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Foreign Addiction: Assessing India's Energy Security Strategy

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ABSTRACT This Special Report examines India's search for energy resources. **Tanvi Madan** chronicles the overseas activities of India's national oil and gas companies and highlights New Delhi's energy diplomacy. **Juli A. MacDonald** describes how India's energy interests abroad interact with foreign policy and national security concerns. **Mikkal E. Herberg** considers U.S. responses to India's international energy search and implications for the U.S.-India relationship. And **Ron Somers** reviews the status of India's domestic energy sectors and their prospects for meeting India's future energy needs.

INTRODUCTION

MICHAEL KUGELMAN

India boasts one of the world's fastest-growing economies. Accompanying this growth is a rapidly increasing demand for energy. India is currently the world's fifth-largest energy consumer, and is expected to vault to third place by 2030—behind only the United States and China. An important driver of this burgeoning demand in the coming years will be the many Indian households expected to transition from traditional energy sources (such as firewood and animal dung) to commercial ones (such as oil and natural gas).

Because of insufficient energy resources at home, India is increasingly looking abroad to satisfy its voracious demand. The country presently imports about two-thirds of its oil consumption, and its dependence on hydrocarbons is expected to deepen over the next few decades. By 2030, the International Energy Agency projects that India will import one-third of its coal, half of its natural gas, and a whopping 90 percent of its oil.

India's need to attain energy security by acquiring resources overseas is now a major concern for the country's government. Indeed, in September 2007, the Ministry of External Affairs—India's foreign ministry—established an energy security division, charged with "maintain[ing] close coordination" with relevant ministries and "support[ing] their international engagement through appropriate diplomatic interventions."[1] On July 22, 2008, the Wilson Center's Asia Program, with cosponsorship from the Center's Global Energy Initiative, hosted a panel discussion on India's energy

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security policy. This report comprises the papers presented by that event's four speakers.

Tanvi Madan of the University of Texas at Austin provides an overview of India's international energy strategy. The plan's objectives include acquiring upstream assets; pursuing transnational pipeline projects; and securing foreign investment in domestic energy sectors. She gives special attention to India's national oil and gas companies (NOGCs), which are "at the forefront" of India's efforts to secure energy resources abroad. Among the most active is ONGC Videsh Limited (OVL), a subsidiary of the Oil and Natural Gas Company, India's largest oil and natural gas firm. OVL, according to Madan, has spent about $6 billion on "over three dozen assets" in 18 countries—a sum OVL claims is the most any Indian corporation has spent overseas. Yet despite their successes, India's NOGCs have suffered setbacks and lost out on bids to other companies—often Chinese firms. As a result, Madan notes, NOGCs are forming partnerships with each other, with private sector firms, and with foreign companies (including Chinese ones) to make their bids more competitive.

New Delhi supports its external energy strategy with robust "energy diplomacy." This is meant to help NOGCs with their bids, writes Madan, but also to promote future cooperation with consumers and producers and to attract investment and technology. India's energy diplomacy extends from Central Asia to the Middle East, Africa, and Latin America, and has yielded various bilateral agreements and memorandums of understanding. Over the last few years, according to Madan's calculations, India's petroleum and natural gas minister has visited 9 of the top 15 oil-exporting countries. During a 10-month period in 2007, he also visited four top gas exporters. Controversially, India has also extended military and economic assistance to unsavory governments in energy-rich countries. These activities range from extending lines of credit (worth nearly $400 million) to Sudan to providing support to Burma's army.

Madan concludes that India's energy interests—despite their salience—have "tended not to trump" the nation's broader strategic objectives. To illustrate this dynamic, she references New Delhi's decision at the International Atomic Energy Agency to side with the U.S. position on the nuclear program of Iran—a major supplier of oil to India—while in negotiations with Washington on a civil nuclear deal, an agreement India's governing coalition has sought in order to strengthen strategic ties with the United States.

The relationship between India's overseas energy activities and its larger strategic goals is the subject of **Juli A. MacDonald's** essay. MacDonald, of the consulting firm Booz Allen Hamilton, argues that energy plays an enabling role in many of the country's strategic relationships. For example, in South and Southeast Asia, energy investments "give India occasion to promote shared interests and win regional influence." In the Middle East and Central Asia, India uses energy diplomacy as a means of countering the influence of China. India's agreements with national energy companies in Brazil and South Africa help build cooperation on foreign policy concerns the three countries share, such as increasing the number of veto-wielding members of the United Nations Security Council. And finally, a nuclear deal with the United States would strengthen strategic ties with

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Washington and "transform" India's status in the international community.

MacDonald contends that the strategic implications of India's external energy security policy—especially in terms of national security—have not been properly examined. "Overseas energy assets," she writes, "open up India to new vulnerabilities and engender new military and security challenges for the Indian military that have not yet been fully understood." India's energy activities are truly global, exposing the country to different types of threats, from political instability to natural catastrophe. Among India's military services, only the Navy is adjusting to these realities. It is undergoing a "slow but aggressive" transformation that will enhance its power projection capacities and allow it to function as a "blue-water" navy.

MacDonald also discusses the Indian national security community's fears of rising Sino-Indian energy competition. Of particular concern is "the coupling" of China's naval modernization efforts with its increasing presence in the Indian Ocean region (IOR). Indian strategists, MacDonald writes, worry that China may "encircle" India through its "infrastructure projects" in South Asian countries and in the island nations of the Indian Ocean. She predicts potential Sino-Indian energy competition across the IOR, as well as in southwestern Africa, the Middle East, and Central Asia.

How does India's global search for energy affect the U.S.-India relationship? According to **Mikkal E. Herberg** of the Pacific Council on International Policy, it generates several sources of anxiety for Washington-New Delhi ties. One is India's energy interests in Burma, Iran, Syria, and Sudan. "Publicly and privately," Herberg writes in his essay, "Washington has expressed serious reservations to New Delhi about its growing ties with these problem regimes." A second concern is what the U.S. government perceives as India's pursuit of a "statist, mercantilist, and predatory" approach to oil and gas investments—a determined quest to lock up energy deals with anyone, and by any means. Such a strategy, American policymakers believe, threatens to reduce future American and Western access to the oil and gas resources targeted by India and "to undermine multilateral cooperation" toward securing global energy supplies.

However, despite these troublesome factors, Herberg notes that Washington's response to India's overseas energy strategy is "relatively muted," while its reaction to China's strategy—which is very similar to India's—is "strident." One reason for this U.S. imbalance is that India's external energy activities are modest compared to China's. While India's portfolio emphasizes the Middle East, Russia, and "small stakes" in Africa, China's energy-seeking tentacles extend across the world, including to Africa and to U.S. suppliers such as Canada and Venezuela. Another reason for the inconsistent American response is that talk about China's rising energy profile gets caught up in larger "China rising" fears, allowing India "to largely slip under the radar" on energy issues. A third explanation is that New Delhi's "direct support" for its NOGCs' overseas activities is "far less extensive" than Beijing's backing for Chinese companies. India's government, he points out, imposes market disciplines—such as profit margin requirements—on the companies' energy investments, while China's does not. The final reason is grounded in realpolitik: Washington seeks greater strategic cooperation with New Delhi, "so it has not been as reactive regarding the country's global energy push."

Herberg suggests that the United States should use its improving strategic ties with India to help foster better Asian energy cooperation. The present Sino-Indian struggle for control over oil and gas supplies "aggravates" energy security concerns in Asia; accelerates the region's "zero-sum energy hoarding behavior"; and deepens Asian bilateral strategic tensions. The United States, he opines, should "moderate" this "competitive atmosphere."

India seeks energy overseas because its domestic resources are inadequate. What are these indigenous resources, and will they ever allow the country to reduce its dependence on energy supplies abroad? The U.S.-India Business Council's **Ron Somers** examines these questions in his essay on India's domestic energy scene. The country's two major domestic resources are hydropower and coal. Both, however, face obstacles. Hydroelectric development has caused the displacement of many Indians and led to "public interest litigation." As a result, "the days of large dam projects are past," and the damming of large rivers "is not politically

viable." Meanwhile, coal is India's major energy source, comprising 60 percent of the country's total installed power capacity. However, in addition to posing an environmental nightmare, the resource presents logistical challenges. It is mostly found in eastern India, far from city centers, and transporting it to urban areas is difficult—particularly given India's railway system, which is "overburdened" with human passengers.

On the brighter side, Somers describes recently discovered indigenous gas and oil reserves—15 trillion cubic feet of natural gas found in the Bay of Bengal off Andhra Pradesh state in 2003, and oil deposits unearthed in the northwestern state of Rajasthan in 2004. The potential dividends of these discoveries are tremendous, Somers claims. The Bay of Bengal gas bonanza "will attract deepwater exploration" throughout the bay and "may one day rival the success" of the North Sea findings of the 1980s. Meanwhile, the Rajasthan oil discovery will attract a great deal of investment to the state. Somers concedes, however, that India's dependence on hydrocarbon imports will remain. "Such is India's demand for oil and gas," he writes, "that these recently uncovered [domestic] reserves will not quench India's massive thirst for energy." Still, he suggests that India's future energy needs will be better served by these local reserves than by potential pipeline deals with Pakistan/Iran, Bangladesh, Burma, and Turkmenistan/Afghanistan/Pakistan. He dismisses these projects as "transnational pipedreams," fraught with too much geopolitical baggage to succeed. Today, growing unrest in Kashmir, cooling India-Pakistan relations, and a recent war in Georgia all lend some credence to this view.

Finally, there is the nuclear sector. India has a nuclear power program—including 22 working nuclear reactors, according to Somers—but it lacks nuclear fuel and technology, and as a nonsignatory to the Nuclear Nonproliferation Treaty cannot legally obtain them from foreign suppliers. Each essayist gives attention to nuclear fuel in India, though all in the context of the U.S.-India civil nuclear initiative, which would make nuclear material available to India.[2] However, most writers here depict the civil nuclear project primarily as an effort to cement stronger ties with Washington, rather than as a way to meet India's energy needs. Indeed, some experts argue that India's electricity requirements would be better fulfilled by seeking gas from Iran. Arjun Makhijani, a leading nuclear authority and an opponent of a U.S.-India nuclear deal, has asserted that India's entire nuclear sector will "at best" contribute 10 to 12 percent of the country's total electricity needs, and that nuclear fuel is more expensive and unreliable than natural gas in India.[3]

In this report, only Somers takes a strong position on a nuclear deal with the United States, arguing fervently that it would augment the country's domestic energy mix with an environmentally friendly resource. Indeed, New Delhi appears committed to the use of cleaner energy—and especially to renewables and other energy sources besides oil, natural gas, and coal. Madan and MacDonald cite government documents that champion the acquisition of such resources and of the technologies to exploit them. Herberg references the U.S.-India Energy Dialogue, which facilitates discussions on energy efficiency and renewables. And Somers refers to both an Indian ministry that oversees renewable energy development and a government-sponsored organization that funds renewables.

Nonetheless, the conclusion emerging from these pages is that non-hydrocarbon resources—at least for now—will not deliver energy security to India. Somers reports that while India boasts considerable solar and wind energy programs—the latter being the world's fourth-largest—renewable energy makes up only about 2 percent of the country's overall mix, and is in no position to slake the country's energy thirst. Madan is blunter, declaring that "nonconventional sources are not yet considered affordable or reliable."

Some of India's recent experiences with automobiles illustrate the country's continued preoccupation with oil. India's first and only electric car company, Reva, has sold only about 3,000 vehicles in its seven years of existence—half of them in Europe. Sales in India "have been somewhat sluggish," in part because of India's blackout-prone electricity sector.[4] Meanwhile, Tata Motors has unveiled the gasoline-powered Nano, the world's cheapest car, which will sell for up to nearly $10,000 less than the Reva. Tata hopes eventually to sell one million Nanos per year.[5]

Given these realities, India appears destined to pursue coveted oil, gas, and coal resources overseas, wherever they may be found—including in what Herberg refers to as "problem states." Indeed, all four essays highlight India's energy-driven close ties with some of the world's most repressive regimes. Yet the authors are unanimous in their judgment that India presently has no intention of altering these relationships. When the West criticizes India for cozying up to the world's Burmas and Irans, Madan explains, New Delhi points to the U.S. relationship with Saudi Arabia and responds that such criticism amounts to a double standard. Indeed, Somers points out that Chevron, the U.S. oil giant, conducts business in Burma. Ultimately, so long as its energy interests in such nations help serve broader strategic goals—such as promoting counterterrorism (in the case of Central Asian autocracies) or countering China's influence (as in Burma), the implication arising from this report is that India will continue to nurture these controversial ties.

Much is riding on India's search for energy resources and on its inevitable forays overseas to secure them. New Delhi's Planning Commission has projected that India must sustain an 8 to 10 percent economic growth rate over the next few decades "if it is to eradicate poverty and meet its human development goals." However, to maintain an 8 percent growth rate through 2031–32, the country must drastically increase its energy supply: at a minimum, primary energy supply must be tripled and electricity generation quintupled.[6] In other words, both India's prodigious economic growth and the well-being of its citizens are at stake.

ENDNOTES

1 Indian Ministry of External Affairs, "New Division of Energy Security," Press release, September 6, 2007, http://pib.nic.in/release/release.asp?relid=30972.

2 In early September 2008, India obtained from the Nuclear Suppliers Group an exemption from the ban on nuclear trade that applies to non-signatories to the Nuclear Nonproliferation Treaty (which India has never signed). Then, several weeks later, both the U.S. House of Representatives and the U.S. Senate approved the U.S.-India nuclear deal, allowing the agreement to take effect.

3 See Aziz Haniffa's interview with Makhijani: "India should choose Iran, not US," Rediff/*India Abroad*, December 28, 2005, http://www.rediff.com/news/2005/dec/28inter1.htm.

4 Raymond Thibodeaux, "Indian Electric Car: A First, But Not Yet A Winner," VOA News, August 8, 2008, http://www.voanews.com/english/2008-08-08-voa30.cfm.

5 Steven Mufson, "This Time, It's Different: Global Pressures Have Converged to Forge a New Oil Reality," *Washington Post*, July 27, 2008.

6 Government of India Planning Commission, "Integrated Energy Policy: Report of the Expert Committee" (New Delhi: August 2006), http://planningcommission.gov.in/reports/genrep/rep_intengy.pdf.

INDIA'S GLOBAL SEARCH FOR ENERGY[1]

TANVI MADAN

In 1989, when a new military junta took over in Myanmar (then known as Burma), placing Aung San Suu Kyi under house arrest, India imposed financial and trade restrictions on its neighbor. The Indian foreign ministry "urge[d] the military authorities to release" opposition leaders such as Aung San Suu Kyi and "create conditions for holding free and fair elections as soon as possible."[2] Commenting on most Asian countries' "business-as-usual" attitude toward the junta, an article noted that India was the "lone exception to the Asian line on Burma," having taken a tougher stance despite incurring the wrath of the regime.[3] Last year, however, when protests broke out in Myanmar against the junta, India's foreign minister refrained from criticizing the military crackdown against protesting monks. Furthermore, he remarked, "it is up to the Burmese people to struggle for democracy, it is their issue."[4] What brought about this change in India's approach? One of the major reasons—though not the only one—for the different response is India's energy needs. These needs, and India's actions to satisfy them, have recently become the subject of attention—not just because of questions regarding their impact on the international energy sector, but also their possible impact on India's behavior abroad more generally. This essay attempts to shed light on these issues, providing an overview of the challenge India is facing in meeting its energy requirements, as well as the steps it is taking beyond its borders as part of its attempt to address this challenge, with a focus on the actions of its national oil and gas companies (NOGCs).

THE CHALLENGE

In 2000, an author surveying the Asian energy scene referred to India as a "lumbering elephant."[5] Eight years on, while it may not quite be moving at China's pace, India has left behind its days of seemingly plodding aimlessly. Energy is fueling a sped-up Indian economy, which in turn is fueling demand for even more energy. In 2006-07, India consumed 404 million tons of oil equivalent (mtoe) of primary commercial energy, making it the fifth-largest energy consumer in the world.[6] These figures do not even take into account the energy from traditional sources consumed by almost two-thirds of Indian households that will likely transition to using commercial sources in the coming years.[7]

Over the next couple of decades, India's energy requirements are expected to more than double; by 2030, the country is expected to overtake Japan and Russia and become the third-largest global consumer of energy.[8] Over that period, China and India together will account for nearly half of the increase in global energy demand.[9] But as India's appetite for energy continues to grow, concern about how these needs are going to be satisfied has been increasing in the country.

Some amount of India's three major sources of energy (oil, natural gas, and coal) already comes from beyond its borders. The country currently imports 12 percent of its coal needs. India has abundant reserves of coal—its primary source of energy—but the coal has been mined inefficiently, and by 2030 the country is expected to look for almost a third of its coal requirements abroad.[10] Furthermore, if production grows at 5 percent per year, India is projected to run out of currently extractable coal in 45 years.[11]

Meanwhile, oil and natural gas account for an increasing portion of consumption—projected to account for almost a third by 2030[12]—but

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with only 0.4 percent of the world's proven oil reserves and 0.6 percent of proven gas reserves, domestic supply will not be able to keep up with demand.[13] Currently, more than two-thirds of the oil consumed in the country is imported; this dependence on oil imports, which is greater than that of the United States and China, is expected to increase, reaching close to 90 percent by 2030. While India only started importing natural gas over the last few years, by 2030, projections indicate that about half of natural gas demand will need to be met from abroad.[14] India's decision-makers are not just concerned about how much oil and gas is coming from sources abroad, but also about where these resources are coming from. Almost three-quarters of oil imports have been sourced from five countries, all located in regions that are considered fairly unstable.[15] Continuing geopolitical uncertainty has stoked fears of natural gas and oil supply disruptions, and/or price volatility.

Energy is fueling a sped-up Indian economy, which in turn is fueling demand for even more energy.

As for India's other sources of energy, progress in India's nuclear program has regularly fallen behind schedule; financial, social, and environmental concerns have limited large-scale development of hydroelectricity generation facilities; and nonconventional sources are not yet considered affordable or reliable.

All these factors have raised concerns that India will be energy-insecure, unable to "supply lifeline energy to all [its] citizens irrespective of their ability to pay for it as well as meet their effective demand for safe and convenient energy to satisfy their various needs at competitive prices, at all times and with a prescribed confidence level considering shocks and disruptions that can be reasonably expected."[16] Though a few Indian analysts dismiss these concerns as over-hyped, there continues to be alarm that without "clean, convenient and reliable energy," India will not be able to sustain a high growth rate across all sectors of the economy.[17] Beyond economic imperatives, the Indian leadership also expects a widening demand-supply gap to have political, socioeconomic, and strategic ramifications as well.

THE STRATEGY

The government's concern and the magnitude of the energy challenge have resulted in an official Indian response—a strategy of diversification—that mirrors former British prime minister Winston Churchill's preferred strategy toward oil: "on no one quality, on no one process, on no one country, on no one route and on no one field must we be dependent. Safety and certainty … lie in variety and variety alone." Thus, over the last few years, India, while not necessarily in an integrated way, has been exploring multiple energy policy options, multiple fuels, and multiple suppliers.

As part of this strategy, the Indian government has made numerous efforts, not always successfully, to increase supply and manage demand domestically. Yet while one still hears talk of self-sufficiency from some in the political and bureaucratic sphere, overall there is a realization that the international dimension of India's energy-related plan is crucial as well. Therefore, to gain resources, partnerships, and technology, the country's decision-makers have been simultaneously pursuing an aggressive international strategy that has included:

(1) Encouraging Indian oil and natural gas companies, both state-owned and private-sector ones, to acquire upstream assets, involving the purchase of equity in oil and gas blocks and stakes in exploration and production (E&P) companies abroad.[18]

(2) Exploring participation in transnational natural gas pipeline projects, such as those involving the Iran-Pakistan-India, Turkmeni-

stan-Afghanistan-Pakistan-India, and Myanmar-Bangladesh-India routes.

(3) Expanding India's network of bilateral supply contracts, including for liquefied natural gas (LNG).

(4) Ending India's nuclear isolation by seeking nuclear agreements with the United States (and other countries) that could potentially give the nation access to required materials and technology, and expand the production and use of nuclear energy.[19]

(5) Aiding the development and/or access to technology that would facilitate India's domestic initiatives to enhance supply and manage demand, including enhanced oil-recovery technology, clean-coal technology, and technology that would help the exploitation of nonconventional sources of energy. These efforts have involved encouraging Indian companies to partner with their international counterparts but also participation in projects like ITER, a joint international project involving research and development related to fusion power.

(6) Seeking foreign investment and participation in India's domestic energy sectors.

(7) Participation in international energy forums.

This paper takes a closer look at the first of these, focusing on the activities of India's NOGCs, as well as the country's reinvigorated energy diplomacy that is supporting these initiatives.

ACQUIRING ASSETS

The Companies and Their Investments

India's NOGCs have been at the forefront of its energy efforts abroad (see Appendix). Over the last few years, ONGC Videsh Limited (OVL) has alone spent close to $6 billion (which it claims is the largest amount by an Indian corporation abroad) on over three dozen assets in 18 countries[20] including Brazil, Colombia, Iran, Libya, Myanmar, Nigeria, Russia, Sudan, Syria, Venezuela, and Vietnam.[21] This interest in exploring opportunities in the oil and gas sector abroad is not new. OVL, today a subsidiary of India's largest oil and natural gas company, the Oil and Natural Gas Corporation (ONGC), began life in 1965 as Hydrocarbons India Pvt. Ltd. Even before it became a full-fledged corporation, ONGC contemplated forays overseas, discussing exploration in Nepal in 1958, and considering offers of collaboration and concessions from Kuwait, Saudi Arabia, and Iran in the 1950s and early 1960s.[22] The company eventually took a small stake in an Iranian offshore lease,[23] and obtained service contracts in Iran, Iraq, and Tanzania.[24] But these international efforts were limited and many of them stalled for political reasons or lack of technical and financial ability, and also because of the Indian government's desire to have its oil and gas companies focus on exploration at home.

Today, the size of OVL's overseas reserves (1.166 billion barrels in 2007-08) has led to this internationally focused ONGC subsidiary's claim that it is India's second largest E&P firm.[25] It already has six overseas assets producing 8.802 mtoe of oil and gas,[26] allowing it to surpass its government-set oil and gas production targets for 2002-07 (5.2 million metric tons, or mmt, and 4.94 billion cubic meters, or bcm, respectively)[27] by claiming production of 16.83 mmt of oil and 5.41 bcm of gas over the period.[28] To facilitate its operations, OVL has also set up offices in Cuba, Iran, Iraq, Libya, the Netherlands, Qatar, Russia, Sudan, the United Arab Emirates (UAE), and Vietnam.[29] Furthermore, it is considering investments in Algeria, Indonesia, and the UAE.[30]

Joining OVL in going forth and exploring beyond India's borders are a number of other corporations, including some of the country's other major state-owned companies such as Oil India Limited (OIL). OIL lists "[a]ggressively seeking for overseas business opportunity" as one of its strategic goals.[31] Working in a consortium with Indian Oil Corporation Limited (IOCL), India's largest downstream company, it has stakes in blocks in Gabon, Iran, Libya, Nigeria, and Yemen; with OVL it has worked on a pipeline project in Sudan.[32] OIL's areas of focus are the Middle East, West Africa, and the former Soviet republics.[33] The Gas Authority of India Limited (GAIL), India's largest gas transporter, distributor, and marketer, also has interests abroad, including stakes in China Gas Holdings, in compressed natural gas (CNG) retailing companies in Egypt, and in blocks in Myanmar and Oman. GAIL's leadership hopes to raise the status of

its Singapore-based subsidiary GAIL Global to that of OVL.[34] GAIL is also considering working with the private-sector Indian firm Reliance Industries Limited (RIL) to set up petrochemical plants in the Middle East, Central Asia, and Russia,[35] and with China Gas to set up coal-based methane, petrochemical, and natural gas projects in China.[36]

The plans for these companies' international operations make it evident that these activities abroad are here to stay. ONGC expects OVL to produce 20 million tons per annum (mtpa) of oil and oil-equivalent gas by 2020 (this date has already been pushed back, however—in 2004, OVL's aim was to produce 20 mtpa by 2010[37]). The Indian government is slated to increase OVL's share of planned expenditure from $3.2 billion in the 10th Five Year Plan to over $13 billion in the next plan.[38] Over 2007-2011, the government is also likely to set OVL and OIL production targets of 35.51 mmt of oil and 9.67 bcm of natural gas.

Reactions

These investments and plans have led to some concern abroad. Some governments are worried about the impact on India's foreign policy. The oil majors, in turn, believe that Indian NOGCs make transactions on terms that the former would not find commercially viable, or that the NOGCs win deals because of the Indian government's support.[39] The Indian government and NOGCs argue that their efforts provide much-needed investment in the sector, and that they are not doing anything that companies from other countries have not done in the past. Critics counter, however, that while the Indian companies might bring funding, they do not have access to the advanced technology that would ensure that these overseas resources are exploited to their maximum potential.

There is also some debate within India about this quest abroad. Some decision-makers consider equity oil cheaper and therefore "worthwhile" to acquire.[40] They believe that acquiring upstream assets abroad will "ensure cheap and reliable oil supply."[41] Detractors, however, contend that the NOGCs are exploiting concern about "energy security" to build government (and public) support for their investments. These skeptics point out that currently only a small amount of equity oil is coming into the country. Some estimates are that only 25 percent of India's oil needs could be met even if all its companies' overseas assets were producing oil.[42]

Government officials explain that India must pursue every possible option to diversify sources of supply.

There are also murmurs of concern, even within government, that acquisitions abroad are causing Indian companies to divert their resources and attention away from their domestic operations. For example, ONGC had to provide an offshore rig to OVL for drilling in the Farsi block of Iran at a time when rigs were in short supply for its domestic fields.[43] Critics assert that instead of spending money and other resources on acquiring assets abroad, the company should invest in technology to improve domestic production.[44]

For the NOGCs, the overseas efforts reflect a desire both to expand supply and enhance revenue. Even their detractors acknowledge that, at the very least, this policy has been providing better returns for the companies than some of their investments at home. From the government's perspective, while the acquisition of upstream assets abroad is definitely not the silver bullet that will single-handedly take care of India's energy security, it is a "necessary but not sufficient" element of India's energy security strategy (in fact, the government neither wants, nor expects, more than a quarter of ONGC's production to come from abroad[45]). Government officials explain that India must pursue every possible option to diversify sources of supply. But they acknowledge that all this will be of little help in a real crisis.[46] For the time being, however, with about $300 billion in foreign exchange reserves in the bank,[47]

whatever the criticism, the Indian government has given the NOGCs its blessing to go forth and explore. And they have done so.

Learning by Doing?

Their efforts, however, have met with mixed success, and the companies have suffered setbacks. OVL, for example, has drilled dry wells in Australia, Cote d'Ivoire, and Libya. The NOGCs have also lost out to other companies (often Chinese) on a number of bids. In 2004, an Indian company was outbidded in Angola by a Chinese firm. In August 2005, despite its higher bid, OVL failed to acquire majority stakes in two blocks in Nigeria, which instead went to the Korean National Oil Company (KNOC). Company officials blamed the government for not clearing its $1.4 billion bid in a timely fashion.[48] Other reports indicated that another reason for the failed bid might have been that KNOC's offer came with a South Korean pledge to invest more in infrastructure.

There is a feeling that such setbacks are due to India's late start in the acquisitions game, as well as its lack of ability and willingness to offer more direct and indirect incentives. But the Indian NOGCs, late to the game compared to their Chinese counterparts and with fewer resources, have been learning on the job and attempting to change and adapt to make their bids more competitive. They have formed partnerships with each other, Indian private-sector companies, and foreign companies. In July 2005, for example, ONGC and the private firm Mittal Investment Sarl decided to form ONGC Mittal Energy Ltd. (OMEL) to pursue jointly oil and gas projects in more than two dozen countries in Africa and Central Asia. With Mittal's existing presence in some of these countries, a reputation for effective deal making, and quick access to capital, this partnership offered ONGC some advantages.[49] For Mittal, it brought the backing of the Indian government and its energy diplomats.

Another partnership, albeit a more ad hoc one, has received a lot of media attention and even led to talk of an Asian axis of oil. In January 2006, Chinese and Indian NOGCs agreed to bid jointly for stakes in companies and blocks as part of a larger set of cooperative energy agreements signed by India and China. Indeed, Chinese and Indian companies have jointly purchased assets in Colombia, Syria, and Sudan. This understanding is not exclusive and the companies have pursued such agreements with other countries too. OVL, for example, also signed a memorandum of understanding with the Japanese agency JOGNEC in 2006, with the intention that OVL and Japanese companies would bid jointly on assets in Southeast Asia and consider doing so in Russia and Libya.[50] The parent company ONGC is also in discussions with companies like Chevron, Total, and Royal Dutch Shell regarding swapping stakes in oil blocks.[51]

Indian NOGCs, late to the game compared to their Chinese counterparts and with fewer resources, have been learning on the job and attempting to change and adapt to make their bids more competitive.

The Indian NOGCs have also been learning to cope with the challenges of local politics, and of leaders and social groups who want to have a say in how the firms develop their ventures. They are sweetening their bids with offers to undertake a slew of projects in host countries. OVL is already taking up refinery upgrades and pipeline contracts in Sudan.[52] ONGC has been planning a joint venture in Ecuador with PetroEcuador and Petroleos de Venezuela to establish a refinery and petrochemicals facility.[53] The company is also training oil workers in Algeria and Sri Lanka, and offering Syria help with improving recovery.[54] OMEL, for its part, has promised to invest billions of dollars in the rail, refining, and power generation sectors in Nigeria.[55]

The Government's Role

The government has learned from experience as well and has adapted its policies toward, and role in, the acquisitions process. In a monograph on ONGC, this author addressed the question of whether the company was driving government policy or being driven by government policy. This question can be, and has been, asked of India's other NOGCs as well. The answer is similar in both cases—the NOGCs can be described neither as purely leaders nor as followers of the government. More often than not, they take the lead in proposing projects in various countries—to the extent that government officials complain that the companies sometimes charge ahead on deals and then, after completing three quarters of the groundwork, call New Delhi in for assistance. At the same time, it is clear that with its control of the approval process,[56] the government has the final say on projects, which means that the companies can find themselves affected by the government's broader foreign policy priorities and security concerns.

This approval process is not simply a formality—in 2005, OVL lost a bid to acquire production assets in Ecuador when the Indian government did not let it raise its bid of $1.4 billion. In December 2005, the government also blocked OVL from acquiring a 45 percent stake in a Nigerian field—expected to begin production in 2008—on security grounds. Recently, OVL did not bid on blocks in Nigeria—ostensibly because of a lack of attractive fields on offer. However, analysts point out that OVL was being offered preferential terms and blocks, and the reason to stay away probably had more to do with the Indian government's hesitation because of security concerns.[57] There was also concern that a new government due to take over in Nigeria might not respect contracts signed by the old government. There is a good deal of grumbling in the companies when New Delhi blocks purchases. Security, however, presents real concerns—there have been reports, for example, of work delays in one of OVL's Sudanese blocks for security reasons.

Having learned from experience, the government has also set commercial conditions, requiring that the NOGCs only invest in projects where they can at least get an internal rate of return of 12 percent (which OVL is trying to get reduced).[58] Government officials insist that these procedures are intended to prevent the companies from getting carried away and overbidding for projects or investing in nonviable ones. The government is also encouraging its companies to pursue a "holistic" approach, stating that it is asking them "to participate not simply in the production of oil and natural gas, but to invest in the development of infrastructure and downstream industries…[and] also related industries such as fertilizers, generation of power etc."[59] Part of the reason for encouraging this broader approach stems from a sense that Chinese companies' efforts might be engendering resentment among sections of the public in the countries they are investing in. For its part, to ensure that such negative sentiments toward India or its companies do not develop, and to support its NOGCs' activities more generally, the Indian government is making these broader efforts worldwide as well.

ENERGY DIPLOMACY

While India's NOGCs sometimes lament that the government's reticence and conditions are holding them back (company officials often envy the relatively greater freedom of maneuver of their counterparts in China), NOGC officials acknowledge that the Indian government, in fact, often facilitates their actions. A senior ONGC official, for example, when asked whether the government's foreign policy hinders or helps the company, remarked that overall it helps the company because India's foreign policymakers and implementers have cast a fairly wide net across the world.

Indeed, increasingly, a crucial part of Indian diplomats' mission is to help "mitigat[e] the risks of [India's] inevitable and growing dependence on imported hydrocarbons."[60] In order to do so, these diplomats, and their counterparts in the energy ministries focused on activities abroad, have been undertaking "energy diplomacy." This diplomacy is not just designed to aid Indian companies in their bids, but also to enhance and diversify supply, lay the groundwork for future cooperation with consumers and producers, and attract investment and technology. This energy diplomacy is not new:

India's support for Arab nations as well as Iran over the last six decades has not just been a consequence of historical ties or the sensitivities of India's large Muslim population. It reflects the fact that India's leaders realized long ago that the country would need Middle Eastern oil. There is a new sense of urgency, however, which can be tracked not just by the frequent flyer miles being racked up by government officials, but also by the fact that the Ministry of External Affairs (MEA) has created an Energy Security Division "to support India's international engagement through appropriate and sustained diplomatic interventions."[61] For its part, the Ministry of Petroleum and Natural Gas (MPNG) has established an International Cooperation division to devise an international strategy, gather information on "countries of relevance," organize India's participation in bilateral and multilateral fora, and liaise with the MEA and Indian embassies and high commission abroad.[62] This reflects a recognition of the importance of the international dimension of India's oil and gas strategy, but it also seems designed to ensure that the MPNG continues to have a major say in the way this dimension plays out.

Buoyed by not just the desire and willingness, but also the ability, to practice such energy diplomacy, India has been establishing a broader as well as deeper set of relationships with a number of countries that had earlier not been on India's radar screen. In the oil and natural gas sector, India has consolidated traditional relationships with countries in the Middle East, but it is also focusing on new opportunities in Africa, Central Asia, and Latin America. Its energy diplomacy has involved cooperative agreements, high-level bilateral visits, and conference hosting, as well as deploying military and economic tools at the government's disposal.

Going on a signing spree, India has inked cooperative agreements or memorandums of understanding—or discussed energy partnerships—with a number of countries including Australia, China, Japan, South Korea,[63] Romania,[64] and the Central Asian countries, as well as with associations such as the Gulf Cooperation Council, the Association of Southeast Asian Nations (ASEAN),[65] the Bangladesh-India-Myanmar-Sri Lanka-Thailand Economic Cooperation Group (BIMSTEC), and the South Asian Association for Regional Cooperation (SAARC).

Whether from the prime minister's office, the various energy ministries, or the MEA, Indian officials have also increased their visits to energy-rich countries. Over the last few years, while simultaneously overseeing the ministry's vast domestic concerns, India's petroleum and natural gas minister, for example, has visited 9 of the top 15 oil-exporting countries.[66] In addition, in the space of 10 months in 2007, he made time to visit the gas exporters Egypt, Myanmar, Turkmenistan, and Yemen. Simultaneously, India has increased the number of invitations issued to leaders and officials from energy-rich countries to visit New Delhi. Just in the last few years, for example, the Indian minister of state for external affairs (June 2004, May 2007), the Indian petroleum and natural gas minister (March 2005, May 2007), and the Indian finance minister (April 2005) have visited Saudi Arabia. In turn, India welcomed the Saudi minister of petroleum and mineral resources (January 2005) and the Saudi foreign minister (February 2008). In addition, in January 2006, Saudi Arabia's King Abdullah was the guest of honor at India's Republic Day celebrations—the first visit by a Saudi monarch to the country in 51 years. In what some at the time considered a break with protocol, the Indian prime minister even went to receive King Abdullah at the airport.

In addition, officials from the Indian MPNG and MEA have been fanning out across the world to participate in a number of energy-related conferences. Furthermore, over the last few years, India has played host to a number of such conferences, including the 5th Asia Gas Partnership Summit in 2008; the India-Africa Hydrocarbon Conference in 2007; the EU-India Business Conference on Energy and a conference with oil executives from 15 African nations in 2006; the BIMSTEC Ministers' Conference on Energy Cooperation; and roundtables of consumers and producers from West and Southeast Asia, and of those from North and Central Asia, in 2005.

Perhaps most controversially, India is also offering military and economic assistance to a number of energy-rich countries.[67] In January 2006, for example, India's export credit bank extended two lines of credit (LOCs) to Sudan worth $391 mil-

lion to set up power plants. The $50 million given to Sudan two years before, as well as the LOCs extended to other African countries (each under $100 million), paled in comparison.[68] Other entities to whom the bank has recently given LOCs include those from Angola, Brazil, Chad, Colombia, Cote d'Ivoire, Gabon, Iran, Kazakhstan, Myanmar, Nigeria, Russia, Sudan, Syria, Trinidad and Tobago, and Vietnam—all countries where India's NOGCs are operating or have an interest in operating.[69]

India's offers of military assistance have not received as much attention as those from China, but several examples illustrate such cooperation: in 2002, India signed a memorandum with Kazakhstan to help with military training and naval development;[70] the head of the Indian army visited Nigeria in November 2005 (the first to do so in 30 years), and pledged to help train and modernize the Nigerian military;[71] and in January 2006, Uzbek troops began training at India's Counter Insurgency and Jungle Warfare School,[72] to be followed a year later by members of the Nigerian military.[73] However, the instance of military cooperation that has received the most attention has been the support offered to Myanmar in recent years, with the Indian Defense Ministry acknowledging that there has been a "substantial increase in bilateral defen[s]e cooperation between [the] Indian Army and the Myanmar Army recently."[74]

…the government seems convinced for now that the benefits of diplomacy outweigh the risks.

The extent to which all this activity is coordinated is debatable; that it is intended to at least facilitate India's energy goals is less so. The MEA acknowledges, for example, that its Investment and Technology Promotion Division, which houses its Energy Security Unit, "actively pursued the policy of using Lines of Credit on concessional terms for [the] promotion of India's political, economic and commercial interests. During the period from April 2007-November 2007, agreements on Lines of Credit amounting to about US$ 365 million have been approved for disbursal. The Lines of Credit have helped Indian companies to obtain project contracts and orders for [the] supply of goods and services in [a] number of countries in Africa, Asia and Latin America."[75]

Despite such claims of success, critics have questioned the (relative) effectiveness, as well as the benefits, of energy diplomacy. A number of observers, for example, argued that during twin visits by the Saudi monarch to China and India, China got a better deal from Saudi Arabia than India. Furthermore, given the level of instability in a number of countries where these diplomatic efforts are being targeted, there are doubts that these activities will ensure security and sustainability of supplies.

However, the government seems convinced for now that the benefits of diplomacy outweigh the risks. One of the reasons for this is that these diplomatic efforts are multipurpose—directed not only toward aiding India's energy strategy, but also its broader strategic goals. Thus, the renewed efforts toward countries in Africa, for example, are also designed to attain the goal of a strong, respected India, with increasing influence beyond its immediate neighborhood. Similarly, the cooperation with Myanmar is as much, if not more, about countering China's influence as it is about gaining access to energy. As India's foreign minister has noted, the country has both "strategic and economic interests to protect in Burma."[76]

That is partly why India's energy diplomacy has followed its foreign policy path, which can probably best be stated as—borrowing (and corrupting) a phrase from another British politician—no permanent allies, lots of good friends. But, as Indian officials fan out in every direction, making friends with multiple countries to serve a number of different interests, including energy security, some of these interests will likely conflict and clash. While India is engaging in more aggressive energy diplomacy with a few countries, considering more acquisitions of oil and gas assets abroad, and thinking about participating in the construction (and use) of a number of pipelines, these attempts are not playing out in a vacuum. They are occurring

in the context of India's developing strategic relationships with a number of other countries, including the United States, which has viewed some of these other "energy relationships"—including those with Iran, Myanmar, Sudan, and Venezuela—with concern.

Thus far, India's energy interests have tended not to trump its larger goals. India's voting against Iran's disputed nuclear program (and then abstaining in a second vote) at the International Atomic Energy Agency while the U.S.-India nuclear deal was being negotiated was a good reflection of its priorities. There is a realization—especially since India is deliberately not putting all its eggs in just a few baskets—that the effectiveness of energy diplomacy can be limited by focusing its attention on just a few countries. India is aware that reaching out to some regimes to ensure a "secure" supply has not proved so reliable. Iran's reliability, for example, has been questioned after it cancelled an LNG supply deal and delayed granting OVL both the development rights for a field where it had struck oil and a 10 percent stake in the Yadavaran field that Iran had promised the company.[77] The Indian government is also beginning to consider the indirect costs of its companies' international investments, realizing that its relationships with some regimes can also limit India's foreign policy flexibility.

Therefore, so far, when India's international energy initiatives have threatened the country's broader strategic goals, the former have tended to take a back seat. Nonetheless, New Delhi will continue to support the NOGCs in their efforts however it can, particularly because there is a feeling that they need to play catch-up. When faced with accusations that such support is unfair, the retort will always be that India is merely doing what the West did in decades past. In response to criticism from the West that in its quest for energy, India is dealing with regimes that have poor human rights records, India will point to the American relationship with Saudi Arabia and suggest that Western states have double standards. But despite these public justifications, as India takes on a wider, more prominent role in the world, the trade-offs it will have to face—and make—will only increase. Before acting on its energy security imperatives internationally, the country will have to carefully consider its other strategic interests. While a grand strategy directing the various strands of Indian energy and foreign policy is neither feasible nor possibly desirable, better coordination and integration of these policies would help the country's decision-makers better weigh the options and trade-offs—and in turn help them make these crucial choices.

APPENDIX: INDIAN NOGCS' OVERSEAS INVESTMENTS

Country	Block	Indian NOGCs' Ownership (%)
Australia & East Timor	103	BPCL (25%)
Brazil	BC-10	OVL (15%)
	ES-M-470	OVL (100%)
	SM-1413	OVL (100%)
Colombia	Omimex de Colombia	Mansarovar Energy Limited^ (100%)
	RC-8	OVL (40%)
	RC-9	OVL (50%)
	RC-10	OVL (50%)
Cuba	25, 26, 27, 28, 29, 35A, 36	OVL (30%)
	34, 35	OVL (100%)
Egypt	North Ramadan (6)	OVL (70%)
Gabon	Shakthi	OIL (45%), IOCL (45%)
Iran	Farsi Offshore	OVL (40%), IOCL (40%), OIL (20%)
Libya	NC-188 & NC-189	OVL (49%)
	81-1	OVL (100%)
	Contract Area 43	OVL (100%)
	86	IOCL (50%), OIL (50%)
	102(4)	IOCL (50%), OIL (50%)
Myanmar	A1	OVL (20%), GAIL (10%)
	A3	OVL (20%), GAIL (10%)
	AD-2, AD-3 & AD-9	OVL (100%)
Nigeria	OPL 279	OMEL (60%)
	OPL 285	OMEL (90%)
	OPL 205	OIL (17.5%), IOCL (17.5%)
Nigeria-Sao Tome & Principe	2	ONGC Narmada (13.5%)
Oman	56	GAIL (25%), BPCL (12.5%), HPCL (12.5%)
Qatar	Najwat Najem	OVL (100%)
Russia	Sakhalin – I	OVL (20%)
Syria	XXIV	OVL (60%)
	Al Furat Project	Himalaya Energy* (33.33-37.5%)
Sudan	Greater Nile Oil Project	ONGC Nile Ganga (25%)
	5-A	OVL (24.125%)
	5-B	OVL (23.5%)
Turkmenistan	Block 11-12	OMEL (30%)
Vietnam	6.1	OVL (45%)
	127	OVL (100%)
	128	OVL (100%)
Yemen	82, 83	OIL (15%), IOCL (15%)

^ Mansarovar Energy = ONGC Amazon Alaknanda (50%) + Sinopec (50%)
** Himalaya Energy = ONGC Nile Ganga [ONGC (55%) + OMEL (45%)] + Fulin Investments (China National Petroleum Corporation)*
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PERSPECTIVES ON INDIA'S GLOBAL ENERGY ACTIVITIES, BENEFITS FOR FOREIGN POLICY, AND NATIONAL SECURITY IMPLICATIONS

JULI A. MACDONALD

India is projected to become the world's third-largest energy consumer by 2030. Moreover, India's sustained economic growth rates of over 8 percent for the past several years, coupled with its success in the software sector and its capable military, are transforming India and changing the way the world thinks about it. India is no longer a leading voice of the "developing" world, but is instead regarded as an emerging power that is building important strategic relationships with all the major international players, including a burgeoning strategic relationship with the United States.

With India's energy demand and strategic importance growing in tandem, energy security concerns will increasingly factor into India's strategic calculus. This paper explores how India's energy security policies are shaping or interacting with India's broader foreign policy and national security objectives.

DEPENDENCE ON ENERGY IMPORTS

India's oil consumption has outpaced its domestic production for decades. Indeed, India has been a net oil importer since the 1970s—and figures to remain so into the foreseeable future. As Exhibit 1 suggests, improved efficiency is unlikely to overcome growing discrepancies between India's production and consumption. Meanwhile, India received its first natural gas imports (liquefied natural gas, or LNG, from Qatar) in 2004. Natural gas imports may follow a similar trajectory to oil imports: Large gas deals have been signed with Iran and Qatar; foreign and domestic investment is financing the construction of LNG terminals along India's eastern and western coasts (such as the LNG terminal at Hazira, built by Shell); and major pipelines from Bangladesh, Iran, and Pakistan are under consideration. On the other hand, there is a chance that increased domestic production of natural gas could reduce India's need for future gas imports. Recent offshore gas discoveries show promise to expand India's gas reserves significantly.

INDIA'S ENERGY POLICIES

Given India's dependence on energy—and particularly oil—imports, the government of India (GOI) is highly concerned about price volatility and the impact of high prices on its economy—including inflation, constraints to economic growth, and the drain on foreign currency reserves. Indeed, the GOI is exploring all options as to how it will meet the country's growing energy demand to ensure that energy supply does not constrain much-needed economic growth.

Several years ago, the GOI identified energy security as a primary pillar of India's foreign policy objectives. Since then, and particularly since the Congress Party-led coalition took over power in the spring of 2004, New Delhi has pursued a multi-pronged set of policies to address India's energy vulnerabilities. The key elements of India's many energy security initiatives include:

- Attract foreign investment to increase domestic energy production
- Use competition and policy to reform energy production, distribution, and consumption at home

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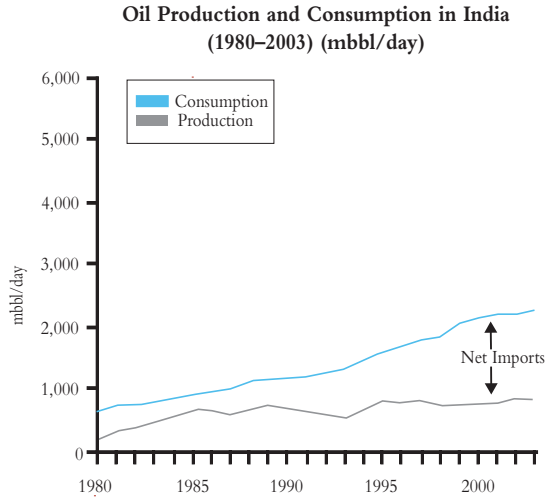
EXHIBIT 1: Growing Gap Between Domestic Production and Consumption in India



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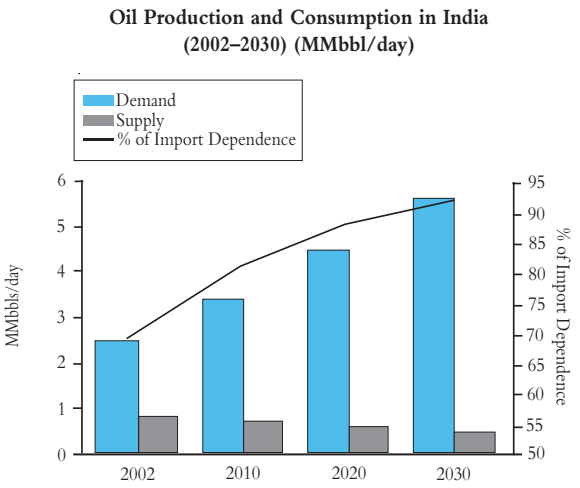

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- Pursue internal and external measures to become a regional supplier of refined products
- Diversify supply by securing access to hydrocarbon supplies from around the world
- Reconfigure state-owned companies to pursue an overseas acquisition-based strategy
- Promote oil diplomacy as part of the national foreign policy agenda
- Expand capacity and use of nuclear power, hydropower, and alternative fuels

Of these elements, three have national security implications: 1) diversification of supply; 2) Indian companies pursuing an overseas acquisition-based strategy; and 3) GOI's oil diplomacy.

Diversification of Supply

The GOI seeks to limit the risk of disruptions and to reduce its import dependence on single regions. For decades, India's largest source of oil supplies has been the Middle East, exceeding 70 to 75 percent of total imports. Over the past few years, India has made a concerted effort to diversify its sources of supply, investing in oil production around the world—in Africa, Latin America, Asia, and Russia. Imports from Africa have grown significantly, particularly from Nigeria and Sudan, but these efforts have done little to reduce India's dependence on the Persian Gulf.

India has also just begun to import gas in the past couple of years. As with oil, the Middle East is its primary supplier. But LNG deals with Australia, Nigeria, and potentially Iran, and the possibility of gas pipelines from Iran, Turkmenistan, and Myanmar/Bangladesh, offer India a diversity of suppliers, with gas imports coming from several different supply routes.

India is also importing high-quality coal from Australia, Indonesia, and South Africa, and its dependence on imported coal is projected to grow significantly over the next two decades.

Overseas Acquisition-Based Activities

India is using a range of commercial and diplomatic approaches to build a portfolio of equity oil investments around the world. As part of this strategy, India has established international subsidiaries to enhance the reputations and capabilities of its state-owned energy companies. For example, India's Oil and Natural Gas Corporation (ONGC) is using its subsidiary—ONGC Videsh Ltd. (OVL)—to build an international presence. OVL and other Indian companies, including commercial firms like Reliance, are forging business alliances with other national or private oil companies to gain a

presence in new markets. Indian energy companies are also leveraging the commercial and political relationships of international Indian companies in other sectors. For example, OVL and an Indian international steel conglomerate, Mittal, have coordinated strategies in Nigeria, Kazakhstan, and Angola.

Oil Diplomacy

Active energy diplomacy is a central component of India's energy security policy, but it has not yet been integrated into the country's national security strategy. Interviews with Indian policymakers and military officers in 2006 reveal that India's increasing global energy and commercial footprints are clearly ahead of the GOI's foreign and national security agenda. India's energy companies are coming to the government asking for help and permission rather than being guided by the GOI as part of a broader foreign policy strategy. India's energy acquisition-based outreach, however, reflects the spirit of India's foreign policy—engage all countries (in this case, all energy suppliers) to maximize the country's options.

Maintaining close relationships with its energy suppliers is a top priority for the GOI. Direct diplomatic efforts, such as government-to-government memorandums of understanding (MOUs) and high-level agreements between Indian officials and their counterparts from other nations, open investment opportunities for Indian companies. In the past several years, the Indian government has signed MOUs with some of the world's major oil and gas producers, including Indonesia, Nigeria, Saudi Arabia, Iran, and Russia. In addition, the GOI has reached out to China, after increasingly finding itself in direct competition with Chinese companies for energy deals around the world and losing. The Indians have engaged the Chinese as partners to gain bargaining leverage over oil suppliers, and the two countries signed a significant energy agreement in December 2005.

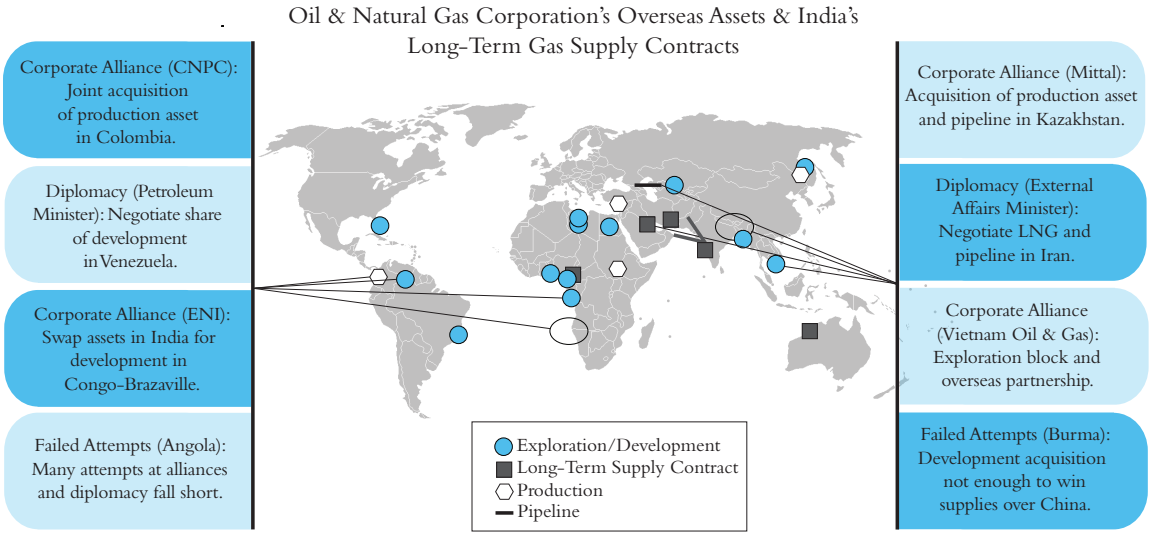
International pipelines and associated long-term energy supply agreements are a central element of the GOI's energy diplomacy. Pipelines can potentially offer a relatively secure source of dedicated supply, but they also build a common set of shared security and economic interests that can undergird broader strategic relationships with the supplier and transit states. Pipelines represent an interesting case in which national interests and commercial activities most strongly complement each other. In any pipeline agreement, the GOI's role is to set the policy framework for the pipeline, creating the context for national companies to work together to achieve the mutual interests of all parties. Indian officials have supported or are actively supporting several regional pipeline options—each with their own challenges to be resolved.

• **Iran-Pakistan-India (IPI).** India's Ministry of Petroleum and Natural Gas (MoPNG) and ONGC are collaborating to establish the policy and price framework for the IPI gas pipeline with their Iranian counterparts. Bilateral and trilateral discussion of this pipeline deal has dragged out for years, but there are recent signs of progress on the most difficult issues. In December 2006, a MoPNG official believed that the pipeline would be feasible technically and that a trilateral consortium could finance the pipeline through a variety of funding sources.[1] However, few Indians outside of MoPNG and ONGC circles share this optimistic view about prospects for the IPI pipeline, due to concerns about pipeline security; available funding sources; and the lack of an established domestic market for the natural gas.

Active energy diplomacy is a central component of India's energy security policy, but it has not yet been integrated into the country's national security strategy.

• **India-Bangladesh or India-Myanmar Pipeline.** The GOI has been engaging Bangladesh and Myanmar in political discussions in an attempt to create the policy framework for pipelines that would transport offshore gas from either or both countries. Several options have

EXHIBIT 2: Use of Diplomacy and Corporate Alliances to Pursue Energy Deals Overseas



Source: Press Clippings & ONGC's Annual Report; Booz Allen analysis

been on the table—India-Bangladesh, India-Bangladesh-Myanmar, and India-Myanmar. Despite hopeful assurances from India's foreign minister after a visit to Myanmar in February 2007, and despite ONGC's investment in an offshore gas field, Myanmar's government announced in April 2007 that it preferred China's proposed gas pipeline over India's. This loss is a serious blow to India's energy policy because it not only eliminates a promising long-term supply arrangement with Myanmar but may also slow progress on a pipeline connection with Bangladesh.

• **Turkmenistan-Afghanistan-Pakistan-India (TAPI).** The Asian Development Bank conducted a feasibility study of the Turkmenistan-Afghanistan-Pakistan (TAP) project in 2003 and determined that the initiative would only be commercially viable if it supplied the Indian market. Therefore, the GOI breathed new life into the effort when the Indian cabinet gave approval to join the project in May 2006. The four parties met in November 2006 and vowed to move forward. Many observers in New Delhi remain skeptical about the real potential for TAPI to come to fruition. If it comes to fruition at all, this pipeline is regarded as a medium- to long-term opportunity that would require significant changes in the security situation in Afghanistan before investment could be made available.[2]

Exhibit 2 provides a snapshot of the breadth of India's energy activities—both diplomatic and commercial—around the world, and with an emphasis on ONGC efforts. It does not focus on the many other Indian companies investing abroad, such as Reliance, Gas Authority of India Limited, and the Indian Oil Corporation.

India's broader foreign policy benefits from its energy outreach policies, and particularly from the overseas investments of its national companies.

In addition to bilateral or project-focused energy diplomacy, the GOI has sought to increase India's profile in the energy sector writ large. For example, the GOI has hosted summits with major energy producers and consumers to discuss Asian energy markets and contracts and has been a promoter of the Asian energy grid. India seeks to be more integrated into international oil politics; it wants a seat

at the table and a decision-making role. Its energy diplomacy and the investment activities of its companies integrate India with other major players in the system.

FOREIGN POLICY BENEFITS

India's broader foreign policy benefits from its energy outreach policies, and particularly from the overseas investments of its national companies. These benefits are particularly clear in the Persian Gulf, Russia, and Africa, where national companies' expansion has provided a framework for cooperation with major energy producers and has built strategic and economic relationships that can be leveraged to pursue other interests. Indian strategist C. Raja Mohan explains that India's foreign policy strategy divides the world into three concentric circles—immediate neighborhood, extended neighborhood, and global stage.[3] Energy investments have helped India advance its interests in each of these circles.

Immediate Neighborhood

In its immediate neighborhood, energy investments give India occasion to promote shared interests and win regional influence. ONGC's investments in Myanmar, for example, have created opportunities for diplomats to extend their influence in that nation and in Bangladesh, where tense relations eased somewhat over the course of pipeline negotiations.[4] India's energy investments and the proposed gas pipelines linking Myanmar, and possibly Bangladesh, to the Indian market are important components of an Indian policy to counter and balance the growing Chinese influence in both countries. However, India's energy diplomacy may not always produce the desired results. Myanmar's government has announced its preference for sending production from its offshore gas fields to China rather than to India. If Myanmar's gas does in fact go to China rather than to India, it will represent a significant strategic setback for India by strengthening China's position in Myanmar and creating more incentives for an increasing Chinese presence in the Indian Ocean. Moreover, negotiations for a gas pipeline from Myanmar to India through Bangladesh were helping to warm relations between Bangladesh and India and possibly beginning to melt Bangladeshi opposition to exporting its own gas to India.

Extended Neighborhood

India's extended neighborhood includes the Middle East and Central Asia—two regions where energy is just one of several strategic interests important to the GOI—as well as important strategic partners in Asia. Iran deserves special mention due to its strategic location between the Middle East and Central Asia and its close relationship with India.

• **Iran.** Iran is of particular interest to India as one of the latter's most important suppliers of oil and, forthcoming, natural gas. These energy interests are just one piece of a broader set of strategic interests. Iran is fundamental to India's security interests in West Asia and to its access to Central Asia, and in its strategic competition with China. The two countries consolidated their energy relationship with a 2005 oil and gas supply contract worth several billion dollars over the next two decades, but the deal has yet to be fully executed. In addition, MoPNG and ONGC hope to move forward with plans for the IPI pipeline, all of which position India to meet its other objectives. Indeed, the pipeline dialogue with Iran serves both countries' needs beyond energy interests. From an Iranian perspective, India's engagement increases the legitimacy of the Iranian government and mitigates its international isolation. For India, New Delhi can use the negotiations politically to demonstrate its independence from the United States without committing to anything. Moreover, India maintains an open communication channel with Iran that can be used for other purposes.[5]

• **Middle East.** India enjoys close historic ties with Middle East suppliers and has significant diaspora populations across the region. This positions India to take a leading role in increasing Asia's influence in the Middle East, where the majority of oil and gas flows east to Asian markets.

At the same time, Indians worry about growing Chinese influence in the region that might erode its special status. Therefore, New Delhi has emphasized active oil diplomacy in the Middle East. ONGC's and Indian Oil Corporation's (IOC) investments across the Persian Gulf in Oman, Qatar, Iraq, and Iran have established working relationships with powerful national companies and officials.[6] ONGC and MoPNG have been in frequent discussions with officials from Saudi Arabia's and Kuwait's national companies to promote "criss-cross energy investments," referring to downstream investments in India such as refineries and crude storage facilities that complement Indian investments in upstream or other non-energy investments in the Saudi and Kuwaiti economies.[7] King Abdullah became the first Saudi king to visit India in January 2007. This visit culminated in a bilateral announcement with Prime Minister Manmohan Singh on joint investments in the energy sector.[8]

• **Central Asia.** India's top priorities in Central Asia are containing cross-border terrorism and extending regional influence to match China's growing presence. Without direct proximity to Central Asia, India's participation in the development of Central Asia's energy sector has been minimal, but pending deals in Central Asia may offer India additional access opportunities. The TAPI pipeline, if it were to come to fruition, would give India the access to Central Asian energy it seeks and would transform Afghanistan into an important "energy bridge" for India. In addition, ONGC has worked with the governments of Tajikistan and Kazakhstan to bid on natural gas and oil assets, and one of India's state-owned oil companies recently partnered with a private Indian steel conglomerate, Mittal, to try to win energy projects in the region. Indians believe that Mittal's influence and business and government contacts may help give Indian energy companies an advantage over their Chinese competitors in the region.

• **Allies in Asia.** Further afield, in India's extended neighborhood, energy investments improve traditional relationships and alliances. Shared energy interests in Russia help India hold together its traditional alliances even as differences on questions of ideology and alignment grow.[9] ONGC's investment in Russia's Sakhalin fields has built close relationships with the Russian national company Rosneft and with senior-level Russian officials.[10] Shared energy interests such as sea-lane protection help India forge new alliances as well—including with fellow consumers in Asia like Japan and South Korea.[11]

Global Stage

On the global stage, energy investments support India's efforts to become a key player in international peace and security. Energy investments in Africa and Latin America have helped companies and diplomats set up relationships with the major energy suppliers further afield.[12] In Brazil and South Africa, for instance, agreements between national energy companies have established trust and shared interests that help build a cooperative relationship on other foreign policy concerns, such as an increase in the number of veto-wielding members on the United Nations Security Council.[13]

• **United States.** Shared energy security concerns are only one common interest of a much broader strategic relationship. But energy is a central component, for example, in the civil nuclear deal that both governments successfully pushed through their respective legislative processes. Many Indians have described the civil nuclear accord as an energy deal that is facilitating a deeper strategic partnership with the United States. Moreover, the deal is seen as instrumental in transforming India's status in the international community. In addition to the civil nuclear deal, energy security and the importance of maritime security are two shared interests undergirding the growing Indo-U.S. military relationship.

NATIONAL SECURITY IMPLICATIONS

India's energy acquisitions help meet energy security objectives but do not enhance energy security. The Indian government recognizes that overseas acquisitions are no less vulnerable to disruption than other energy shipments—particularly when these new investments require transport from

regions further away than the Persian Gulf—and provide no supply security unless special supply agreements are made, and even then, all agreements can be renegotiated.

Overseas energy assets and regional pipelines open up India to new vulnerabilities and engender new military and security challenges for the Indian military that have not yet been fully understood. Instead of focusing on the security of oil imports from the Persian Gulf, more efforts should be made to understand that today Indian imports come from many directions. From the west, they could come from as far as Venezuela and in the east they have come from as far as the Sakhalin Islands. The pipelines mentioned earlier traverse unstable and even hostile territory, making them highly vulnerable to attack and disruption. Moreover, Indian companies are investing in offshore infrastructure along India's coast, but also in places as far from the Indian Ocean as Cuba to the west and the Sakhalin Islands to the east. This infrastructure is vulnerable to natural catastrophe or attack. Far-flung onshore and offshore investments and multiple pipeline options underscore the growing complexity of the security challenges associated with becoming a global energy actor.

Far-flung onshore and offshore investments and multiple pipeline options underscore the growing complexity of the security challenges associated with becoming a global energy actor.

To date, among India's military services only the Navy has begun to focus seriously on the strategic implications of India's overseas energy interests and the increasing stakes abroad. In December 2006, with the arrival of oil from ONGC's activities in Sakhalin, the Navy's chief of staff announced that India's "greater strategic neighborhood has expanded from Venezuela to Sakhalin" and asserted that the Indian Navy needed a capability-driven force to protect offshore oil blocks in areas like Sakhalin.[14] These comments from the Navy's leadership reflect how the growing need to protect the transport of oil and gas from Asia, Africa, and Latin America is directly driving a slow but aggressive naval transformation from a brown-water Navy to a blue-water Navy.

The transformation of the Navy is designed to give India the capabilities to secure the Indian Ocean region (IOR) and to project power outside of the region. India's naval presence in the Indian Ocean is projected to include two aircraft carriers, nine destroyers and frigates, six submarines, and a number of other offshore patrol capabilities by 2014.[15] In concert with this military transformation, the Indian Navy is engaging the IOR and beyond. For example, in February 2008, it hosted the first Indian Ocean Naval Symposium in New Delhi to promote cooperative engagement among the 26 IOR states. It was a well-attended event that attracted senior leadership from nearly all of the regional navies. The leitmotif for the symposium was to develop capabilities for disaster relief, but discussions with Indian military officers suggest that the two primary drivers of Indian leadership and engagement in the region are to keep the sea-lanes open and safe for energy transport, and to counter the growing influence of China in the IOR.

China is a controversial and challenging topic for Indian policymakers and defense planners, and this is no different for issues related to India's energy security and outreach activities. Indeed, India's concerted energy outreach underscores compatible and conflicting interests with China, as both countries pursue a greater share of the global market. Some Indians, primarily in industry, see China as an important partner that can help each country meet mutual objectives of pushing prices down and gaining leverage vis-à-vis supplier states or other companies. China can also provide political cover when Indian companies seek to invest in pariah states—such as Sudan, Syria, Myanmar, and even Venezuela. Indian companies believe they can gain technical

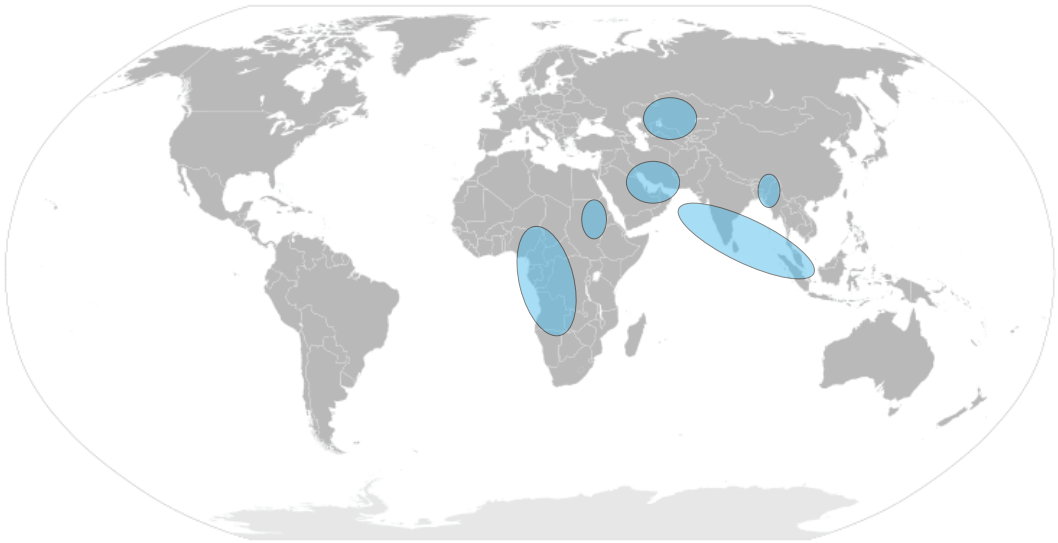
expertise by working with the Chinese. They can point to examples of collaboration in Colombia and Syria.

On the other hand, Indians in the strategic community do not envisage a future in which energy is a viable area of cooperation. In fact, if the two economies continue to grow, they will be competing more, not less, with each other to secure deals and gain influence with the major suppliers. These Indians believe that the shrinking number of investment opportunities engenders a zero-sum environment for investment and strategic decisions. Moreover, this group holds the view that China's aggressive investment strategy in Africa and Latin America has been driving Indian companies to follow, and these observers question the strategic and economic utility of India's far-flung investments. Many of these investments are perceived to be putting India and China in direct competition for influence, access, and acquisitions. Exhibit 3 identifies a couple potential areas of future competition.

In New Delhi, the military and national security communities are focused on the implications of China's aggressive outreach strategy in pursuit of energy, other raw materials, and new transportation routes, which among other things has concentrated China's attention on the Indian Ocean Region. In this context, many Indians in the national security community are concerned about the coupling of China's naval modernization efforts and its significant inroads in the Indian Ocean. Indian strategists see China successfully encircling India with its close relationships and infrastructure projects in Pakistan, Bangladesh, and Myanmar, as well as with several island nations in the Indian Ocean. The IOR—the "energy superhighway" connecting Persian Gulf suppliers to Asian consumers—is going to be the region to watch for both military cooperation around energy security concerns (e.g., the United States and India, Japan, and India) and strategic competition (e.g., China and India).

India's concerted energy outreach underscores compatible and conflicting interests with China, as both countries pursue a greater share of the global market.

EXHIBIT 3: Focal Points for Future Sino-Indian Energy Competition



Sino-Indian Competition

ENDNOTES

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INDIA'S SEARCH FOR ENERGY SECURITY AND IMPLICATIONS FOR THE UNITED STATES

MIKKAL E. HERBERG

With a rapidly growing economy and expanding diplomatic influence, India is emerging as a major regional and global power. The United States is the reigning global superpower, which means that the emergence of India creates a new set of strategic opportunities and challenges in Asia. India's rise increases in importance when considered in the context of the simultaneous rise of China on the Asian continent, and of the rapidly evolving triangular relationship among the three powers. As Washington grapples with the rising influence of two new major global powers, New Delhi is seeking ways to come to terms with China's growing regional power and influence, while at the same time crafting a new and more productive relationship with the United States.

India's intensifying search for energy security is likely to play a significant role in shaping Asia's future and India's future relations with the United States. Energy is propelling India's emergence as a major regional power, which in turn is accelerating the pace at which the United States will need to come to terms with India's influence and interests in geopolitics and energy diplomacy.

In energy, as in the broader strategic realm, the United States is the unchallenged global superpower. It is by far the world's largest oil consumer and importer, the third-largest oil producer, the dominant strategic power in the Persian Gulf, and the unchallenged naval power in the critical energy sea-lanes of the world. Consequently, India's growing regional and global quest for energy supplies and diplomatic influence in key energy-producing regions is bound to have implications for American global energy interests.

This has been manifested in both negative and positive ways. On the negative side, recent developments suggest Washington and New Delhi increasingly see themselves as competitors for future energy supplies. At the same time, some of India's efforts to access energy supplies in and around the South Asian region conflict directly with U.S. strategic policies. These conflicting views run the risk of spilling over into the broader strategic dynamics between Washington and New Delhi. Yet on the other hand, the improving strategic and economic dimensions of the relationship between India and the United States also influence energy relations, in many ways supporting incentives to promote energy cooperation. Put simply, energy has become a factor in promoting strategic partnership and reducing the potential for rivalry in U.S.-India relations. Energy insecurity will inevitably affect how America relates to India and how it seeks to balance and manage common and conflicting interests.

In reality, the broad energy security interests of the United States and India largely converge around the need for more stable global energy supplies and prices; rising global investment in new oil and natural gas supplies; an increasingly diversified mix of energy sources; a more diversified geographic range of supplies of oil and gas; ensuring reliable energy transport; and working together to achieve an environmentally sustainable energy future. The two countries have mutual energy security interests, and, for the most part, U.S.–India energy relations appear headed toward a relatively cooperative framework. In sharp contrast, U.S.–China energy relations appear headed toward increased competition and distrust.

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Therefore, American perspectives on energy competition or cooperation with India need to be placed in the context of overall political and economic relations. The United States views the energy strategies and actions of India through a narrow prism of energy security and foreign policy concerns, but also through a broader prism which takes into account political, economic, and strategic relations. This broader strategic view, in turn, is impacted by how America perceives India's strategic importance in Asia as a potential counterweight to rising Chinese power in Asia.

Put simply, energy has become a factor in promoting strategic partnership and reducing the potential for rivalry in U.S.-India relations.

This essay focuses on the rising importance of energy as a factor in this new and evolving pattern of relations from the U.S. perspective, and the role that energy security and the potential for competition over energy supplies is likely to play in these broader relations. The first section will outline recent developments in, and future prospects for, U.S.–India strategic relations. The second section will survey the key elements of India's outward energy investment strategy and diplomacy. The third section will review U.S. responses to India's externally focused energy security strategy, particularly in comparison to American reactions to China's similarly outward-oriented energy security strategy. The final section will highlight two recent U.S. policy initiatives that demonstrate the strong relationship between energy cooperation and strategic partnership in U.S.-India relations.

U.S.-INDIA STRATEGIC RELATIONS

American strategic relations with India have undergone a process of significant improvement since the Cold War era, when they were rife with suspicion and tension. This has been possible for a number of reasons. With the end of the Cold War, India was no longer tethered to its close relationship with the Soviet Union, thereby removing an important barrier to better relations with the United States. Moreover, India's major economic reforms beginning in the 1990s, the gradual opening up of its economy and markets, and resulting rapid economic growth have also made the country a major positive global economic force. This has opened up opportunities for much closer and more productive U.S.-India economic, trade, business, and cultural ties, which in turn spill over into prospects for more favorable strategic ties.

At the same time, Washington increasingly sees India's rising clout as an important and positive factor in Asia's future regional balance of power. From the U.S. perspective, stability in Asia is served by a situation whereby no single nation can dominate the region and which allows America to remain the key balancing power. A strong and self-confident India contributes to a multipolar and diverse Asian power structure and, in the process, preserves American primacy in the region. Moreover, with the simultaneous rise of China and India, the potential for a more active Japan, an increasingly fluid situation on the Korean peninsula, new Russian influence in the region due to its energy diplomacy, and new challenges related to Islamic extremism in Southeast Asia, Washington increasingly recognizes the need to broaden its relations and support across this rapidly changing Asian strategic environment.

Unlike with China, U.S. policymakers do not see India as a potential long-term systemic challenger to American global or Asian interests. India's economic dynamism and growing military reach are unlikely to lead to any systemic challenge to U.S. leadership, a situation which is reinforced by shared values from a common democratic heritage. Unlike China, India is not one of the five permanent members of the United Nations Security Council. Therefore, in this context, Washington does not have the same reservations about India as it does about China and its ability to frustrate American efforts to shape UN action to further

its own national interests. Nor does Washington have the same reservations about India's growing regional military and naval power as it does about China's military modernization. In fact, Washington and New Delhi are very much aligned on security and maritime interests in the Indian Ocean and the free flow of goods and energy through South and Southeast Asia. The general improvement in U.S.-India relations is manifested by American efforts to pursue a more balanced policy toward India and Pakistan, and by its greater efforts to assure India that close American ties with Pakistan (due to the latter's key role in the global war on terrorism) do not represent a permanent tilt toward Pakistan's interests.

Therefore, although there are still a range of specific sources of bilateral tension, from the U.S. perspective India's political and economic rise presents much less of a potential challenge to American strategic interests than China's and, indeed, contributes to continued U.S. primacy in Asia. Closer ties across a range of issues are not compromised by concerns over New Delhi's long-term strategic intentions.

INDIA'S OUTWARD REACH FOR ENERGY SECURITY

Improving U.S.-India strategic relations carry important implications for energy relations. So far, energy issues between the two nations have been generally viewed in the context of the reasonably cooperative direction that U.S.–India political, economic, and strategic relations have taken. This has served to reduce the potential for rivalry and competition that might emerge over energy supplies and energy diplomacy. Nevertheless, Washington does have important concerns about India's energy security efforts. These need to be managed in the future as India seeks to access new energy supplies across the globe.

India is now the fifth-largest energy consumer in the world. As in the rest of Asia, oil looms as the key import concern. Strong economic growth is driving oil demand growth of 3 to 5 percent annually, currently making India the fourth-largest oil consumer globally and the sixth-largest oil importer. Oil production has stagnated in recent years due to a limited domestic reserve base. Consequently, oil imports reached nearly 2.0 million barrels per day (MMBD) by 2007, representing 70 percent of total consumption. Roughly half of India's current oil imports come from the Middle East, and this dependence will grow over time. Indian oil demand growth, along with China's, is likely to remain among the fastest in the world, at nearly 4 percent annually to 2030—total demand rising from 2.7 MMBD in 2007 to 6.6 MMBD in 2030. Combined with essentially flat or declining oil production, this suggests that imports will account for 85 percent of the total oil demand by 2030, much of which will have to come from the Middle East, with the balance arriving mainly from Central Asia and Africa.

> The United States views the energy strategies and actions of India through a narrow prism of energy security and foreign policy concerns, but also through a broader prism which takes into account political, economic, and strategic relations.

Historically, India has been self-sufficient in natural gas, but given limited domestic gas resources and rising demand, this is likely to change in the future. Gas demand is expected to continue to increase, making India a major importer in the form of liquefied natural gas (LNG) and possibly pipeline supplies. Indian gas consumption is expected to triple by 2030, driven by the growing need for electricity and the need to substitute for dirty coal. At the same time, domestic gas production is expected to

rise more slowly, meaning that 40 percent of India's gas needs are likely to be imported by 2030. The country is already developing the infrastructure to boost gas imports. India's first LNG import terminal, Petronet, a joint venture between the Indian state oil and gas companies Oil and Natural Gas Corporation (ONGC), Gas Authority of India Limited (GAIL), and Indian Oil Corporation Limited (IOCL), as well as Gaz de France, began operation in late 2003 and is importing gas from Qatar. Royal Dutch Shell has developed a second Indian LNG terminal project at Hazira, Gujarat state, which brings LNG from Oman; this project was inaugurated in April 2005. In all, the government has approved plans for more than a dozen possible import terminals in the future. Recently, there has been new progress on natural gas pipeline proposals to bring gas from Iran via Pakistan, and from Myanmar via Bangladesh. Each of these proposals has serious geopolitical problems, and the outlook for pipeline supplies will depend on resolving key regional geopolitical rivalries and constraints. A major proportion of India's future gas imports will necessarily come as LNG from the Arabian Gulf, with some possible increases via pipeline gas from Myanmar and Iran.

Unlike with China, U.S. policymakers do not see India as a potential long-term systemic challenger to American global or Asian interests.

India's rapidly growing dependence on imported oil and LNG supplies has catalyzed a more active strategy to secure supplies overseas, and India seems to be emulating China in its overseas energy security strategy. India's national oil and gas companies (NOGCs) are moving abroad rapidly to secure future oil supplies and to tap into regional energy sources from South Asia, Southeast Asia, the Persian Gulf, and Eurasia. Like China, India is beginning to combine its national oil company investment activities with broader government diplomacy. New Delhi is increasingly active in calling for greater regional energy cooperation, seeking in particular to develop a cooperative strategic energy relationship with China. The government is aiming to secure roughly 1.2 MMBD of Indian equity overseas oil production by 2025. ONGC, India's major state-owned oil exploration and production enterprise, is moving rapidly to stake out new overseas oilfield investment plans through its international subsidiary, ONGC Videsh Ltd.

India's largest oil stakes to date include its 25 percent share of the Greater Nile Oil Project in Sudan (ironically in partnership with China's National Petroleum Corporation, or CNPC), bought for $750 million, and its 20 percent share of the Sakhalin 1 project in Russia, led by ExxonMobil and purchased for $1.7 billion. ONGC is also beginning to source large LNG supplies from the Arabian Gulf through deals with Qatar and Oman. ONGC also recently signed a preliminary deal with Iran to buy LNG later in the decade, for which ONGC would have the option to develop a large Iranian oil field. With more than 50 percent of its total oil supplies now sourced from the Middle East, India has announced plans to build a strategic oil stockpile, although it has not yet made much progress in this matter.

U.S. RESPONSES TO INDIA'S OUTWARD ENERGY REACH

The American response to India's accelerating outward reach to secure oil and natural gas supplies has been a mixture of concern and initiatives toward cooperation. On the one hand, U.S. policymakers have expressed continuing opposition to two key elements of India's energy diplomacy which mirror their concerns regarding China's approach to energy security. One key source of anxiety is India's growing energy ties and proposed major energy projects with key "problem states." India is building a substantial and growing energy relationship with Iran, which is creating significant new tensions in the U.S.–India relationship. Iran is viewed as a key

future supplier of oil and natural gas and also as an important diplomatic power in a region with which India needs to have cooperative relations. New Delhi recently signed a memorandum of understanding to participate in a multi-billion dollar future LNG project in Iran that would include an equity stake in the upstream LNG liquefaction plant, as well as a 25-year long-term contract to purchase LNG from the project. The deal would bring with it the added benefit of an option to develop a large Iranian oil field, the Yadavaran field near the Iraq border, potentially capable of producing 200,000 barrels of oil per day.

Another key potential project that has attracted opposition from Washington is the proposal to build a large, multi-billion dollar natural gas pipeline from Iran across Pakistan to India. Negotiations are underway, although there are significant obstacles to finalizing the project. India has serious reservations about relying on its bitter foe, Pakistan, as a transit country for a critical energy resource.

Another cause for U.S. concern is ONGC's partnership with China's CNPC in the Greater Nile Oil Project in Sudan. Although India has not been as open in its diplomatic embrace of the Sudanese regime and has not expanded its economic ties in Sudan to the same extent as China, there is clearly discomfort among American policymakers over India's Sudanese involvement. A third source of U.S. concern is Indian efforts to develop a large natural gas pipeline from Myanmar to India, either across Bangladesh or directly to India via a more northern route bypassing Bangladesh. In this project, India is competing with China, which is promoting an alternative pipeline to ship that natural gas northward to southern China. Finally, the United States harbors concerns regarding India's recent acquisition, in partnership with China, of the Al-Furat oil field in Syria. Publicly and privately, Washington has expressed serious reservations to New Delhi about its growing ties with these problem regimes.

A second set of U.S. policymaker concerns over India's energy strategy revolves around their perception that India, like China, is pursuing a statist, mercantilist, and predatory approach to its oil and gas investments. In their view, this threatens to reduce future American and Western access to these oil and gas resources and to undermine multilateral cooperation to secure global energy supplies and flows and to stabilize global markets. India has frequently been lumped together with China—particularly in American congressional rhetoric—in terms of its non-market approach that grants Indian NOGCs strong financial and diplomatic support from New Delhi in their overseas investments. This raises concerns in Washington that India is, in effect, "taking oil off the market." This kind of mercantilist, apparently predatory investment behavior by India also feeds the underlying perception among policymakers in Washington, China, and the rest of Asia that they are all in a nationalistic competition to control international oil and gas resources.

Nevertheless, what is striking about the U.S. response to India's energy strategy—particularly vis-à-vis those elements that mirror China's mercantilist approach—is its relatively muted reaction, compared to Washington's strident reaction to Beijing's similar strategy. There are four reasons for this different response.

First, as suggested earlier, the overall objective of improving U.S.–Indian strategic and economic relations clearly contributes to a more subdued American response. Washington is seeking avenues for greater cooperation with New Delhi for broader strategic reasons, so it has not been as reactive regarding the country's global energy push. New Delhi's recent decisions illustrate its own interest in strengthening its strategic ties with Washington. Consider, for example, the contrasting actions of India and China with regard to imposing sanctions on Iran. Through its permanent five (P-5) Security Council membership, China has sought to frustrate U.S. and Western efforts to impose UN sanctions on Iran for its nuclear program, and continues to resist their imposition (as does Russia). In contrast, India holds no such P-5 position, but has begun to move toward the American and Western position on imposing sanctions on Iran, despite its close ties with Tehran.

Second, the intensity of U.S. tensions with China over energy and many other issues, coupled with the intense political focus in Congress on the "rise" of China, seem to have allowed India to largely slip under the radar on energy issues.

Third, the scale of India's strategic outward energy thrust is modest in relation to the worldwide scale of China's energy investment activities. The Chinese thrust includes major forays into Africa and into traditionally secure U.S. suppliers in the western hemisphere, such as Canada and Venezuela. By contrast, India's focus is much narrower, emphasizing the Middle East, Russia, and small stakes in Africa.

Finally, the Indian government's direct financial and political support for NOGC overseas investment is far less extensive than China's, and New Delhi also imposes some key market disciplines on these overseas investments. For example, the Indian government imposes profit margin requirements, requires that two-thirds of investment financing be private, and encourages private equity to ensure that investments are commercially sound. In several notable cases, the government has forced ONGC to withdraw economically unsound bids for assets—even in the face of Chinese competition—including potentially major deals in Nigeria and Kazakhstan.

U.S.-INDIA ENERGY COOPERATION AND STRATEGIC PARTNERSHIP

Two recent U.S. initiatives demonstrate how Washington is looking for ways to promote U.S.–India energy cooperation to support a broader vision of a U.S.–India strategic partnership. The first example is the recently inaugurated U.S.–India Energy Dialogue (established in mid-2005), which to some extent mirrors the new U.S.–China Energy Dialogue. It is made up of five working groups: oil and gas; coal; power and energy efficiency; new technologies and renewable energy; and civil nuclear. Interestingly, the initiative was spearheaded not by the U.S. Department of Energy (DOE), but by the State Department, and was announced by American Secretary of State Condoleezza Rice during an important strategic visit in early 2005. There is strong evidence that the DOE was not even involved in the proposal and only learned of it when publicly announced by Secretary Rice in New Delhi. This suggests the extent to which the initiative had foreign policy roots extending beyond mere efforts to promote energy cooperation.

The second example is the U.S.–India civil nuclear agreement, forged in 2006. The first phase of the deal was passed by the U.S. Congress in December of that year. The accord was controversial in the United States in that it required a fundamental review of U.S. nonproliferation policy. However, much of the justification for the deal offered by the George W. Bush administration revolved around its value in furthering long-term U.S.–India strategic cooperation. This was often set in the context of India's growing Asian and global power and of the country's significance in helping to further American interests in counterbalancing China's power in the region.

> The American response to India's accelerating outward reach to secure oil and natural gas supplies has been a mixture of concern and initiatives toward cooperation.

In sum, both initiatives were crafted with an eye toward using energy cooperation as a means for cementing closer U.S.–India strategic relations, as well as toward promoting India as a strategic counterweight to China in the future evolution of Asia. This illuminates the complex interplay between energy and strategic interests driving American perceptions of energy competition or cooperation with China and India.

CONCLUSION

The improving state of U.S.–India strategic relations has provided a favorable context for promoting energy cooperation. The keys to the future of U.S.–India energy cooperation are to sustain dialogue, to create a new structure for existing cooperative energy institutions,

and to manage the inevitable disagreements over Indian involvement in nations viewed by Washington as deeply problematic. It is also important for the United States to moderate the competitive atmosphere caused by the struggle India and China wage for control over oil supplies, because this rivalry is aggravating the energy security concerns of other major Asian powers, intensifying the region's zero-sum energy hoarding behavior, and deepening bilateral strategic tensions in Asia. It is also imperative that the United States find ways to integrate India into the current Western global energy management institutions (such as the International Energy Agency), or to create new Asian energy institutions to accomplish similar goals. This would reduce the inclination of India and other oil-importing Asian powers to start building their own, separate, and less market-oriented alternative regional energy institutions that could undermine the effectiveness of existing global energy institutions.

INDIA'S QUEST FOR ENERGY: THE DOMESTIC PICTURE

RON SOMERS

Pent-up demand for energy in India will soon herald a major resurgence of foreign direct investment (FDI) in the country's energy sector, notwithstanding global uncertainties in the financial markets and India's domesticpolitical challenges.

The glaring fact is that India currently consumes very little energy compared to other economies. On a per capita basis, India consumes only about 600 kilowatt hours (kwh) per person per year, whereas European countries and the United States consume on the order of 14,000 kwh per person per year—a dramatic difference.

However, as India's economy continues to grow at greater than 8 percent of gross domestic product (GDP), and as its middle class continues to expand, there is no question that India's energy consumption will be poised to grow exponentially. One need only look northward to China—the other billion-person economy—to shed light on what is in store for India's energy needs. China, at current count, is consuming more than twice the energy that India consumes—at about 1300 kwh per person per year. Both of these economies are modernizing at double-digit rates, creating a major demand for energy and spurring calls for energy independence and energy security. China's and India's quests for energy present major challenges for all economies.

FOREIGN INVESTMENT AND INDIA'S ENERGY SECTOR: A HISTORY

FDI in India's energy sector is not new. What is new, however, is the international competition for investment that is the hallmark of the global economy in which we now live. Energy developers have so many alternatives as to where to invest (particularly in locations close to home) that investing far afield in places like India poses a challenge for India—where policies and the investment climate must out-compete other more comfortable or logical investment destinations. India is on the move to promote just such an attractive investment environment.

As for FDI engagement in India's energy sector, an interesting historical footnote reminds us that General Electric developed the first hydro-electric project in Asia near the city of Mysore, in the Indian state of Karnataka, as early as 1902. The Sivasamudram Hydel Station on the Cauvery River is still operating—and boasts civil works and a diversion channel that are original components of the facility.

Similarly, foreign investors with the Burma Oil Company helped discover and exploit the Digboi oilfield in Assam, which has been producing successfully for the past 100 years.

Furthermore, subsequent to India's independence in 1947, the Soviet Union aided India in developing its Oil and Natural Gas Corporation (ONGC), which later discovered natural gas in the Bombay High field—and the facility there is producing in commercial quantities even today.

After economic liberalization in 1991, a wave of international investment poured into India that targeted the country's power sector. The energy secretary at the time coined the phrase "No power is more costly than independent power." Independent power producers (IPPs) from around the world made a beeline straight for India. National Power of the United Kingdom, National Grid Corporation, Enron, AES, CMS, AEP, Electricité de France—literally every international player—set up offices in India and initiated development of one or more Green-field projects (that is, projects built from scratch

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on undeveloped land). At the time, the so-called developed world enjoyed surpluses in power and was overcapacitized. IPPs were hungry to access new markets, and China and India were prime targets.

However, the great IPP wave in India was short-lived—repelled by a domestic reaction that viewed these foreign investments as too expensive. This interest in India by outsiders was also described by some as a type of neocolonialism. India was not ready to bear the cost of what then

After economic liberalization in 1991, a wave of international investment poured into India that targeted the country's power sector.

appeared to be obscenely high-priced energy. Years of subsidized sales of electricity by state-owned utilities had created an expectation that the price of power should be nominal, and nearly free. In fact, in some states even today, electricity is provided to the agricultural sector for free. A movement to resist these IPP investments was spawned, and was named "swadeshi"—a term meaning self-reliance. Activists vowed to scrap these projects—driving them out of India into the Arabian Sea. These activists targeted the so-called eight "fast-track" projects, which became the early casualties. India's government had accorded these projects with this special status in order to expedite their development—even going the extra mile of providing payment security to backstop the obligations of the power purchase agreements. The projects were:

- Enron's Dabhol Project (natural gas), 2500 megawatts (MW)
- National Power's Vizag Project (coal), 1000 MW
- Cogentrix's Mangalore Project (imported coal), 1000 MW
- EDF's Nagpur Project (coal), 1000 MW
- CMS's Neyveli Project (lignite), 250 MW
- AES's Ib Valley Project (coal), 250 MW
- GVK's Jugurapadu Project (natural gas), 200 MW
- Spectrum's Kakinada Project (natural gas), 200 MW

We all know the story of Dabhol; even under government ownership today, the project still operates at partial capacity due to lack of fuel. Beyond Dabhol, only the Neyveli Project (250 MW), the GVK Project (200 MW), and the Spectrum Project (200 MW) materialized—collectively amounting to a drop in the bucket in terms of meeting India's massive energy needs.

Later, in the oil and gas sector—which liberalized in accordance with international norms—British Gas joined forces with Reliance (an Indian private corporation) and ONGC. Collectively, these companies have had great success in maximizing natural gas production from the Panna-Mukta-Tapti Fields adjacent to the Bombay High.

Against this backdrop of twists and turns that characterizes India's energy security quest, India's current and future energy needs are—by any measure—enormous. And pent-up demand is growing each day.

THE ENORMITY OF INDIA'S ENERGY NEEDS

India imports 70 percent of its hydrocarbons. At a rate of $20 a barrel, such imports may be manageable. But at a rate of $120 a barrel, the impact on the Indian economy is ravaging.

Meanwhile, India is struggling to add 100,000 MW of new electrical generation to augment its existing capacity of 135,000 MW. The goal is to accomplish this over the next five years—at a cost exceeding $150 billion. This target is achievable but unlikely. Developing and installing 135,000 MW of electricity generation required all of India's 60-year history as an independent nation. To nearly double this amount in just the next five years is clearly daunting. Complicating this objective is the fact that India must also simultaneously develop the transmission and distribution systems to accommodate this new

capacity. The price tag for this is easily another $50 billion.

All the while, pent-up demand for energy continues unabated.

Moreover, no one could have predicted two years of drought in Australia, which has spurred price rises in essential food grains and edible oils. The cost of dairy products in India—the largest producer of milk in the world—is up by 80 percent. Cooking oil prices have risen by 50 percent in the past year. And scrap, iron ore, and coking coal—all necessary to manufacture steel—have doubled in price over the past 12 months. India today is suffering an inflation rate that touches 12 percent. Indeed, a perfect storm of high oil prices, the drought in Australia, and India's growing appetite for energy, commodities, and better nutrition and food have caused India's fiscal situation to deteriorate.

The impacts of this are troubling. A shortage of energy by itself is bad enough, and India has suffered for decades from inadequate energy supplies. But when you add double-digit inflation—which hits the common man hardest—to this potent mix, the political ramifications can be considerable.

INDIA'S INDIGENOUS ENERGY OPTIONS

An energy planner would recommend to any country a strategy that facilitates the development of indigenous energy sources above all others. Yet this is easier said than done.

Hydro and Other Renewables

Hydroelectric power is India's original source of renewable energy and a source of free fuel—in that only sunlight and gravity are required to harness the energy benefits of running water. India has successfully exploited this type of energy, both pre- and post-independence. For example, in the south of India, large catchment areas are dammed while awaiting the bounty of the annual monsoon. In the north, snowmelt runoff from the Himalayas is diverted to canals to provide irrigation and hydroelectric generation.

This is not to say that all hydroelectric potential has been exploited. In fact, today there are real challenges thwarting further development. A case in point is the Narmada Dam Project, which is tiny in scale compared to China's Three Gorges Dam Project on the Yangtze River. This comparison is made to highlight the constraints large-scale dam development encounters in a country (India) that adheres to the rule of law, and where public interest litigation is the antidote to government autocracy.

Both India and China are billion-person economies. Due to the density of population encountered in both countries, literally millions of citizens live in the riparian zones of the countries' large rivers. Such is the case in China along the Yangtze. Such is also the case in India along the Narmada. These people may be displaced when dams are built.

> …even though renewables must be encouraged and pursued, it is unrealistic to believe that renewables alone will contribute a substantial portion to India's energy portfolio…

In India, however, there is an option of recourse to judicial activism, as prescribed by English common law. For the Narmada Dam Project in India, this has meant more than 17 years of active public interest litigation waged by various interest groups that has effectively halted the project's development. In contrast, the Three Gorges Dam effort in China has dislocated more than three million inhabitants without one court case.

The point here is that, for India, the days of large dam projects are past. Small hydro is acceptable, but damming large rivers and dislocating millions of inhabitants is not politically viable, and the benefits do not outweigh the certain risks. For those who advocate hydroelectric development in India, therefore, one must adopt rational and reasonable goals considering the judicial activism and

legal recourse available to those affected by such projects. The government has identified more than 100,000 MW of potential hydroelectric power in India, but many of these resources are located in politically unstable locations, are subject to geologic faults and earthquakes, or are far away from load centers or transmission lines. This is not to say that hydroelectric development should not be pursued, especially on a smaller scale or as a way of establishing decentralized energy sources for isolated load centers. Yet for the larger projects envisaged on paper, one must adopt realistic expectations—especially given the history of the Narmada Dam Project, which is still under development after 17 years.

Second to hydroelectric development, in terms of preference, would be the implementation of a robust renewable energy program—particularly relating to wind and solar. India already boasts the fourth-largest wind program in the world. Moreover, organizations sponsored by the government, such as the Indian Renewable Energy Development Agency (IREDA), provide financing—especially for solar power. That said, even considering the magnitude of India's wind program, renewable energy still only comprises about 2 percent of India's overall energy mix. Accordingly, even though renewables must be encouraged and pursued, it is unrealistic to believe that renewables alone will contribute a substantial portion to India's energy portfolio, notwithstanding India's desire to do so.

On the other hand, from a forward-leaning policy standpoint, India has a separate ministry which oversees renewable energy development. Moreover, the standard form contract for the purchase of electricity generated from renewable energy projects is attractive. Nonetheless, so great is India's energy need, we cannot hope that renewable energy will very soon shift the scales in terms of supplying the bulk of India's electricity.

Coal: India's Main Energy Source

Of India's 135,000 MW of installed capacity, more than 60 percent is generated by coal-fired conventional power. This is of considerable concern when one thinks of the implications for climate change and global warming. India possesses at least 200 years' supply of indigenous coal. Indian coal is low in sulfur, but very high in ash content: the resource is composed of more than 50 percent of non-burning minerals. This in turn has major implications not only for the environment, but also for India's overburdened transportation system.

Most Indian coal is located in the eastern region of the country—in the states of Orissa, West Bengal, and Jarkhand—and in Madhya Pradesh. These coal-bearing regions are far away from the urban centers and load centers where the energy is needed the most. As much as India can boast that it moves more people by rail each day than any other country on earth, this is precisely why it is difficult to move Indian coal to the load centers. India's railway system is overburdened by passenger movement, so transporting high-ash coal long distances from the mines to the urban centers is not a feasible option. Accordingly, New Delhi is advocating that "pithead" projects be built near coal mines, from which electricity could be evacuated long distances to urban load centers via transmission lines. In theory, this makes perfect sense. However, in practice there are still challenges to overcome. First, Indian coal mining is mostly controlled by strong unions that are loathe to encourage the participation of the private sector—domestic or foreign— in the country's mining industry. Hence, it is still no easy task to receive a government allocation of a prospective coal mine—particularly if the coal union is dead set against such competition. The practical result is that private players are given access to mine resources that are questionable, unproven, or a long distance from any load center or transmission access point.

The second challenge is access to an integrated transmission grid—one that would support the development of a pithead power project, while also enabling the evacuation of electricity to load centers via available transmission lines. India's regional transmission network (covering five regions) is still not integrated. Moreover, there is no major private sector transmission agreement in place to demonstrate efficacy. The result is that foreign players will be reluctant to step in to uncharted territory. So, although pit-

head projects make sense in theory, the practical aspects of putting in place the payment security agreements (coal access and transmission access) are still largely untested.

Finally, the environmental impact of hundreds of thousands of megawatts of coal-fired power from India is not being considered. If you take into account that China's coal-fired program is already causing heavy-metal detection in the Sierra Nevada snowmelt, just imagine what would happen to the global environment if India were to generate the bulk of its electricity via conventional coal-fired power. The effects would be far-reaching and extremely damaging.

…an imperative of U.S. and Indian foreign policy in the coming decade must be to cooperate on energy development, utilizing technologies that will burn cleaner coal and tapping energy sources other than coal.

The U.S. Department of Energy is seized of this challenge and is working with India to develop technologies that will enable coal to be burned more cleanly. In practice, though, the technologies being explored and tested have evolved largely in the private sector. Hence, intellectual property relating to research and development is at risk. Private companies that have spent decades and millions of dollars developing these technologies do not simply want to hand them over to the marketplace, free of cost. This raises the moral dilemma inherent in all intellectual property cases where the need and emergency of the situation are universally established, and where the intellectual property is owned by private sector researchers and entrepreneurs. Needless to say, the advent of genuinely clean coal technology is still years away—and, because of the high ash quality of Indian coal, there are challenges with Indian coal that even U.S. technology may not be able to readily overcome. Meanwhile, owing to its acute need to produce cost-effective energy, India barrels ahead with its coal-fired program, at a projected rate of approximately 50,000 MW over the next five years, and surely with an adverse impact on the global environment. Therefore, an imperative of U.S. and Indian foreign policy in the coming decade must be to cooperate on energy development, utilizing technologies that will burn cleaner coal and tapping energy sources other than coal.

Newly Discovered Oil and Natural Gas Reserves: The Next North Sea?

India's liberalized oil and gas sector has attracted private sector participation, resulting in two dramatic discoveries: the largest gas discovery in the world in 2003, and the largest oil discovery in the world in 2004. This underscores the fact that whenever a sector is opened completely—inviting private investment from domestic industry and from abroad—major progress can be made. Such is the case with India's hydrocarbon sector.

In 2003, India's largest private sector company, Reliance Industries, made a stunning discovery in the Bay of Bengal, about 90 miles offshore from the state of Andhra Pradesh and in very deep waters. The Dhirubhai Ambani Discovery, named after the late founder of Reliance, in the Krishna Godavari (KG) Basin, will likely change India's economy for at least the next half century. This discovery of gas, with provable and probable reserves exceeding 15 trillion cubic feet (according to the firm Degolyer and McNaughton), has sparked the creation of a 48-inch-diameter pipeline. This pipeline lands in Kakinada in Andhra Pradesh and traverses the country via Hyderabad, to the north of Goa, through Navi Mumbai, and touches its destination point at Jamnagar—where Reliance owns and operates the largest petrochemical complex in the world (a facility built with help from Bechtel). There is no question that gas-fired power and fertilizer facilities will begin sprouting up along the pipeline route, spurring industrial development and creating countless employment opportunities.

This pipeline is already complete. Production of the gas was expected by September 2008, with full production of 2.8 billion cubic feet per day projected to occur by year's end. More than a dozen compressors provided by GE's Nuovo Pignone will push the gas from the shores of Andhra Pradesh across the country to Gujarat, north of Mumbai. It is not hyperbole to state that this discovery will attract deepwater exploration throughout the Bay of Bengal—and may one day rival the success of the North Sea discoveries of the 1980s.

Joining Reliance in the history books a year later was a relatively small Scottish Company—Cairn Energy—which, in 2004, made a stunning oil discovery in the Thar Desert of Rajasthan near Mangla. The oil discovered in Rajasthan (within sight of the Pakistan border) may be heavy in paraffin, requiring special refining, but this discovery opens up an entirely new geological opportunity—one that will attract investment in Rajasthan, and which will prove to be a boon for northern India.

Without belaboring the point, wherever India has opened its markets—whether in telecommunications or in oil and gas exploration—the bounty brought to the country by the private sector becomes obvious.

That said, India continues to import more than 70 percent of its hydrocarbons—a trend, despite these two discoveries, that will continue unabated. Such is India's demand for oil and gas that these recently uncovered reserves will not quench India's massive thirst for energy.

TRANSNATIONAL PIPEDREAMS

Transnational natural gas pipelines, by their very nature, promote regional energy cooperation and, hence, promote peace, stability, and security. In this sense, transnational pipelines are "peace pipelines," particularly when they connect parts of South Asia that have historically been at loggerheads and where a stabilizing economic connection would prove helpful.

The proposed Bangladesh-India natural gas pipeline, connecting Unocal's Bibyana gas discovery in northeastern Bangladesh with gas markets in India, is one transnational pipeline that has failed to see the light of day. In concept, the pipeline was a sound idea. The Bibyana gas discovery, with reserves of eight trillion cubic feet, was to be connected via a 42-inch-diameter pipeline to gas markets downstream in India. In the mid-1990s, when this gas discovery was made by Unocal, there were no major demand centers for that quantity of gas in Bangladesh. As such, the Unocal gas discovery was "stranded," unable to be produced due to a lack of market access in Bangladesh. Unocal's proposal, which was met with tacit approval by the Awami League (the political party then controlling Bangladesh's parliament), was to produce and transmit via pipeline 500 million cubic feet per day from Bangladesh to markets in India. For Bangladesh, this would have resulted in a major long-term revenue source—amounting to billions of dollars over time.

When the government in Bangladesh changed political parties, with the Bangladesh National Party coming to power, the Unocal Bibyana gas pipeline became a political hot potato—with leaders from both parties accused of selling the country's national treasure to "Hindu" India. Such was the political volatility surrounding this issue that neither political party dared to embrace the pipeline, even though India was proclaiming its interest in being a gas purchaser and professing its willingness to pay international market rates. The Bangladesh-India pipeline remains in this political "no man's land"—with neither of Bangladesh's two political parties willing to take up the project for fear of reprisals by the other party and of the stirring up of nationalist sentiment. Meanwhile, the Bibyana gas discovery remains, in large part, stranded and awaiting exploitation. This means that Bangladeshi market demand for natural gas must "grow into" the need to develop Bibyana—which could take years—squandering revenues that could have been derived by gas sales to India at market rates.

A variation of this pipeline has been resurrected in recent years—as a result of a major discovery by India in Myanmar (formerly Burma), east of Bangladesh. Upon making this discovery, the Indians learned—as had been the case with the gas in Bangladesh—that there is no market for the gas within Myanmar itself. Accordingly, the only way to benefit from this discovery would be to construct a pipeline to existing markets in India. However, to access these markets a pipeline would need

to traverse Bangladesh, or be laid undersea from Myanmar to Kolkata, anchored deep at the bottom of the Bay of Bengal. Unfortunately for India, the deepwater/undersea route is not feasible. And the overland option is a non-starter as a result of Bangladesh fearing a pipeline that traverses its property. Bangladesh's concern is that once a pipeline is in place, one day Bangladeshi molecules would enter that pipeline destined for India. The result is that Bangladesh has blocked the Myanmar-Bangladesh-India pipeline—and the Myanmar gas discovery made by the Indians remains stranded.

This raises an important geopolitical question concerning India-Myanmar relations—which the U.S. government officially discourages. Myanmar's ghastly treatment of its citizens following the recent cyclone is but one good example that lends credence to U.S. disdain for Myanmar's regime. It is understandable, therefore, why the United States would prefer that India wield its influence in the region to encourage Myanmar's government to adopt policies consistent with basic human rights and democracy.

Not wanting to be an apologist for India insofar as Myanmar is concerned, the government of India has on numerous occasions made it clear that a withdrawal from Myanmar's energy scene or a hardening of its policies against the current regime would probably result in a predictable outcome: namely, China would move in to fill any vacuum created by India's absence or hardened foreign policy. For the people of Myanmar, such an outcome would not yield human rights. Nor would India gain, as it would find its northeastern states virtually surrounded by Bangladesh and China—an outcome India's foreign policy establishment deems unacceptable. Accordingly, India's approach to Myanmar is one of engagement. It is ironic that U.S. foreign policy discourages India's economic cooperation with Myanmar, whereas Unocal (now Chevron) still has a major natural gas concession with the country's government and, together with Total of France, has developed a major natural gas pipeline from Yadana in Myanmar to Bangkok.

Two other gas pipelines are worthy of mention. One of them, the Turkmenistan-Afghanistan-Pakistan-India (TAPI) project, is not only an effort of significant engineering scope, but also one fraught with obvious political risk. If a pipeline crossing two borders is difficult, than imagine a pipeline crossing through four borders. Moreover, when you consider the tribal boundaries that checkerboard Afghanistan—notwithstanding the fact that the country is at war—there is virtually no chance that such a project could attract conventional financing. Further complicating this is the fact that the gas reserves in Turkmenistan are questionable. Such a long pipeline, crossing four borders, would have to have a significant gas reserve backing it up to make it worthwhile. Without a major reserve study, which would confirm proven and probable reserves, financing is a non-starter. And this analysis does not even scratch the surface vis-à-vis political risk, or the issue of transit fees that would likely be demanded by each country—all of which diminish the likelihood that this project will materialize.

Similarly, the Iran-Pakistan-India (IPI) pipeline suffers from comparable challenges. Although there is no question that Iran's reserves of natural gas are ample, the political risk associated with a border crossing from Iran into Pakistan, and a further border crossing from Pakistan into India, complicates the likelihood that this project will ever see the light of day. The greatest deterrent to the IPI pipeline is the suspicion that dominates the India-Pakistan relationship. Pakistan is demanding a transit fee for this pipeline from India equivalent to $500 million a year in Pakistani revenues. There is no scenario—especially after the recent fatal bombing of India's embassy in Kabul, in which Pakistan's intelligence services (ISI) have been implicated—whereby the people of India would find it politically acceptable to pay Pakistan (and trust Pakistan with) $500 million per year in revenues.

India's concerns (and suspicions) would be that such funds would finance the ISI or the jihad that kills Indian *jawans* (soldiers) and innocent tourists in Indian-occupied Kashmir each year. Under no circumstances can it be imagined that a pipeline benefiting Pakistan to this magnitude would ever be considered palatable to the Indian polity in the near term.

That said, when one adds up the components that make up the delivered price of Iranian gas to India—including the gas price, the transit fee for Pakistan, and the transmission fee to amortize the 2000 mile pipeline—the delivered price for such gas would be north of $6.00 per British thermal

unit (Btu). Considering that Reliance is forced to sell its domestic gas from the KG discovery across the country in Gujarat for approximately $4.50 per Btu, there is a compelling economic reason why Reliance would support Iran-Pakistan-India gas coming to India: it would justify Reliance achieving and receiving a higher price for its domestically produced gas.

Although the jury is still out on the fate of Iranian gas over the long term, one can rest assured that because of the geopolitical challenges associated with Iranian gas crossing Pakistan before it reaches India, one should not expect the arrival of IPI gas in India in our lifetime—despite India's thirst for energy.

NUCLEAR POWER: AN ENERGY AND ENVIRONMENTAL IMPERATIVE

India needs nuclear fuel and technology. Prime Minister Manmohan Singh has determined that ending India's nuclear isolation is in the country's national interest. To this end, he has vigorously pursued the U.S.-India civilian nuclear initiative. To obtain access to international civil nuclear technology and fuel from the 45-nation Nuclear Suppliers Group (of which the United States is a member), India has had to complete several important steps. One was for the U.S. Atomic Energy Act of 1954 to be amended—to allow for the United States to share civil nuclear technology and fuel with India, even though India is not a signatory of the Nuclear Nonproliferation Treaty (NPT). This was completed in December 2006 by an overwhelming bipartisan majority—359 to 68 voting in favor in the U.S. House of Representatives, and 85 to 12 in the Senate.

India also had to successfully conclude a safeguards agreement with the International Atomic Energy Agency (IAEA). This proved more difficult, due to domestic Indian political considerations. In 2008, hoping to leverage anti-American sentiments within India, the country's Left bloc, a group of Communist parties (and at the time a supporter of India's ruling coalition, the United Progressive Alliance, or UPA) insisted that the prime minister suspend negotiations with the IAEA. India has 14 civil nuclear facilities, of which 6 are already subject to IAEA safeguards. Nonetheless, the Left drew a stark line in the sand, insisting that the UPA stop its negotiations. The Left believed adamantly that IAEA safeguards would compromise India's sovereignty.

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On July 18, 2008, Prime Minister Singh made the decision to proceed with IAEA negotiations, and the Left promptly withdrew its political support for the UPA—calling into question the UPA's majority and its moral authority to lead. India's president called for a confidence vote in parliament four days later. The result was 275 votes in favor of the prime minister, enabling the UPA to continue without the support of the Left. On August 1, 2008, the 35-nation Board of Governors of the IAEA unanimously approved a safeguards agreement with India.

U.S. cooperation with India's nuclear program is not new. Back in the 1960s, it was General Electric that provided the reactors for India's first civil nuclear facility at Tarapur. Today, almost 50 years later, the Tarapur facility is operating at greater than 95 percent efficiency—a tribute to General Electric technology. But because of India's lack of access to technology and fuel, India's nuclear power program could be much more robust than it presently is; the program currently provides only 3,500 MW of power to India's overall capacity of 135,000 MW.

During India's nuclear isolation these past three decades, the country has researched (and

is on the cusp of commercial development of) a fast-breeder civil program, which would operate on thorium. India, although short on uranium, has within its borders one-third of the world's supply of thorium. A fast-breeder program utilizing thorium would provide India's nuclear power program with nearly unlimited supplies of fuel for generations to come. Moreover, such a program would help neighbors turn to non-carbon-emitting energy sources—staving off climate change and global warming. This is not to say that fast-breeder technology is proven or ready for commercialization, but India has researched this science extensively, and, given India's prowess in technology, there is every reason to believe that India can share the benefits of this research with all the members of the 45-nation Nuclear Suppliers Group—to the benefit of all humanity.

Throughout the world, there are 400 operating nuclear reactors. India has 22 of them within its borders. Between now and mid-century, before there is any hope of new technologies being commercialized that wean us off our dependence on hydrocarbons, experts predict there will be a need for the worldwide development of at least 2500 nuclear reactors—a six-fold increase in current numbers. India would be one of the countries in the world with the capabilities to assist in this nuclear build-out, heralding a nuclear renaissance. India would also contribute to the human resource demand required by this build-out.

Nuclear power is non-carbon-emitting, and will enable India to augment its electric power mix—now dominated by coal—with clean nuclear power. It is therefore high time that India be invited into the international mainstream, graduating—as the world must—from a hydrocarbon-based economy to one that does not alter the climate or spur global warming. A major step was taken in this direction in early September 2008, when the Nuclear Suppliers Group granted India an exemption from the ban on nuclear fuel (levied on nations, like India, that have not signed the NPT).

CONCLUSION

India is rising and becoming vital to American interests. Indeed, the United States and India—together, in partnership—will have a large voice in shaping the outcome of the 21st century. Therefore, the United States has every interest to work closely with India to address its energy security concerns—and as described here, America has already demonstrated its desire to work with India on its coal and nuclear energy resources. Over the long term, we will learn from one another—as partners—and these lessons will be shared. This will help other countries by enabling them to achieve an energy security balance that also protects the environment, thereby improving the quality of life for all of mankind.

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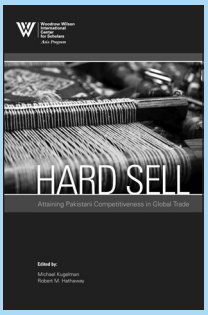

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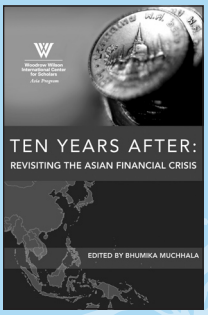

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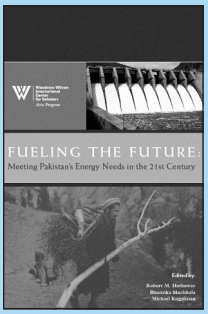

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