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The Commission was created in October 2000 by the Floyd D. Spence National Defense Authorization Act for 2001 sec. 1238, Public Law 106–398, 114 STAT. 1654A–334 (2000) (codified at 22 U.S.C. sec. 7002 (2001)), as amended, and the "Consolidated Appropriations Resolution of 2003," Public Law 108–7, dated February 20, 2003. Public Law 108–7 changed the Commission's title to U.S.-China Economic and Security Review Commission.

The Commission's full charter is available via the World Wide Web: http://www.uscc.gov and begins in Appendix I, page 233.

IN MEMORIAM

This Report is dedicated to the memory of the Honorable Robert A. Bean, who served the Commission with distinction as a key advisor and director of Congressional and public affairs. He was a trusted and highly valued close advisor and good friend to the Chairman, Vice Chairman, Commission Members and staff. Bob's passing on May 14, 2004, was tragic and untimely. He will be deeply missed by all who knew him.

U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION

JUNE 10, 2004

The Honorable TED STEVENS,
President Pro Tempore of the U.S. Senate, Washington, D.C. 20510
The Honorable J. DENNIS HASTERT,
Speaker of the House of Representatives, Washington, D.C. 20515

DEAR SENATOR STEVENS AND SPEAKER HASTERT:

On behalf of the U.S.-China Economic and Security Review Commission, we are pleased to transmit our second annual Report to the Congress, pursuant to Public Law 106–398 (October 30, 2000), as amended by Division P of P.L. 108–7 (February 20, 2003). The Commission has again reached a broad and bipartisan consensus, this year approving the Report by a unanimous vote of all eleven Commissioners (11–0), on the most important aspect of our mandate, "to monitor, investigate, and report to Congress on the national security implications of the bilateral trade and economic relationship between the United States and the People's Republic of China."

The Report includes a detailed treatment of our investigations into the areas identified by the Congress for our review and recommendations in the amendments of 2003. These areas are: China's proliferation practices, China's economic reforms and U.S. economic transfers to China, China's energy needs, Chinese firms' access to the U.S. capital markets, U.S. investments into China, China's economic and security impacts in Asia, U.S.-China bilateral programs and agreements, China's record of compliance with its World Trade Organization (WTO) commitments, and the Chinese government's media control efforts.

The Report is organized into an Executive Summary, which highlights our general assessments, conclusions and key recommendations in the areas of investigation, and is followed by detailed treatment of each area in nine separate chapters. We believe the level of bipartisan consensus the Commission has achieved is significant given the number of controversial issues the Congress directed us to investigate, and the continuing and growing concern over the direction of the U.S.-China relationship politically, economically and strategically over the next decade or more. We have operated under a key assumption of our mandate, that the United States' economic health and well-being are a fundamental national security matter, including the maintenance of a strong manufacturing base, a vigorous research and development capability, the ability to maintain our global competitiveness and a healthy employment level and growth rate.

This Commission arose from the debate that led the Congress to approve Permanent Normal Trade Relations (PNTR) for China and U.S. support for China's admission to the WTO, despite the fact that China clearly had not achieved the level of free market development normally required for WTO membership. The administration argued strenuously during that debate that including China in the world trading system would lead to political reform and a more open Chinese society to accompany the development of market economics. These expectations have, so far, been disappointed by China's lack of progress on any important measurements of political reform, human rights, openness, and the building of democratic institutions. That is the central dilemma of our bilateral relationship: that China remains an undemocratic, authoritarian state, while it is opening its market and seeking the respect and support of its trading and investment partners. This gap between our political and value systems is magnified by the fact that we compete for economic and political influence in Asia. As a result, the U.S.-China relationship is variously categorized as strategic engagement and competition. In some areas there is promising cooperation, in others sharp antagonism.

Certain fundamental issues have guided the Commission's work, and they span the broad range of topics mandated for review by the Congress. Those central issues include the questions of China's progress in four broad areas: (1) market reforms and trade commitments, (2) cooperation with the United States on national security matters, (3) policies toward openness, human rights, democracy-building, and the rule of law, and (4) the quality of the overall bilateral relationship. In most of these areas, the Commission believes China's progress has been far less than satisfactory, and that it is in the U.S. interest to continue to press China to do more. On the range of questions dealing with openness, human rights, democracy-building, and the rule of law, the Commission believes China simply fails to meet a minimal standard of progress.

This Report includes a number of recommendations for Congressional action, ranging from fair dealing in a range of economic arenas, to policies on media openness, to diplomatic strategies such as in the case of North Korea's nuclear weapons program. Some of these recommendations involve renewed efforts to cooperate with the Chinese in a number of areas where we believe the United States must use its influence to encourage China to live up to its commitments and to act as a responsible world power. In all cases, our success will depend to a large extent on the level of cooperation between the executive branch and the Congress on fashioning policies for dealing with China. Success will also depend on other countries actively engaging in a cooperative process with the United States.

The Commission believes that U.S. policies must be firmly grounded on the calculus of what will strengthen and advance our nation's economic health and national security—in a nutshell, our national interests. Second, although it is unrealistic to expect the United States to fundamentally transform the beliefs, structures, and governing dynamics of China's Communist dictatorship, we should continue to advocate strongly democratic values and principles, remembering that in the past strong American actions and influence have successfully brought about such values and practices in Japan, South Korea, the Philippines and Taiwan. On both scores, we can and should do better.

The Commission used a number of approaches to conduct its work on behalf of the Congress, including holding eleven public hearings on a broad range of topics, including field hearings in Columbia, South Carolina, and San Diego, California; new research in a variety of relevant areas; classified briefings from the intelligence community; and fact-finding visits to Asia and also the WTO in Geneva. We published complete hearings records, together with preliminary findings and recommendations in separate volumes for each of our hearings. The original research funded by the Commission is also posted on our Web site (www.uscc.gov).

We believe that this Report will provide a baseline for assessing progress and challenges in the U.S.-China relationship. We believe that the relationship is still in a fluid state and that the United States has an historic opportunity to help move China in directions that will be beneficial for its own development and for peaceful bilateral relations with the United States, the Asian region and the world community. In many ways, we believe the direction of the world trading system, and so-called globalization, will be significantly influenced by the progress that is made in our bilateral relationship. We encourage the Congress to become a genuine partner with the administration in formulating and evaluating this complicated and many-faceted relationship because we are persuaded that the quality and success of American policies toward China are far more likely to succeed if they originate from a bipartisan consensus with the administration. We hope this Report and the continued work of the Commission will contribute to facilitating and informing that process.

Yours truly,

Roger W. Robinson, Jr.
Chairman

C. Richard D'Amato
Vice Chairman

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EXECUTIVE SUMMARY

This Report sets forth the Commission's analysis of the U.S.-China relationship in the designated areas of investigation in our Congressional mandate: China's proliferation practices, China's economic reforms and U.S. economic transfers to China, China's energy needs, Chinese firms' access to the U.S. capital markets, U.S. investments into China, China's economic and security impacts in Asia, U.S.-China bilateral programs and agreements, China's record of compliance with its World Trade Organization (WTO) commitments, and the Chinese government's media control efforts. Our analysis, along with recommendations to the Congress for addressing identified concerns, is chronicled in the Report's nine chapters, and summarized herein.

OVERALL ASSESSMENT OF ECONOMIC AND SECURITY CHALLENGES

Along with specified areas of investigation, Congress gave the Commission the overarching mission of evaluating on an annual basis "the national security implications of the bilateral trade and economic relationship between the United States and the People's Republic of China (PRC)." As reflected in our Congressional mandate, the Commission takes a broad view of "national security" in making this assessment. We have attempted to evaluate how the U.S. relationship with China affects the economic health of our nation, our industrial base, the military and weapons proliferation dangers we face, and our political standing and influence in Asia. Taken together, these elements paint a full picture of how the relationship impacts our broader national security interests.

Based on our analyses to date, as documented in detail in our Report, the Commission believes that a number of the current trends in U.S.-China relations have ***negative implications*** *for our long-term economic and national security interests, and therefore that U.S. policies in these areas are in need of urgent attention and course corrections.*

Nonetheless, the Commission believes that the time is ripe for putting the U.S.-China relationship on a more solid, sustainable footing from the perspective of long-term U.S. interests. The U.S.-China relationship is still in the relatively early stages of its development and is marked by a fluid rather than static environment. The United States has played—and continues to play—an enormous role in the economic and technological development of China. As the Commission has documented through our hearings and reports, U.S. trade, investment, and technology flows have been a critical factor in China's rise as an economic power. We need to use our substantial leverage to develop an architecture that will help avoid conflict, attempt to build cooperative practices and institutions, and advance both countries' long-term interests. The United

States has the leverage now and perhaps for the next decade, but this may not always be the case. We also must recognize the impact of these trends directly on the domestic U.S. economy, and develop and adopt policies that ensure that our actions do not undermine our economic interests.

When the Congress approved Permanent Normal Trade Relations (PNTR) for China, the guiding premise was that it would expand market access for U.S. goods and services and, more fundamentally, would lead to economic reform in China and, eventually, political reform. In this context, it was characterized as in our "national security interest" to support China's accession to the WTO. Having taken this significant step, the United States cannot lose sight of these important goals, and must configure its policies toward China to help make them materialize—from expanded trade opportunities for U.S. exporters and a mutually beneficial trade relationship that sets global standards for fair trade, to an open, more democratic society in China that can be an important partner in addressing regional and global security challenges, including weapons proliferation, terrorism, and peaceful resolution of the cross-Strait situation.

The Commission examined in depth the extent of ongoing cooperation between China and the United States on traditional national security matters, most particularly China's assistance in resolving the North Korea nuclear weapons crisis. The Commission believes that China's performance in this area to date has been unsatisfactory, and we are concerned that U.S. pressure on trade disputes and other unrelated aspects of the relationship may have been toned down by the administration as a concession for China's hoped-for cooperation on this and other vital security matters. The Commission believes that any real progress with China on both the trade and security fronts will require the use of substantial and continuing leverage on the part of the United States.

If we falter in the use of our economic and political influence now to effect positive change in China, we will have squandered an historic opportunity. We believe China demonstrated a willingness to move in a positive direction, and to take substantial risks to do so, when it entered the WTO. But China will likely not initiate the decisive measures toward more meaningful economic and political reform without substantial, sustained, and increased pressure from the United States. And while the United States must pursue its own interests, it is vital for other nations to join our efforts if we are to succeed. Our recommendations to Congress in this Report provide our assessment of particular tools the United States can use to exercise its leverage.

KEY FINDINGS AND RECOMMENDATIONS

The Report presents its key findings, analysis, and recommendations to Congress in nine chapters, organized in three sections capturing the major themes of our Congressional mandate. While our analysis has been divided in this manner, all of these areas interrelate in assessing the broader question of how the U.S.-China economic relationship affects U.S. economic and national security interests. We recognize that the United States' vast economic trans-

fers to China are inseparable from the larger geopolitical and military developments at issue.

We include within this Executive Summary our priority recommendations to Congress. A full list of the Report's recommendations, by chapter, follows in a separate section.

U.S.-China Trade and Economic Transfers

Bilateral trade and investment flows between the United States and China are taking place on a massive and rapidly increasing scale. Assessing how these flows are affecting the U.S. economy—and with that U.S. economic security—is an essential area of the Commission's work.

Litmus Test for Global Trade Relations

The development of the U.S.-China economic relationship has broader implications for the path of globalization writ large. As generally understood, globalization refers to the process of creating a unified global economy through the breaking down of barriers between national economies. It encompasses the increased integration of national goods, financial, and labor markets. In goods markets, globalization takes the form of increased goods and services trade between countries and the internationalization of production through global supply chains. In labor markets, it manifests itself through increased labor migration and movement of production to labor markets that are the most cost-effective in terms of wages and working conditions, whether or not they are the result of artificial conditions. In financial markets, it shows up in the international diversification of investor portfolios and increases in cross-border financial flows.

The Commission believes that the U.S.-China economic relationship is of such large dimensions that the future trends of globalization will be influenced to a substantial degree by how the United States manages its economic relations with China. It is reasonable to believe that U.S.-China economic relations will help shape the rules of the road for broader global trade relations. If current failings are remedied and the relationship is developed so as to provide broad-based benefits for both sides, globalization will likely be affected in a positive manner on a worldwide scale. If not, the opposite will likely be true.

Further, the Commission recognizes that many of the challenges facing the U.S. economy from globalization require changes in U.S. policy that go well beyond specific responses to China's practices. Improving U.S. economic competitiveness and the welfare of U.S. workers will require actions including enhanced national commitments to education, infrastructure modernization, changes in U.S. tax policy to encourage U.S.-based production and research and development (R&D), and to more comprehensive retraining programs for U.S. workers negatively impacted by trade. However, given our mandate, we have focused our recommendations to Congress on items tailored to meet the more specific economic challenges of China.

The Imbalanced U.S.-China Trade Relationship and the Consequences for the U.S. Economy

The dominant feature of U.S.-China economic relations is the U.S. goods trade deficit, which rose by more than twenty percent in 2003 to a record $124 billion. This deficit now constitutes over twenty-three percent of the total U.S. goods trade deficit, and China is by far the largest country component of the deficit. Moreover, U.S. trade with China—with $28 billion in exports to China as compared with $152 billion in imports in 2003—is by far the United States' most lopsided trade relationship as measured by the ratio of imports to exports. China is heavily dependent on the U.S. market, with exports to the United States constituting 35 percent of total Chinese exports in 2003.

A key factor contributing to the U.S. deficit with China is the undervaluation of the Chinese yuan against the U.S. dollar. This gives Chinese manufacturers a competitive advantage over U.S. manufacturers. Economic fundamentals suggest that the Chinese yuan is undervalued, with a growing consensus of economists estimating the level of undervaluation to be anywhere from fifteen to forty percent. The Chinese government persistently intervenes in the foreign exchange market to keep its exchange rate pegged at 8.28 yuan per dollar, and through these actions appears to be manipulating its currency valuation. A second factor contributing to imbalances in U.S.-China trade is China's mercantilist industrial and foreign direct investment policies. These policies involve a wide range of measures including technology transfer requirements, government subsidies, discriminatory tax relief, and limitations on market access for foreign companies. Finally, China's labor markets do not provide adequate recognition of workers' rights, thereby resulting in artificially low wages that disadvantage our economic interests.

The U.S. trade deficit with China is of major concern because (i) it has contributed to the erosion of manufacturing jobs and jobless recovery in the United States, (ii) manufacturing is critical for the nation's economic and national security, and (iii) the deficit has adversely impacted other sectors of the U.S. economy as well. Therefore, our trade and investment relationship with China—with current trends continuing and the deficit expanding—is not just a trade issue for the United States, but a matter of our long-term economic health and national security.

Recommendation: In the absence of concrete progress by the administration in moving China toward an substantial upward revaluation of the yuan against the dollar and to repegging the yuan to a trade-weighted basket of currencies, Congress should pursue legislative measures that will direct the administration to take action—through the WTO or otherwise—to combat China's exchange rate practices. The administration should concurrently encourage our trading partners with similar interests to join in this effort.

Recommendation: Congress should direct the United States Trade Representative (USTR) and the Department of Commerce to undertake immediately a comprehensive investigation of China's system of government subsidies for manufacturing, including

tax incentives, preferential access to credit and capital from state-owned financial institutions, subsidized utilities, and investment conditions requiring technology transfers. The investigation should also examine discriminatory consumption credits that shift demand toward Chinese goods, Chinese state-owned banks' practice of noncommercial-based policy lending to state-owned and other enterprises, and China's dual pricing system for coal and other energy sources. USTR and Commerce should provide the results of this investigation in a report to Congress that assesses whether any of these practices may be actionable subsidies under the WTO and lays out specific steps the U.S. government can take to address these practices.

China's Mixed Record in the WTO

China joined the WTO in December 2001. Its accession agreement is extremely complex, reflecting the need for special arrangements to address the fact that China does not have a market-based economy. To protect against trade distortions and unfair trade practices resulting from China's non-market status, the agreement includes a special WTO review mechanism—the Transitional Review Mechanism (TRM)—to monitor China's compliance and special safeguard provisions giving WTO members the right to protect themselves against sudden surges of Chinese imports.

Though China has made progress in reducing tariffs and otherwise formally meeting a large number of its WTO accession commitments, significant compliance shortfalls persist in a number of key areas for U.S. trade. Among areas of concern are China's manipulation of its currency, continued provision of direct and indirect subsidies to Chinese producers, use of unjustified technical and safety standards to exclude foreign products, poor enforcement of intellectual property rights (IPR), and discriminatory tax treatment for domestic semiconductor production. Moreover, China has deliberately frustrated the effectiveness and debased the value of the WTO's TRM, which was intended to be a robust mechanism for assessing China's WTO compliance and for placing multilateral pressure on China to address compliance shortfalls.

Recommendation: Congress should press the administration to make more use of the WTO dispute settlement mechanism and/or U.S. trade laws to redress unfair Chinese trade practices. In particular, the administration should act promptly to address China's exchange rate manipulation, denial of trading and distribution rights, lack of IPR protection, objectionable labor standards, and subsidies to export industries. On IPR, the United States must take action to force China to enact credible criminal penalties for IPR violations and to greatly enhance enforcement. Another key priority for U.S. trade officials must be ensuring China's compliance with its WTO commitments to refrain from forced technology transfers used as a condition of doing business. In pursuing these cases, Congress should encourage USTR to consult with trading partners who have mutual interests at the outset of each new trade dispute with China.

Recommendation: Congress should press the administration to make better use of the China-specific section 421 and textile

safeguards negotiated as part of China's WTO accession agreement to give relief to U.S. industries especially hard hit by surges in imports from China.

Recommendation: Congress should encourage USTR and other appropriate U.S. government officials to take action to ensure that the WTO's Transitional Review Mechanism process is a meaningful multilateral review that measures China's compliance with its WTO commitments. If China continues to frustrate the TRM process, the U.S. government should work with the European Union, Japan, and other major trading partners to produce a separate, unified annual report that measures and reports on China's progress toward compliance and coordinates a plan of action to address shortcomings.

Governance and Security Concerns with China's Outreach to the Global Capital Markets

The Chinese government has selectively chosen firms—predominately state-owned enterprises (SOEs)—to list on international capital markets, primarily in Hong Kong and New York, and may bring as much as $23 billion in initial public offerings to global capital markets in 2004, a marked increase over the past few years. Yet, Chinese corporate governance standards lag far behind those in the United States. Accounting and reporting standards are weak, and China lacks a sound, transparent system of credit ratings. As a result, even the most sophisticated investors lack adequate disclosure when it comes to Chinese debt and equity listings in international capital markets.

Moreover, inadequate transparency and disclosure prevents the U.S. government and investors from understanding the possible nexus between Chinese firms listing on U.S. and international capital markets and weapons proliferation and/or China's defense-industrial complex. Many SOEs were previously controlled by the People's Liberation Army (PLA), and there is concern that unofficial links to the PLA remain intact after privatization. At least one firm listed in China's capital markets and available for purchase by qualified U.S. investors—China North Industries Corp.—has been sanctioned for proliferation by the U.S. government, and there are concerns that other Chinese firms listed or trading in China or in the United States may be engaging in similar activities.

Without adequate information about Chinese firms trading in international capital markets, U.S. investors may be unwittingly pouring money into black box firms lacking basic corporate governance structures, as well as enterprises involved in activities harmful to U.S. security interests.

Recommendation: Congress should reinstate the reporting provision of the 2003 Intelligence Authorization Act [P.L. 107–306, Sec. 827] directing the director of central intelligence (DCI) to prepare an annual report identifying Chinese or other foreign companies determined to be engaged or involved in the proliferation of weapons of mass destruction or their delivery systems that have raised, or attempted to raise, funds in the U.S. capital markets. In addition, Congress should expand this provision to require the DCI to include a broader interagency review of the

security-related concerns of Chinese firms accessing, or seeking to access, the U.S. capital markets that would examine linkages between proliferation and other security-related concerns and Chinese companies, including their parents and subsidiaries, with a presence in the U.S. capital markets.

Recommendation: Congress should bar U.S. institutional or private investors from making debt or equity investments, directly or indirectly, in firms identified and sanctioned by the U.S. government for weapons proliferation-related activities, whether they are listed and traded in the United States or in the Chinese or other international capital markets.

We note that these bilateral trade and investment dynamics are occurring at a time of significant economic stresses in China, with growing numbers of economists and financial analysts cautioning about the possible bursting of the bubble in China's economy. These predictions rest on concerns about the economy overheating and on concerns about the weak foundation of the Chinese banking system, which has accumulated nonperforming loans estimated to be $500 billion after decades of making loan decisions based on policy or political grounds rather than financial considerations.

These suspect capital allocation practices raise cautionary flags about the sustainability of China's economic boom. It is crucial that U.S. policymakers understand the potential ramifications for the U.S. economy and investors, China's Asian trading partners, and China's domestic stability should China's economic bubble burst.

Regional and Geostrategic Developments

The Commission examined China's rise as a regional power and its central role in the global security challenges stemming from the proliferation of weapons of mass destruction (WMD) and access to energy supplies. In this examination, we weighed the extent to which China is contributing to or undermining a more stable global security environment.

China's Regional Diplomatic Offensive

Through trade and investment, China has become increasingly interconnected with its Asian neighbors. Investors from Hong Kong, Taiwan, Japan, South Korea and Southeast Asia are helping to fuel the export processing industries of China that deliver a wide array of manufactured goods to the United States and Europe through global supply chains. China's industrial growth has attracted foreign direct investment that might otherwise have gone elsewhere; some industries in Northeast and Southeast Asia have been displaced by competition from China; but Asian suppliers also have been increasingly feeding China's export processing industries and domestic markets. Large trade surpluses with China in 2002–03 contributed to the growth of most regional economies.

Enhanced regional economic linkages have served China's political agenda. Through increasingly active and sophisticated bilateral and multilateral diplomacy, China is presenting itself as a country that is peacefully rising, offering win-win solutions for its economic partners in Asia. It has shown a greater willingness in recent years to participate actively in multilateral forums on both economic and

security issues—such as APEC, the ASEAN Regional Forum, and the Shanghai Cooperation Organization. Evidence indicates that this diplomatic strategy is making inroads for China, despite a wariness of China's growing military power, particularly on the part of Japan.

While China has undertaken a diplomatic offensive in Asia to reassure its neighbors of its long-term peaceful intentions, buying time and space in the process to pursue its economic development and military strengthening, countries in the region appear to perceive the United States as losing focus on Asia as it prosecutes the war on terrorism. The Commission believes that the United States' influence and vital long-term interests in Asia are being challenged by China's robust regional economic engagement and diplomacy, and that greater attention must be paid to U.S. relations in the region.

Recommendation: Congress should revitalize U.S. engagement with China's Asian neighbors by encouraging U.S. diplomatic efforts to identify and pursue initiatives to demonstrate the United States' firm commitment to facilitating the economic and security needs of the region. These initiatives should have a regional focus and complement bilateral efforts. The Asia-Pacific Economic Cooperation forum (APEC) offers a ready mechanism for pursuit of such initiatives.

Growing Tensions Across the Strait and in Hong Kong

China has not offered win-win political solutions to Taiwan and Hong Kong. China has been building missile forces and positioning its military to deter Taiwan from taking political steps Beijing considers unacceptable moves towards independence and to coerce Taiwan to end the island's continued separate status. Further, China is using its political clout to keep Taiwan out of regional and bilateral economic arrangements and to otherwise economically marginalize the island. Taiwan President Chen Shui-bian's recent reelection and Chen's plan for constitutional revision have heightened China's anxiety regarding Taiwan and heightened the near-term prospects for conflict. In Hong Kong, China's National People's Congress has undercut Hong Kong's autonomy and self-governance by its recent unilateral decisions to rule out near-term direct elections for Hong Kong's chief executive and Legislative Council. Moreover, Beijing has engaged in a systemic campaign in recent weeks to intimidate the democracy movement in Hong Kong by depicting its leaders as unpatriotic toward China, directing an unprecedented visit of eight Chinese warships to Hong Kong's harbor, and prohibiting legislative debate on electoral matters in Hong Kong's legislature.

China's recent actions toward Taiwan and Hong Kong call into question its commitments to a peaceful approach toward Taiwan and to preserving Hong Kong's autonomy and self-government. These developments merit a fresh look at U.S. policies in these areas by the Congress and executive branch. In particular, recent developments across the Strait are putting increasing stress on the United States' one China policy, demonstrating the need for a new assessment of this policy that takes into consideration current realities.

Recommendation: Congress should consult with the administration to assess jointly whether the PRC's recent interventions impacting Hong Kong's autonomy constitute grounds for invoking the terms of the U.S.-Hong Kong Policy Act with regard to Hong Kong's separate treatment. This includes U.S. bilateral relations with Hong Kong in areas such as air services, customs treatment, immigration quotas, visa issuance, and export controls. In this context, Congress should assess the implications of the National People's Congress Standing Committee's intrusive interventions with regard to matters of universal suffrage and direct elections. Congress and the administration should continue to keep Hong Kong issues on the U.S.-PRC bilateral agenda and work closely with the United Kingdom on Hong Kong issues.

Recommendation: Congress should enhance its oversight role in the implementation of the Taiwan Relations Act. Executive branch officials should be invited to consult on intentions and report on actions taken to implement the TRA through the regular committee hearing process of the Congress, thereby allowing for appropriate public debate on these important matters. In this same context, Congress and the administration should conduct a fresh assessment of the one China policy, given the changing realities in China and Taiwan. This should include a review of:

- The policy's successes, failures, and continued viability;
- Whether changes may be needed in the way the United States government coordinates its defense assistance to Taiwan, including the need for an enhanced operating relationship between U.S. and Taiwan defense officials and the establishment of a U.S.-Taiwan hotline for dealing with crisis situations.
- How U.S. policy can better support Taiwan's breaking out of the international economic isolation that the PRC seeks to impose on it and whether this issue should be higher on the agenda in U.S.-China relations. Economic and trade policy measures that could help ameliorate Taiwan's marginalization in the Asian regional economy should also be reviewed. These could include enhanced U.S.-Taiwan bilateral trade arrangements that would include protections for labor rights, the environment, and other important U.S. interests.

Recommendation: Congress should consult with the administration on developing appropriate ways for the United States to facilitate actively cross-Strait dialogue that could promote the long-term, peaceful resolution of differences between the two sides and could lead to direct trade and transport links and/or other cross-Strait confidence-building measures. The administration should be directed to report to Congress on the status of cross-Strait dialogue, the current obstacles to such dialogue, and, if appropriate, efforts that the United States could undertake to promote such a dialogue.

China's Intermediary Role in the Standoff with North Korea

China has become a major diplomatic player in the ongoing standoff with North Korea over Pyongyang's development of nuclear weapons. As host of the Six Party Talks, China has helped bring North Korea to the table; but has not adequately employed

its considerable political and economic leverage over North Korea to drive Pyongyang towards acceptance of the goal of achieving a complete, verifiable, and irreversible dismantlement of North Korea's nuclear weapons programs. Even as events in North Korea unfold, Chinese state companies continue to pursue deals to sell WMD-related items to countries of concern to the United States. The United States has repeatedly imposed sanctions in response to these activities; but sanctions remain limited to penalizing offending companies, despite many of these companies' direct affiliation with top levels of the PRC government or military.

The United States has placed great faith in China's ability to move North Korea toward renouncing its nuclear weapons programs. The U.S.-China working relationship to defuse this crisis has been lauded as an essential component in bilateral relations, one that appears to trump other areas of U.S. concern. The Commission believes China has not effectively utilized its substantial leverage over North Korea to produce a workable resolution and regards China's performance in this regard over the next few months as a key test of the U.S.-China relationship.

Recommendation: Should the current stalemate in the Six Party Talks continue, Congress should press the administration to work with its regional partners, intensify its diplomacy, and ascertain North Korean and Chinese intentions with a detailed and staged proposal beginning with a freeze of all North Korea's nuclear weapons programs, followed by a verifiable and irreversible dismantlement of those programs. Further work in this respect needs to be done to determine whether a true consensus on goals and process can be achieved with China. If this fails, the United States must confer with its regional partners to develop new options to resolve expeditiously the standoff with North Korea, particularly in light of public assessments that the likely Korean uranium enrichment program might reach a stage of producing weapons by 2007.

Recommendation: Congress should press the administration to renew efforts to secure China's agreement to curtail North Korea's commercial export of ballistic missiles and to encourage China to provide alternative economic incentives for the North Koreans to substitute for the foreign exchange that would be foregone as a result of that curtailment.

China's Energy Trajectory and the Implications for Global Energy Markets

China has moved past Japan to rank second behind the United States in global energy consumption, and is the world's second largest oil consumer and its third largest oil importer. These trends have made China increasingly dependent on imported energy sources. China has pursued its energy security strategy via bilateral energy deals, and does not maintain a meaningful strategic petroleum reserve or participate in multilateral energy market stabilizing arrangements. China's rising energy demand has put added pressure on global petroleum supplies and prices. Indeed, the recent escalation in gasoline prices in the United States has been attributed, in part, to the impact of China's growing pressure on

world oil supplies and the absence of any mechanism in place to counter this pressure and maintain stable prices for consumers. It also has had consequences for China's economy, as energy shortages and blackouts have led to slowdowns in industrial production in certain sectors.

Energy needs have driven China closer to the Middle East and Africa, as well as neighbors in Central Asia, Russia and the Pacific. China seeks to lock in secure energy supplies, especially new sources of gas and oil not subject to potential disruption in a time of conflict. China has sought energy cooperation with countries of concern to the United States, including Iran and Sudan, which are inaccessible by U.S. and other western firms. Some analysts have voiced suspicions that China may have offered WMD-related transfers as a component of some of its energy deals.

China's growing energy needs, linked to its rapidly expanding economy, are creating economic and security concerns for the United States. China's energy security policies are driving it into bilateral arrangements that undermine multilateral efforts to stabilize oil supplies and prices, and in some cases may involve dangerous weapons transfers.

Recommendation: Congress should direct the secretaries of State and Energy to consult with the International Energy Agency with the objective of upgrading the current loose experience-sharing arrangement, whereby China engages in some limited exchanges with the organization, to a more structured arrangement whereby the PRC would be obligated to develop a meaningful strategic reserve, and coordinate release of stocks in supply disruption crises or speculator-driven price spikes.

Technology and Military Advancements

China has undergone rapid advancements in technology development, military modernization, and media control. These advancements are altering bilateral and regional trade flows, the cross-Strait military balance, and the Chinese government's ability to control the media and shape perceptions of the United States and its policies.

China's Coordinated National Strategy for Technology Development

The Chinese government has developed and pursued a coordinated strategy for attracting and directing national and foreign investment into high-tech research, development, and production. This strategy for high-tech investment has been a sustained, multi-year effort that has paid dividends for economic growth, science and technology institutions, educational infrastructure, technical levels of workers and industries, and military modernization. The United States and other foreign partners—both commercial and governmental—have contributed significantly to these developments. U.S. advanced technology and technological expertise is transferred to China in a number of ways, both legal and illegal, including through U.S. invested firms and research centers in China, Chinese investments in the United States, bilateral science and technology (S&T) cooperative programs, and Chinese students

and researchers who return home following their work and study at U.S. universities and research institutes.

China's development as a locus of high-technology manufacturing and R&D has been a key component of its economic reform strategy, and the pace of this development has exceeded many outside observers' expectations. What China does with its growing technology capabilities—whether it converts them to military uses and/or to control the free flow of information to its population—is of direct national security concern to the United States. Moreover, the extent to which these advances allow China to challenge U.S. competitiveness in technology development is a vital matter for U.S. economic security.

The U.S. government collects inadequate data on the shifts of U.S. high-tech investment, technology transfers, and R&D to China. Information on U.S. transfers of technology subject to export licensing is compiled and government reporting on official S&T cooperation efforts has improved somewhat under Congressional mandate; but the overall picture of U.S. contributions to the development of China's technology growth and R&D base is not at all clear. Assessments of the implications of these shifts for the United States' long-term technological superiority and for China's competitiveness—both commercially and militarily—are difficult to make as a result of this gap in knowledge. Moreover, the process by which the U.S. government reviews acquisitions of American companies by Chinese and other foreign investors—the Committee on Foreign Investment in the United States (CFIUS)—focuses solely on traditional national security concerns with such investments, while failing to consider broader U.S. economic security interests.

Recommendation: Congress should direct the administration to develop and publish a coordinated, comprehensive national policy and strategy designed to meet China's challenge to the maintenance of our scientific and technological leadership and competitiveness in the same way it is presently required to develop and publish a national security strategy.

Recommendation: Congress should revise the law governing the CFIUS process to expand the definition of national security to include the potential impact on national economic security as a criterion to be reviewed, and should direct the administration to transfer chairmanship of CFIUS from the Secretary of the Treasury to the Secretary of Commerce.

Military Modernization and the Shift in the Cross-Strait Military Balance

Commission research and hearings indicate that China's military capabilities increasingly appear to be shaped to fit a Taiwan conflict scenario and to target U.S. air and naval forces that could become involved. China's modern arsenal includes an increasingly sophisticated nuclear missile force that is of direct strategic concern to the United States, while in the Western Pacific theater China has deployed over five hundred conventional short-range ballistic missiles that threaten Taiwan and longer-range conventional missiles that could threaten Japan and U.S. forces deployed in the region. China's advanced naval and air weapons systems—including

surface ships, submarines, anti-ship missiles, and advanced fighter aircraft—have been significantly enhanced by infusions of foreign military technology, co-production assistance and direct purchases, mainly from Russia and, to a lesser extent, from Israel.

China's quantitative and qualitative military advancements have resulted in a dramatic shift in the cross-Strait military balance toward China, with serious implications for Taiwan, for the United States, and for cross-Strait relations.

Recommendation: Congress should urge the President and the secretaries of State and Defense to press strongly their European Union counterparts to maintain the EU arms embargo on China.

Recommendation: Congress should direct the administration to restrict foreign defense contractors who sell sensitive military-use technology or weapons systems to China from participating in U.S. defense-related cooperative research, development, and production programs, which restriction can be targeted to cover only those technology areas involved in the transfer to China, and to provide a comprehensive annual report to the appropriate committees of Congress on the nature and scope of foreign military sales to China, particularly from Russia and Israel.

Continued Controls Over The Media

The Chinese government continues to exercise strong controls on the dissemination of information via the public media. While there has been some loosening of controls on reporting of news relating to many areas of business and society in China, red lines remain that are dangerous for individuals or organizations to exceed.

The Chinese government's propaganda machinery has not withered away during twenty-five years of reform and opening; rather it has modernized. This was proven beyond doubt during the SARS epidemic of 2003. The Chinese government's intensive efforts to cover up the outbreak of SARS showed the breadth of the government's control, while the ability of many in the population to nonetheless access information about the epidemic via the Internet, text messaging, and other new media demonstrated the limitations of this control in a growing high-tech society.

Government censorship; jamming of some overseas broadcasts, including those of U.S. government-sponsored outlets like the Voice of America; blocking of foreign and domestic Internet Web sites; and punishments for those who disseminate information beyond the government's tolerance remain widespread. Open criticism of China's leaders, questioning of the Communist Party and its policies, organizational activities that are independent of government control, and anything perceived as conducive to political conduct remains taboo in the public media. The Chinese government has used its control over the media to shape the population's perceptions of the United States and its policies, leading to a consistent message in the Chinese media that has been particularly critical of U.S. foreign policy and intentions in Asia.

Despite the Chinese government's much heralded reversal of policy to encourage more open and accurate reporting of SARS during last year's outbreak, there has in practice been no fundamental change in the Chinese government's approach to controlling the

media, including information available through the Internet. This control shapes the Chinese population's perceptions of the United States and its policies, enhancing the risk of misperception and miscalculation in the bilateral relationship and increasing the potential for, and the difficulty of, managing crisis situations.

Recommendation: Congress should enhance funding for the Broadcasting Board of Governors' programs aimed at circumventing China's Internet firewall through the development of anticensorship technologies and methods, and direct the Department of Commerce and other relevant agencies to conduct a review of export administration regulations to determine whether restrictions are needed on the export of U.S. equipment, software, and technologies that permit the Chinese government to surveil its own people or censor free speech.

CONCLUSION

It is now commonplace to assert that the U.S.-China relationship will be our most significant bilateral relationship during the Twenty-First Century. Our trade and investment with China already has an enormous impact on the U.S. economy, and the security challenges before us are of the highest order. Through an appropriate mix of U.S. policies, this complex relationship can be managed in such a way as to minimize the downside risks, and enhance the prospects of moving China toward a more open, democratic and market-oriented society, to the benefit of both our economic and national security interests.

As we stated at the outset, we have concluded that a number of the current trends in U.S.-China relations are presently moving in the wrong direction. With a renewed and realistic focus on the relationship by the Congress, we are optimistic that U.S. policy toward China can be put on a more solid, productive footing to tackle the long-term challenges that lie ahead.

Kong, and the United States. The bank, which has hired Citigroup Inc. and Morgan Stanley to lead manage the IPO, will set up a joint-stock company to own the assets it plans to list.[75] CCB is also faced with the task of reducing bad debts. Like the Bank of China, the Chinese government estimates that nearly one-fifth of CCB's loans are NPLs. But economists in China say a number between forty and fifty percent is more realistic. Chinese Premier Wen Jiabao recently criticized CCB managers for lack of commitment to reform and commercialization. CCB also received a cash infusion of $22.5 billion from China's central bank to reduce its NPL ratio.[76]

Security-Related Dimensions

During the 1980s and 1990s, China's economy was dominated by SOEs, many of which were managed by the People's Liberation Army (PLA) and were a part of China's defense-industrial complex. In 1998, in an effort to curtail corruption and return the PLA to focusing on its primary military functions, then-President Jiang Zemin called for the dissolution of this military-business structure. Divestiture served as recognition that the military should not run commercial operations.[77]

Because many of the former PLA enterprise heads transferred control to relatives or former military officers, the Commission remains concerned that these enterprises have retained unofficial links to their former PLA counterparts.[78] Moreover, the links between military and commercial production in China, particularly in SOEs, mean that foreign investors in these firms can rarely be sure of their investment's final destination. It is incumbent upon fund managers and underwriters to make investors aware of any relevant ties between China's military and companies listed in global capital markets, as such ties could be a material risk for investors.

In addition to linkages to the Chinese defense-industrial complex, the Commission continues to be concerned about the possible nexus between Chinese firms listing on U.S. and other international exchanges and weapons proliferation. The 2003 Intelligence Authorization Act (P.L.107–306 sec. 827) included a provision that required the director of Central Intelligence to report annually on whether any Chinese or other foreign companies determined to be engaged or involved in the proliferation of weapons of mass destruction (WMD) or their delivery systems have raised, or attempted to raise, funds in the U.S. capital markets. This requirement, however, was repealed in the 2004 Intelligence Authorization Act (P.L. 108–177, sec. 361e). The Commission believes there is need for a robust, coordinated effort by the U.S. government to ensure that U.S. investors are not unwittingly investing their funds in Chinese military-related firms or weapons proliferators, and that this important issue has not been accorded a high enough priority by the intelligence community. The repealed reporting provision was a solid, positive step in this direction, and the Commission believes it should be reinstated and expanded.

As of 2002, more than three-quarters of companies listed as A shares in China's capital market are state controlled.[79] These include known proliferators such as NORINCO, which was sanctioned by the U.S. government on four separate occasions in 2003

SECTION II
REGIONAL AND GEOSTRATEGIC DEVELOPMENTS

The following section groups topics relating to the regional and geostrategic consequences of China's emergence as a major force. These are China's economic and security impacts in Asia and the current challenges of Hong Kong and Taiwan; China's proliferation practices and the challenge of North Korea; and China's energy needs and strategies.

Chapter 4 examines China's increasing prominence in Asia. Through trade and investment, China has become increasingly interconnected with its Asian neighbors. Investors from Hong Kong, Taiwan, Japan, South Korea, and Southeast Asia are helping to fuel the export processing industries of China that, through global supply chains, deliver to the United States and Europe a wide array of manufactured goods. China's industrial growth has attracted foreign direct investment that might otherwise have gone elsewhere; some industries in Northeast and Southeast Asia have been displaced by competition from China, but Asian suppliers also have been increasingly feeding China's export processing industries and domestic markets. Large trade surpluses with China in 2002–03 have contributed to the growth of most East Asian economies.

Enhanced regional economic linkages have served China's political agenda. Through increasingly active and sophisticated bilateral and multilateral diplomacy, China is presenting itself as a country that is peacefully rising, offering, as it grows, win-win solutions for its economic partners in Asia. It has become more willing, in the past several years, to participate actively in multilateral fora on both economic and security issues—such as APEC, the ASEAN Regional Forum, and the Shanghai Cooperation Organization. Evidence indicates that this diplomatic strategy is making inroads for China, despite a wariness of China's growing military power, particularly on the part of Japan.

Cultivating relationships in Asia buys China time and space to pursue its economic development and harness its economic growth to military modernization. This is transforming the balance of military power in East Asia, particularly in the Taiwan Strait, China's main focus for a potential use of force.

Within the regional dynamic, Chapter 4 explores the difficult challenges for U.S. interests arising from China's relationships with Hong Kong and Taiwan. In these cases, China has not been offering win-win political solutions. China has positioned its military to deter Taiwan from taking political steps Beijing considers unacceptable moves toward independence and to coerce Taiwan to end the island's separate status. Clearly concerned about Taiwan President Chen Shui-bian's reelection and Chen's plan for constitu-

tional revision, China has not offered any vision for a workable resolution of cross-Strait conflict beyond unification under the "one country, two systems" formula. This formula, rejected in Taiwan, is being sorely tested in Hong Kong, where Chinese sovereignty is not disputed. China's National People's Congress has frustrated demands for greater democracy in Hong Kong by making unilateral decisions to block further development of constitutionally allowed self-governance, and Beijing has prohibited legislative debate on this matter in Hong Kong.

Chapter 5 looks at China's weapons proliferation practices and its role in the North Korean nuclear crisis. While becoming enmeshed in the capitalist economies of Asia and the West, China has maintained its traditional state patron-client relationship with North Korea. China has become a major diplomatic player in the ongoing standoff with North Korea over Pyongyang's development of nuclear weapons. As host of the Six Party Talks, China has helped bring North Korea to the table; but has not adequately employed its considerable political and economic leverage over North Korea to drive Pyongyang toward acceptance of the goal of achieving a complete, verifiable, and irreversible dismantlement of North Korea's nuclear weapons programs.

Even as China professes to support the goal of a non-nuclear Korean Peninsula and claims to oppose WMD proliferation generally, China's own proliferation practices remain an ongoing concern. Chinese state companies continue to pursue deals to sell WMD-related items to countries of concern to the United States. The United States has repeatedly imposed sanctions in response to these activities; but sanctions remain limited to penalizing offending companies, despite many of these companies' direct affiliation with top levels of the PRC government or military.

Lastly, Chapter 6 examines the impact of China's rapidly growing economy on its energy needs, the implications for global energy supplies, and how this impacts China's geopolitical relations. China has moved past Japan to rank second (behind the United States) in global energy consumption, and is the world's second largest oil consumer and its third largest oil importer. These trends have made China increasingly dependent on outside energy sources. China's energy demands and the means by which it is attempting to address them have put added pressure on global petroleum supplies and prices.

Energy needs have driven China closer to the Middle East and Africa, as well as neighbors in Central Asia, Russia, and the Pacific. China seeks to lock in secure energy supplies, especially new sources of gas and oil not subject to potential disruption in a time of conflict. China has sought energy cooperation with countries of concern to the United States, including Iran and Sudan, which are inaccessible to U.S. and other western firms. Some analysts have voiced suspicions that China may have offered WMD-related transfers as a component of some of its energy deals.

Taken as a whole, China's growing economic and political clout have important implications for its relations in Asia and beyond, with direct implications for U.S. diplomacy in Asia and for U.S. cross-Strait, nonproliferation, and energy security policies.

CHAPTER 4

CHINA'S REGIONAL ECONOMIC AND SECURITY IMPACTS AND THE CHALLENGES OF HONG KONG AND TAIWAN

"***REGIONAL ECONOMIC AND SECURITY IMPACTS.*** *The Commission shall assess the extent of China's "hollowing out" of Asian manufacturing economies, and the impact on United States economic and security interests in the region; [and] review the triangular economic and security relationship among the United States, Taipei and Beijing. . . .*" [P.L. 108–7, Division P, Sec. 2(c)(2)(F)]

KEY FINDINGS

- China is gaining influence in Asia through its rapidly increasing economic weight and successful diplomacy. China is strengthening bilateral economic and security ties with nearly all countries on its periphery and energizing regional trade and security groupings, such as the Shanghai Cooperation Organization (China, Russia, and four Central Asian states) and the multilateral fora of the Association of Southeast Asian Nations (ASEAN). As never before in modern times, countries throughout Asia are weighing the China factor in their external relations and economic strategies.
- During 2002–03, China became the single largest export market for Japan, South Korea, and Taiwan, eclipsing the United States. In Northeast and Southeast Asia, exports have been driven by China's surging demand for commodities, equipment, and industrial inputs. At the same time, employment, investment, and production in some industries in the region have been adversely affected by a shift of foreign direct investment (FDI) to China and the emergence of China as a major manufacturing power in product lines once dominated by other Asian manufacturers.
- China is extending its influence even as the United States is widely perceived in the region as preoccupied with Iraq, North Korea, and the global war on terrorism and paying less attention to the region's economic, trade, and development issues. The United States is seen as having allowed the regional trade liberalization mechanism of the Asia Pacific Economic Cooperation (APEC) process to atrophy in favor of pursuing bilateral free trade agreement (FTA) negotiations.
- China's leaders have rebuffed Hong Kong society's growing demand for direct elections and more responsive government. A recent decision of the National People's Congress Standing Committee (NPCSC) rules out until at least 2012 direct election of Hong Kong's chief executive or the full Legislative Council. This has dashed hopes for early achievement of universal suffrage in

Hong Kong and has seriously set back Hong Kong's ability, under the "one country, two systems" formula, to decide how to govern itself. The significant erosion of Hong Kong's autonomy is a matter to be considered under the terms of the U.S.-Hong Kong Policy Act.

- China has employed its economic and political leverage to isolate Taiwan further by excluding it from most regional economic fora and discouraging others from negotiating bilateral trade agreements with Taiwan, which is entering a critical period in its modern history. Under the terms of the Taiwan Relations Act (TRA), this development should be of concern to the United States.
- Taiwan faces the challenge of solidifying its own political identity and buttressing its security while still finding a way to support its trade and investment interests by gaining direct transport and communications links with the PRC. Business interests in both Taiwan and the United States see direct cross-Strait links as crucial to preventing Taiwan's further marginalization in a regional economy that is increasingly centered on China. There has been no formal cross-Strait dialogue on these matters since 1998.
- Cross-Strait tensions have increased in the past year. Factors include China's continuing military buildup and missile deployments opposite Taiwan, the holding of referenda in Taiwan on the questions of missile defense and cross-Strait relations, the reelection of Taiwan President Chen Shui-bian, and President Chen's proposal for constitutional revision in 2008—to be set in motion by a possible referendum in 2006—that the PRC has equated with an unacceptable timetable for independence.

OVERVIEW

In the past two years, China has become even more central to regional and global trade, investment, and production patterns than it was at the time of the Commission's first Report to Congress. The trends the Commission identified in 2002 accelerated as a result of China's December 2001 accession to the WTO and the attendant granting of Permanent Normal Trade Relations status to China.

In the past two years, China has linked its growing economic power with strong diplomatic initiatives throughout Asia. China's softer approach to the region has been dubbed a smile campaign or charm offensive, but it is more than just that—China has injected new energy into bilateral partnerships and multilateral trade and security arrangements.[1] China's active participation in regional groupings such as the Asia Pacific Economic Forum, the Shanghai Cooperation Organization (SCO), and One ASEAN Regional Forum reflects China's use of multilateralism as a tool for pursuing its economic and political interests.[2]

This regional diplomatic effort is designed to serve China's stated strategy of peace and development by promoting a stable security environment and its own access to the world trading system, while it concentrates on domestic economic development and strengthening its military.[3] It also raises considerable challenges for the United States' economic and security relations with the countries of Asia. Some observers consider the implications for longer-term

U.S. interests to be alarming. As one witness who testified before the Commission wrote: "China is patiently and systematically amassing a geopolitical presence of superpower proportions in Asia. Washington must start to take China seriously as a potential great power competitor in the region."[4]

China-Taiwan relations are entering another period of transformation as two contradictory trends play out. On the one hand, Taiwan investors, particularly those in the information technology (IT) sector, have been pouring money, managers, plant, and equipment into ventures on the mainland. Cross-Strait trade and investment flows are at an all-time high, with the direction of both investment and exports going largely from Taiwan to the mainland. Although mainland exports to Taiwan have increased, Taiwan tightly restricts inward investment from the PRC for security purposes. On the other hand, political attitudes on both sides of the Strait have hardened. There is effectively no public dialogue across the Taiwan Strait. China continues to work to isolate Taiwan internationally. As the rest of Asia and the world establish direct links with Chinese ports, airports, investment zones, and financial centers, Taiwan's potential as a platform for servicing trade and investments in China has dwindled. Taiwan is becoming marginalized further in the regional economy.

The Commission seeks to assess the degree of regional influence China has gained through its growing economic power and the implications for U.S. economic and security interests in the region. This assessment includes the questions of how economic integration and central-local political dynamics are affecting Hong Kong's health as a major international finance, services, and transport center; and how cross-Strait economic relations are influencing Taiwan's economy and security.

On December 4, 2003, the Commission held a hearing on *China's Growth as a Regional Economic Power: Impacts and Implications*. Witnesses from academia and research institutions testified on China's growing influence in Asia through its burgeoning diplomatic and commercial ties with neighboring countries and intra-Asian regional groups such as ASEAN.

During the September 25, 2003, hearing on *China's Exchange Rate, Investment, and Industrial Policies* and the February 12–13, 2004, field hearing in San Diego on *China as an Emerging Regional and Technology Power: Implications for U.S. Economic and Security Interests*, various panels discussed China's impact on regional economic trends, especially through its growing importance as a manufacturing hub within global supply networks.

From March 14 to 23, 2004, a delegation of Commission members and staff traveled to Tokyo, Hong Kong, and Taipei for discussions with officials, American and local business representatives, academics, and media representatives on regional economic, political, and security questions.

ANALYSIS AND FINDINGS

Regional Trade and Investment

Regional trade and investment patterns that emerged in the second half of the 1990s have become more pronounced in the past

two years. A high volume of inward FDI—the majority of it originating in East Asian economies—continues to fuel China's export-driven economic boom even as global levels of FDI have dropped.[5] China's December 2001 entry into the WTO locked open China's access to its key export market, the United States. This sharply reduced the perceived risk premium for FDI in China and intensified FDI inflow. This has implications for all regional economies but especially for the countries of Southeast Asia, which have already experienced a relative decline in FDI flows and could lag behind China in technological progress.[6]

China received the largest amount of inward FDI of any nation in 2002—$52.7 billion—after averaging about $40 billion per year for the previous seven years. As pointed out in the Commission's 2002 Report, FDI projects in China are concentrated on new, greenfield investments, whereas FDI directed into the United States generally takes the form of foreign purchases of existing American firms.[7] Global flows of FDI to China over the past seven years exceeded those to the rest of East Asia (excluding Hong Kong) combined, including Japan and Singapore. The large stock of FDI in China—estimated to be nearly $550 billion at the end of 2003[8]—is a reflection of China's becoming thoroughly enmeshed in global production networks.[9] As indicated in figures 4.1 and 4.2, the United States has contributed a relatively small share—on average about four percent—of China's annual flows and cumulative stock of FDI, the bulk of which is sourced from within Asia, notably Taiwan, Hong Kong, Japan, South Korea, Thailand, and Singapore.

Figure 4.1 World FDI Inflows Into Asia, 1997–2002 (Billions of U.S. dollars)

	1997	1998	1999	2000	2001	2002	1997–2002
China	$44.2	$43.8	$40.3	$40.8	$46.8	$52.7	**$268.6**
Hong Kong	11.4	14.8	24.6	61.9	23.8	13.7	**150.2**
China & Hong Kong	55.6	58.5	64.9	102.7	70.6	66.4	**418.8**
Japan	3.2	3.2	12.7	8.3	6.2	9.3	43.1
Indonesia	4.7	−0.4	0.0	0.0	0.0	−1.5	2.8
Korea, Rep. of	2.8	5.4	9.3	9.3	3.5	2.0	32.4
Malaysia	6.3	2.7	3.9	3.8	0.6	3.2	20.5
Philippines	1.2	1.8	0.6	1.3	1.0	1.0	7.0
Singapore	10.7	6.4	11.8	12.6	10.9	7.7	60.2
Taiwan	2.2	0.2	2.9	4.9	4.1	1.4	15.9
Thailand	3.6	5.1	3.6	3.4	3.8	1.1	20.5
Vietnam	2.6	1.7	1.5	1.3	1.3	1.2	9.6

Source: UN Conference on Trade and Development, **www.unctad.org**; time series figures revised 2003.

Figure 4.2 U.S. FDI Inflows Into Asia, 1997–2002 (Billions of U.S. dollars)

	1997	1998	1999	2000	2001	2002	1997–2002
Asia/Pacific	$13.7	$14.7	$21.0	$21.0	$14.7	$28.8	$113.9
Australia	1.2	6.3	4.9	0.9	−0.4	3.7	16.6
China	1.3	1.5	2.6	3.1	1.2	0.9	**10.6**
Hong Kong	3.8	1.9	4.2	4.3	4.4	2.0	**20.6**
China + HK	5.1	3.4	4.2	4.3	5.6	2.9	**25.5**
Indonesia	—	0.5	2.2	1.2	0.026	0.4	4.3
Japan	−0.3	6.4	5.2	8.1	2.3	4.5	26.2
Korea, Rep. of	0.7	0.6	1.2	1.2	1.3	1.4	6.5
Malaysia	0.7	−0.5	—	0.3	−0.004	9.4	9.9
Philippines	0.1	0.3	−0.3	—	−0.4	0.7	0.4
Singapore	3.7	0.3	3.0	2.7	3.8	11.4	24.9
Taiwan	0.7	−0.6	0.6	1.1	0.9	0.9	3.6
Thailand	—	0.4	1.1	0.5	0.8	0.9	3.7

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

China's entry into the WTO, increasing inflows of FDI, and the new production capacity built up in China have led to an unprecedented expansion of China's trade volume. China's total goods trade increased by twenty-one percent in 2002 and by thirty-seven percent in 2003 (with a forty percent rise in imports). Without taking into account transshipments of imports and exports through Hong Kong, China is now the fourth largest trading and exporting nation in the world, after the United States, Germany, and Japan; if Hong Kong's transshipment trade is included, China's total would exceed Japan's. By any measure, China became the third largest importing country in the world in 2003, behind only the United States and Germany.[10]

By the end of 2003, China became the single largest export market for Japan, South Korea, and Taiwan, eclipsing the United States. All three economies enjoyed significant trade surpluses with China in 2003 (Taiwan, $40 billion; Korea, $23 billion; Japan, $15 billion).[11] China's total trade turnover with the ASEAN countries rose to $78 billion in 2003, with China's imports from ASEAN nations up fifty percent, to $47 billion (versus $31 billion in China's exports to ASEAN), giving the ASEAN grouping a surplus of $16 billion.[12] These regional merchandise trade surpluses reflect China's centrality to global supply chains producing manufactured goods for developed country markets; they are the flip side of China's $124 billion trade surplus with the United States in 2003.

The economic center of gravity in Asia is shifting from Japan to China. Japanese policymakers are increasingly concerned about the long-term strategic consequences of China's rise. The ongoing shift

of production and FDI to China upset long-standing regional manufacturing networks centered on Japan. In the past several years, large Japanese international firms have recognized that establishing a production base in China is essential to their future financial health. In the 1980s and 1990s, Japanese firms dominated production chains set up in Southeast Asia that channeled exports of industrial inputs from Japan and finished manufactures from Southeast Asia to Japan and other world markets. During this period, Japanese companies outsourced a relatively small percentage of their production overseas, and spent a fairly low level of investment in China compared with other regions.[13]

After the Asian financial crisis (1997–98), the productivity of investment in Southeast Asia declined relative to China, and Japan found its product lines challenged by new production coming out of China. In the late 1990s and early 2000s, Japan increased its investments in China and sourced more of its production in China. In the late 1990s, Japanese companies and localities began to express serious concerns about the hollowing out of manufacturing sectors that had moved to China, but in the past few years the shift of production to China has only accelerated. The profitability of Japanese investments in China reportedly has also increased markedly in the past two years.[14]

South Korea's flow of investments into China amounts to less than five percent of total domestic investment and some Koreans see their companies' association with China as benefiting their own domestic economic reforms. Increased South Korean exports to China have helped bolster already buoyant relations between the Republic of Korea (ROK) and the PRC, whose economic interests seem more aligned than ever.[15] Some analysts believe the ROK economy has suffered dislocations from trade and investment ties with China, however. Korean heavy machinery manufacturers, for example, are reportedly transferring operations to the PRC. South Korea feels these economic shifts to China perhaps more than a larger Japan does. For example, Shanghai and Shenzhen ports have grown at double digits and surpassed Pusan to become the third and fourth busiest container ports in the world. South Korea's global textile exports dropped to a thirteen-year low in 2003 of $15.2 billion, largely as a result of increased competition from China. Meanwhile, a new trend suggests a possible Chinese strategy to gain greater economic advantage in the future: Chinese firms seeking Korean technology and experience are beginning to invest in Korea in strategic industrial sectors.[16]

Rapid growth in exports from the rest of Asia to feed China's manufacturing sector has taken some of the sting out of hollowing out. In 2003, most major Asian economies ran substantial trade surpluses with China. The question is whether China will continue to move up the technology ladder to such an extent that its current imports from the rest of Asia will slow or change in composition. Classical development economists contend that Japan, South Korea, Taiwan, and the ASEAN nations have no choice but to rise to China's challenge by advancing their own technological base if they want to remain competitive, maintain domestic employment, and improve standards of living.[17]

Chinese production and export of textiles and garments are expected to surge and remain at high levels following the complete phasing out of quotas under the WTO Multifiber Arrangement, as of January 1, 2005, and put added competitive pressure on marginal producers in South and Southeast Asia. According to a set of econometric models presented to the Commission, a combination of FDI diversion and increased Chinese textile and garment production due to the end of MFA quotas could lead to a net loss of national income in the countries of Southeast and South Asia if China's attraction of FDI is accompanied by technological advancement.[18]

China's Regional Diplomatic Offensive

China's regional diplomacy serves its global economic strategy, which is to maintain access to the open, multilateral trading system upon which its rapid growth depends. It also complements China's national security strategy by conditioning regional actors to its peaceful rise, a trend increasingly seen as economically positive and politically benign among many regional actors, notably South Korea and the ASEAN nations.

Asia is going through historic geopolitical changes due to the rise of China. The region is in search of a new order to accommodate China's growing power and influence and to maintain regional peace and stability.[19] China's strategy of promoting bilateral and regional dialogues, trade agreements, and confidence-building measures is consistent with its stated foreign policy goal of peace and development. Chinese media have lately begun to characterize China's emergence as a regional economic and political power as a peaceful rising (*heping jueqi*).[20]

The 2001 APEC summit meeting in Shanghai is a convenient demarcation line for a new assertiveness in China regional policies. Since then, China has shown (1) a more proactive stance in pursuing strategic partnership agreements and adding substance to them; (2) increased support for and participation in regional security mechanisms, notably the Shanghai Cooperation Organization, the ASEAN Regional Forum, and bilateral military exercises; and (3) an emphasis on its economic and political influence, while downplaying its growing military strength.[21]

China touts its policy of noninterference in the internal affairs of other states and contrasts its hands-off approach to that of the United States, which actively pursues an agenda to combat terrorism and to promote human rights and democratic governance. Aside from reiterating the importance of partners accepting its "one China" principle vis-à-vis Taiwan, China makes few political demands on its Asian neighbors. Needless to say, China does not push human rights, labor, or environmental standards in its diplomacy.

China's regional strategies are driven in part by its energy security needs, as discussed in Chapter 6. Major pipeline projects are being planned to connect China to oil and gas fields in Central Asia and the Russian Far East. Moreover, Chinese energy firms have signed long-term contracts to import liquefied natural gas from Australia, Indonesia, and Iran.

CHAPTER 5

CHINA'S PROLIFERATION PRACTICES AND THE CHALLENGE OF NORTH KOREA

"***PROLIFERATION PRACTICES.*** *The Commission shall analyze and assess the Chinese role in the proliferation of weapons of mass destruction and other weapons (including dual-use technologies) to terrorist-sponsoring states, and suggest possible steps which the United States might take, including economic sanctions, to encourage the Chinese to stop such practices.*" [P.L. 108–7, Division P, Sec. 2(c)(2)(A)]

KEY FINDINGS

- China's assistance to weapons of mass destruction (WMD)-related programs in countries of concern continues, despite repeated promises to end such activities and the repeated imposition of U.S. sanctions. The Chinese government and Chinese enterprises have assisted such states to develop their nuclear infrastructure, chemical weapons capabilities, and/or ballistic missile systems notwithstanding a consistent history of denials. Libya's decision to open up its WMD programs, and the revelations by Pakistan that A.Q. Khan supplied uranium enrichment technology to Libya, Iran, and North Korea, provides new insight into China's legacy of proliferation. China's continued failure to adequately curb its proliferation practices poses significant national security concerns to the United States.
- The dangers posed by the North Korean nuclear weapons program are of grave concern for regional security, and global nonproliferation policies and actions and are exacerbated by a lack of real progress in the Six Party Talks. The extent of Chinese cooperation in those negotiations to achieve a complete, verifiable, and irreversible dismantlement of North Korea's nuclear weapons programs is a critical test of the U.S.-China relationship. Nevertheless, the closed nature of North Korea means intelligence assessments must be judged with caution. As U.S. intelligence estimates of North Korea's nuclear weapons capabilities increase, so too does the urgency for a resolution of the stalemate that has characterized those talks to date. Reports now indicate that North Korea may have reprocessed eight thousand spent fuel rods. This could provide enough plutonium to produce approximately nine weapons in addition to the one to two weapons the North already is believed to possess. China's efforts to convene the Six Party Talks are a commendable preliminary step, but Beijing does not appear to have used its substantial leverage to persuade North Korea to dismantle all elements of its nuclear weapons program.
- It appears that U.S. and Chinese goals for the Six Party Talks are not identical, given recent Chinese public statements that the

United States should modify its negotiating position. Furthermore, a fully developed strategy has not yet been developed for a reasonably staged process of steps, starting with a freeze of North Korea's nuclear programs and ending with irreversible dismantlement under an extensive verification regime. The Commission is concerned that the United States has not presented a detailed plan that puts pressure on North Korea to begin serious negotiations and that presses China to use its leverage on North Korea to negotiate and implement an agreement.

- China continues to permit North Korea to use its air, rail, and seaports to trans-ship ballistic missiles and WMD-related materials. North Korean officials recently stated they do not intend to curtail missile trade, as it provides badly needed foreign exchange. This is contrary to Beijing's stated position that it seeks to curtail this dangerous proliferation activity. China has not applied sufficient pressure on North Korea to stop these exports.
- The need for China's cooperation in resolving the North Korean nuclear crisis has been cited by commentators as a reason the United States has softened its position regarding other outstanding U.S.-China trade and economic disputes. The Commission believes that it is as much in China's national interests as it is in the U.S. national interest to achieve a nuclear-free Korean Peninsula without additional, nonrelated concessions or other inducements. Nevertheless, the expected benefits to the United States from China's cooperation in the Six Party Talks do not appear to have been forthcoming. North Korea's assertions that it is now moving forward with its weapons development programs, both qualitatively and quantitatively, should be taken seriously, with all the attendant risks for U.S. national security interests, regional stability, and global nonproliferation goals.

OVERVIEW

In its 2002 Report to Congress, the Commission stated that China's transfers of technology and components for WMD and their delivery systems to countries of concern, including certain designated terrorist-sponsoring nations, was helping to create a new tier of nations with the capability to produce weapons of mass destruction and ballistic missiles. Since that time, recent events unfortunately have confirmed this warning. Clearly, China is a key to stopping this proliferation.[1]

Chinese supplies of technology and components for weapons of mass destruction and their delivery systems to countries of proliferation concern continue to pose significant security issues for the United States. China's cooperation with Pakistan and Iran in nuclear and missile-related technologies; Beijing's continued economic support for North Korea and whether it will choose to exert its substantial economic leverage to help achieve a complete, verifiable, and irreversible dismantlement of North Korea's nuclear program; and whether China will effectively implement and enforce its export regulations to stem proliferation all remain grave security issues for the future of U.S.-China relations.

The Commission held a hearing on July 24, 2003, examining *China's Proliferation Practices and the Challenge of North Korea*. This hearing took place against the backdrop of a developing nuclear cri-

sis on the Korean Peninsula after North Korea admitted it secretly had resumed a nuclear weapons development program based on uranium enrichment. The Commissioners heard testimony from current and previous administration officials, as well as outside experts, on China's proliferation practices and its role as an intermediary in the Six Party Talks that are aimed at defusing the North Korean crisis.

ANALYSIS AND FINDINGS

Proliferation Is Ongoing

The all-too-real possibility that WMD will be acquired and used by terrorists is of the gravest concern for U.S. national security, unlike the Cold War era, when the prospect of mutual assured destruction between nuclear states made nuclear conflict ultimately unthinkable. The current era is characterized by concerns about transfers of WMD-related materials between states and nonstate actors. Today's challenge is to keep nuclear, chemical, and biological weapons out of the hands of terrorists and rogue nations that are willing to use any means to achieve their goals.

The consequence of more than twenty years of China's direct transfers, as well as associated re-transfers of WMD and related technologies, is that the United States now faces enhanced threats from rogue states or terrorist groups that can acquire WMD capabilities. Unfortunately, even in light of overwhelming evidence of the increased threat to global security, Chinese entities continue to proliferate. This activity calls into question the effectiveness of the U.S. government's pursuit of a partnership with Beijing in counterterrorism efforts or in resolving the crisis on the Korean Peninsula. Moreover, the extent to which U.S. actions to address economic and trade disputes with China may be deferred because of hoped for Chinese cooperation in achieving these U.S. security objectives is of concern. There is a risk in deferring such actions while the level of China's cooperation on counterterrorism and the North Korean crisis is an open question.

The history of Chinese proliferation behavior is one of broken promises during several decades. For years, China transferred ballistic and cruise missiles capable of acting as WMD delivery systems, missile technology, and missile-related components (especially dual-use items) to countries with troubling proliferation records such as Pakistan, Libya, Iran, and North Korea despite U.S. protests and the imposition of sanctions on numerous occasions.[2] Since 1992, the United States has expressed ongoing concern with regard to China's noncompliance with its nuclear commitments and its numerous pledges to the United States with respect to missile proliferation. The United States also believes that China retains undeclared chemical and biological weapons capability inconsistent with its Chemical Weapons Convention (CWC) and Biological Weapons Convention (BWC) obligations.

In contrast to the 1990s, Chinese transfers have evolved from sales of complete missile systems, to exports of largely dual-use nuclear, chemical, and missile components and technologies.[3] While this change represents a quantitative decrease, qualitatively these transfers are equally worrisome. The shift from complete systems to components and technologies continues to raise significant con-

cerns about the extent to which these exports are improving the WMD-related capabilities of recipient countries.[4] Recent activities "have aggravated trends that result in ambiguous technical aid, more indigenous capabilities, longer range missiles, and secondary (retransferred) proliferation."[5] Continuing intelligence reports indicate that Chinese cooperation with Pakistan and Iran remains an integral element of China's foreign policy.[6]

As recently as April 1, 2004, the United States imposed sanctions on five Chinese entities for exports to Iran of items that have the potential to make a material contribution to Iran's WMD or missile capabilities. Several entities such as China North Industries Corporation (NORINCO), a state defense industrial firm, and its subsidiaries, and China Precision Machinery Import/Export Corporation (CPMIEC) have been sanctioned multiple times. NORINCO and any successor, subunit, or subsidiary was sanctioned under the Iran Non-proliferation Act of 2000 twice in 2003 and again in 2004. CPMIEC or its parent, for example, was sanctioned in 1991, 1993, 2002, 2003, and 2004 for missile-related transfers to Iran and/or Pakistan. (See Appendix A for history of U.S. sanctions against the PRC.)

In the summer and fall of 2002, Beijing issued a comprehensive set of export control regulations and control lists. But, at the same time that China was providing its first national training course on the new, missile-related export regulations in February 2003, Chinese entities continued to work with Pakistan and Iran on ballistic missile-related projects, were primary suppliers of advanced conventional weapons to Pakistan and Iran, and provided dual-use chemical weapons-related production equipment and technology to Iran.[7] In testimony to the Senate Select Committee on Intelligence in February 2004, CIA Director George Tenet stated that "although Beijing has taken steps to improve ballistic missile related export controls, Chinese firms continue to be a leading source of relevant technology and continue to work with other countries on ballistic missile-related projects."[8] Reporting to Congress in mid-2003, the CIA stated that "firms in China provided dual-use missile-related items, raw materials, and/or assistance to . . . countries of proliferation concern such as Iran, Libya, and North Korea."[9]

One key issue for the United States is the ability to determine the true relationship of proliferating entities in China and the Chinese government, and the extent to which the Chinese government is aware of these transfers.[10] Some analysts argue that because China is such a large country, the Chinese government may be unaware of the activities of each Chinese entity involved in proliferation. However, the ability of serial proliferators such as NORINCO, which is a state-owned entity, to continue to operate, calls into question China's commitment to enforcing its export control laws. Beijing's failure to control such transfers gives the appearance that these are allowed in accordance with an unstated national policy.

China has generally tried to avoid making fundamental changes in its transfer policies by offering the United States carefully worded commitments[11] or exploiting differences between agreements. With respect to nuclear nonproliferation, China joined the Zangger Committee in 1997, which requires item-specific safeguards, but not the Nuclear Suppliers Group (NSG), which requires full-scope

safeguards. The NSG covers exports of dual-use items, a major difference between it and Zangger and covers not just equipment and material but also technology for the development, production, and use of listed items. Full-scope safeguards allow for International Atomic Energy Agency (IAEA) inspections and verification of declared nuclear facilities.

Recent news reports indicate that China has applied to join the forty-nation NSG and also is discussing entry into the multilateral Missile Technology Control Regime (MTCR).[12]

China's entry into the MTCR may, however, be met with mixed reaction. MTCR membership could mean greater cooperation in controlling missile proliferation or, alternatively, "membership in MTCR would exempt China from certain sanctions, provide it with intelligence, give it a potentially obstructionist role in decision-making, and relax missile related export controls to China." [13]

China is party to the CWC and the BWC, but not to the Australia Group.[14] China has exploited differences between the CWC and Australia Group control lists to export "chemicals and equipment of proliferation concern to countries such as Iran." [15] China's new export control regulations do contain a "catchall" provision that can be used to restrict the export of items not specifically identified on the control list. But, once again, enforcement will be the key test of Beijing's commitment to restrict its exports.

Transfers to Countries of Proliferation Concern

China-Pakistan Nuclear Weapons

Chinese assistance to Pakistan was essential to the development of Pakistan's missile and nuclear programs [16] (see Appendix B). Pakistan's recent admission that its chief nuclear scientist, A.Q. Khan, operated a nuclear arms market and supplied uranium enrichment technology to Libya, Iran, and North Korea confirms the worst—that a huge arsenal of nuclear materiel and technology is now widely diffused without controls. Detailed Chinese nuclear plans initially supplied to Pakistan have been uncovered in Libya, with more discoveries possible. With the Pakistani government's revelations, and Libya's agreement to dismantle its nuclear program, new evidence is surfacing that shows how black market arms purveyors transfer nuclear weapons hardware and technologies from country to country either with government sanction or through underground networks. Although Beijing pledged in 1996 that it would not provide assistance to unsafeguarded nuclear facilities, U.S. intelligence does not "rule out, however, some continued contacts subsequent to the pledge between Chinese entities and entities associated with Pakistan's nuclear weapons program." [17]

China currently is in the process of negotiating the sale of a large, $700 million nuclear reactor to Pakistan in Chasma. However, Pakistan has refused to open all of its facilities to full-scope IAEA inspections and is not a Nuclear Nonproliferation Treaty (NPT) signatory. Under NSG guidelines, no member is supposed to supply nuclear goods to declared non-nuclear weapon states unless the recipient is willing to open all of its nuclear facilities to full-scope IAEA inspections.[18] Arms control expert Henry Sokolski raises serious concerns about this sale to Pakistan and questions why it should be permitted, even though the agreement would be

grandfathered under the terms of China's accession to the NSG, asking:[19] "Is there any country less qualified financially or in need of buying such a reactor, more able to convert the reactor's fresh or spent fuel quickly into bomb material, or freer of legal constraints to proliferate?"[20]

Chinese entities have helped Pakistan to "move toward domestic serial production of solid-propellant SRBMs and supported Pakistan's development of solid-propellant MRBM's."[21] In the first half of 2003, the CIA reports that China also remained a primary supplier of advanced conventional weapons to Pakistan.[22]

China-Iran Missile and Nuclear Cooperation

China's continued assistance to Iran,[23] a designated state sponsor of terror, also is extremely troubling. U.S. intelligence reports that entities from China, Russia, and North Korea helped Iran become self-sufficient in ballistic missile production.[24] Iran produces Scud short-range ballistic missiles, is in the late stages of developing the Shahab medium-range ballistic missile, and is pursuing longer-range missiles."[25] Chinese entities continue to assist Iran with dual-use missile-related items, raw materials, and chemical weapons-related production equipment and technology as of the CIA's most recent unclassified reporting that covers the period from January through June of 2003.[26]

In October 1997, China agreed to end cooperation with Iran on supplying a uranium conversion facility, not to enter into any new nuclear cooperation with Iran, and to bring to conclusion within a reasonable period of time two existing projects.[27] But concerns remain within the intelligence community, as of the first half of 2003, that Chinese firms continued to cooperate with Iran in the nuclear field.[28]

According to news reports, "An Iranian opposition group found that Iranian front companies procured materials from China (and other countries) for secret nuclear weapons facilities."[29] It also was reported last year that in Iran "about fifty Chinese experts have been observed at a uranium mine at Saghand, and North Korean and Chinese experts supervised the installation of centrifuge equipment to enrich uranium near Isfahan."[30]

The United States is convinced that Iran is "pursuing a clandestine nuclear weapons program based on both enriched uranium and low burn up plutonium."[31] After enormous pressure from the international community and the IAEA, Iran has agreed to demands that its nuclear program be open for inspections and that it halt its uranium enrichment and reprocessing activities. The IAEA cited Russia, China, and Pakistan as "probable suppliers of the technology Iran used to enrich uranium."[32]

Energy Security

One potential explanation for China's history of proliferation to countries such as Iran, Iraq, and Libya, countries that have been on the State Department's list of terrorist sponsors is China's growing dependence on Middle East oil.[33]

China is a net importer of oil, and its need for foreign oil is expected to double by 2010. This need for energy security may help explain Beijing's history of assistance to terrorist-sponsoring states, with various forms of WMD-related items and technical assistance,

even in the face of U.S. sanctions. Such assistance to Iran appears to be ongoing.

Some research indicates that China's sales of arms-related material and technologies have not only been for hard currency but also for favorable oil concessions. Iran, for example, exported 12.4 million tons of crude oil to China in 2003.[34] The Zhuhai Zhenrong Corporation, a spin-off of NORINCO, a Chinese government-owned weapons producer and serial proliferator currently under sanction, has agreed to purchase $20 billion worth of liquefied natural gas from Iran over twenty-five years and is expected to complete deals to develop three Iranian oil fields.[35] Sinopec Group, China's state-owned petrochemical company, which already has an oil project in Iran, is holding talks with the Iranian government to purchase liquefied natural gas. Analysts say this would be an important coup for Iran in the face of U.S. economic sanctions.[36]

But, this pursuit of oil diplomacy may support objectives beyond just energy supply. Beijing's bilateral arrangements with oil-rich Middle Eastern states also helped create diplomatic and strategic alliances with countries that were hostile to the United States. For example, with U.S. interests precluded from entering Iran, China may hope to achieve a long-term competitive advantage relative to the United States. Over time, Beijing's relationship-building may counter U.S. power and enhance Beijing's ability to influence political and military outcomes. One of Beijing's stated goals is to reduce what it considers U.S. superpower dominance in favor of a multipolar global power structure in which China attains superpower status on par with the United States. See Chapter 6 for further analysis of China's energy needs and strategies.

China and North Korea

In October 2002, North Korea revealed that it secretly had resumed its nuclear weapons program. This was in violation of its commitments under the 1994 Agreed Framework, as well as the NPT, its IAEA safeguards agreement, and the Joint North-South Declaration on the Denuclearization of the Korean Peninsula. The North Korean government acknowledged to a U.S. delegation that it had a program to enrich uranium for nuclear weapons, which the North now denies, triggering the current crisis on the Korean Peninsula. In the late 1990s, the United States had evidence of the uranium enrichment program,[37] which now has been corroborated by Pakistan's A.Q. Khan, who began working with North Korea on uranium enrichment not long after the 1994 Agreed Framework was signed.

It is reported that around 1997, Pakistan's A.Q. Khan "made inroads with the government of Kim Jong Il, as it sought a way to make nuclear fuel away from the Yongbyon plant and the prying eyes of American satellites."[38] According to intelligence officials cited in the *New York Times*, Pakistan transferred to North Korea all of the equipment and technology it needed to produce uranium based nuclear weapons.[39]

In addition, CIA Director George J. Tenet stated that "[T]he Intelligence Community judged in the mid-1990's that North Korea had produced one, possibly two, nuclear weapons. The eight thousand rods the North claims to have processed into plutonium metal

would provide enough plutonium for several more."[40] Recent reports now indicate that North Korea may have reprocessed all eight thousand fuel rods and that it may have sufficient stocks for an additional eight or nine nuclear weapons.[41]

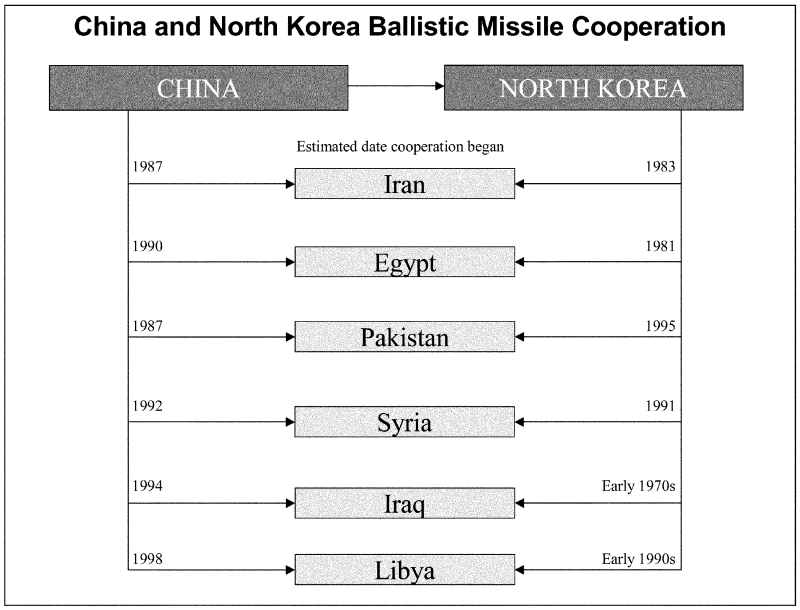
In June 2000, the Japanese newspaper *Sankei Shimbun* obtained a Chinese report on the North's uranium production program, which it said was secretly operating since 1989 at the Mt. Chonma Power Plant in North Phyongan Province. The information was provided by a North Korean military defector.[42]

Open to question is when Beijing learned of North Korea's nuclear weapons programs and how much it has known, given China's close cooperation with Pakistan's nuclear program and Pakistan's cooperation with North Korea. China has provided assistance to North Korea's missile program, its space program, and possibly its nuclear program, either directly or indirectly through Pakistan.[43] Since the 1990s, Chinese airspace, military airfields, and ports were used to transport WMD and related technologies between Pakistan, North Korea, and Iran.[44] According to the CIA, "[f]irms in China have provided dual-use missile-related items, raw materials, and/or assistance to . . . North Korea."[45]

Similarities also exist between Chinese and North Korean missiles. "China's CSS–3 booster stage rocket and the DPRK's [North Korea] Taepo Dong–1 (fired over Japan on 31 August 1998) used liquid hydrogen-nitrogen mixed fuel."[46] As reported in the spring 2001 issue of the *Journal of International Affairs*, the CIA also noted that following the U.S. bombing of the Chinese embassy in Belgrade, Chinese state-owned enterprises increased exports of high-technology components to North Korea.[47] According to the *Washington Times*, U.S. intelligence believes a Chinese chemical manufacturer in Dalian, which is a Chinese seaport near North Korea, shipped "tons" of tributyl phosphate (TBP), a dual-use chemical, to North Korea. U.S. intelligence believes the TBP was intended for the North's nuclear weapons program.[48]

Several North Korean government-trading firms are located in China. For example, the Korea Daesong Bank operates a branch called the Korea Daesong Trading Corporation which is located in Hong Kong.[49] The Zokwang trading company in Macau is part of the Korea Daesong Trading Corporation and handles exports of industrial products. U.S. intelligence has linked this company to North Korea's covert WMD program.[50] Moreover, in Shanghai are the Maebong Trading Co. and the Amur River National Development General Bureau.[51] In 1997, a former official of North Korea's Ministry of Foreign Affairs testified before Congress stating that the Maebong Trading Company was responsible for importing high-technology weapons such as missiles.[52]

Chinese and North Korean assistance to global ballistic missile proliferation is extensive. With respect to ballistic missiles, China and North Korea have been providers of ballistic missiles, cruise missiles, and their production facilities to Iran, Iraq, Syria, and Egypt. In fact, very few programs have not directly benefited from Chinese and/or North Korea assistance and, with the exception of Libya and Iraq, cooperation continues today. These interrelationships are highlighted below.



Source: See Appendix D for background information.

China's Role in the North Korea Crisis

From the onset of the current crisis, the United States has been seeking China's assistance in resolving the stand-off with North Korea. China exerts significant leverage over North Korea and is its largest trading partner. Moreover, a Treaty of Friendship, Cooperation and Mutual Assistance between China and North Korea dates back to 1961. Without Chinese assistance, it is difficult to imagine how the regime in the North could remain in power. China provides approximately ninety percent of North Korea's oil and forty percent of its food[53] (approximately $500 million in food and heavy oil)[54] and has consistently allocated twenty-five to thirty-three percent of its foreign assistance budget to North Korea since 1996.[55] It was reported that the oil pipeline between China and North Korea experienced "technical difficulties" and was shut down for three days in February 2003[56]—an event analysts say sent a powerful signal to Pyongyang and helped to persuade North Korea to join three-country talks in April 2003.[57] One estimate holds that the North Korean economy would be paralyzed within a period of six months should Chinese energy assistance be halted.[58] Another study estimates that Leader Kim Jong Il's regime would collapse within two years if international economic sanctions were imposed.[59]

Nonetheless, despite China's active role in the Six Party Talks, in which it is serving as the key intermediary with North Korea, to date it appears unwilling to use its leverage in a significant way. Notably, China has been opposed to sanctions and to discussing the North Korean nuclear issue in the United Nations.[60] If North Korea were to carry out nuclear tests publicly, China reportedly has indicated that it would not oppose a proposal to impose economic sanctions in the United Nations.[61] But thus far, China has

resisted attempts to put this issue before the United Nations, presumably in support of promises it made to Pyongyang.[62]

China's position in the "Six Party Talks is that it seeks elimination of North Korea's nuclear weapons program and that it agrees with the U.S. position that a complete, verifiable and irreversible dismantling of the North's nuclear capabilities is required. North Korea has indicated that it will dismantle its nuclear weapons program in return for economic aid and security guarantees. But, subsequent to the last round of Six Party talks in February 2004, Pyongyang's official news agency stated that allowing nuclear inspections and the dismantling of its nuclear weapons program would only lead to a U.S. invasion,"[63] not prevent it.

Beijing's desire to avoid regional instability and regime change in Pyongyang, its long-time ally and buffer state, may be inducing its active participation in the Six Party Talks. Regime change in North Korea, either through economic blockade or a military strike, could result in a democratic and reunified Korea, likely increasing American influence in Asia. On the other hand, Beijing's active role in facilitating talks fosters good relations with the United States, its most important trading partner, and enhances China's prestige. Further, China's participation may help to assuage the security fears of its neighbors, prevent a regional arms buildup, and preclude the United States from taking preemptive military action against the North or forcing imposition of an economic blockade.

But time is not on our side in confronting this crisis. As the Six Party Talks drag on, North Korea's nuclear weapons and ballistic missile programs keep moving apace. While we cannot be sure just how far North Korea has progressed, there seems to be a growing consensus that it already possesses significant capabilities in this regard and will advance considerably further within a matter of months. As these capabilities are attained, the prospects for achieving a complete, verifiable, and irreversible dismantlement by North Korea are dimming substantially. Such an outcome, while contrary to U.S. objectives, may on the other hand satisfy Beijing's strategic objectives—its desire to keep the North Korean regime in place while also being perceived to have worked cooperatively with the international community.

The key question is not only whether China will be willing to exert leverage in a meaningful way on North Korea, but also whether China is prepared to press the North Koreans to accept a robust and intrusive dismantlement verification regime, an essential component of a complete, verifiable, and irreversible dismantlement scenario. North Korea's failure to comply with the 1994 Agreed Framework underscores the absolute requirement for onsite inspections and verification. Given China's posture to date on the Proliferation Security Initiative (PSI), not to mention its own continuing proliferation problems, it is certainly a questionable proposition.

The Commission is concerned that the United States, with little benefit in return, may be offering unrelated trade concessions or other inducements to China for its cooperation in this crisis. The Commission believes that it is as much in China's national interests as it is in the U.S. national interest to achieve a nuclear-free Korean Peninsula and therefore that unrelated inducements for China's help should not be necessary.

The recent visit of Leader Kim Jong Il to meet with China's leaders, including President Hu and Central Military Commission Chairman Jiang Zemin, followed a visit by Vice President Cheney, during which Mr. Cheney presented Beijing with new evidence on North Korea's nuclear weapons program and reportedly warned that time is running out for ending the stalemate. President Hu is said to have advised Kim to soften his stance on North Korea's nuclear weapons program, after reassuring Kim that chances were slim that the United States would invade North Korea. Kim is also believed to have requested more aid.[64] On the heels of Kim's return to Pyongyang, North Korea's number two leader Kim Yong-nam told a U.S. policy expert visiting the North that "If Bush insists on his present policy of a complete, irreversible and verifiable dismantling first, we wouldn't be interested in having a deal with the United States. . . . We are going to use this time one hundred percent effectively to strengthen our nuclear deterrent, both quantitatively and qualitatively."[65]

Export Controls

In November 2000, the Chinese government pledged to the United States that it would not assist "in any way, any country in the development of ballistic missiles that can be used to deliver nuclear weapons" and that it would publish comprehensive, missile-related export controls. In return, the United States agreed to waive sanctions for Chinese assistance to Iranian and Pakistani missile programs. In August 2002, as part of this commitment, the Chinese government published a comprehensive export control list.[66]

It remains to be seen how China will progress in implementing its new regulations. According to a recent in-country assessment by the Monterey Institute of International Studies, the Chinese government has taken steps to strengthen its "export control infrastructure, increase communication among various branches and levels of government, offer training to local officials and exporters and improve the transparency of its system."[67] Problems, however, remain with respect to end-use verifications, the number of personnel dedicated to training, the ability of companies to skirt the law through falsified documentation, and a lack of information on the part of some exporters.[68] The Commission believes that the Chinese government has not made an adequate effort to monitor its companies, as evidenced by the cases of serial proliferators that are government entities or spin-offs of formerly state-owned enterprises.

The Monterey study points to the lack of public evidence that firms have been punished for illegal exports, in contrast to Chinese government claims that in fact violators have been punished discretely with fines, revocation of licenses, and other legal punishments.[69]

During April 2004 talks, the U.S.-China Joint Commission on Commerce and Trade, a government-to-government consultative forum, reached agreement on procedures to strengthen end-use visit cooperation and help ensure that U.S. exports of controlled dual-use items are being used by their intended recipients for their intended purposes.

How China implements its export control regime will be a key test of its commitment to cooperate with the United States to stem

proliferation. Implementation will depend on the Chinese government's foreign policy objectives which may override any interest in pursuing nonproliferation objectives: China's "strategic relationship with Pakistan, its desire to avoid instability or regime change in North Korea, or its desire to demonstrate its opposition to a unipolar world." [70]

The Proliferation Security Initiative

In May 2003, the United States launched the Proliferation Security Initiative to combat further spread of WMD. So far, the United Kingdom, Japan, Australia, Italy, France, Germany, Poland, Portugal, the Netherlands, Spain, and Liberia have agreed to support the initiative. Canada, Singapore, and Norway are also expected to provide support. The PSI is aimed at air, sea, and land interdiction of WMD and their delivery systems and related materials to state and nonstate actors of proliferation concern.

Although it is not a member of the PSI, China has been informed about the progress of the talks and has been invited to participate but has not agreed to do so. The chances of China agreeing to aggressive measures against the North Korean arms trade along the lines of the PSI appear unlikely. The Chinese foreign ministry on July 11, 2003, stated that China "does not approve of sanctions, blockages and other measures which are aimed at putting pressure on (North Korea). . . . Doing so will not only be useless to solve the problem, but will escalate antagonism and tension." [71] Further, China appears to be working through the United Nations to not only undermine the initiative but also to render it globally ineffective. This has been accomplished by getting the United States to drop a provision on the interdiction of foreign vessels carrying banned weapons on the high seas.[72]

Whether through a deterrent effect, or actual interdictions of WMD and missiles or their components, the PSI could put a serious dent in the North's ability to earn income from illicit exports to rogue states. In 2001, Pyongyang reportedly earned more than $560 million from missiles sales, and income from illegal drugs was between $500 million and $1 billion.[73] The North has stated that an economic embargo would be grounds for war. PSI interdictions, as contemplated, appear designed to fall short of enforcing an indiscriminate embargo on outbound North Korean maritime traffic, with the focus instead on WMD shipments. Whether such interdictions would be considered a less provocative measure than an embargo remains to be seen. President Bush has proposed that the PSI be expanded to include greater cooperation in law enforcement, such as through Interpol, "to bring to justice those who traffic in deadly weapons, to shut down their labs, to seize their materials, to freeze their assets." [74]

The Bush administration believes the PSI was an important factor in convincing Libya to end its nuclear program after American and British intelligence led to the interception of a German-owned ship bound for Libya with parts of sophisticated centrifuges. The administration hopes that North Korea will follow Libya's example and find that it would be to its own benefit to renounce its nuclear ambitions.

RECOMMENDATIONS

- Should the current stalemate in the Six Party Talks continue, the Commission recommends that Congress press the administration to work with its regional partners, intensify its diplomacy, and ascertain North Korean and Chinese intentions with a detailed and staged proposal beginning with a freeze of all North Korea's nuclear weapons programs, followed by a verifiable and irreversible dismantlement of those programs. Further work in this respect needs to be done to determine whether a true consensus on goals and process can be achieved with China. If this fails, the United States must confer with its regional partners to develop new options to resolve expeditiously the standoff with North Korea, particularly in light of public assessments that the likely North Korean uranium enrichment program might reach a stage of producing weapons by 2007.
- The Commission recommends that Congress press the administration to renew efforts to secure China's agreement to curtail North Korea's commercial export of ballistic missiles and to encourage China to provide alternative economic incentives for the North Koreans to substitute for the foreign exchange that would be forgone as a result of that curtailment.
- As recommended in the Commission's 2002 Report, and now similarly proposed by President Bush and the U.N. Secretary General, the Commission reiterates that Congress should support U.S. efforts to work with the U.N. Security Council to create a new U.N. framework for monitoring the proliferation of weapons of mass destruction and their delivery systems in conformance with member nations' obligations under the Nuclear Non-Proliferation Treaty, the Biological Weapons Convention, and the Chemical Weapons Convention. This new monitoring body would be delegated authority to apply sanctions to countries violating these treaties in a timely manner or, alternatively, would be required to report all violations in a timely manner to the Security Council for discussion and sanctions.[75]
- As recommended in the Commission's 2002 Report, the Commission reiterates that Congress should act to broaden and harmonize proliferation sanctions by amending all current statutes that pertain to proliferation to include a new section authorizing the president to invoke economic sanctions against foreign nations that proliferate WMD and technologies associated with WMD and their delivery systems. These economic sanctions would include import and export limitations, restrictions on access to U.S. capital markets, restrictions on foreign direct investment into an offending country, restrictions on transfers by the U.S. government of economic resources, and restrictions on science and technology cooperation or transfers. The new authority should require the president to report to Congress the rationale and proposed duration of the sanctions within seventy-two hours of imposing them. Although the president now has the authority to select from the full range of economic and security-related sanctions, these sanctions are case specific and relate to designated activities within a narrow set of options available on a case-by-case basis.[76]

Appendix A Current U.S. Sanctions on the PRC

ACT	SANCTIONED PARTY(IES)	SANCTION	REASON FOR SANCTION	DATE OF SANCTION	DATE SANCTION WAIVED
Foreign Relations Authorization Act of 1990–91 (Tiananmen Sanctions)		• Suspension of: 1) Export of Satellites for Launch by the People's Republic of China 2) Nuclear Cooperation with the People's Republic of China	• Tiananmen Square crackdown	• 1990	1) Presidential waivers for the export of satellites for launch by the PRC occurred in the following cases: —Aussat-1 and -2 and Frija, 1991 —Asiasat-2, Apsat, Intelsat-7A, Starsat, and AfriStar, 1992 —Iridium and Intelsat-8, 1993 —Echostar, 1994 —Cosat, Mabuhay and Chinasat-7, 1996 —Asia Pacific Mobile Telecommunications (APMT) satellite, 1996 —Globalstar, 1996 —Satellite parts for PRC Fengyun-1, 1996 —Sinosat, 1996 —Chinasat-8 (built by Loral), 1998 2) 1998 (Presidential waiver)
1990 Missile Technology Control Act	• China Precision Machinery Import-Export Corp. and China Great Wall Industry Corp. • China's Ministry of Aerospace Industry	• Prohibition of the export of missile-related computer technology and satellites • Prohibition of the export of Missile Technology Control Regime (MTCR) items and U.S. government contracts	• PRC transferred missile-related technology to Pakistan • PRC shipped M-11 related equipment to Pakistan	• 1991 • 1993	• 1992 (Presidential waiver) • 1994 (Presidential waiver)

	• China Metallurgical Equipment Corporation	• Prohibition of U.S. exports of MTCR annex items to the sanctioned entity	• Proliferation of missile technology to Pakistan	• 2001 (Duration of a minimum of 2 years)	
Iran Nonproliferation Act of 2000	• Liyang Chemical Equipment, China Machinery and Electric Equipment Import and Export Company (aka China National Machinery and Electric Equipment Import and Export Company), and a Chinese individual	• Prohibition of U.S. government procurement of goods and services from the sanctioned entities. Prohibition of U.S. government assistance to the entities. No new individual licenses shall be granted for the transfer to these foreign entities of controlled items.	• Supplying Iran with materials used in the manufacture of chemical and biological weapons	• January 2002 (Duration of a minimum of 2 years)	
	• Jiangsu Yongli Chemicals and Technology Import and Export Corporation	• Prohibition of U.S. government procurement of goods and services from the sanctioned entity. Prohibition of U.S. government assistance to the entities. No new individual licenses shall be granted for the transfer to these foreign entities of controlled items.	• Reports indicate company was involved in export of dual-use items covered in the Australia Group	• 2001 (Duration of a minimum of 2 years)	
	• Liyang Chemical Equipment Company (aka Liyang Yunlong), Zibo Chemical Equipment Plant (aka Chemet Global Ltd.), China National Machinery and Electric Equipment Import and Export Company, Wha Cheong Tai Company, China Shipbuilding Trading Company, China Precision Machinery Import/Export Corporation, China National Aero-Technology Import and Export Corporation, and one Chinese individual	• Prohibition of U.S. government procurement of goods and services from the sanctioned entity. Prohibition of U.S. government assistance to the entities. No new individual licenses shall be granted for the transfer to these foreign entities of controlled items.	• Aiding Iran's weapons of mass destruction programs	• May 2002 (Duration of a minimum of 2 years)	

Appendix A Current U.S. Sanctions on the PRC—Continued

ACT	SANCTIONED PARTY(IES)	SANCTION	REASON FOR SANCTION	DATE OF SANCTION	DATE SANCTION WAIVED
	• Taian Foreign Trade General Corporation, Zibo Chemical Equipment Plant, Liyang Yunlong Chemical Equipment Group Company, NORINCO, CPMIEC	• Prohibition of U.S. government procurement of goods and services from the sanctioned entity. Prohibition of U.S. government assistance to the entities. No new individual licenses shall be granted for the transfer to these foreign entities of controlled items.	• Missile proliferation	• June 2003 (2 years)	
	• Beijing Institute of Opto-Electronic Technology (BIOET), NORINCO, CPMIEC, Oriental Scientific Instruments Corporation (OSIC), Zibo Chemical Equipment	• Prohibition of U.S. government procurement of goods and services from the sanctioned entity. Prohibition of U.S. government assistance to the entities. No new individual licenses shall be granted for the transfer to these foreign entities of controlled items.	• Sold equipment or expertise that Iran could use in nuclear, chemical, and biological weapons programs	• April 2004 (2 years)	
Chemical and Biological Weapons Control and Warfare Act of 1991	• Nanjing Chemical Industries Group (PRC), Jiangsu Yongli Chemical Engineering and Technology Import/Export Co. (aka Jiangsu Yongli Chemicals and Technology Import and Export Corporation) (PRC), Cheong Yee Limited (Hong Kong), and five Chinese individuals	• Prohibition of U.S. government procurement of goods or services from the sanctioned entities or persons. Prohibition of importation into the United States of products produced by the sanctioned entities.	• Contributed to Iran's chemical weapons program	• 1997	• In effect

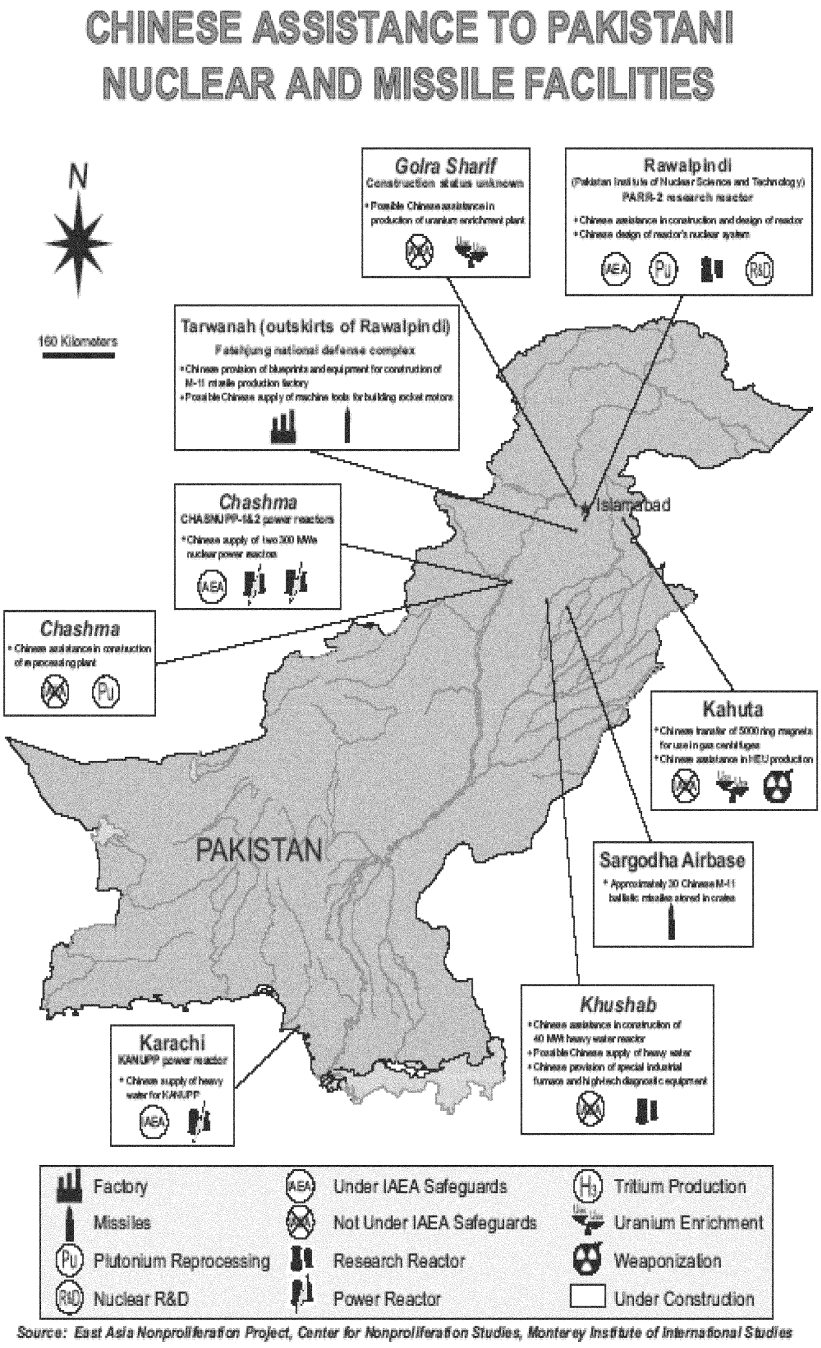
Iran-Iraq Arms Proliferation Act	• Jiangsu Yongli Chemicals and Technology Import Export Cop., Q.C. Chen, China Machinery and Equipment Import Export Corp., China National Machinery and Equipment Import Export Corp., CMEC Machinery and Equipment Import Export Co., CMEC Machinery Electrical Import Export Co., China Machinery and Electric Equipment Import Export Co., Wha Cheong Tai Co.	• Prohibition of U.S. government procurement of goods and services from the sanctioned entity. No new individual licenses shall be granted for the transfer to these foreign entities of controlled items.	• Chemical weapons technology to Iran	• July 2002 (2 years)	
	• China Shipbuilding Co.	• Prohibition of U.S. government procurement of goods and services from the sanctioned entity. No new individual licenses shall be granted for the transfer to these foreign entities of controlled items.	• Transfer of cruise missile technology to Iran	• July 2002	
Executive Order (12938)	• North China Industries Corporation (NORINCO)	• Prohibition of the importation into the United States of any goods, technology, or services produced or provided by this entity. Prohibition of U.S. government procurement of goods and services from the sanctioned entity. Prohibition of U.S. government assistance to the entities. No new licenses shall be granted for the transfer to these foreign entities of controlled items.	• Missile technology to Iran	• May 2003 (2 years)	• In effect

Appendix A Current U.S. Sanctions on the PRC—Continued

ACT	SANCTIONED PARTY(IES)	SANCTION	REASON FOR SANCTION	DATE OF SANCTION	DATE SANCTION WAIVED
Executive Order (12938)	• CPMIEC	• Prohibition of the importation into the United States of any goods, technology, or services produced or provided by this entity. Prohibition of U.S. government procurement of goods and services from the sanctioned entity. Prohibition of U.S. government assistance to the entities. No new licenses shall be granted for the transfer to these foreign entities of controlled items.	• Missile technology to publicly unnamed country	• July 2003	• In effect
Arms Export Control Act	• NORINCO	• Prohibition of the importation of products produced by the entity. Prohibition of U.S. government procurement of goods and services from the sanctioned entity. Prohibition of U.S. government assistance to the entities. No new individual licenses shall be granted for the transfer to these foreign entities of controlled items.	• Engaged in missile technology proliferation activities	• September 2003 (2 years)	• Waiver for 1 year on import ban for non-NORINCO products

Sources: *Federal Register* and Shirley Kan, Congressional Research Service (CRS) Report: RL31555, "China's Proliferation of Weapons of Mass Destruction."

Appendix B Chinese Assistance to Pakistani Nuclear and Missile Facilities



Source: East Asia Nonproliferation Project, Center for Nonproliferation Studies, Monterey Institute of International Studies

Appendix C China's Nuclear Technology Exports: 1980–2004

COUNTRY	TYPE OF ASSISTANCE
ALGERIA	**Research Reactor** • 15 MWt pressurized heavy water research reactor; possible provisions of heavy water for the reactor; construction began around 1988; placed under IAEA safeguards in 1992 • Designs for construction of third stage of Algeria's Center for Nuclear Energy Research
ARGENTINA	**Low Enriched Uranium** • 20 percent enriched, sold in 1980s, no safeguards **Heavy Water** • 50–60 metric tons (1981–1985); no safeguards **Uranium Concentrate** (U3O8) • 1981–1985, no safeguards **Uranium Hexafluoride Gas** (UF6) • Early 1980s, 30 metric tons; no safeguards **Highly Enriched Uranium** • 12 kg, no safeguards, (1981–1985)
BRAZIL	**Enriched Uranium** • 3 percent, 7 percent, 20 percent enriched; 200 kg total • 1984, no safeguards
CHILE	**Enriched Uranium** • 3, 7, 20 percent enriched, no safeguards (1984) • Uranium mining and processing
INDIA	**Heavy water** • 1982–1987; 130–150 metric tons • No IAEA safeguards **Low-Enriched Uranium** • 1995, for India's Tarapur reactors • Supplied under IAEA safeguards
IRAN	**Research Reactors** • 27kW subcritical, neutron source reactor; provided in 1985; currently under IAEA safeguards • Zero-power reactor; commercial contract signed in 1991; currently under IAEA safeguards • HT–6B Tokamak nuclear fusion reactor, located at Azan University • 20 MWt reactor; contract signed in 1992 but the deal was canceled due to U.S. pressure **Power Reactors:** two 300 MWe reactors • Deal suspended in 1995 and canceled in 1997 • CIA verified project cancellation **Calutrons** (electromagnetic isotope separators, EMIS) • For Karaj and Isfahan facilities; commercial contract signed in 1989; under safeguards **Uranium Hexaflouride (UF6) Production Facility** • Project canceled in October 1997 • CIA verified cancellation of deal • China possibly provided blueprints for facility **Zirconium Tube Production Facility** • Assistance continuing **Uranium Mining Assistance** **Tributylphosphate (for reprocessing)**
IRAQ	**Ring Magnets** • Exports of samarium-cobalt magnets for gas centrifuges, 1989–1990 **Lithium hydride** • 7 tons exported by the China Wanbao Engineering Company for $15 million **Weapons Grade Uranium** • 1980
LIBYA	**Nuclear Weapons Designs** • In 2004, Chinese nuclear weapons designs were reportedly discovered at Libyan facilities, probably the result of Pakistani proliferation
JAPAN	**Uranium Concentrate** • 250 Short Tons to Tokyo Electric Power (1992)

Appendix C—Continued China's Nuclear Technology Exports: 1980–2004

COUNTRY	TYPE OF ASSISTANCE
PAKISTAN	**NUCLEAR WEAPON-RELATED ASSISTANCE** **Nuclear Weapon Design** • Basic, Hiroshima-sized weapon **Nuclear Weapon Testing** • Possible inclusion of Pakistani observers at China's Lop Nur test facility (1989) **Possible Provision of Tritium Gas** • 1986, no safeguards **Uranium Enrichment** • Assistance to unsafeguarded Kahuta enrichment facility • This assistance was mutually beneficial **Ring Magnets** • About 5,000 to unsafeguarded A.Q. Khan Research Laboratory in Kahuta (1995) **Weapons-Grade Uranium for Two Devices** • Early 1980s, supplied without safeguards **Plutonium Production Reactor at Khushab** • 50–70 MW heavy water reactor (unsafeguarded) • Construction assistance • Provided special industrial furnace and high-tech diagnostic equipment (1994–1995) **Reprocessing Facility at Chashma** • Possible assistance constructing unsafeguarded facility **CIVILIAN NUCLEAR ASSISTANCE** **Power Reactor:** Chashma–1 (CHASNUPP), 300 MWe • Build by CNNC, deal signed in late 1995 • Began operating in November 1999 • Under IAEA safeguards (INFCIRC/418) **Research Reactors** • Miniature Neutron Source Reactor (MNSR); supplied under IAEA safeguards (INFCIRC/393) in 1991 • Helped construct PARR–2 research reactor, safeguarded **Heavy water (D2O)** • Up to 5 MT/year for safeguarded PHWR [Kanupp] research reactor • Possibly diverted by Pakistan to the Khushab research reactor against Chinese wishes **Fuel Fabrication Services**
NORTH KOREA	**Provided Nuclear Expertise until 1987**
SYRIA	**Neutron Source Reactor** • 30kWt miniature neutron source research reactor **Highly Enriched Uranium** • Supplied under IAEA safeguards (1992)

Source: Monterey Institute of International Studies.

China's Missile Technology Exports: 1980–Today

COUNTRY	TYPE OF ASSISTANCE
ALBANIA	**Cruise Missiles** • HY–1, HY–2 **Surface-to-air missiles (SAMs)** • HQ–2
ARGENTINA	• Missile Fuel (1995)
BANGLADESH	**Cruise Missiles** • HY–2
BRAZIL	**Missile Technology** • SS–300 **Space Launch** • Joint Satellite Program • Launcher and satellite manufacturing technology • VLS–SLV space launch vehicle

Appendix C—Continued China's Missile Technology Exports: 1980–Today

COUNTRY	TYPE OF ASSISTANCE
EGYPT	**Cruise Missiles** • 72 HY–2 antiship missiles (1990s)
IRAN	**Antimissile systems** • Modified SA–10 and SA–12 SAMs **Anti-tank missiles** • HJ–73 **Ballistic Missiles** • M–7/8610/CSS–8 • M–9/DF–15 (China cancelled the sale under U.S. pressure) **Cruise Missiles** • HY–1 • 100 HY–2 (Silkworm) • HY–4/C–201 • C–601 • YJ–1/C–801 (sales halted in October 1997) • YJ–2/C–802 (sales halted in October 1997) **Assistance to Iran's Indigenous Missile Programs** • Extensive production assistance for the 8610/CSS–8 missile • Extensive production infrastructure for HY–2, C–801 and C–802 missiles (production assistance halted in 1997) • Possible assistance to the Shahab–3 ballistic missile • FL–10 air-launched cruise missile • Assistance in converting SAMs to surface-to-surface missiles • Iran–130 ballistic missile • Tondar–68 (modified M–11) ballistic missile • Oghab/Ugab (Eagle) ballistic missile **Missile Fuel** • Various propellant ingredients • Ammonium perchlorate **Missile Guidance and Control Technology** • Guidance kits (mid-1990s) • Gyroscopes (mid-1990s) • Accelerometers (mid-1990s) • Test equipment for ballistic missiles (mid-1990s) **Surface-to-air missiles (SAMs)** • HQ–2J, HN–5, NN–5 (shoulder-fired)
IRAQ	**Cruise Missiles (1980s–1990s)** • HY–2 (Silkworm) • C–601 • YJ–1/C–801 **Missile Engine Testing Facility/Project 3209** • Supply of standard parts for liquid propellant engine, late 1980s **Missile Fuel** • 10 tons of UDMH, late 1980s • 7 tons of lithium hydride; 1989–1990; exported by the China Wanbao Engineering Company (CWEC) • Ammonium perchlorate, 1994
LIBYA	**Missile Fuel** • Lithium hydride
NORTH KOREA	**Cruise Missiles** • HY–1, HY–2 **Expertise/training** • Scud reverse engineering • Long-range missile project • Rocket engine design • Metallurgy • Airframe expertise • Small warhead design **Missile Technology** • Rocket design and production • Fiber Optic Gyroscopes • Accelerometers **Surface-to-air missiles (SAMs)** • HQ–2

Appendix C—Continued China's Missile Technology Exports: 1980–Today

COUNTRY	TYPE OF ASSISTANCE
PAKISTAN	**Ballistic Missiles and Launchers** • 34 M–11/DF–11 missiles; stored at Pakistan's Sargodha Air Force Base near Lahore; delivered in November 1992 • M–11 transporter-erector-launchers (TELs) **Possible Assistance to Indigenous Missile Programs** • Hatf–1, Hatf–2 and Hatf–3 ballistic missiles • Anza surface-to-air missiles **Missile Fuel** • Ammonium perchlorate, 10 tons seized in Hong Kong in 1996; Pakistan's SUPARCO was caught attempting to import the ammonium perchlorate from a company in Xian, China **Missile Guidance** • Gyroscopes • Accelerometers • On-board computers **Assistance to Missile Production Factory** • Rawalpindi, 40 km west of Islamabad • Likely producing Pakistani version of M–11 missile • Blueprints and construction equipment, possibly ongoing **Cruise Missiles** • HY–1, HY–2, FL–1, FL–2 **Missile technology** • M–11 components (1991–1997) **Surface-to-air missiles (SAMs)** • HQ–2 **Anti-tank missiles** • Alleged shipment of special metals and electronics for use in production (1998)
SAUDI ARABIA	**Ballistic Missiles** • 30+ DF–3 (CSS–2) missiles; deliveries began in 1988; and included construction of launch complex, training, and post-sale systems maintenance • In 1997, Saudi Arabia requested from China possible replacements for the aging DF–3 missiles; China did not provide any replacements
SYRIA	**Ballistic Missiles** • DF–15/M–9 missiles, Syria provided advance payments • Cancelled under U.S. pressure in 1991; Syria possibly received test missile **Assistance with Indigenous Programs** • 30 tons of ammonium perchlorate in 1992 • Technical exchanges
THAILAND	**Cruise Missiles** • 50 YJ–1/C–801 missiles
TURKEY	• Short- and long-range missile technology (1995) • Joint production of WS–1 artillery rocket (1997–)
UNITED ARAB EMIRATES	**Ballistic Missiles** • Scud-B missile launchers **Cruise Missiles** • HY–2

Legend:
MWt = megawatts thermal
MWe = megawatts electric
MT = metric tons
Kg = kilogram
Kw = kilowatt
KWt = kilowatt thermal

Source: Monterey Institute of International Studies, East Asian Nonproliferation/Center for Nonproliferation Studies (EANP/CNS), 2004.

Appendix D Third World Ballistic Missile Cooperation Between or Among China and North Korea

- **Iran.** In 1983, Iran signed a long-term financing agreement with North Korea for its Scud-B development program and offered its assistance in acquiring critical western technologies.[77] By 1987, North Korea sold Iran approximately 90 to 100 missiles and associated transporter erector launchers. By 1988, Iran had established a Scud-B production plant. In a follow-on to its Scud-B program, Iran negotiated for the purchase of the North Korean Nodong-1 intermediate-range ballistic missiles.[78] By 1989, Iran's domestically manufactured version of the Nodong the Shabab-3 missiles was undergoing flight-testing.[79] Between 1989 and 1990, Iran-China cooperation resulted in the purchase of approximately 150–200 M–7/8610 ballistic missiles and associated production technology.[80] By 1997, Iran was jointly developing with China the NP–110 short-range solid-fuel missile.[81] China has also assisted Iranian efforts to upgrade its North Korean Scud missile arsenal and North Korea has assisted Iranian efforts to improve the accuracy of the C–802, anti-ship cruise missiles Iran bought from China.[82]
- **Egypt.** Both China and North Korea have a long history of supporting Egypt's ballistic missile development efforts. Egypt-North Korea missile cooperation began in 1981,[83] and by the mid-1980s Egypt had provided North Korea an initial shipment of missiles. These were the stock from which North Korea established its domestic ballistic missile program. North Korea then assisted Egypt to produce an extended-range Scud-B.[84] Egypt has the additional goal of producing its own version of North Korea's SCUD-C.[85] This joint cooperation has been ongoing since. Documents seized in a raid on a North Korean front company in Bratislava, Slovakia in 2003, show that North Korea attempted to acquire missile technology for Egypt.[86] China's involvement with Egypt dates to June 1990, when it signed a protocol to help Egypt modernize its Sakr missile factory to produce a new version of the Scud-B.[87]
- **Pakistan.** Pakistan has both liquid-fuel and solid-fuel ballistic missile programs. It continues to receive extensive assistance from China for its solid-fuel ballistic missile and from North Korea for its liquid-fuel missiles. China-Pakistan cooperation began in the early 1990s, when China sold Pakistan M–11 SRBMs. This transfer also included production and manufacturing capability.[88] China has sold Pakistan more than thirty of the 180-mile range M–11 ballistic missiles and the means to build the 450-mile-range Sahheen-1 and 1200-mile-range Shaheen-II missiles.[89] In the late 1990s Pakistan reportedly purchased twelve to twenty-five North Korean Nodong missiles and by 1998 had conducted a Ghauri missile test flight. The Ghauri and the Nodong are probably the same missile.[90]
- **Syria.** Syrian-North Korean cooperation in ballistic missiles probably began in early 1989, when Syria sought North Korean assistance to establish a domestic missile production capability.[91] In 1991, Syria had purchased Scud-Cs from North Korea and by 2000 had upgraded its missile force with the purchase of the Nodong.[92] Chinese cooperation has been in the area of technology

vice the export of actual missiles. In 1999, Chinese-origin aluminum powder was delivered to Syria's missile program and it is not known if this was with Chinese complicity. China may have also assisted Syria with production technologies and materials and may have helped Syria to upgrade its North Korean missiles.

- **Libya.** In the early 1990s, North Korea assisted Libya in establishing its Scud production facility near Tripoli. This has been a long-term effort, and in 1999 missile components were interdicted at Gatwick Airport in England. This confirmed reports that North Korea has sold Scud and Nodong missiles to Libya.[93] Additionally, it has been reported that by June 1998, Chinese technicians were connected to the Al-Fatah missile program and that China continued to transfer missile technology at least until early 2000.[94]

ENDNOTES

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15. Jennifer C. Bulkely, "Making the System Work: Challenges for China's Export Control System," forthcoming publication in *Non-Proliferation Review*, vol. 11, no. 1 (spring 2004).
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17. Ibid.
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19. IAEA INFICR/405 (May 1992), p. 2.
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76. Under the International Economic Emergency Powers Act (IEEPA), the president does have the authority to select from the range of sanctions, but this imple-

mentation is an unlikely remedy as the IEEPA is to be invoked only in the event of a national economic emergency.

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CHAPTER 6
CHINA'S ENERGY NEEDS AND STRATEGIES

*"**ENERGY.** The Commission shall evaluate and assess how China's large and growing economy will impact upon world energy supplies and the role the United States can play, including joint R&D and technological assistance, in influencing China's energy policy."* [P.L. 108–7, Division P, Sec. 2(c)(2)(C)]

KEY FINDINGS

- China is now the world's second largest energy consumer and third largest net oil importer, increasingly dependent on outside sources, and this dependency influences China's energy and national security policies. China has a growing sense of insecurity because of increased dependence on tanker-delivered Middle East oil via sea lanes, including the Straits of Malacca and Hormuz, controlled by the U.S. Navy.
- Reliable access to energy supplies is essential for China's continued rapid economic growth. Shortages are even now forcing China to ration electric power supply. This has slowed down the manufacturing sector and may eventually significantly slow down overall economic growth.
- China's approach to securing its imported petroleum supplies through bilateral arrangements is an impetus for nonmarket reciprocity deals with Iran, Sudan, and other states of concern, including arms sales and WMD-related technology transfers that pose security challenges to the United States.
- The United States can influence China's state-controlled energy policy through technical assistance and through diplomacy. The United States can provide technical assistance to China and participate in joint research and development (R&D) aimed at developing more efficient energy sources, including clean coal technology. Through diplomacy, the United States can promote fuller integration of the PRC into the international oil security system.
- China does not have a meaningful strategic petroleum reserve today, although it is planning to address this deficiency. It does not participate in multilateral market stabilizing organizations such as the International Energy Agency (IEA) and thus benefits from global stockpiles and coordination in world energy crises and speculator-driven price spikes without incurring the attendant costs.
- China's large and rapidly growing demand for oil is putting pressure on global oil supplies. This pressure is likely to increase in the future, with serious implications for U.S. oil prices and supplies and therefore U.S. economic security. China's share of world oil consumption is projected to increase from almost seven per-

cent today to more than nine percent by 2020, whereas U.S. oil consumption is projected to decrease slightly and remain at almost twenty-five percent.

OVERVIEW

China's economic trajectory has driven its expanding energy needs, which have now made it the world's second largest energy consumer behind the United States. Accompanying this growing energy demand has been a growing dependence on imported oil, with China now the world's second largest oil consumer and third largest oil importer.[1] These trends clearly demonstrate that China has become—and will continue to be—a major player in world energy markets.

These developments have several important implications for the United States. First, China's long-term impact on global energy supplies needs to be carefully analyzed, along with whether China's current approach to energy security is conducive to U. S. and other oil-importing countries' long-term energy strategies. Second, China's heavy reliance on coal as an energy source poses a tremendous challenge to both China and the world, as much of this consumption involves unwashed coal and has lead to a surge in air pollution and emissions of greenhouse gases. Lastly, to enhance its energy security, China has entered into energy deals with a number of countries of concern, including Iran and Sudan. These arrangements are troubling, especially to the extent they might involve political accommodations and sales or other transfers of weapons and military technologies to these nations. In sum, China's growing energy demands, particularly its increasing reliance on oil imports, pose economic, environmental, and geostrategic challenges to the United States.

Moreover, China's increasing energy demands pose challenges for China's economic growth. China's export-led growth, fueled by its manufacturing sector, is dependent on energy supplies. China is experiencing increasing electric power shortages. Coal provides around two thirds of China's energy needs, but due to corruption, inefficiencies, and infrastructure problems, China, which has the world's third largest coal reserves, must now import coal in addition to growing amounts of oil and gas. Today, nineteen of thirty-one provinces are rationing electricity, and some factories are limited to a four-day week. This could take five percentage points off the expected annual industrial growth rate and reduce foreign investment.[2]

Proper U.S. policy in this area is a complex calculation given conflicting dynamics. On the one hand, improved energy efficiency and bringing China into the international energy system could help manage oil prices and oil crises, mitigate environmental degradation, and potentially mitigate China's outreach to certain states of concern like Iran and Sudan (and any associated weapons proliferation involved). On the other hand, it will make China's industrial base more efficient, thereby enhancing China's manufacturing competitiveness with the United States and exacerbating the concerns raised in Chapter 1 and may reduce U.S. energy leverage in the event of any U.S.-China conflict.

On October 30, 2003, the Commission held a hearing in Washington on China's energy needs and strategies to evaluate the impact of China's energy demands on global supplies, U.S. security interests, and possible ways in which the United States can influence China's energy policy. The Commission heard from Energy Information Administration (EIA) Administrator Guy Caruso and from energy industry analysts regarding China's role in the supplier-consumer country dynamics of the global petroleum marketplace.

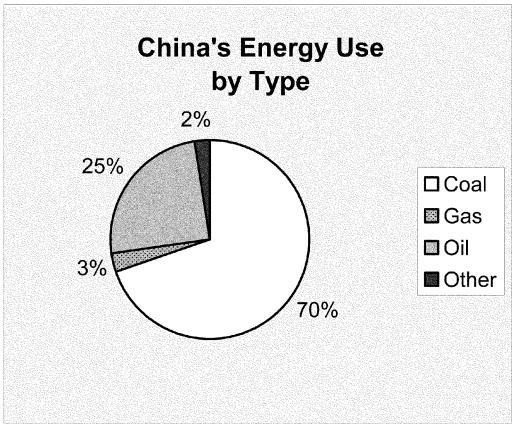
ANALYSIS AND FINDINGS

China's Energy Supply and Demand

China's energy development and policies are directed by the central and provincial governments. These governments "maintain their hold on the energy sector through ownership of energy companies, power to approve investments, and control over energy prices. China's energy policy is based upon a 'strategic' approach which eschews dependence on markets."[3] China's stated energy policy goals are a reduction of reliance on imports by further diversifying the types of energy used, broadening import sources, and raising the levels of technology used in energy production and consumption. In practice, the realization of China's goal of reduced dependency will probably be limited to coal. According to EIA Administrator Guy Caruso, China's actual long-term oil security goals are the development of a strategic petroleum reserve and to "become more involved in international multinational cooperation during oil emergencies."[4] Today, however, progress toward these goals is minimal. China's pragmatic approach is to deal with dependency while reducing vulnerability. The strategy includes leveraging bilateral relationships with key Middle Eastern and African suppliers, building stronger ties with Russia, establishing a market position in Central Asia, and continuing energy efficiency and alternate fuel R&D programs.

According to the EIA, China's total energy consumption will increase at an average annual rate of 3.8 percent through 2020. China's oil consumption was 5 million barrels per day (mb/d) in 2001 and is expected to be 10.9 in 2025, increasing at an average annual rate of 3.3 percent a year. By comparison, the United States is expected to go from 19.6 mb/d to 29.2 mb/d, a 1.7 percent average annual increase.[5] Figure 6.1 presents the type of energy China used, by percent, in 2003.

Figure 6.1 China's Energy Use by Type



Note: See appendix A, China's Energy Trends for further detail.
Source: Eric Ng, "Mainland Power Producers in a Quandary," *South China Morning Post* (Hong Kong), September 10, 2003.

Coal

China is the largest producer and consumer of coal in the world. It will remain China's dominant energy source for the foreseeable future.[6] After the United States and Russia, China has the world's third largest coal reserves (114 billion tons), and coal provides seventy percent of China's energy needs, including eighty-three percent of the electric power sector needs. These reserves are concentrated in China's north, northeast, and the central provinces, but energy requirements are primarily on the eastern seaboard. China is the world's second largest coal exporter. Yet, last year China imported almost eleven million tons of coal, primarily from Australia, the world's largest exporter, because it was cheaper to ship coal from Australia to China's eastern seaboard than to transport it from the Chinese interior by train. In addition, WTO entry has made access to foreign coal much easier for Chinese markets.[7] Sixty percent of China's coal is used in the electric power sector, increasing by fifty to sixty million tons each year. This increase is expected to be offset by the Three Gorges project, projected to produce the energy equivalent of fifty million tons of coal—or ten percent of current demand for electricity—when it is fully operational in 2009.[8] While China's coal imports are driven in part by delayed exploration, dropping capacity, closing of local and small mines, and infrastructure and transportation inadequacies, the main reason is the composition of China's coal reserves—its high grade coal is located in the interior, while the growth-generated power consumption is on the seaboard. While today China's growth-driven coal imports are not a geostrategic concern, future shifts in energy markets could increase pressure on supplies.

More pessimistic analyses hold that the vast bulk of China's reserves will be depleted in the near-to-medium term. Sixty-eight percent of China's coal-producing townships are in their autumn period, twelve percent are ailing, and only the remaining twenty percent have long-term production potential. Most analysts believe

that growth in demand will consistently exceed supply. According to *The Economist*, "China's considerable coal exports can be expected to fall, and it could become a net coal importer as soon as 2005. . . . [China] 'faces a risk of long-term coal and power shortages.'"[9]

Electric power drives China's manufacturing sector. China is developing twenty gigawatts of additional power generation capacity each year to sustain export-driven economic growth.[10] Clean Coal Technology (CCT) is not widely implemented in China's power industry. Many power plants are small or medium (less than three hundred megawatts in size), designed to burn low-quality (low thermal efficiency and polluting) coal. The results are high power generation costs, pollution, and insufficient generation capacity. Improving the efficiency of the coal sector could slow down the accelerating reliance on energy imports. But transportation infrastructure inadequacy, capital rationing, and water shortages restrict efforts to improve the quality of coal through greater use of coal-washing plants, as does lack of demand for better quality coal. Due to inadequate investment, there are inadequate and/or mismatched transmission capacities, i.e., an insufficient grid.

Furthermore, China has a dual pricing system for coal, which favors big cities and major power consumers. Coal prices keep rising due to mine closings and transportation cost increases, but the state-mandated electric power price is static. In spite of the inequitable pricing of coal, the "system has largely succeeded in maintaining a virtually flat electricity tariff to China's industries and main cities."[11] Power shortages likely will continue until 2007, as it will take time to build additional capacity. Some predict an eventual glut due to overbuilding, the result of a characteristic command-economy overreaction. According to Philip Andrews-Speed, the current system "is unable to cope with China's growing energy needs. . . . Last year, a discontinuity between the pricing systems for coal and electric power caused a showdown between the two industries: the power companies were unwilling to pay the higher prices while their output prices were constrained. . . . The lack of a coherent policy for the electrical power sector will continue to be a major obstacle to investment."[12]

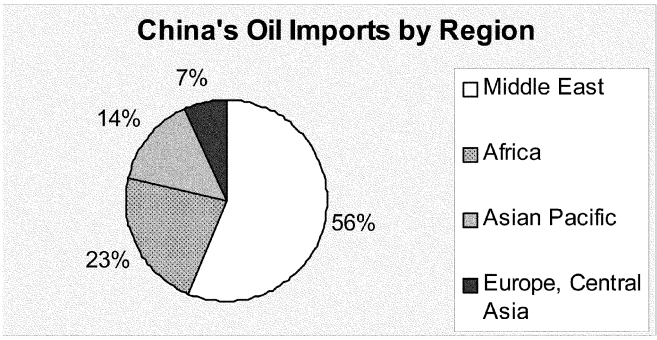
Oil

Oil accounts for twenty-five percent of China's energy use, and China needs to import increasing quantities to sustain growth. In the next decade, the number of vehicles on China's roads is expected to grow to one hundred million, about one half of today's U.S. combined car and truck total.[13] In mid-November 2003, China announced fuel economy standards for new cars and trucks. These fuel efficiency standards, stricter than ours, are a component of China's comprehensive energy security policy.[14]

China became a net oil importer in 1993 and has overtaken Japan to become the second largest petroleum consumer after the United States. Imports are expected to rise to 738 million barrels in 2004 against a total demand of 1.993 billion barrels per year. Domestic supply has begun to plateau at around 1.240 billion barrels a year.[15] EIA forecasts that China's oil imports will increase from today's roughly two million barrels per day to nearly eight

million in 2025, or to sixty percent of China's total oil consumption. The IEA expects China's oil imports to double to four million barrels per day by 2010 and reach ten million barrels per day by 2030.[16] Domestic oil production is flat.[17] (See appendix B, "China's Projected Oil Production v. Consumption, 1990–2020." "China is having an incredible influence on market flows, not just in Asia, but on a world-wide basis. . . . The whole center of gravity of the world energy market is changing."[18] This year and next, China is expected to account for one third of the increase in global oil demand in the $1 trillion a year global oil market.[19] Figure 6.2 presents China's oil imports from other regions in 2001.

Figure 6.2 China's Oil Imports by Region, 2001



Sources: FBIS document CPP20030425000288; China State Customs Administration 2001.

The Middle East, Africa, and Central Asia are the primary areas from which China seeks to meet its long-term needs for oil imports. China is also looking for additional sources of oil and gas in Indonesia, Burma, Venezuela, Peru, and Canada. China is reducing its dependence on Middle East imports, and Angola is now its number one oil supplier.[20] In the Middle East, China is pressing for access to reserves in Iran, the second largest exporter in the Organization of the Petroleum Exporting Countries (OPEC) after Saudi Arabia and hoping that any new Iraqi government will stand behind oil field development contracts it negotiated with China back in 1997. In September 2003, China's main oil company, China National Petroleum Company (CNPC), signed a cooperation protocol to develop Iran's Azadegan oil field. In the past year, Chinese state oil companies have also made investments or struck deals for future investment in Algeria, Azerbaijan, Ecuador, Kazakhstan, Myanmar, Thailand, and Venezuela. China probably will be unable to gain an upstream foothold in Saudi Arabian, Kuwaiti, and United Arab Emirate (UAE) fields, already controlled by western and Middle Eastern oil companies, however. Moreover, China's territorial disputes in and around the South China Sea may be related to its expectations of potential oil reserves and may shape its future efforts to become a more dominant regional power.

Throughout the past year, China and Japan have been competing over the construction of an oil pipeline from Angarsk, Russia, to the Pacific. China wants it to go through its northeast to Daqing, one thousand four hundred miles, at a cost of $2.5 billion. Japan

wants it to go through Russia to Nakhodka, two thousand three hundred miles, at an originally estimated cost of $5.0 billion to $7.5 billion. Further decisions had been put on hold since Mikhail Khodorkovsky, president of Yukos, the company backing the Daqing route, was arrested. On February 20, 2004, Russian Energy Minister Igor Yusufov announced that Russia is now studying the proposal to build the crude oil pipeline to Nakhodka. While China was concerned about a possible pullout by Russia from the agreement, *China Daily* pointed out that Yusufov's word is not final.[21] But it appears that Russia has finally decided to go the Nakhodka route, at an increased estimated cost of $10 billion due to the increased cost of pipe.[22] Figure 6.3 presents China's oil imports by country of origin in 1994, 1999, and 2001, by percent.

Figure 6.3 China's Oil Imports by Country of Origin, 1994, 1999, and 2001, by percent

Import Source Country	1994 Import Amount %	1999 Import Amount %	2001 Import Amount %
Iran	*	10.8	18.0
Saudi Arabia	*	6.8	14.6
Oman	27.3	13.7	13.5
Sudan	~	~	8.3
Angola	3.0	7.9	6.3
Vietnam	4.9	4.1	5.6
Indonesia	38.3	10.8	4.4
Yemen	10.2	11.3	3.8
Equatorial Guinea	~	2.2	3.6
Russia	~	*	2.9
Kuwait	~	*	2.4
Qatar	~	~	2.2
United Kingdom	~	6.0	*
Norway	~	5.5	*
Nigeria	~	3.7	*
Iraq	~	2.7	*
Australia	*	2.5	*

Legend:
* Denotes imports less than two percent
~ Denotes no imports
Source: China Customs Bureau.

China is the world's largest economy without a meaningful strategic petroleum reserve—seven to ten days, compared to Japan's one hundred. According to Kang Wu, an energy analyst with the

East-West Center in Hawaii and a witness at the Commission's October 30 hearing, China is addressing this problem with plans to expand its strategic reserve to fifty to fifty-five days worth of oil imports by 2005 and sixty-eight to seventy days by 2010.[23]

There is a clear distinction between U.S. and PRC approaches to securing oil supplies. Whereas the United States has shifted from an oil import strategy that was based upon controlling the oil at its source to one that is based on global market supply and pricing, the Chinese strategy is still focused on owning the import oil at the production point. According to James Caverly, of the U.S. Department of Energy, "[t]he U.S. strategic framework makes certain that plenty of oil is available in the world market so that the price will remain low and the economy will benefit." The Chinese policy is to own the barrel that they import "... to gain control of the oil at the source. Geopolitically, this could soon bring United States and Chinese energy interests into conflict. Both countries will be in the Persian Gulf for oil."[24] While China's direct investment into energy production could increase global energy supplies, its strategy of securing its own stake in an energy-exporting state, particularly in states of concern, does not appear on balance to contribute to the larger energy security picture for other energy-importing nations. According to EIA Administrator Caruso, in practice PRC equity investment has been comparatively small and not very rewarding.[25] To reduce its increasing dependence on the Middle East, China is diversifying and beginning to shift its energy activities toward the construction of pipelines as part of its comprehensive energy security policy.

On December 23, 2003, the State Council issued a white paper entitled *China's Policy on Mineral Resources*, which states that in order to implement former President Jiang Zemin's pledge to build a well-off society in an all-round way by 2020, China will depend mainly on the exploitation of its own mineral resources to guarantee the needs of its modernization program. The paper noted that "(a)bundant petroleum resources have been discovered in the western regions. Important discoveries have also been made in the Bohai Sea area. In the old oil fields, deeper formations will be exploited" to increase "verified oil reserves and maintain a rational rate of self-sufficiency in oil," reduce reliance upon spot trade, and encourage long-term supply contracts with foreign companies and imports from diversified sources.

The International Energy Agency (IEA), an autonomous body within the Organization for Economic Co-operation and Development (OECD), was established in November 1974 in the wake of the 1973–74 oil crisis. Energy security is its core activity. IEA member countries are committed to the maintenance and improvement of its emergency response systems. IEA gathers and analyzes statistics; administers a plan to guard member countries against the risk of a major disruption in oil supplies; coordinates national efforts to conserve energy and develop alternate energy sources as well as to limit pollution and energy-related climate change; disseminates information on the world energy market; and seeks to promote stable international trade in energy. The IEA oil security system includes maintenance by members of national emergency oil reserves and stockdraw plans, other national measures such as

demand restraint, fuel switching, and surge oil production; operation and coordination of national emergency organizations; testing response measures and training; mechanisms for industry advice and operational assistance; and a reallocation system. According to the IEA's *2002 World Energy Outlook*, IEA stocks were equivalent to 114 days of net imports. IEA importing member countries have a legal obligation to hold emergency oil reserves equivalent to at least ninety days of net imports. Since 1973, the largest oil supply disruption occurred in the 1978–79 Iranian revolution, resulting in a supply shortfall of 5.6 mb/d for six months. Today, the IEA member countries hold about 1.3 billion barrels of public oil stocks, and the IEA feels that its stockdraw potential is sufficient in magnitude and sustainability to cope with the largest historical supply disruption. The IEA cooperates with important nonmember oil-producing and -consuming countries including China.[26] Further involvement of China in the IEA's coordinated multilateral energy security activities could be conducive to the IEA's primary mission of energy security and end China's counter-productive spot market buying such as occurred prior to the Iraq invasion.

Natural Gas

Gas use currently constitutes only three percent of total PRC energy consumption; however, some ambitious gas infrastructure projects have already been launched to support rapid growth targets. Gas infrastructure development is expensive and time-consuming and requires the assurance of future markets and a clear government gas policy and regulatory framework. China's gas reserves were estimated at 53.3 trillion cubic feet in 2002.[27] The political reasons for shifting to natural gas are environmental and security related (i.e., dirty coal and imported oil). Furthermore, existing gas pipelines are underutilized, because China's cities do not have adequate distribution networks to bring the piped gas to individual users.[28] China's natural gas demand is projected to be 2.8 billion—3.4 billion cubic feet by 2010 and 6.4 billion cubic feet by 2020—with fifty-three percent for power generation, twenty-one percent for the chemical sector, and twenty-five percent for city fuel. To meet this demand, China National Offshore Oil Corporation (CNOOC) has signed a $12 billion, twenty-five year contract with Australia for purchase of liquefied natural gas (LNG) from Australia's North Shelf Project.[29] As discussed in Chapter 5, a PRC state-owned company and Iran have executed a $20 billion, twenty-five-year LNG contract.

PRC government plans call for increased gas consumption from the current three percent to eight to ten percent (from 34 billion cubic meters [bcm] to 200bcm) by 2020. The degree of increase depends on economic growth and infrastructure development assumptions. According to the State Development and Reform Commission's Energy Bureau, this goal will require a $26.5 billion investment in pipeline and terminal construction. Even then, domestic supplies will meet only sixty percent of the projected 200bcm demand. The rest will be imported by pipelines from Russia, Uzbekistan, Turkmenistan, and Kazakhstan, and as LNG primarily from Australia and Indonesia—in some cases involving equity investment—but also Iran, Russia, and Qatar. Several LNG

terminals are planned, meeting demand as well as supply security needs: unlike piped natural gas, LNG can be stored.[30] LNG is less vulnerable to terrorism than pipelines.

But, according to the IEA, cheap and abundant domestic coal remains the main competitor to increasing natural gas use, and the inadequate local gas distribution system is a major weakness in achieving the goal. According to the IEA's William Ramsay, the "key success factor is to secure paying customers, otherwise you run the risk of transporting the gas a long way for nothing."[31]

Nuclear Energy

Today, nuclear energy provides only 1.4 percent of China's electric power sector needs. China wants to build thirty-two reactors in addition to today's operational nine by 2020. Nuclear power is expected to account for eight percent of China's future electric power needs. The request for proposals to build the initial four reactors is expected to be issued shortly. Westinghouse and the French company Areva are considered to be the chief competitors, although the existing plants are of French, Canadian, Russian, Japanese, and Chinese designs. This competition is very significant, because China has indicated it wants a standardized design.[32] China's increased use of nuclear energy raises concerns about whether China has sufficient capacity to handle and safeguard spent nuclear fuel.

Joint R&D and Technological Assistance Opportunity Areas

As noted at the outset of the chapter, providing energy efficiency assistance to China may improve China's economic competitiveness, the subject of Chapter 1, but such programs may also work to reduce China's pressure on the world's energy (especially oil) supplies. China will continue to rely on coal as its main source of primary energy. If the PRC can use its coal more efficiently and cleanly, this increased efficiency will offset oil consumption, especially for generation of electric power. Because of coal shortages, the power sector has been increasingly relying on diesel generators. Improved coal production and power plant efficiency in China will reduce pressure on global energy supplies as well. If China can see a way out of dependency on the Middle East, it may be less motivated to enter into reciprocal relationships with states of concern in the Middle East that involve weapons and other nonmonetary concessions. Joint programs can be expected to provide opportunities for U.S. investment in the PRC energy sector (coal and nuclear-fired power plants) resulting in U.S. jobs and profits for U.S. power plant builders and spin-offs with efficiency and environmental benefits for the United States and the world.

Several types of energy technology assistance are currently feasible. The first is the Fischer-Tropsch technology or the coal gasification paraffin process that turns coal into diesel fuel. The costs of this process have dropped to around $30 per barrel. Some companies are currently producing diesel not from coal but from slag, or waste, to transport fuel within the existing infrastructure in an environmentally friendly way. Coal gasification permits sequestration of carbon dioxide. Also, coal gasification, together with the "combined cycle,"[33] produces gas competitive with natural gas. Another technology uses genetically modified biocatalysts to break down cel-

lulose into transportation fuel as ethanol by using straw waste from China's rice farms as feedstocks for transportation fuel. A third possibility is thermal depolymerization—a new waste-to-fuel process that is about to be demonstrated commercially in a ConAgra processing plant in Missouri.[34]

The objectives of the U.S. Department of Energy (DOE)—China Bilateral Science and Technology (S&T) Cooperation are to promote energy security interests between the world's two largest energy consumers, increase market opportunities for U.S. companies and technologies, deploy clean energy technologies, leverage U.S. S&T investments through mutually beneficial cooperation, and to positively influence China's nuclear nonproliferation, export controls, nuclear safety and health, and environmental and waste management. DOE has six S&T cooperation agreements/protocols and twelve annexes with China. Areas of collaboration include the following:

1. High Energy Physics Implementing Accord
2. Protocol on Nuclear Physics and Controlled Magnetic Fusion
3. Fossil Energy Protocol
4. Energy Efficiency and Renewable Energy Protocol
5. Peaceful Uses of Nuclear Technology
6. Protocol on the Exchange of Energy Information
7. Cooperation on the Beijing 2008 Green Olympics[35]

Further technological cooperation projects are on the horizon. PRC fossil fuel efficiency and pollution problems can be effectively addressed by U.S. "off-the-shelf" technologies. Several other potential target areas for technological assistance include coal mining practices efficiencies, coal washing, coal bed methane, new power plant thermal efficiency, and the addition of desulphurization equipment and low NOx burners and particulate emission control equipment on power plants. Several problems hinder such cooperation. From China's perspective, there must be a direct economic, not just environmental, benefit from technology transfer to give the project high priority—not uncommon in developing countries. Further, there exists the possibility of intellectual property rights violations, an otherwise high-risk investment environment, and the PRC's underlying desire to solve problems domestically.

Most of the U.S.-China bilateral cooperative programs in the energy sector are conducted under the framework of the 1979 S&T Agreement discussed in Chapter 7.

In September 2003, U.S. Energy Secretary Abraham signed a key nonproliferation assurances agreement with China. The agreement established a process for determining the necessity of government-to-government nonproliferation assurances in relation to certain nuclear technologies. Thus, the agreement opened the door for scientific cooperation in this field, beginning with the development of the Modular High Temperature Gas Pebble Bed Reactor.[36]

In June 2002, Hydrocarbon Technologies, Inc., (HTI) and China's largest coal-making company, Shenhua Group, signed a $2 billion contract under which HTI will provide technology license, process design, and technical services for construction of the direct coal liquefaction plant. With capability to produce fifty thousand barrels per day (eighteen million per year), this plant will be the second

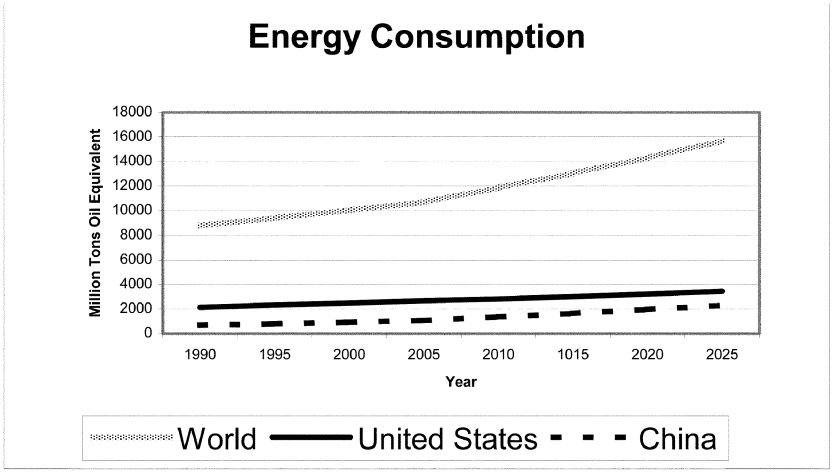
largest in the world after South Africa's Secunda plant. That plant has a capacity of twenty-five million barrels per year and was built in 1982. Construction began in 2003, and operation is to begin in 2005.

Global Energy Picture

Economic growth drives global energy demand. World GDP has grown at the annual rate of 3.1 percent, from $12.7 trillion in 1970 to $32.2 trillion in 2001, and is forecast to grow at the same rate, to $67.4 trillion in 2025. U.S. GDP is expected to grow at three percent per year to $19.3 trillion by 2025, and China's GDP is expected to grow at 6.2 percent, to $5.1 trillion in 2025.[37]

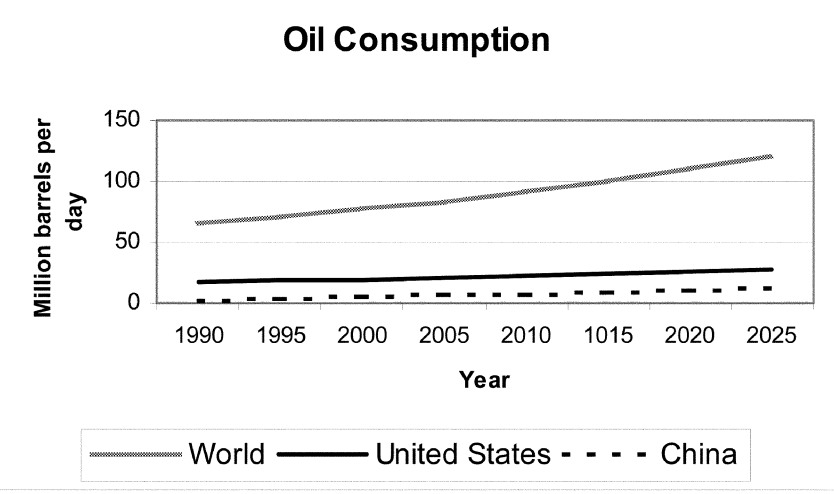
Global energy demand is projected to increase by fifty-eight percent by 2025, from 404 quadrillion British thermal units (BTUs) in 2001 to 640 quads in 2025.[38] See figures 6.4, 6.5, and 6.6 and appendix C, "China Energy Comparisons," for a more detailed view of future trends of China's energy consumption, energy intensity, and carbon intensity compared with the United States and the world total. Oil has been, and will remain, the foremost source of primary energy. World oil consumption is projected to increase from seventy-eight million barrels per day to 119 million barrels in 2025; sixty-one percent will be produced by OPEC and thirty-nine percent by non-OPEC countries. Natural gas is the fastest-growing source of primary energy and is projected to double and overtake coal use, increasing its share from twenty-three to twenty-eight percent. Coal use is projected to increase slowly at 1.5 percent per year, but its share of total global energy use will fall from twenty-four percent to twenty-two percent, with China and India accounting for seventy percent of the increase in coal use. Globally, coal is used primarily in electric power generation (sixty-four percent worldwide) and secondarily in key industries such as steel. According to EIA, "(o)ne exception is China, where coal continues to be the most widely used fuel in the country's rapidly growing industrial sector, reflecting China's abundant coal reserves and limited access to other sources of energy."[39] Globally, nuclear power as a source for electric power is expected to fall from sixteen percent in 2001 to twelve percent in 2025.[40] As a percent of total world energy, it will decrease from around seven percent to about five percent during the same period.[41] Global use of renewable energy sources is expected to increase gradually to around eight percent by 2025.[42] But in China, nuclear power utilization is expected to increase.[43]

Figure 6.4 Energy Consumption, 1990–2025



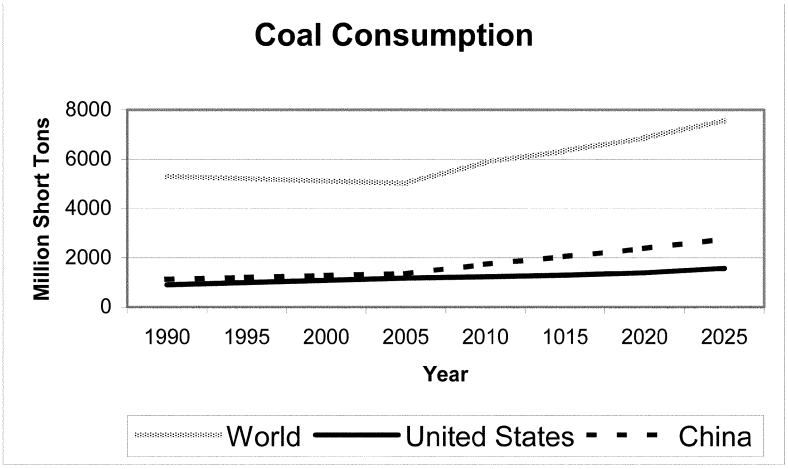
Source: Energy Information Administration, "International Energy Outlook, 2004."

Figure 6.5 Oil Consumption, 1990–2025



Source: Energy Information Administration, "International Energy Outlook, 2004."

Figure 6.6 Coal Consumption, 1990–2025



Source: Energy Information Administration, "International Energy Outlook, 2004."

World Oil Production and Supplies

The EIA's global oil resource base consists of three categories: remaining proven reserves (oil that has been discovered but not produced), reserve growth (increases in proven reserves that occur over time as oil fields are developed, produced, and improved technologically), and undiscovered resources (oil that remains to be found through new field exploration). Figure 6.7 presents these three categories with regard to China, the United States, OPEC and non-OPEC countries, and the world.

Figure 6.7 Oil as a Global Energy Resource

Country	Remaining Proven Reserves (billion barrels)	Expected Reserve Growth (billion barrels)	Undiscovered Resource Estimates (billion barrels)
China	18.3	19.6	14.6
United States	22.7	76.0	83.0
OPEC Countries	869.5	395.6	400.5
Non-OPEC Countries	396.3	334.5	538.4
World Total	1,265.8	730.1	938.9

Source: Energy Information Administration, "International Energy Outlook, 2004."

Canada's proven oil reserves have catapulted from 4.9 million barrels in 2002 to one hundred eighty million barrels in 2003 due to reclassification of Canada's oil sand resources as proven reserves as a result of dramatic reductions in production costs. Canada now has seventy-five percent of the world's oil sands, containing 1.7 trillion barrels of oil. Fifteen percent, 255 billion barrels, is recoverable. Today's production is seven hundred thousand bl/d (barrels

per day), and 2025 estimated production is 2.2 mb/d, of which one half will be consumed by the United States. The reason that the numbers are not higher is lack of transportation infrastructure.[44] Figure 6.8 presents global oil production and reserves by country.

Figure 6.8 Percentage of Global Oil Production and Reserves by Country

(Including adjustments due to recent Canadian developments in Canada's oil reserves)

Country	% World Production	% Reserves	Country	% World Production	% Reserves
North America	18.5	17.7	**Middle East**	29.2	56.5
United States	10.4	1.8	Saudi Arabia	11.6	21.5
Canada	3.3	14.8	Iran	4.8	7.4
Mexico	4.9	1.0	Iraq	2.9	9.3
Africa	11.1	7.6	Kuwait	2.7	8.0
Asia Pacific	10.6	3.2	United Arab Emirates	3.2	8.0
Latin America	8.8	8.1	**Europe**	9.1	1.6
Eurasia	12.5	6.4	**Other**	4.0	
Russia	6.8[45]				

Source: Cambridge Energy Research Associates, Accenture, and Sun Microsystems, *Global Oil Trends 2003*.

Technological innovation, such as Digital Oil Field of the Future, likely will make exploration and production more exact and targeted. This would change the oil supply landscape, as physical supplies that were previously too expensive to explore will become economically feasible, expanding the world oil reserves by 125 billion barrels in the next five to ten years.[46] The U.N. Institute for Training and Research Centre for Heavy Crude and Tar Sands estimates that the combined global amount of Canada's and Venezuela's recoverable reserves is equivalent to the total recoverable reserves of the Middle East. At present, heavy oil is only 3.5 percent of global oil production,[47] but, according to an industry study, bitumen and heavy oil could make up half of the world's energy supplies by 2050.[48]

There are differing views regarding future oil supplies. According to the optimistic view, voiced during the Commission's October 30, 2003, hearing, the production of cheap crude will peak around 2040, allowing plenty of time for development and transition to other fuels, and therefore a shortage of conventional oil is not a long-term energy security problem.[49]

According to other studies, however, global production of cheap crude could peak sooner—between 2010 and 2020.[50] There is rising skepticism among energy experts that Saudi Arabia may not be able to provide oil at levels previously estimated. An internal Saudi

Aramco plan estimates total production capacity in 2011 at 10.15 million barrels per day, whereas the U.S. Department of Energy projects that Saudi Arabia will produce 13.6 million barrels per day in 2010 and 19.5 in 2020. Oil executives and government officials in the United States and Saudi Arabia predict that Saudi capacity may stall near current levels, potentially creating a significant gap in global energy supply.[51]

According to R. James Woolsey, estimates of world conventional oil reserves vary "between a trillion and two trillion barrels, depending on what probabilities you assign and how optimistic or pessimistic you are" and "the fields on the average in the world outside the Persian Gulf either have already peaked or should peak within the next very few years."[52] Peaking is when half of estimated ultimately recoverable reserves have been extracted. This is a very important point for any oilfield. When this midpoint is reached, production costs tend to escalate rather sharply. Whether the world's oil supplies peak in 2010 or 2020 depends on whether the calculation is based on the one trillion or two trillion number. When global supplies peak, there will be (1) increasing oil market dominance by the Middle East, (2) increased extraction/production costs, and (3) concurrent substantial increase in demand from the growing economies of China and India.[53]

One reason for the differing estimates is the definition and use of the terms "reserves," meaning the known quantities of oil that can be readily commercially produced, and "resources," defined as theoretical estimates of total amounts that may exist and that cannot be extracted commercially with current technology. Another is that countries and companies often misrepresent the figures for political and commercial purposes. "Oil is money and . . . reserves are oil in the bank."[54]

In its most recent estimate, the IEA revised global oil demand upward by two hundred seventy thousand barrels per day to 78.3 mb/d, a 2.2 mb/d or almost three percent increase over last year, of which China's demand was revised upward by one hundred eighty thousand barrels to a record 6.14 mb/d.[55] China's surging demand growth, combined with its go-alone energy security policy, OPEC's production cutbacks, the IEA's reduction of the expected non-OPEC supply growth to less than 1.3 mb/d, and potential global supply instabilities will put increasing pressure on global energy supplies and prices, with resulting consequences for the U.S. economy.[56]

Geostrategic Implications

Assessment of the amount of oil reserves and the rate of extraction does not consider supply disruptions, such as the Arab oil embargoes of 1967, 1973, and 1979 and the more recent events in Iraq, Venezuela, and Nigeria. In a global crisis situation, China's lack of a meaningful strategic reserve and the absence of a true global safety net would put additional pressure on the market, not directly related to extraction capabilities.

According to some energy analysts, as its dependence on imported energy grows, China will become increasingly vulnerable to market disruptions. China considers the United States as its most likely potential adversary, with the capability to cut off energy sup-

plies. For this reason, it fears what it considers U.S. control of access to Middle East oil supplies. The U.S. military presence in the region contributes to this sense of insecurity. More specifically, according to Amy Myers Jaffe of the James A. Baker III Institute for Public Policy at Rice University in Houston, Texas, China is concerned that the United States will blockade either militarily or by diplomatic means China's access to oil if there were a military conflict over Taiwan, or the United States, having strong relationships with oil producers, will ask those producers to reduce supplies to China. China feels boxed in, and these perceptions drive China's policy.[57]

The IEA finds that China's oil policy has been to establish stable, long-term supply relationships "through reciprocal investment and non-oil trade. Its forays into Iran (with arms trade), Iraq and Sudan have raised eyebrows and concerns in other oil-importing capitals, notably Washington. The United States has energy security concerns as well, and fears that China's efforts may be destabilizing for the region as a whole." The IEA has also noted that "[r]ecently, China has tended to stress energy security more and diplomatic adventure less."[58]

Global oil demand has also skyrocketed, led by the United States and the PRC. China's growth has sparked economic recovery and higher oil demand in the rest of Asia. India, too, is an increasingly oil-dependent economy. Oil revenues are dollar denominated, motivating OPEC to keep supplies tight, and inventories are low. In addition, the United States has not yet recovered from the disruption in supply of crude and refined products from Venezuela last year, and there has been continued instability in Venezuela, Nigeria, and Indonesia. Royal Dutch Shell announced it was lowering by twenty percent its estimate of reserves, and there have been questions regarding the size of Saudi reserves.[59] Finally, this past March, OPEC announced a four percent cut in its oil output target, a move that is seen as confirming "an end of longstanding efforts to stabilize oil prices."[60] However, in a recent statement, Saudi oil minister Ali al-Naimi called for OPEC to raise its production ceiling by 1.5 million barrels per day.[61]

Some analysts believe that China's dependence on imported oil will bring the United States and the PRC closer as the result of common interests in Middle East stability. Others conclude that U.S. and PRC interests do not converge where oil is concerned, pointing out China's ties with oil-rich countries that are not on friendly terms with the United States.[62]

According to Philip Andrews-Speed, while the focus has been on external threats to China's energy security, "... the past year has shown that the real threats are domestic, rather than foreign. For more than twenty years, China has lacked a coherent energy policy. Energy strategies have been aggregated from the plans of individual energy industries. Coordination takes place only after the industry plans have already been drafted."[63]

According to Robert E. Ebel, "We are vulnerable to any event, anyplace, that affects the supply and demand of oil." In particular, the Middle East remains the world's low-cost producer and possessor of two-thirds of the global conventional oil supplies.[64] Meanwhile, non-OPEC resources are maturing, and OPEC market share

can only increase over the next two decades. Only by finding a viable alternative to oil will the consuming countries break their dangerous reliance on OPEC oil. Hydrogen power and bioethanol are two technologies that might provide an escape in a decade or two.[65]

RECOMMENDATIONS

- The Commission recommends that Congress direct the secretaries of State and Energy to consult with the International Energy Agency with the objective of upgrading the current loose experience-sharing arrangement, whereby China engages in some limited exchanges with the organization, to a more structured arrangement whereby the PRC would be obligated to develop a meaningful strategic reserve, and coordinate release of stocks in supply disruption crises or speculator-driven price spikes.[66]
- The Commission recommends that Congress encourage work that increases bilateral cooperation in improving China's energy efficiency and environmental performance, such as further cooperation in Clean Coal Technology and waste-to-liquid-fuels programs, subject to any overriding concerns regarding technology transfers. Further, the Commission recommends that Congress direct the State and Energy departments, and the intelligence community, to conduct an annual review of China's international energy relationships and its energy practices during times of global energy crises to determine whether such U.S. assistance continues to be justified.
- The Commission recommends that the Commerce Department and USTR investigate whether China's dual pricing system for coal and any other energy sources constitutes a prohibited subsidy under the WTO and include this assessment in the Commerce/USTR report on subsidies recommended in Chapter 1.