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China's Energy Consumption and Opportunities for U.S.-China Cooperation to
Address the Effects of China's Energy Use

I first would like to thank the members of the Commission for the opportunity to testify to this important group. It is an honor and a privilege.

I have been asked to speak about China's approach to securing its energy supplies and implications. I will focus mainly on the first two issues for our panel since there are two other panelists much more qualified to discuss China's maritime security policy:

- What is China's approach to securing future energy supplies and does this encourage or impede cooperation among countries to promote secure and stable supplies globally?
- How have China's relationships with its land-based neighbors been influenced by its increasing energy consumption and how will the development of oil and gas pipelines influence China's access to petroleum? What new security challenges for China and the U.S. will arise from this development?

What is China's Approach to Energy Security?

The global energy emergence of China reflects the enormous scale of its rising oil demand and Beijing's increasingly active strategic diplomacy designed to secure future energy supplies. China is now the second largest oil consumer in the world and the third largest oil importer, accounting for roughly one-quarter of the growth in world oil demand during the past decade. China's three national oil companies (NOCs) have become important new players on the global oil industry scene and China is now a major factor in world oil demand and prices, production prospects in key energy-exporting countries, and the global oil industry competitive rules of the game. Energy ties abroad are expanding Beijing's diplomatic reach in key energy-producing regions and China's efforts to secure energy supplies and transport routes around the world and are increasingly affecting the shape and tenor of China's diplomatic ties and rivalries globally.

Energy security has become a critical political and economic concern for Beijing's leadership for several inter-related reasons. First, at a visceral level, China's leaders fear that domestic energy shortages and rising energy costs could undermine the country's economic growth and thus seriously jeopardize job creation. For a regime that increasingly stakes its political right to rule on economic performance and rising standards of living, the threat of economic stagnation raises real risks of social instability,

which could in turn threaten the continued political monopoly of the Chinese Communist Party (CCP). Hence, energy security is a strategic domestic political concern for the leadership. Beijing also has been alarmed, like other oil importing governments around the world, by the huge rise in global energy prices over the past four years and the increasing specter of long-term global oil “scarcity.”

China’s strong economic growth is spurring a concomitant rise in energy demand that is outstripping domestic energy supply and infrastructure capabilities. This supply-demand gap will become more acute over time and, in this regard, oil is a particularly sensitive problem. Over the next fifteen years, oil demand is expected to roughly double. By 2020 China will likely import 70% of its total oil needs and will become heavily dependent upon the Arabian/Persian Gulf to supply a large share of its future oil needs, and an increasing share of China’s oil imports will have to transit vulnerable maritime choke points. Other significant shares will be coming by tanker from Africa, by pipeline and rail from Russia, and by pipeline from Central Asia. More than 50% of China’s oil will have to transit the Malacca Straits. Added to insecurity over future tanker seaborne supplies, China has growing concerns about the reliability of Russia as a future energy supplier as well as seeing itself in competition with Japan, South Korea, and India for access to those potential Far East Russian energy supplies.

The same long-term trends are likely to hold for China’s natural gas needs, although import dependence will probably accelerate only after 2010. The U.S. Department of Energy forecasts that natural gas imports from Southeast Asia, the Persian Gulf, Africa, and Russia will account for 40% of China’s gas needs by 2025.

In short, China’s domestic energy supply-demand gap poses serious challenges to ongoing rapid economic growth. As this problem becomes more acute over time, energy imports will play an increasing role in China’s economy. Consequently, energy security has increasingly become an issue of the “high politics” of national security, not just the “low politics” of domestic economic policy.

For Beijing today, energy security has become too important to be left entirely to the markets. In response, Beijing has adopted an approach called the “Go-Out” strategy, a loosely coordinated range of efforts aimed at reducing China’s vulnerability to future oil supply and price shocks. Briefly, the main elements of the go-out strategy include a more active, energy-centric form of commercial diplomacy by Beijing’s leaders in the key energy exporting regions, combined with a more commercially-driven expansion of China’s three major NOCs—CNPC, Sinopec, and CNOOC—to secure equity investments in oil and gas fields abroad, with an emphasis on physical control over oil supplies. Additionally, the NOCs are pursuing a diversified slate of long-term crude oil supply market contracts and liquefied natural gas [LNG] supply contracts from a broad range of exporters to meet future needs. A further aspect of this loosely coordinated effort is Beijing diplomacy and NOC investments to promote development of new overland oil and natural gas pipelines that will diversify future transport routes for energy imports.

China's NOCs have acquired growing equity oil stakes and signed long-term crude oil supply contracts in the Arabian/Persian Gulf, anchored by growing involvement in Iran's oil and gas sector and more recently by growing energy and diplomatic ties with energy giant Saudi Arabia. China's focus on Central Asia has centered on the acquisition of sizeable equity oil stakes in Kazakhstan that will be shipped via a long-distance pipeline currently being built to western China. Russia has become an important crude oil supplier through its rail shipments to northeastern China, and has plans to build both crude oil and natural gas pipelines from East Siberia to China. China recently had its first success in establishing an equity oil position in Russia through the recent acquisition of Urdmurtneftgas.

China's NOCs have also built a large portfolio of oil stakes and supply contracts in Africa, centered on the NOCs' largest equity production position in Sudan's oil industry, along with growing investments and supply contracts with major West African oil exporters Nigeria and Angola. In the western hemisphere, China owns growing equity oil stakes in Canada's western heavy-oil belt and is building ties with Venezuela. China has recently acquired equity investments through a major acquisition in Ecuador, and a strategic energy alliance with Brazil's Petrobras. In Southeast Asia, China's energy acquisitions and supply contracts are growing rapidly in Indonesian oil and LNG, Australian LNG and natural gas supplies, and potential oil pipeline deals with Myanmar.

All told, China's NOCs now have equity oil production overseas of roughly 500 thousand barrels per day (MBD), equal to approximately 15% of China's oil imports. Beijing has signed "strategic" energy alliances of one sort or another with at least nine countries, including Iran, Sudan, Russia, Kazakhstan, Saudi Arabia, Brazil, and Venezuela. However, while seeking to expand its equity oil and state-to-state (or NOC-to-NOC) position, China still must rely on the open market for the vast majority of oil imports.

The decidedly mercantilist cast of the go-out strategy reflects China's sense of weakness and vulnerability regarding reliable access to energy supplies which has provided the rationale for significant state intervention and support. This mentality has been strongly influenced by a general mistrust of global energy markets. China's leaders believe they are facing an unstable and unforgiving global energy market that is dominated by sophisticated global oil companies, Western industrial countries, and unreliable and unstable-oil exporting countries. The market alone cannot be counted on to provide reliable oil supplies at reasonable prices. This helps explain Beijing's fixation on physical control of oil supplies through direct investment in the major producing countries, state-to-state cooperative agreements, and transport systems in which China has a stake.

Second, distrust of energy markets has been aggravated by the perception that these markets are dominated by the United States, a perception that overlaps with concerns that the United States is out to exploit China's energy weakness. U.S. strategic power in the Persian Gulf, the U.S. Navy's control over critical energy transport sea lanes, and what is perceived to be the power of the U.S. in the global oil industry and institutions, drive a perception in Beijing that the United States exerts a powerful influence on global oil

prices and flows. Strident rhetoric in the United States during the 2005 CNOOC-Unocal episode has reinforced the perception that the U.S. seeks to undermine China's access to secure supplies and reinforced suspicions in Beijing that the U.S. saw energy as an arena of strategic competition and that the U.S. intended to use its strategic power and leverage over access to global energy supplies to weaken China.

Third, in terms of energy sector capabilities, Beijing feels it is working from a position of weakness and must play "catch-up." Excluded from the major institutions governing global oil cooperation (such as the IEA) and forced to rely upon NOCs that are relatively new and weak competitors in the dynamic global oil industry, China feels dominated by the large, powerful, and technologically sophisticated oil companies that Beijing feels help to defend the interests of Western industrial countries.

All these factors combine to give a mercantilist character to China's energy security drive and to Beijing's rhetoric about its energy security concerns.

Does Beijing's Approach Encourage or Impede Cooperation?

As described above, Beijing's focus has been on a relatively "go-it-alone" approach to meeting its oil supply needs, with an emphasis on bilateral energy relations often including significant political, trade, and aid components, and reliance on investments abroad by its own state-owned NOCs to meet future oil security needs. This has certainly contributed to a more politicized and competitive environment, both regionally in Asia as well as globally, regarding access to and control over long-term oil and gas supplies. It has added to the zero-sum atmosphere that exists among today's oil importing and consuming countries. At the same time, Beijing has relegated regional or multilateral approaches to energy security to the back burner and often simply "lip-service". Moreover, in terms of domestic energy policy, Beijing until very recently has focused very little attention on energy conservation, improving energy efficiency, or reducing the rate of growth of oil and energy demand. This has limited prospects for energy cooperation with the U.S. or other Asian countries on energy efficiency and demand management efforts.

However, China's approach to energy security shows some signs of evolving gradually toward a more cooperative posture for a number of reasons. Most importantly, there is a growing perception among key policy advisors in Beijing that the current strategy is not fundamentally improving China's energy security. Oil demand and need for oil imports is simply growing too quickly to be met effectively through equity investments by China's NOCs and bilateral deals with producing countries. Demand is growing roughly 500 thousand barrels per day (MBD) annually, almost all of which will have to be met with imported oil. In five years China will be importing 6 million barrels per day (MMBD), compared to today's 3.5 MMBD. At best, China's NOCs expect to add perhaps a total of 500 MBD to their equity production in that five year period. The realization is growing that China's future oil supplies and security are ultimately tied to market access to crude oil rather than ownership of crude oil. This inevitably is leading policy advisors in Beijing to suggest that policymakers begin focusing on the stability of

the global oil market, stability of supplies, and unimpeded access to long-term contract crude supplies as the key to China's energy security, rather than outright ownership and control. Global market stability is impossible without international cooperation.

Related to this point, there is a growing sense in Beijing that the investment interests of China's NOCs in expanding abroad are not necessarily synonymous with China's national energy security interests. For example, the reality is that most of the oil produced by China's NOCs abroad is not shipped back to China, it is sold into the global market in the same way other global commercial oil companies do. The crude shipped to China reflects its particular value in China's refining system which needs mainly light, sweet crude. There is growing discussion that, while China should have strong, globally-competitive national oil companies commensurate with other global powers, China's energy security interests do not require heavy state support or unnecessarily controversial financial and diplomatic support for their NOCs.

In broader foreign policy terms, there also seems to be some recognition that the atmosphere of zero-sum energy competition is creating serious and potentially unnecessary collateral foreign policy disputes with key powers, most importantly the U.S. and Japan. While there remain suspicions about the long-term energy intentions of both the U.S. and Japan, there are concerns among those responsible for China's broader foreign policy interests that energy disputes are unnecessarily complicating these important diplomatic relationships. Moreover, there appears to be some growing realization that as China seeks to reassure other world powers that China's rise will be peaceful and non-threatening to the world, that one area where China can begin demonstrating a more responsible posture, a "responsible stakeholder", is in the management of the global energy system.

A final key change that is occurring in Beijing is a growing recognition that domestic energy policy in China, particularly regarding oil and coal use, needs to focus much more intently on energy conservation, improving efficiency, and demand-side reforms. Energy policy has traditionally been heavily supply-side driven, which partly explains the emphasis on accessing oil supplies abroad rather than addressing rapidly rising demand domestically. This is changing rapidly toward an understanding that demand cannot continue to grow on its current trajectory without disastrous environmental, infrastructural, and health consequences. This opens the door widely to a new interest in international cooperation on energy.

The result of all these underlying trends is that there appears to be the beginnings of a sense in Beijing that international energy cooperation is in China's interest. For example, China has become gradually more engaged and forthcoming with the IEA on its development of Strategic Petroleum Reserves. In recent meetings it has suggested that it was favorably inclined on issues such as coordinating strategic stock releases with the IEA during global market disruptions. This is new. Last December, China convened a Ministerial-level meeting of the major Asian energy importing countries, including the U.S., Japan, South Korea, and India to discuss common approaches to the importing countries' energy security concerns. In recent bilateral meetings with the U.S., both the

SED and the Energy Bilateral, China has expressed growing interest in energy cooperation with the U.S. on coal, natural gas, and oil issues. Beijing has also recently begun make new efforts to resolve energy disputes with Japan, in particular a long-running dispute over natural gas fields in the East China Sea. Recent China-Japan bilateral energy discussions also made substantial new progress on cooperation on energy technology, efficiency, and energy/environmental issues. In Southeast Asia, China has begun to show a more cooperative regional approach to maintaining the security of regional sea lanes and the Straits of Malacca from the threats from piracy and terrorism.

It would be premature to say that China's approach to energy security and energy cooperation has changed decisively from its "go-it-along" pattern of the past decade. However, there are significant indications that policy is evolving toward a policy that recognizes that the stability of the global market and reliable transport flows are more important than trying to carve out its own secure energy supplies and supply-lines unilaterally. As this develops, it is likely to lead to policies that increasingly support market stability through global and regional energy cooperation. Consequently, it is vital that the U.S. re-double its efforts to engage China across the board on energy cooperation internationally and bilaterally in order to encourage the positive evolution of these policies.

Energy, Pipelines, and China's Land-based Neighbors

China sees its land-based neighbors in Eurasia as key sources of oil and natural gas supplies that can help diversify China's growing dependence on these seaborne supplies of both oil and LNG. Russia, Kazakhstan, and Turkmenistan are all potentially large suppliers of oil or natural gas to China and the rest of Asia and the logistics of pipeline transport favor much of that oil and gas moving to China.

For this and many other strategic reasons, China has worked assiduously over the past decade to establish closer energy and diplomatic ties with Russia and the key Central Asian energy rich states. Many analysts have expected energy to become one of the main sinews to cement a strong set of strategic ties between China and Russia and between China and Kazakhstan. For the U.S., the idea that China and Russian strategic ties would strengthen as a result of a strong energy alliance raised questions of the implications of Eurasia's two major powers increasingly closely aligned in policies potentially seeking to reign in U.S. power in influence in Asia and globally.

In reality, energy investment and trade have indeed helped cement improving strategic relations between China and Kazakhstan. China's NOCs have acquired several major oil production assets since the mid-1990s and now control nearly 25% of Kazakhstan's crude oil production. The first leg of a major oil pipeline from western Kazakhstan to China's western border was completed last year and is currently delivering 200 MBD, with expansion plans to take the pipeline to 400 MBD over the next few years. China also has signed a Strategic Energy Alliance with Kazakhstan. In the next 20 years, it is possible that up to 1MMBD of crude oil could flow to China by pipeline from Kazakhstan,. However, market drivers suggest most of Kazakhstan's crude is more likely to flow west

through the CPC pipeline to the Black Sea with new supplies from the Kashagan offshore field due to come in the next several years going into an enlarged Baku-Ceyhan pipeline to the Mediterranean coast. Both sides have also recently discussed a potential natural gas pipeline to China as Kazakhstan's gas production ramps up over the next 5 years of field development. All of this has led to a strong strategic relationship with Kazakhstan, encompassing energy cooperation, military cooperation, and growing trade and investment.

However, the Sino-Russian energy relationship has been tortured and fraught with cross-currents of competition, suspicion, and Russian energy policy paralysis and, hence, has done little to bring the two Eurasian powers closer together, yet. China has been receiving 250 MBD of crude oil delivered by rail over the past several years and these volumes are contracted to increase gradually, assuming Russia invests in expanding its Far Eastern rail capacity. Russia has finally, apparently, begun to build a long-promised oil pipeline from Angarsk to a point near the Chinese border, but details on that remain very sketchy. But Russia's repeated promises to build gas pipelines to China have been stalled by the re-centralization and re-nationalization of much of the oil and gas industry during the Putin era which has paralyzed major new projects in East Siberia and Sakhalin Island. This includes both Sakhalin Island projects and the Irkutsk gas project in Eastern Siberia. Second, even where the Kremlin has had unchallenged control of gas resources in Western Siberia, it has failed to follow-through on repeated promises, made as recently as March 2006 by President Putin in Beijing, to build a major West Siberian gas pipeline to China. China has also been rebuffed several times when it tried to make equity investments in producing oil assets in Russia, only recently finally successful in gaining control of Urdmurtneftgas in a recent auction. Finally, Russia has become a major obstacle to China's hopes to access potential pipeline gas from Turkmenistan and Kazakhstan. In a recent deal Russia has locked up large future supplies of gas from both countries to move north to Russia, which is likely to leave insufficient gas supplies to justify a gas pipeline east to China.

So Sino-Russian energy relations have been rocky, at best, despite the natural strategic resource fit. Over the long-run, however, the logic of more oil and gas moving from Russia to China are compelling and volumes are likely to grow. The question is how much and at what pace of growth.

Therefore, in China's straightforward energy security calculus, it is likely that Russia and Eurasia will be important future suppliers of both oil and gas and should help diversify China's sources of oil and gas imports. However, these supplies are likely to only marginally reduce China's dependence on seaborne oil and gas imports. Most forecasts suggest a range of oil exports from Kazakhstan over the next 20 years of possibly up to 1 MMBD, but more likely in the range of 500 MBD since most Kazakh oil exports are likely to move west to markets in Europe. Russia could potentially export 1-2 MMBD to China in 20 years, but most likely in the 1 MMBD range given the somewhat less robust oil reserve picture in East Siberia and the Russian Far East. Most likely combined would be in the 1.5-2.0 MMBD range in 20 years. Alternatively, on current trends, in 20 years China is likely to be importing roughly 10-12 MMBD worldwide. So an important

source of supply and an important source of transport diversification, certainly, particularly as it will mainly be by overland pipeline rather than seaborne supplies. Another small increment of oil imports could avoid the Malacca Straits through a proposed oil pipeline through Myanmar that may or may not get built. Nevertheless, China's dependence on seaborne supplies from the west, mainly the Middle East, transiting the Malacca Straits will remain profound, accounting for a minimum of 70-75% of China's oil imports.