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Mr. Chairman, distinguished Committee members, I am pleased to be here today, with Department of Energy Under Secretary Garman to discuss the energy trends in China and India and their implications for the United States. They, along with the United States, represent three of the largest energy consuming countries in the world today.

The ability to bring economic growth and prosperity to its citizens is a key function that defines the legitimacy of any government. Economic growth, affordable energy, and environmental stewardship are all connected. One of the best ways to help nations develop is to promote energy-generating technologies that are clean, affordable, and secure.

In recent years, China and India have implemented significant changes that allow market forces to play an increasing role in their economies. The leadership in India and China has been successful in reducing poverty and delivering better lives for the many of their citizens. In China, for example, the economy has grown an astounding nine percent per year for the past 25 years. The Indian economy has grown by five percent annually during this same period -- still remarkable -- putting the country in the ranks of what are often termed as the "rapidly industrializing economies."

A greater demand for energy is a natural consequence of expanding economic activity. To support its recent level of economic growth, China's growth rate of the consumption of energy has increased 4.3 percent per year since 1980; India's has been 5.4 percent. The China of 25 years ago was largely energy self-sufficient, but in order to fuel its growing economic engine, an increasing share of petroleum and natural gas inputs must be obtained beyond China's borders. China now imports 40 percent of its oil needs, approximately 3 million barrels per day.

To improve the living standards of its citizens, China and India are understandably very concerned about energy security, as is the United States and every other nation in the world. Our continued engagement with these two rising economic giants is the best means to shape their energy outlook and policies, helping to ensure that world energy resources are used in the most efficient, affordable and environmentally-sound ways possible.

It is important to stress that while I may characterize as similar some aspects of China's and India's quest for energy security, we do not view this as a monolithic policy challenge. The two countries are very different, and we will tailor our policies toward each country as needed.

Although coal, sourced largely from domestic supplies, still comprises over 50 percent of each country's primary energy consumption, it has been the growing share of oil, particularly imported oil, in each country's energy mix that has captured world attention. In 2003, China replaced Japan as the world's second largest petroleum consumer. According to data published by the International Energy Agency (IEA) in early 2005, China consumes 6.4 million barrels per day (b/d), or about one-third the level of the United States. While domestic production of oil has only increased approximately 7 percent between 2000 – 2004, overall demand has increased by 36 percent. Prior to 1993, China was a net exporter of petroleum.

India has not made any major new domestic oil discoveries since the mid-1970s. According to the International Energy Agency (IEA), domestic production has stagnated in recent years while overall demand for oil doubled since 1990 to 2.4 million b/d in 2003 and is expected to double again by 2030. Total net oil imports for India were about 1.6 million b/d in 2003 with India holding the position of the ninth largest net importer worldwide. In 1990, Indian domestic supply met almost 60 percent of oil demand; whereas the country now imports over 65 percent of its oil.

This growing demand for oil by both countries is often characterized as "the cause" of the recent surge in high global energy prices. However, Chinese and Indian demand growth has by no means been the only factor in tightening markets. Indeed, Indian oil demand, unlike Chinese oil demand, has not surged in recent years, but continued on the historical trend. Energy prices have been impacted by a sustained general increase in world demand for energy. The United States comprised 27 percent of the total increase in global demand between 2003 and 2004; China: 36 percent; and India: 4.0

percent. Other important factors include slowing increases in non-OPEC oil production, dwindling spare production capacity within OPEC, constrained refinery capacity, temporary supply disruptions due to natural disasters and, simply, risk of significant disruptions due to political instability or acts of terrorism in countries that produce, transship or refine oil and gas.

While their current economic performance and corresponding demand for energy are impressive, we should not overstate the issue. It is important to remember that at $1.5 trillion, the GDP of China in 2004 is only 12 percent of the US's $12 trillion. India's GDP of $642 billion is 5 percent. US per capita GDP for 2004 was $40,540 compared to $1,118 for China and $594 for India. In terms of oil, each American consumes 28 barrels per year. In China, per capita consumption is approximately two barrels per year; and less than one barrel per person per year in India.

More importantly, we must consider the future demands for energy by India and China if they maintain their policies of economic expansion.

According to the IEA, overall demand for energy in China and India is projected to approximately double by 2030, whereas US demand is expected to grow by only 35-50 percent.

What is notable about the case of China is that while it has set a goal of quadrupling the size of its economy during the next two decades, it aims to only double its consumption of energy. This will take a massive amount of investment in more modern, efficient energy systems. The International Energy Agency estimates that China's oil sector alone will require investment of $119 billion by 2030 while natural gas will need $100 billion. The electricity sector will require an investment of $2 trillion, part of which will be devoted to the construction of up to 40 new nuclear power plants---a field in which US companies will compete.

Energy use for transportation in China is projected to grow by 5 percent per year between now and 2025. Virtually all of the projected increase is for petroleum products; about two-thirds of that is expected to be for transportation. Personal travel in China has soared in the past two decades, with passenger miles traveled increasing fivefold. China had 14.5 million registered vehicles (including passenger cars, trucks and buses) at the end of 2001. According to forecasts conducted by the International

Energy Agency, this number could climb to 130 million by 2030. (There are approximately 230 million vehicles on America's roads today).

India's energy demand for transportation is projected to grow at an average rate of 4.4 percent a year, and the transportation sector is expected to account for 20 percent of the country's total energy consumption in 2025. There were about 12 million vehicles in use in India in 2001.

The challenge before both countries, therefore, is energy security---especially oil security---in an expected environment of expanded economic growth. Policy makers and the national oil companies in China and India have begun to develop a mix of policies to improve oil security. These include steps to diversify suppliers, strengthen oil diplomacy, build strategic oil reserves, enact conservation and efficiency policies, and develop alternative energy sources. But the most visible, and commented on, aspect of their energy strategy has been the effort by their respective national oil companies to purchase overseas assets and participate in bilateral oil deals. China has been particularly active in this regard.

In the past ten years, Chinese national oil companies have acquired interests in upstream oil projects in Burma, Kazakhstan, Venezuela, Sudan, Iraq, Iran, Indonesia, Ecuador, Peru, Yemen, Oman, Azerbaijan as well as small shares in projects in Canada and Australia. Leading the drive among Chinese national oil companies is China National Petroleum Corporation (CNPC). It plans to spend $18 billion in overseas oil and gas development between now and 2020. China recently became one of the largest investors in Indonesia, buying into oil and gas interests worth $1.2 billion. The Kazakh and Chinese governments signed an agreement in May 2004 for the construction of a $700-million pipeline to export Kazakh crude oil into western China. Even so, China's outward investment pales in comparison with that of the U.S. China's cumulative realized stock of investments overseas in all commercial sectors totaled approximately $37 billion for all countries at the end of 2004. By comparison, US direct investment stock abroad stands at over $2 trillion, including $15 billion in China.

Oil imports account for two-thirds of India's oil consumption. Like China, it has increased its energy diplomacy with states in the South Asia region; as well as states in Central Asia, Russia, the Middle East, Latin America and Africa. The Indian state-owned Oil and Natural Gas Company (ONGC) has invested $3.5 billion in overseas exploration since 2000. It has

invested in gas fields in Vietnam, as well as energy projects in Algeria, Kazakhstan, Indonesia, Venezuela, Libya and Syria. Indian private sector firms have pursued projects in Iran, Yemen and in Africa. India reached agreement in principle with Iran this year to purchase a total of 5 million tons per year of LNG for 25 years beginning in 2009. Pipelines involving Iran, Turkmenistan, Burma and Bangladesh have also been considered in recent years.

Driving the strategy of overseas equity investments in oil and gas ventures is a belief among policy makers that although their oil imports could be met by purchases on the world market, physically owning oil-producing assets overseas provides the country with greater energy security. As the theory goes, equity investments would reduce dependence on oil from major oil companies from developed countries, (which dominate global oil production outside oil controlled by national oil companies) as well as limit exposure to price volatility by reducing purchases of oil on the open market.

This strategy of intensified acquisition of equity oil has met with considerable skepticism from international oil market analysts. They argue that overseas investments are unlikely to shelter China from volatility in the oil market. Equity investments by China in distant producing fields in Africa, Latin America, or the Middle East are not likely to improve the physical security of its energy supply. Whether purchased on the open market, or produced by its national oil companies, China will effectively pay the world market price either directly or in foregone revenues if China were to ship every barrel of equity oil back home. In fact, according to industry press reports, most of the oil currently produced by Chinese oil companies abroad is not shipped back to China, but instead is sold on markets closer to production.

Crude oil is fungible and the market for this commodity is globally integrated. Due to the laws of supply and demand, any oil that is pumped from the earth and added to the world market will increase supply relative to demand and tend to have a downward effect on price. Any increase in demand relative to supply would tend to push prices upward. Even if its national oil companies continue their acquisition strategy, it is very unlikely that China would satisfy its demand or insulate its economy through China-owned assets. China will continue to be affected by the world market---just like most other countries, including the United States—and its impact on the

world oil market and on the global price of oil is determined by China's level of demand, not from where its oil is supplied.

Industry analysts have noted that in their rush to stake claims around the world, Chinese national oil companies have accepted terms that would often not be considered commercially viable for major Western oil companies, who base their investment criteria assuming a long-term average price of oil at between $20 and $30 per barrel. The question is how long can China pursue such a strategy? If oil continues selling for $50 per barrel or more, it may prove to have been a good bet from a commercial perspective, but if prices drop considerably, the results could be quite painful. In response to the oil crises of the 1970's and early 1980's, Japan embarked on a similar policy: establishing the state-owned Japan National Oil Company to lock in equity oil around the globe as a way to improve national energy security. After investing billions of dollars with lackluster results, the government of Japan abandoned that policy and now plans to dissolve the majority of the parastatal and privatize some of its healthier subsidiaries.

A more troubling aspect of the recent surge in overseas energy deals by China and India is their willingness to invest in countries that are pursuing policies that are harmful to global stability. Both Chinese and Indian firms have reportedly been involved in oil and gas-sector deals in Iran that raise concerns under US law and policy. For example, Indian and Pakistani officials are engaged in detailed discussions on the technical, financial and legal aspects of building a $4 billion pipeline that would bring Iranian natural gas to Pakistan and India–a project that, as Secretary Rice has said, also raises US concerns. India, and to a much larger extent China, have significant upstream investments in Sudan's energy sector. Additional sources of oil and gas on the world market are, of course, welcome, and for over two decades US international energy policy has promoted the reduction of barriers to energy trade and investment around the world as a means to enhance global energy security. However, the economic support such investment provides regimes such as Iran and Sudan can undermine efforts to encourage policy changes that will reduce global instability and enhance energy security for all.

Other important trends that the State Department is addressing include the environmental challenges that rapid economic development will pose for India and China. Both countries intend to rely on their plentiful supplies of coal to fuel their expanding industrial and electric generation needs.

According to the US Energy Information Administration (EIA), over the next twenty years, China and India are expected to account for 85 percent of the projected rise in coal use in the developing world and nearly 70 percent of the total world increment in coal demand. However, many of the countries' coal-fired plants are inefficient and lack adequate pollution control equipment.

In 2003, 63 percent of the 330 Chinese cities being monitored had poor air quality. One of the main pollutants is sulfur dioxide, resulting in the formation of acid rain, which now falls on about 30 percent of China's total land area. About 34 percent (6.6 million tons) of the country's total sulfur dioxide emissions in 2002 were released from power plants. In addition to point sources (such as power plants and factories), vehicles account for an increasing percentage of the country's air pollution especially in urban areas. For instance, city planners in Shanghai estimate that about 90 percent of the city's air pollution is from vehicle traffic.

As their consumption of fossil fuels accelerates, so will India's and China's emissions of greenhouse gases such as carbon dioxide. Based on data from the Energy Information Administration, India and China contribute only 4 percent and 14 percent, respectively, to total global carbon dioxide emissions. However, these figures are projected to increase to 5 and 18 percent by 2025, roughly equaling that of the United States. This represents a 3.3 percent annual average percentage increase by China over the next 20 years, and a 2.9 percent increase for India, compared to a 1.5 percent increase for the United States.

The opportunities for China and India in the coming decades are huge, as are the challenges. The United States has an active policy of engagement with both countries to ensure that energy interests are pursued in a manner that seeks to engender cooperation rather than conflict or confrontation.

We are engaged with India on energy issues through our comprehensive Energy Dialogue. Energy Secretary Bodman launched this energy dialogue in May of this year. The Energy Dialogue builds upon the broad range of existing energy cooperation between the two countries and seeks ways to develop new avenues of collaboration. It is organized across five Working Groups with the following key goals; 1) Strengthening energy security through increased information and trade and investment in the oil and gas sector; 2) Advancing understanding of efficient generation,

distribution and use of electricity; 3) Enhancing the understanding of coal-related energy issues; 4) Promoting the development and deployment of clean energy technologies and energy conservation practices; and 5) Dialogue and action on issues associated with safe and secure civil uses of nuclear energy.

The recent visit of the Indian Prime Minister provided more opportunity to reach agreement on the details of this civil nuclear cooperation. The Joint Statement released during the visit stressed President Bush's desire to achieve full civil nuclear energy cooperation with India as it realizes its goals of promoting nuclear power and achieving energy security. The President would also seek agreement from Congress to adjust U.S. laws and policies, and the United States will work with friends and allies to adjust international regimes to enable full civil nuclear energy cooperation and trade with India. India would reciprocally agree that it would be ready to assume the same responsibilities and practices and acquire the same benefits and advantages as other leading countries with advanced nuclear technology. These responsibilities, among others, include taking a decision to voluntarily place its civilian nuclear facilities under IAEA safeguards and signing and adhering to an Additional Protocol with respect to civilian nuclear facilities.

India's decision in early 2004 to set up a strategic petroleum reserve was an important step in improving its energy security. The Chinese government is already working to establish four oil storage sites on the east coast of China with total storage capacity of about 100 million barrels. The Chinese government intends to start filling the SPR this year.

We have also established high-level dialogues with the Chinese leadership to improve cooperation on the crucial issue of global energy supply and coordination of energy policy. The U.S. and China are expanding cooperation on developing clean and renewable energy sources, which has important environmental as well as energy implications.

The U.S. conducts discussions on energy policy matters with China in a number of fora. Both China and the U.S. are active participants in the Asia-Pacific Economic Cooperation (APEC) organization's Energy Working Group. Work in the Energy Working Group in the recent past has focused on developing and implementing an Energy Security Initiative, which includes enhanced data transparency, sharing best practices for trade in

liquefied natural gas, strategic oil stock issues, and a Real-time Emergency Information System.

The United States has a number of cooperative technology arrangements with China, including clean coal technology and nuclear power issues. China, India and the United States also participate in several multilateral agreements to promote the development of transformational technologies needed to address climate change. These initiatives include the International Partnership for the Hydrogen Economy, the Carbon Sequestration Leadership Forum and the Methane-to-Markets Partnership.

These multilateral engagements are useful in encouraging Chinese behavior in the international economic and energy arenas that are consistent or harmonious with Western norms. Together with countries that share our sense of market economy and energy security, the USG may introduce and promote practices in China that would help it transition into the world economy in an effective and undisruptive manner.

We also work to support American firms from all industrial sectors in their efforts to invest and work in China through advocacy by the Department of Commerce, USTR, and State as well as our diplomatic posts in China.

The State Department initiated the U.S.-China Economic Development and Reform Dialogue in 2003 with the Chinese National Development and Reform Commission (NDRC), China's premier economic development agency. NDRC has the lead in broad macroeconomic policy and is involved in virtually every key sector of the economy. Through the Dialogue—which is flexible and informal in format—we have sought to move China toward a more market-oriented and rules-based economic system. The discussions have focused on long-term structural reform challenges, avoiding current bilateral disputes. NDRC puts a high priority on the Dialogue, and has recently initiated similar dialogues with the EU and UK, among others.

We have held three sessions since 2003, covering a wide range of topics, including energy, agriculture, macroeconomic policy, investment, and telecommunications. The next session of the Dialogue will be chaired by Deputy Secretary Zoellick, and is planned to take place in early August in Beijing.

The United State's broadest dialogue on energy with China is the new Energy Policy Dialogue that former Energy Secretary Abraham and NDRC Vice Chairman Zhang Guobao agreed to in May 2004. Secretary Bodman and Vice Chairman Zhang launched that dialogue on June 30 here in Washington with a session that focused on a general review of energy policies, petroleum stockpiling (strategic petroleum reserves), energy efficiency, and coal mine safety.

We hope that working closely with India and China will go far to increase their energy security as well as our own. Participation by China and India in the recent G8 Summit in Gleneagles is an example of the importance we hold for their growing role as an economic powers and as an energy consumers. Through the newly established "Dialogue on Climate Change, Clean Energy, Sustainable Development," the Leaders of the G8 will invite nations of the developing world and the transitioning economies, to join them in building on the progress achieved at the Summit.

As President Bush has said in recent months, "we need to help India and China become more efficient" [users of energy]. We need to discuss ways we can share clean energy technologies and help them reduce their own demand for crude oil and gasoline. By doing this, we will help ease pressure on global supply and thus help reduce gasoline prices here at home.

Many thanks for the opportunity to testify today.