigns in India.

China's and India's energy quest overseas

- 3.1 As two emerging economies, both China and India are facing increasing energy shortages. Production overseas is an effective way to hedge against high oil prices and ensure energy security. Thus acquisitions of equity oil overseas by state companies have formed the core of energy-security policy, as both governments believe that equity oil abroad will “ensure cheap and reliable oil supply”.¹¹
- 3.2 When China became a net oil-importing country in 1993, the central government's strategy is to develop China's oil industry by “establishing oil fields abroad”, and two state-owned companies – CNPC (China National Petroleum Corporation) and Sinopec (China Petroleum and Chemical Corporation) were set up for oil exploration overseas. After a decade of overseas investment, China has made some achievements.
- 3.3 For instance, from 1995 to 2006, total Chinese NOCs investment flows abroad reached \$27.2 billion, covering over 200 oil exploration and development projects in more than 50 countries. Chinese NOCs produced 685 thousand barrels of equity oil per day abroad in 2006, and it is projected that China's equity oil output will reach 1.1 million barrels per day by the years 2013 to 2015. Now China's overseas oil expansion is concentrated in three strategic areas: Middle East-North Africa, Russia-Central Asia and Latin America, covering Sudan, Iran, Kazakhstan, Russia, and Venezuela.
- 3.4 India has been following China in its overseas energy expansion strategies. Indian oil and gas companies are encouraged to invest abroad and build strong relations with strategically important countries. Indian NOCs have ambitious plans — ONGC Videsh Ltd. (OVL) has set a long-term target of producing 60 million tons of oil a year from overseas by 2025, and has spent about US\$4.5

¹¹ Equity oil refers to standard industry production sharing agreements where the foreign oil company is given the right to sell a specified share of the oil produced.

billion abroad.¹² ONGC (The Oil and Natural Gas Corporation) aims to double its reserves by 2020, with 20 million tons coming from OVL.¹³

- 3.5 India has agreed in principle with major oil-producing Gulf countries like Saudi Arabia, Kuwait and the United Arab Emirates to develop long-term strategic relationships in the energy sector involving supply of crude oil, upstream and downstream joint ventures, refineries, petrochemical industries and marketing. During the past few years, India's NOCs such as ONGC and IOC (Indian Oil Cooperation Limited) have made some bids in oil exploration and production deals in a number of countries, including Australia, Egypt, Iran, Myanmar, Syria and Central Asia. ONGC has made investments of US\$3.5 billion in overseas exploration since 2000,¹⁴ and the equity oil production in 2006 was about 120 thousand barrels per day.
- 3.6 Yet, due to the following political and economic reasons, India's energy expansion strategy overseas is not as successful as that of China.
- 3.7 Firstly, China has a high-level energy entity which is in charge of formulating and adjusting its overall energy development strategy. In 2005, China established the *Energy Leading Group*, a supra-ministerial coordinating body headed by Premier Wen Jiabao, and in March 2008, China established the *National Energy Administration*, a national-level energy institution. This reflected China's recognition of the need to strengthen energy sector management by improving coordination across industries and ministries, and promoting the formation, implementation and enforcement of energy policies and strategies.
- 3.8 In India, there is no single central ministry of energy (one existed before 1992). Instead, a number of ministries and groups are jointly responsible for

¹² India's largest oil and gas company is the state-owned ONGC. While mostly involved in upstream activity, more recently it has tried to become an integrated company. OVL (ONGC Videsh Ltd.) is an ONGC subsidiary that operates exclusively overseas.

¹³ The Brookings Foreign Policy Studies Energy Security Series: India, 2007.

¹⁴ Chietigj Bajpae, "India, China locked in energy game", Asia Times online March 17, 2005.

polymaking related to various energy sources. Attempts at integrating energy policies have been hindered by separate entities overseeing a particular type of energy source. Even within ministries, the emphasis tends to be on specific and limited policies rather than on a long-term, integrated strategy, as a former minister remarked that his job was “to make policy for next year.”¹⁵ The realities of domestic politics, social economic concerns and policy-making processes have stifled the country’s making of a clear and long term strategic framework for its energy development and exploration overseas.

- 3.9 Secondly, Chinese NOCs can get more support from the government and soft loans from banks. For example, while crisis-hit international oil companies have been reining in their overseas expansion, China’s top oil giant CNPC recently has inked a US\$5 billion financing deal with Kazakhstan’s state oil company KazMunaiGas with the support from cash-rich state-owned banks.
- 3.10 China’s generous funding to support its oil ventures overseas has taken other forms as well. China’s banks have been making headlines for showering tens of billions of loans and funds on emerging markets in Africa, Latin America and Central Asia. Beijing recently provided six resource-rich countries, including Argentina and Indonesia, with access to more than 640 billion yuan (S\$141.2 billion).¹⁶ And it also announced a US\$10 billion fund for ASEAN countries to support resources, among other things.
- 3.11 India pales in its financial clout. Its NOCs receive no government support for their overseas investment. Although Indian NOCs overseas upstream development forms a part of the government’s energy security policy, they evaluate investment areas and specific deals independently and use their own funds. In this sense, their overseas upstream development is apparently more rational and sustainable than those pursued by their Chinese counterparts.

¹⁵ Tanvi Madan. “Energy Security Series: India”, The Brookings Foreign Policy Studies, 2006.

¹⁶ Grace Ng. “China dangles loans to get key resources”, *The Strait Times*, April 23, 2009.

- 3.12 Thirdly, China's energy diplomacy plays a more effective role in its energy quest abroad. With China's extraordinary economic expansion and its corresponding need for energy and natural resources since the late 1990s, China's diplomacy has become more pragmatic and is mainly motivated by energy security and economic growth.¹⁷ These years saw China channeling diplomatic efforts into cultivating relations with oil and gas-exporting countries, and successfully using its political capital to influence pariah regions to make policy-decisions tilt to China's favor.
- 3.13 India's energy diplomacy has been restricted by its conflicting interests that may indeed clash with its energy expansion efforts. While it is engaging in more aggressive oil diplomacy with a few countries, considering more acquisitions of oil and gas assets abroad, and planning to participate in the construction of pipelines, these attempts are hindered or affected by some other strategic factors, including the US factor. India is also likely to run into conflict of interests with the US when considering potential energy suppliers like Myanmar, Sudan and Venezuela.
- 3.14 Lastly, India's quest for energy supply is also being impeded by its sometimes tense relations with energy suppliers, energy transit countries and energy competitors. While China has either resolved or shelved its border disputes, India has active conflicts on almost all of its borders with neighboring states. India's tense relations with Pakistan are likely to impact negatively on the proposed gas pipeline from Turkmenistan or Iran to India, which will have to traverse Pakistani territory. India's poor relations with natural gas-rich Bangladesh and China-friendly Myanmar have impeded its quest for energy abroad. India has to overcome more serious geopolitical and security challenges than China before it can realize its overland pipeline dreams.
- 3.15 Although India lags behind China in terms of oil investment abroad, it has advantages in overseas enterprise mergers and internal enterprise governance. Many Indian big enterprises have gone abroad since early last century, and

¹⁷ Stephanie Kleine. "China's New Dictatorship Diplomacy", *Foreign Affairs*, February 2008.

have accumulated a lot of experiences in managing multinational businesses. India's private economy is also more developed than China's. It is more advanced in enterprise supervision and management.

- 3.16 Moreover, for historic reasons, Indian enterprises are more acquainted with Western law systems and regulations, cultures and language than their Chinese counterparts. They are more acknowledged and accepted by the western world, and have more means to merge or buy foreign companies. Once these advantages are introduced into its NOCs, India's competitiveness in this regard will be enhanced greatly.

Room for cooperation

- 4.1 China and India are the second and third largest economies in Asia. Rapid economic development, industrialization, urbanization and improved lifestyles are driving these two countries' energy demand higher and making them increasingly reliant on world energy markets. Although the energy situation of China is better than that of India in terms of energy consumption structures, international reserve status, and quest for energy supply abroad, both countries are increasingly exposed to changes in the world energy markets as IEA estimated that China and India's oil import dependence will increase to 80 and 92 percent respectively in 2030.
- 4.2 Thus it is important for these two big oil importing countries to strengthen cooperation in dealing with energy issues. Over-competition will result in unnecessary loss to both sides; as pointed out by the Indian former Petroleum Minister Mani Shankar Aiyar, both countries have to "realize that when we compete in an unhealthy manner to acquire oil fields in third countries, we only end up driving costs for each other."¹⁸
- 4.3 As "new comers" in the world oil markets, both countries need to learn from each other's strengths. China has advantages in its government-driven energy

¹⁸ The Brookings Foreign Policy Energy Security Series: India.

strategy and energy diplomacy, whereas India has advantages in enterprise governance and management. They can combine these advantages and collaborate to expand their energy venture overseas.

4.4 Some achievements have been made in this regard. India in 2005 took the initiative to cooperate with China in its energy quest. In January 2006, China and India signed five memorandums of cooperation in the energy sector, covering a full scope of areas, including strengthening the exchange of information when bidding for oil resources in a third country, enhancing upstream exploration and production, refining and marketing of petroleum products and petrochemicals, laying of national and trans-national oil and gas pipelines, fostering frontier and cutting-edge research and development, and promoting environment-friendly fuels.¹⁹ Both countries' NOCs agreed to bid jointly for stakes in companies and blocks as part of a larger set of energy cooperation.

4.5 China and India can also cooperate in areas of energy diplomacy. Today, more than 50 percent of China's oil imports come from the Middle East, and IEA estimates that China's oil imports from this region will rise to at least 70 percent by 2015. At present, two-thirds of India's imported oil comes from the Middle East, while India will inevitably have to continue to rely on Gulf oil. It goes without saying that the two countries share a large long-term interest in ensuring a steady supply of energy resources from the Middle East to meet the demand of Asian countries. To ensure this, the two countries need to use their clout as large and growing consumers of energy to push for increased influence in this region.

¹⁹ "China, India agree on energy cooperation", Embassy of the People's Republic of China in the United States of America, 13 January 2006.