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CHINA AND LONG-RANGE ASIAN ENERGY SECURITY

An Analysis of the Political, Economic, and Technological Factors

Shaping Asian Energy Markets

China has achieved remarkable economic progress over the past ten years, leading to speculation that it may rival the U.S. as a superpower in the 21st century. However, China's meteoric economic success did not derive in great measure from central planning agendas and blueprints. Significantly, it rose spontaneously from the loosening of the central economic authority over China's provinces, municipalities, and localities. Understanding this fact is critical to the process of weighing Beijing's future.

China is a society in flux. The country's political, legal, and economic institutions have all undergone major shifts over the past twenty-five years and are likely to see further transformation. In particular, China's government faces extraordinary challenges and excruciating choices in promoting the sustainable growth that is important to bolster its long-term legitimacy.

China's energy sector is one of the key areas in which dramatic change can be expected in the coming years. Cheap, readily available energy sources will be critical to China's economic expansion, just as such resources played a major role in the industrial revolution and rapid economic development in the West. China's economy is now heavily dependent on coal resources for about 73 percent of its energy use, but this reliance presents serious challenges for the country. Continued economic development can also be expected to increase substantially China's requirements for oil and natural gas.

China's Rising Energy Demand

China's economy experienced double-digit growth in the first half of the 1990s and over 8 to 9 percent per annum since 1996. Total primary energy use has risen from 665 million tons of oil equivalent (mtoe) in 1990 to 935 million mtoe in 1996.

Total primary energy consumption in China could grow from 916 million tons of oil equivalent (mtoe) in 1995 to 1,405 mtoe to 1,774 mtoe by the year 2010 and 1,762 mtoe to 2,691 mtoe by 2020 (Soligo, Medlock, 1999).

As economies develop, they inevitably undergo certain structural changes. These changes are characterized by increasing industrial activity as well as shifts in the structure of consumption towards energy-consuming durable goods such as automobiles and residential appliances. These shifts have a direct effect on total demand for energy and its composition.

While the bulk of total Chinese energy demand will continue to come from industrial activities for the foreseeable future, the transportation sector is beginning to represent an increasing share of total energy use. In fact, at a per capita GDP growth rate of 5 percent, energy demand in the transportation sector is projected to triple by 2015, fueling a sharp increase in oil and petroleum product use.

Oil is likely to remain the predominant energy source globally for the transportation sector well into

the 21st century. While alternative engine systems might play a limited role in dampening demand for diesel and gasoline fuel in industrialized countries during the next decade or so, they are unlikely to represent a major share of the market until 2020 or later. Some pilot programs are being conducted to develop nonhydrocarbon-based energy technologies in certain industries, including transportation sectors in China. But it is unlikely that China will be able to cope with rising dependence on traditional fossil fuel resources in the coming years by leapfrogging to alternative energy technologies.

Chinese oil demand has risen from 2.1 million barrels per day (b/d) in 1990 to 3.95 million b/d currently. In the last few years, China has slowly become a net importer of crude oil. But these imports, averaging 500,000 to 700,000 b/d for the last two years, have yet to be a major factor in Beijing's international calculus. However, as China's economy continues to expand, China's oil consumption is expected to grow while its domestic crude oil production is likely to remain flat or even decline slightly. As a result, Chinese imports of crude oil and petroleum products are expected to increase steadily.

Depending on China's pace of economic growth, its oil use is projected to climb from 3.3 million b/d to between 5.4 million and 7 million b/d by 2010 (Soligo, Medlock, 1999). This will represent roughly 18 to 24 percent of total Asian oil demand and 5 to 7 percent of total world demand, making China's influence on and vulnerability to oil markets significant. By comparison, U.S. oil use will represent around 20 percent of world demand and Japan 6 percent in 2010. China domestic oil output is likely to remain around 3.1 million b/d given the high costs for developing and transporting the oil resources of Western China. Flat Chinese oil production will leave a gap of two million to 3.5 million b/d that will have to be covered by imports in the coming years.

In an effort to diversify from the troubled domestic oil sector, state-concern China National Petroleum Corp. (CNPC) has responded to China's expected boom in oil demand by making huge investments in foreign oil fields in Kazakhstan, Peru, Venezuela, and Sudan. It has announced plans to invest in Iraq's oil industry after United Nations sanctions against Baghdad are lifted. China also has proposed projects to

transport Caspian oil and gas production by pipeline to China directly or through Iran to the Persian Gulf and to form an exploration venture in Iran in return for a higher allocation of crude oil. To the extent that China deepens its oil and military relationships with Iraq or Iran, a conflict between either of those countries and a U.S. ally in the Persian Gulf could draw China into conflict with Western powers.

Ironically, China's oil sector may not be able to benefit directly from access to large volumes of oil from Iraq and Iran. Aged and unsophisticated oil refining equipment throughout most of China means that China is limited in the quality of oil it can process. China cannot refine large amounts of most of the lower quality supplies that are produced in Persian Gulf countries such as Iraq, Iran, Saudi Arabia, and Kuwait. By 2005, China is only likely to be able to process little more than one million b/d of this lower quality Persian Gulf oil, though it will be able to import higher-quality supplies from Abu Dhabi, Yemen, or Oman. This commercial constraint will reduce at least the economic incentive for China to pursue client-state oil for arms alliances with any of the major Middle East producers unless large-scale investments can be made in its domestic refining sector. High production and pipeline transport costs for oil shipments from neighboring Kazakhstan mean that economic and commercial factors alone can't justify major pipeline projects across China unless international oil prices top \$14 to \$15 a barrel (in current dollars) for a prolonged period.

While growth in Chinese energy use in the transportation sector will likely be highest, demand for energy in both the residential and commercial sectors, as well as the industrial sector, may nearly double by 2015. To the extent that the industrial, residential and commercial sectors are coal intensive, this will have considerable ramifications for the environment (coal emits 34 percent more carbon per British Thermal Unit (BTU) than oil and 81 percent more carbon than natural gas). For example, by 1992, China was already emitting 55 percent of the U.S. level of carbon emissions from industrial processes. China's per capita CO₂ emissions could rise from 2.44 metric tons to 3.77 metric tons by 2010 (Warby, Hartley, Medlock 1999). But the costs of Beijing trying to limit this rise in emissions in line with the Kyoto agreements will

be prohibitive. In the year 2020, Chinese attempts to limit emissions in line with available production technology would result in GDP levels 27 percent lower than if emissions are not constrained (Sickles, Jeon, 1999). Given the other pressing social, economic, and health challenges facing China, its leaders are unlikely to make control of greenhouse gases a priority, barring some form of massive subsidy from advanced economies.

At the margins, China may try to lessen environmental consequences of rising coal use by switching to other resources where possible. In this case, oil demand would rise by a greater amount than the projections listed above, which are based on a constant proportion of oil and coal in China's energy mix.

While progress has been made in recent years in the development of alternatives to fossil fuels for power generation, these alternatives are unlikely to have significant impact on energy markets until after 2020. Fusion-driven power generation is ten to twenty years away from commercialization under the best circumstances. The commercialization of fuel cell technology is more advanced, particularly in the power generation sector, but broad application in either China or the industrialized world could still be decades away.

Natural gas remains a viable alternative to expanding coal and oil use in China. Natural gas could rise from 2 percent of China's current mix to 8 to 10 percent by the year 2020 if the Chinese government quickly gives priority to the natural gas sector (Xu, 1999). Such an increase could possibly be met by augmenting domestic gas production to 100 billion cubic meters (bcm) and arranging to import 60 bcm of natural gas by 2020. Current Chinese natural gas production is 22 bcm. About 8 bcm is used in chemical industries (mainly for fertilizer manufacturing) and 6 bcm in the residential sector.

China's natural gas policy is likely to begin with greater domestic exploration. But import arrangements are also being pursued that might bring gas from neighboring regions. Inland Chinese markets can be served by pipelined gas from east Siberia and Central Asia while its southeastern coastal demand can be met by liquefied natural gas imports, mainly from Southeast Asia and the Middle East. China's southern provinces alone are expected to see demand for gas-generated power reach 11 to 18 bcm by 2005

and 20 to 35 bcm by 2010.

The Geopolitical Consequences of China's Rising Energy Needs

Over the past few decades, China has had the luxury of neutrality toward oil geopolitics. Oil prices inside China were fixed by the state central planners and had no relation to world price levels. Internal supplies fairly evenly matched domestic requirements. China's economy was sheltered from the volatile international oil scene, and therefore, its leaders could be indifferent to conflicts in the Middle East or elsewhere. Oil disruptions neither hurt nor helped China substantially.

By contrast, the U.S. economy, as a major consumer and importer of oil, was vulnerable to rapid, sustained swings in international oil prices, dictating foreign policies that would promote stability in international oil markets. The U.S. Navy defended Persian Gulf supplies while U.S. policymakers worked to remove political and economic barriers to oil development outside the volatile region. The Soviet Union was a major oil exporter, and its economy benefited directly from rising oil prices. Its interests in oil markets were diametrically opposed to those of the United States. Soviet oil interests so diverged from America's that policy theorists in the 1980s suggested that the U.S. would benefit from events that could drive oil prices lower to hurt the Soviet treasury.

The implications of China's shift to a world energy importer are significant. Over the next ten to twenty years, China will have to participate in international energy trade on a substantial and sustained basis, form energy supply and transportation alliances, and make security and environmental choices about fulfilling its future burgeoning energy needs. These alliances and trade and policy options will be constrained by the unwieldy organization of China's oil and gas industry and by the aged and inefficient refining and distribution infrastructure that exists in China today.

Unlike the U.S., China does not have the military capabilities to protect its energy security once it becomes dependent on foreign supplies. China lacks air and naval power projection necessary to control

international sea lanes or reopen vital waterways such as the Strait of Hormuz in the Persian Gulf. China cannot stage a military intervention in a distant locale such as the Persian Gulf. Given its limited military budgets and current capabilities, China's military is unlikely to attain such capacity in the next several decades. It is 30 to 50 years away from the type of comprehensive, across-the-board technological modernization of its naval and air forces that could challenge American power in the sea lanes. Its ballistic, antiship, and cruise missile capability--while able to threaten energy trade and commercial shipping in Asian waters, among other targets--is not sufficient to defend fully its own incoming shipments of oil and other goods from retaliation in response to its own aggressive acts.

By the same token, neither China's leadership nor its oil and gas industry institutions are likely to be strong diplomatic or commercial substitutes for military means in defending access to international energy supplies. Given the central government budget deficits, the capital shortage faced by most industries in China, including the energy industry, and the very high social, political, and economic costs of implementing a full-scale reorganization of the state energy sector, it will be extremely difficult for Beijing to be a strong international player in the strategic oil and gas arena.

China's oil and gas companies are expected to be constrained by financial pressures and the need to raise profitability, limiting the scale of geopolitically-driven foreign oil field investments they can take on behalf of the central government. As the central government's ability to offer tangible economic benefits and commercial privileges to the energy sector companies weakens, the commitment of those companies to China's national foreign policy agenda is likely to weaken as well. Increasingly, China's oil and gas giants, such as CNPC and Sinopec, are seeing the state's influence erode in guaranteeing markets, domestic prices, and capital for infrastructure investments. Provincial, municipal, and local actors are encroaching on CNPC and Sinopec's turf and causing energy pricing and marketing competition through import channels and locally privatized oil sector businesses. Ongoing liberalization and restructuring in the energy sector is likely to accelerate this process.

The central government's decreasing influence on the domestic energy sector--as well as its military limitations--raises serious doubts about concerns that China's rising dependence on foreign oil supplies will cause geopolitical instability in Asia and drive regional arms races. While it is true that China will increasingly compete for similar energy supplies with Japan, South Korea, and India, the possibility that this will lead to increased tensions and conflict does not have to be a foregone conclusion. In formulating China's future foreign policy in light of changes in its energy supply balance, China's leadership will have to take a hard look at the possible outcomes from competition and conflict over energy resources and compare them to the potential benefits of cooperation on energy matters.

China's increasing dependence on the same energy sources as the U.S., Japan, and other industrialized economies means that its strategic interests could actually blend more closely with Western interests in the Middle East. A rising reliance on Persian Gulf oil and gas imports imply that China will suffer the same negative consequences as the U.S., Japan, and Europe if military equipment it or others pass to regimes such as those in Iraq or Iran is used to interdict the free flow of oil from the Middle East or elsewhere. A breakdown in order in Afghanistan or Central Asia will have similarly dire consequences for China's chances of tapping Caspian energy supplies. However, it remains to be seen if China's energy interests will be enough to alter China's military's perceptions of its own more general strategic interests, particularly on the issue of weapons nonproliferation. China may continue to perceive a benefit from deep U.S. involvement with concerns in regions other than Asia.

China's move away from self-reliance in its petroleum and natural gas sectors will enhance its interests in free navigation in Asian sea lanes in which the U.S. Navy plays a major role as defender. Ironically, this change for China will coincide with a greater U.S. reliance on energy supplies from its own Western hemisphere, potentially raising burden-sharing issues with Asian nations about the expense of the U.S. military role in the Persian Gulf. It remains to be seen whether China's leadership can publicly acknowledge and accept the reality of the benefits it might incur from the U.S. naval presence in East Asia and the

Middle East. For now, the regime still criticizes Japan for its reliance on “third parties” and calls for the U.S. to remove its military from Asia on the grounds that the Cold War threat has been resolved. To some extent, China’s economy could be shielded from the negative consequences of a temporary cut-off in oil supplies as a result of a major disruption by its heavy use of coal in vital industries. But it would still have to implement uncomfortable--and potentially destabilizing--major consumer sacrifices.

The wide distribution of media throughout China, including the rise of the Internet and expansion of access to foreign-sourced programming for television is challenging the hegemony of the symbols and messages of the Chinese Communist Party, providing alternative images of consumerism, conspicuous consumption, and self-fulfillment. As media outlets expand, awareness is likely to grow regarding disparities within Chinese society and between PRC citizens and people living in Hong Kong, Taiwan, the United States, and other rich societies. The material demands of the Chinese population are likely to intensify.

With a broad sampling of Chinese now watching television, advertising can be targeted at middle class Chinese who might desire lavish vacations, air-conditioned homes, and private cars--all of which drive up the demand for energy exponentially.

The Chinese central government has fought back against this bombardment of foreign images by delivering competing messages of socialist values, but ultimately, Beijing faces a near impossible task to monitor and control the symbols being circulated at the local level throughout China. The net result could easily be a society increasingly unwilling to forego consumer goods and unlikely to conserve in its energy consumption. This fact will make the imposition of curbs on energy use more costly politically and give the Chinese leadership pause in taking adventurous military actions that could result in a cut-off in energy imports.

China and Its Neighbors: An Energy Bridge?

China sees itself both as an emerging gas market and as a land bridge for regional gas distribution. A natural gas-oriented energy strategy could provide an

incentive to China to give serious consideration on how to improve relations with neighboring countries. But, in order for joint energy linkages and large-scale, cross-border energy projects to succeed, distrust surrounding China’s long term geopolitical goals will have to be overcome.

Already, China has pursued border discussions with Vietnam through diplomatic initiatives that could lead to joint exploitation of oil and gas resources in border areas in the Beibu Gulf. However, border disputes in the South China Sea remain an area of strain. China has also sought Japanese and South Korean financial support in constructing transportation infrastructure for natural gas shipments from Russia and Central Asia to China, Japan, and South Korea. Cooperation on the latter would, however, require a resolution of tensions in the Korean peninsula. Past actions of the North Korean government, the presence of large military units on the NorthSouth border, a ballistic missile capability, the potential development of a nuclear threat from North Korea, and the dire economic situation in the North are all reasons for worry with regard to the Korean peninsula. Energy issues represent only a very minor factor in the equation.

As China has shifted to a nonrevolutionary stance in international relations, seeking to establish a “socialist market economy” and pursuing peaceful regional cooperation, new, more positive public attitudes toward China have emerged in some quarters--though dark suspicions remain in others. Objective evidence of the former trend can be seen in changing patterns of diplomatic recognition, shifts in public rhetoric, and rising trade and investment figures. Privately, however, the intellectual elites of Southeast Asia continue to voice suspicions of long-term Chinese intentions as suggested by aggressive actions in the Spratley Islands and strategic flirtation with Burma. Such attitudes find their roots not in anti-Communist sentiment but in long-standing historic suspicions of Chinese imperial intentions.

A variety of historical experiences have shaped attitudes toward China among the region’s populations and elite. Certainly, the perspective of Vietnam has been formed by the long, often contentious, association with China, which included a thousand years of Chinese occupation. In Indonesia, more

recent history reinforced antagonism against China. The close relationship between the People's Republic of China and the now defunct Indonesian Communist Party and the alleged role of China in the failed Communist/Sukarno putsch of September 1965 have colored Indonesian-Chinese relations for decades. Sino-Japanese relations are also influenced by a long, bitter history of war and, more recently, regional and international economic competition. Japanese elites remain deeply suspicious of China's long term intentions and worry about Chinese initiatives to disrupt free navigation in Asian sea lanes.

But it is the final status of Taiwan that looms largest as a dangerously volatile issue between China, neighboring Asian nations, and the U.S. The importance of this issue to China, which maintains that Taiwan is an integral part of its country, cannot be underestimated as Beijing has threatened to respond to any declaration of independence on the part of Taiwan with military action. While the U.S. has explicitly acknowledged Taiwan's territorial relationship as a part of the People's Republic of China, the implementation of that status remains a delicate matter between the U.S. and China--one that, if mishandled, could lead to direct military conflict.

The Special Case of U.S. Relations With China

During the Cold War years, the U.S.-China relationship was handled only at the highest level of power. Now increasingly, subgroups of social groups, special interests, and civil society are providing a richer texture to China's relations with the U.S. In the longer run, these underlying layers will have a deep influence on the development of U.S.-Chinese relations.

China's economic reforms have added new interactions between the heads of each society's major corporations. China's external relations are also molded by the relationships between networks of Chinese entrepreneurs, often connected through extended family ties. These business networks extend from the Chinese mainland throughout the Chinese Diaspora. On still another level, China's relationships with the outside world will be colored by the relationships between

representatives of and/or advocates for dissidents, political exiles, religious groups, ethnic minorities, and other disaffected groups scattered throughout China but that have external supporters in the U.S. and elsewhere.

American business interests in China are diverse and sometime contradictory. In addition, the situation of certain suppressed religious and ethnic groups remains a major thorn in China's side in its interactions with the international community and media. The human rights issues raised by these groups throw a huge amount of unpredictability into China's future development and its relationship with the U.S. and other nations.

U.S. public opinion of China is influenced by the fact that China remains an authoritarian nation. China's sensitivity to matters of territorial integrity, no matter how understandable from a historical perspective, represent a constant source of tension. But those political analysts that call on the U.S. to act quickly to contain China also exaggerate its current and future strength.

China may strive to upgrade naval, missile, and other military capabilities, but it is far from dedicating the resources to become a plausible military rival to the U.S. within the next 30 to 50 years. In this important manner, it differs sharply from the Soviet Union in the 1940s and 1950s.

In the late 1940s, the Soviet Union, by dint of its immense human and financial resources, its impressive land force, and its contiguous border to Europe, represented a direct and immediate threat to the U.S. and its allies. China today possesses no such parity, even from challenging U.S. supremacy in East Asia. A second key difference between the Soviet Union and China today is the evidence of expansionist intent. The Soviet Union, by force of arms, created a large series of subject states on its borders. China possesses no comparable empire and holds few alliances, nor can it boast rival institutional challengers such as the Warsaw Pact or COMECON. Rather, China seeks membership in international bodies where the U.S. wields considerable power, such as the International Monetary Fund and the World Trade Organization.

Finally, China poses no ideological threat to the U.S. China's nominal communist system no longer serves as an item for "export," and its current path of

economic reform puts it more closely on course with the international status quo than with revolutionary zest. Unlike the Soviet Union, China is likely to compete with the U.S. within an international system largely created and dominated by the U.S. and U.S.-led institutions.

All this means that the U.S. can embark in a systematic manner on a policy of constructive engagement with China and can take a wait and see approach to containment policy with regards to China—a luxury that was not available to U.S. leaders in the 1940s where the Soviet Union was concerned.

Policy Recommendations

The U.S. should elaborate a coherent policy framework on matters of energy security within the AsiaPacific region and assist with the formation of regional institutions that encourage cooperation among Asian nations to counter tendencies toward rivalry and competitive military buildups. Such cooperation can enhance Pacific security and the peaceful resolution of territorial issues. The U.S. should take an active role in engaging China in this process.

U.S. political and military leaders should communicate clearly to their Chinese counterparts about areas of emerging mutual interests, particularly with regards to energy security issues in the Persian Gulf. Discussions of weapons proliferation should be broached in the context of converging oil geopolitical interests.

The U.S. should embark in a systematic, comprehensive manner on a policy of constructive engagement with China and take a wait and see approach to containment strategies. Clear, direct, and open dialogue with China should be maintained, particularly on sensitive issues and conflict resolution.

In this respect, U.S. policy-making towards China should be coordinated at a high level. Negotiations on wide-ranging issues, such as trade, energy, environment, weapons proliferation, security, geopolitics, Asian regional issues, and academic and research exchanges, should be guided by a broader, more consistent, and comprehensive set of goals and guidelines developed and communicated effectively through inter-agency working groups. In this fashion, the

U.S. could develop as clear and consistent dealings as possible with China's leadership at many levels of its government and private business.

China should make development of natural gas resources a key priority of its national energy policy. The U.S. should encourage and assist China in enhancing its natural gas industry as a means to diversify away from heavy reliance on coal. The U.S. Department of Energy should be supported strongly in its efforts to provide information and assistance about natural gas market regulation, operation, and development. Western government and nongovernmental agency support and trade credits should be provided to energy companies that invest in major natural gas infrastructure projects in China.

The huge scale of growing greenhouse gas emissions from developing countries such as China, India, Brazil, and Indonesia casts doubts on the effectiveness of the Kyoto accords to reduce greenhouse gas emissions if these countries aren't included. Cleaner, more efficient emerging technologies in the automotive and power sectors could eventually help fill the gap that the Kyoto agreement leaves behind in reducing overall levels of global emissions from key developing nations. Emerging technologies in the field of transportation and power generation could play a critical role in reducing CO2 emissions in emerging economies where major infrastructure investments remain to be made. While relatively inexpensive energy prices may seem to obviate the need for government-support of emerging energy technologies such as cost-effective fuel cell generators or hybrid vehicle automobiles, environmental considerations may justify public support for research on innovative technology.

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