



ENERGY & SECURITY

THE GEOPOLITICS OF
ENERGY IN THE ASIA-PACIFIC

Institute of Defence and Strategic Studies
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Energy and Security

The Geopolitics of Energy in the Asia-Pacific

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October 2006

CONTENTS

FOREWORD	5
EXECUTIVE SUMMARY	6
INTRODUCTION	12
Objective	
OVERVIEW OF ENERGY SECURITY IN ASIA	15
Introduction	
Energy Security: Definitions and Dimensions	
Energy Security in Asia: Issues and Challenges	
<i>Issues</i>	
<i>Challenges</i>	
References & Notes	
COUNTRY STUDIES	22
The United States	
<i>US Energy Profile</i>	
<i>Key Challenges</i>	
<i>US Energy Security Strategy</i>	
<i>Implications</i>	
Russia	
<i>Russia's Energy Profile</i>	
<i>Key Challenges</i>	
<i>Russia's Energy Security Strategy</i>	
<i>Implications</i>	
China	
<i>China's Energy Profile</i>	
<i>Key Challenges</i>	
<i>China's Energy Security Strategy</i>	
<i>Implications</i>	

India

India's Energy Profile

Key Challenges

India's Energy Security Strategy

Implications

Japan

Japan's Energy Profile

Key Challenges

Japan's Energy Security Strategy

Implications

South Korea

South Korea's Energy Profile

Key Challenges

South Korea's Energy Security Strategy

Implications

References & Notes

**THE QUEST FOR ENERGY AND THE EMERGING
STRATEGIC ENVIRONMENT**

52

The Middle East Remains Prominent

The Caspian Sea Region Comes to Fore

New "Great Game" in Central Asia

Maritime Security – An Integral Part of the Energy Security Agenda

Nuclear Energy as an Alternative Source

Emerging Cooperative Frameworks

Conclusion

CONTRIBUTORS

59

ABOUT IDSS

62

LIST OF FIGURES AND TABLES

Figure 1	Oil Imbalance by Region (1995 and 2005)	15
Figure 2	World Oil Reserves in Billions of Barrels	16
Figure 3	Consumption of Oil and Coal (1991–2005)	18
Table 1	China's Oil Companies in Comparison	34

FOREWORD

The combination of recent geopolitical tensions, particularly in the Middle East, with the worsening oil imbalance in major energy consuming states have put the issue of energy security back firmly on the global policy agenda. With new oilfields being discovered at a slowing rate and alternative energy yet to fully deliver on its promise, the resulting competition for scarce energy resources, and the attempts to secure their safe delivery, could constitute a potential trigger for inter-state tensions, even conflict. The energy security strategies of some of the major states, if miscalculated or misaligned, could have severe geopolitical and economic repercussions for all states.

This report locates energy security squarely at the nexus of other critical policy issues such as national grand strategy, military force modernization, maritime security and environmental policy. Consequently, the energy security strategies of states are analysed from the perspective of policymakers responsible for the broader national security policy and not from the more technical point of view of the industry specialist. The resulting breadth of analysis, we feel, is worth the sacrifice of depth and more pertinent to the policymaker.

In many ways, the return of energy security to the policy agenda is a return to the past, with the foreign and security policies of states driven by material concerns, in this case, energy and the scramble for it. And yet, as the report will show, the current situation is not a perfect analogue of the past: the greater political, social and economic interdependence among states brought about by globalization greatly increase the cost of conflict. At the same time, if the energy security strategies of the major states can be coordinated, then the benefits to the international system, in terms of stability of energy prices and lessened geopolitical tensions, will be significant. This report suggests ways in which this can be achieved.

This report focuses on how the major powers in the Asia-Pacific region are grappling with the challenges of energy security and examines the strategies they have adopted. For each of the countries, the report analyses their strategies at the national, regional and global levels, and evaluates their effectiveness. At the same time, the Asia-Pacific region is examined not in isolation but *vis-à-vis* other regions such as the Middle East and the Caspian Sea region. This surely drives home the point that energy security is a global issue.

The Institute of Defence and Strategic Studies (IDSS) has drawn together country and security specialists to produce a report that captures succinctly the most salient issues that feature in the state's energy security calculus. I commend it to all of us interested in how the dynamics of the energy sector intersect with the national security agenda to impact on how we live.

Barry Desker
Director
IDSS

EXECUTIVE SUMMARY

OVERVIEW OF ENERGY SECURITY IN ASIA

- Two factors – the oil imbalance between total consumption and production worldwide and the prospect of the ultimate depletion of fossil fuels – are among the most significant determinants of energy security. Furthermore, oil imbalance in the Asia-Pacific and North America has worsened over the past decade.
- Energy security is affected by a number of issues – economics, technology, environment, politics and international relations.
- The fungible nature of oil makes energy security a global concept. However, there is a mismatch between the global nature of energy security and the local aspects of suggested or implemented solutions. This has resulted in a near absence of global or international cooperation in energy development and energy policy.
- Unlike the OECD countries, there is no stockpiling facility in Asia. There is a need to design an implementation plan for collective oil stockpiling in the region.
- Institutional efforts to achieve effective coordination of energy policy by country as well as by region need to be emphasized. The recent publication of the European Commission's green paper on energy calls for a common European Union strategy as it finds that nationalism and protectionism get intertwined and ultimately undermine energy security. Asian countries should assess whether a similar common strategy for the region can be implemented. Asian states are already assessing the viability of energy cooperation.
- There should be more cooperation among countries in developing alternative energy sources, e.g. nuclear energy, clean coal technologies, coal gasification technologies and technologies to develop energy from renewable sources such as solar and wind power.

COUNTRY STUDIES

The United States

- The US obtains the bulk of its oil needs from non-OPEC countries (most of which lie in the Western Hemisphere). However, the US sees the Middle East as the most vital region for its oil requirements in the long term.
- US war-fighting capacities are highly dependent on secure energy supplies and the energy demands of the US military indicate that fuel shortfalls can critically undermine their agility and killing capacity.

- In Washington's view, there are two key challenges to US energy security – the vulnerability of the supplier state to deliberate disruption of its production and the designs of emerging peer competitors, especially China.
- The US energy security strategy is aimed at reducing American dependence on foreign supplies and undercutting the ability of potential adversaries from using oil as a strategic weapon against the US. Moreover, the US has indicated that it will intervene militarily to protect its energy interests abroad.

Russia

- With the world's largest natural gas reserves, the second largest coal reserves, the eighth largest oil reserves and a fast growing economy, Russia is emerging as an energy superpower in the 21st century.
- NATO expansion and the EU's support for the so-called "coloured revolutions" in some of the former Soviet republics were seen by Moscow as sources of its own insecurity. In order to respond to this, one of the strategies being pursued by Moscow is the diversification of its energy markets to include the large and growing economies of Asia. Russia has also embarked on an Energy Dialogue with the US.
- However, Russia continues to remain the strategic source of energy for the EU. Moscow's relationship with the EU cannot be replaced by other partners.
- Russia is keen on cooperation with Asian states and even the US. Russia's interest in diversification of its energy markets stems from traditional security, economic and internal developmental concerns.
- With their large oil reserves, Eastern Siberia and Far Eastern Russia are seen as regions that are strategically important to Russia's long-term economic development and geo-economic survival. The development of this region would require cooperation with China and, in this regard, a branch of the Eastern Siberia-Pacific Ocean oil pipeline will be extended to northern China under an agreement signed in early 2006.

China

- Coal will continue to remain the most important energy source for China for the next couple of decades. In spite of this, the importance of the Middle East to China's oil and gas needs will continue to grow.
- Energy security for China is not about traditional security concerns. China's quest for energy security revolves around issues of economics and politics.
- China is unlikely to be able to build a blue-water navy in the foreseeable future that can single-handedly protect China's oil supply. Such a navy will have to be a multi-aircraft-carrier based navy. However, Beijing has no plans to build an aircraft carrier, much less a carrier-centred navy.

- China will rely on diplomatic means and the goodwill of the US navy and other supplier nations for the security of its energy supplies. Beijing hopes that its own vulnerability and interdependence will stabilize the regional security environment. China and the US have also launched a Strategic Dialogue that is likely to include energy issues.
- In spite of China's rising oil appetite, the global oil industry continues to be dominated by western firms from the US, Britain, the Netherlands and France with strong backing from their respective governments.
- China is not the only country that deals with states with poor records on human rights and democracy to meet its energy needs. The US deals with many such states to meet its own energy needs.

India

- Coal is likely to remain the most important source of energy for India for the next few decades. However, India's appetite for imported oil and natural gas will continue to grow along with its rising economy (and population). Energy security is providing a new thrust to New Delhi's diplomacy.
- Concerned about the possibility of a sudden increase in oil prices and its negative impact on the Indian economy, New Delhi decided to establish strategic petroleum reserves for 15 days of consumption in 2004.
- With recent economic investments in a special economic zone at Jamnagar in Gujarat, India is all set to emerge as an "energy outsourcing hub" by end 2008. The combined refining capacity of the refineries in Jamnagar will make that city the world's largest by December 2008. India hopes to earn revenue from its investment in refineries by exporting petroleum products to markets in Europe and North America.
- Progress on the Iran-Pakistan-India and Myanmar-Bangladesh-India pipelines is hostage to New Delhi's relations with its sub-continental neighbours. American pressure is also a source of concern in New Delhi's dealings with Iran and Myanmar.
- India and the US have initiated an Energy Dialogue to discuss and address New Delhi's energy challenges. India has also signed a civil nuclear cooperation deal with the US. If approved by the US Congress, the deal will provide a significant momentum to Indo-US strategic ties.
- At the same time, India is cooperating with China in its search for other sources of energy. Moreover, many Indian analysts have proposed energy cooperation between Russia, China and India.
- India is determined to play an important role in the Indian Ocean Region (from the Straits of Hormuz to the Straits of Malacca) to protect energy and trade routes.

Japan

- Energy security is a matter of national security for Japan and Tokyo's defence policies are closely related to the issue of energy. Defence cooperation with the US is crucial for Japan's energy security. The Middle East and Southeast Asia are Japan's most important sources of energy.
- The safety of sea lanes of communication – the Persian Gulf-Indian Ocean-Straits of Malacca-South China Sea-East China Sea – is a major concern for Tokyo.
- Japan's Maritime Self-Defence Forces are likely to play an active role in securing its energy supplies in the years ahead. Japan has also taken the lead in establishing the Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia.
- Tokyo faces security competition with Beijing in the maritime domain. Moreover, Japan is in dispute with China over Senkaku Islands and EEZs in the East China Sea, both of which are energy rich.

South Korea

- The 2006 National Energy Act and the imminent establishment of the National Energy Commission demonstrate that Korea now perceives energy security to be intertwined with its overall national security concerns. South Korea is dependent upon imported oil for almost all of its oil needs. Most of Korea's crude oil imports come from the Middle East.
- Korea is approaching the concept of energy security from the point of view of "comprehensive" security that includes the nurturing of private enterprises for energy acquisition, overseas energy development and cooperation in Northeast Asia, civil and military diplomacy, new strategic thinking and the development of an independent military capability.
- Korea is keen to address its energy security issues in a regional setting. Korea has initiated an energy development and cooperation project in Northeast Asia together with China, Japan, Russia and Mongolia. Korea has also initiated the development of a Northeast Asian Oil Stockpile.
- Korea's energy policy is based on the concept of sustainable development in which energy security is understood thus: to ensure adequate and affordable access to energy in an economically viable, environmentally sound and socially acceptable way. Korea is also putting significant efforts to increase its oil efficiency.
- Korea has not acquired any new weapons systems and there have been no changes in its force structure with respect to energy security. Korea supports its bilateral security alliance with the US and believes that securing military security can bolster energy security. In the maritime realm, Korea is interested in ensuring the smooth passage of oil and LNG tankers through the critical Straits of Malacca.

THE QUEST FOR ENERGY AND THE EMERGING STRATEGIC ENVIRONMENT

- The past few years have witnessed significant changes in the demand centres and production areas of oil and gas. Russia and other non-OPEC countries like Canada, Kazakhstan and Brazil have emerged as important supplier nations and large Asian states like China and India have emerged as major consuming nations.
- All major energy-consuming nations are diversifying the sources of their oil supplies and are importing in increasing volumes other fossil fuels like natural gas in response to the current oil imbalance.
- The Middle East will continue to remain the most important source of oil and gas. Washington's naval and military presence in the Middle East will continue to remain the single most important factor affecting strategic stability in this vital region. As China's dependence on energy supplies from this region increases, China may feel the need to translate its economic and defence trade ties with states such as Iran and Saudi Arabia into tangible political influence. In such a scenario, there would be an intense security competition between China and the US in the Middle East.
- The Caspian basin with five states having ownership stakes – Iran, Turkmenistan, Kazakhstan, Russia and Azerbaijan – is emerging as a major source of oil and gas. However, the owner states have not resolved their boundary disputes, and each of these countries face a number of political and strategic challenges. The transportation of energy from this landlocked region also poses geo-physical and strategic challenges.
- China, Japan and India are enhancing their maritime and air power projection capabilities to safeguard their energy (and trade) routes. However, the US navy will continue to remain the most significant player in the Indian Ocean, South China Sea and East China Sea.
 - Rivalry for predominant influence in the western Indian Ocean region between China and Pakistan on the one hand and India (with Indo-US military-to-military ties in the background) on the other is emerging.
 - In the eastern Indian Ocean region, strategic stability will be a product of the interaction between the Indian navy and its American and Japanese counterparts on the one hand and the Chinese navy with its electronic posts on several Myanmar islands on the other.
 - Sino-Japanese naval interaction (with Japan's security alliance with the US in the background) will define strategic stability in the South and East China Seas.
- There is the likelihood of a new great game in Central Asia. China and Russia are increasing their influence in this energy-rich region as demonstrated by the emergence of the Shanghai Cooperation Organization (SCO). The US has military bases in this region that were established after the 9/11 attacks. The US seems inclined to increase India's role in this region to balance Beijing and Moscow. New Delhi is also making its own independent efforts to increase its influence here and has reportedly acquired a military base in Tajikistan.

- Given the precarious nature of the geopolitics of fossil fuels, the US and the major Asian states are looking to nuclear energy to meet their electricity needs. The US has launched a Global Nuclear Energy Partnership initiative in this regard. The US and India have also established a framework for civil nuclear cooperation, a deal that promises to have geopolitical implications.
- Several bilateral and multilateral energy cooperation frameworks seem to be taking shape. These include, for example, bilateral US energy dialogs with Russia and India, discussion of energy issues at the ASEAN + 3 level etc. However, no substantial fora, whether bilateral or multilateral, have emerged thus far. To begin such a forum, it is imperative that Russia, China and India be made members of the International Energy Agency.
- All states are keen to avoid conflict over sources of energy and the security of supply routes. However, in the event of a conflict over non-energy-related issues, it is likely that antagonistic states will attack their adversaries' energy sources/supplies.

The international environment is in a state of flux. While the issues pertaining to energy security have the potential to generate intense security competition, they also have the potential to create new international, multilateral (or bilateral) and regional cooperative frameworks.



INTRODUCTION



This study focuses exclusively on the links between energy and security, and how these links impact the foreign policies of the major players in the Asia-Pacific, including the US. A nation's energy strategy is undoubtedly informed by a multiplicity of concerns including access to technology, ecological issues and the question of sustainable development. However, the focus of this study is narrow as it approaches the issue of energy from the perspectives of national security and foreign policy. As a result, several important themes of international significance are not analysed here. For example, there is little or no discussion of an Asian energy market, an Asian price signal mechanism, the so-called Asian oil premium, or a global market for natural gas. Many of these issues, though important, are highly technical and situated in the global political economy. The aim of this study, however, is to understand how the quest for energy is shaping the military doctrines and force structures as well as the alliances and alignments of the key players in the region and the US. In a nutshell, the aim of this study is to understand how the quest for energy security is shaping the foreign policy objectives of key players in the Asia-Pacific, and how their foreign policy objectives are influencing their energy policies. Its task is to illuminate the dynamics that are shaping the politico-military security architecture in the Asia-Pacific region. Finally, its objective is to anticipate and prepare for issues of potential conflict arising from energy competition, and to propose avenues for cooperation.

Energy security has been an integral part of a state's national security strategy ever since Winston Churchill, the First Lord of the (British) Admiralty decided to convert British ships from coal to oil propulsion in 1912 in order to gain a significant military advantage over German ships that were powered by coal. Since Britain lacked domestic sources of oil, the protection of oil supplies in southwestern Persia (then under British sphere of influence) became a part of Britain's defence policy as early as 1914. Significantly, several battles fought during World War II were also directly or indirectly related to issues pertaining to energy security. A major reason why Germany attacked on Russia in 1941 was due to its desperate need for oil. In the Pacific, Japan's decision to attack the US naval base in Pearl Harbor was in part due to the US embargo on oil exports to Japan. Realizing the strategic importance of oil (and thus the oil-producing regions in the Middle East), the US sought to integrate Saudi Arabia, Iraq and Iran into security alliances led by Washington in order to reduce Moscow's influence in that region during the Cold War. Given the fact that all major weapons systems – tanks, aircraft, ships – run on oil, there has always been a direct relationship between oil security and military security. However, the industrial world realized the importance of oil during the “oil shocks” of 1973–1974.

Energy security issues have come to dominate the global agenda and national debates in many countries in recent years. Traditionally, energy security issues have focused on political instability in the Middle East and the security of oil supplies from that region including the

Persian Gulf. Apart from these traditional concerns which have become more complicated in recent times due to the crisis in Iraq and the Iranian nuclear issue, energy security today also concerns itself with a host of other issues: an exceedingly tight oil market; Russia's emergence as an energy superpower and its attempts to bring its energy assets under state control; political instability in non-Middle Eastern supplier states such as Venezuela and Nigeria; rising demands for energy by China and India as well as their scramble for sources of energy supplies; and, of course, the geopolitical competition among the world's major and emerging powers for secure energy supplies as energy security has the potential to reshape the security architecture of the international system.

Noting these developments, Daniel Yergin has commented that "it must be recognized that energy security does not stand by itself but is lodged in the larger relations among nations and how they interact with one another". China's activities to secure energy needs have been viewed with particular suspicion in this regard. The US, still the world's largest oil importer, suggested in its 2006 National Security Strategy that the Chinese are "acting as if they can somehow 'lock up' energy supplies around the world or seek to direct markets rather than opening them up – as if they can follow a mercantilism borrowed from a discredited era". For its part, the strong US reaction to China's bid to take over the US oil firm Unocal last year will have reinforced Beijing's concerns that it cannot rely on the equitable operation of market forces. That the US government has raised its suspicions about China's energy policies to a national security concern will no doubt heighten concerns in China that the US may try to interdict China's foreign energy supplies, especially in the event of an armed confrontation over Taiwan.

Some of the world's largest and fastest growing economies are located in Asia and they depend on large imports of energy sources to fuel their economies. Asia's oil consumption exceeded North America's for the first time in 2005. China's demand for oil in 2004 grew by an unprecedented 16 per cent, contributing to the tightest oil market in three decades. India's oil consumption lags significantly behind China's, though its energy needs will surge driven by its feverish pace of growth. Anxious that the growing gap between the world energy demand and supply will continue to drive up prices and act as a drag on economic growth, countries like China and Japan have been scrambling to ensure energy security by striking exclusive supply deals and pursuing energy investments in the Middle East and Russia. India too is seized with ensuring energy security and, among other things, recently signed a milestone deal with the US to import the know-how to enhance its nuclear energy programme.

Energy security does not stand by itself but is lodged in the larger relations among nations and how they interact with one another.

– Daniel Yergin

OBJECTIVE

The rising competition for scarce energy supplies could alter the geo-strategic landscape in significant ways, from bringing about new strategic alignments to sparking off conflict among the major powers. These realignments and potential conflicts could also dramatically affect energy supplies and prices. The objective of this study is to obtain a deeper understanding of

how the quest for securing energy supplies is driving foreign and security policy in the key countries in the Asia-Pacific region, and if these policies are intensifying security competition or giving rise to cooperative mechanisms.

This study begins with a general overview of the energy security issues and challenges facing the key Asia-Pacific countries, briefly discussing the energy demand and supply patterns in this region. The subsequent section addresses the energy profiles of the US, Russia, China, India, Japan and South Korea, and the strategies each have pursued to advance their energy security policies. The countries' energy security challenges and strategies are examined through a conceptual framework based on three levels of analysis: national, bilateral and multilateral. At the national level, the impact of energy security on military doctrines, force structures and weapons acquisition will be analysed. At the bilateral level, the impact of the countries' energy security policies on their alliances – both formal military and/or political alliances as well as informal politico-security alignments – will be analysed. At the multilateral level, the impact of their energy security policies on regional and international groupings will be analysed.

The concluding section will discuss the emerging competition for resources, the resulting geopolitical alliances and alignments, and the potential for conflict, which can, in turn, affect not only energy supplies and prices, but also the politico-security architecture of the international system. It is hoped that this study will enable Singapore to anticipate geopolitical trends so that it can better position itself to take advantage of these changes or better prepare itself for the attendant impact of such changes on the energy market and the architecture of the emerging international system.

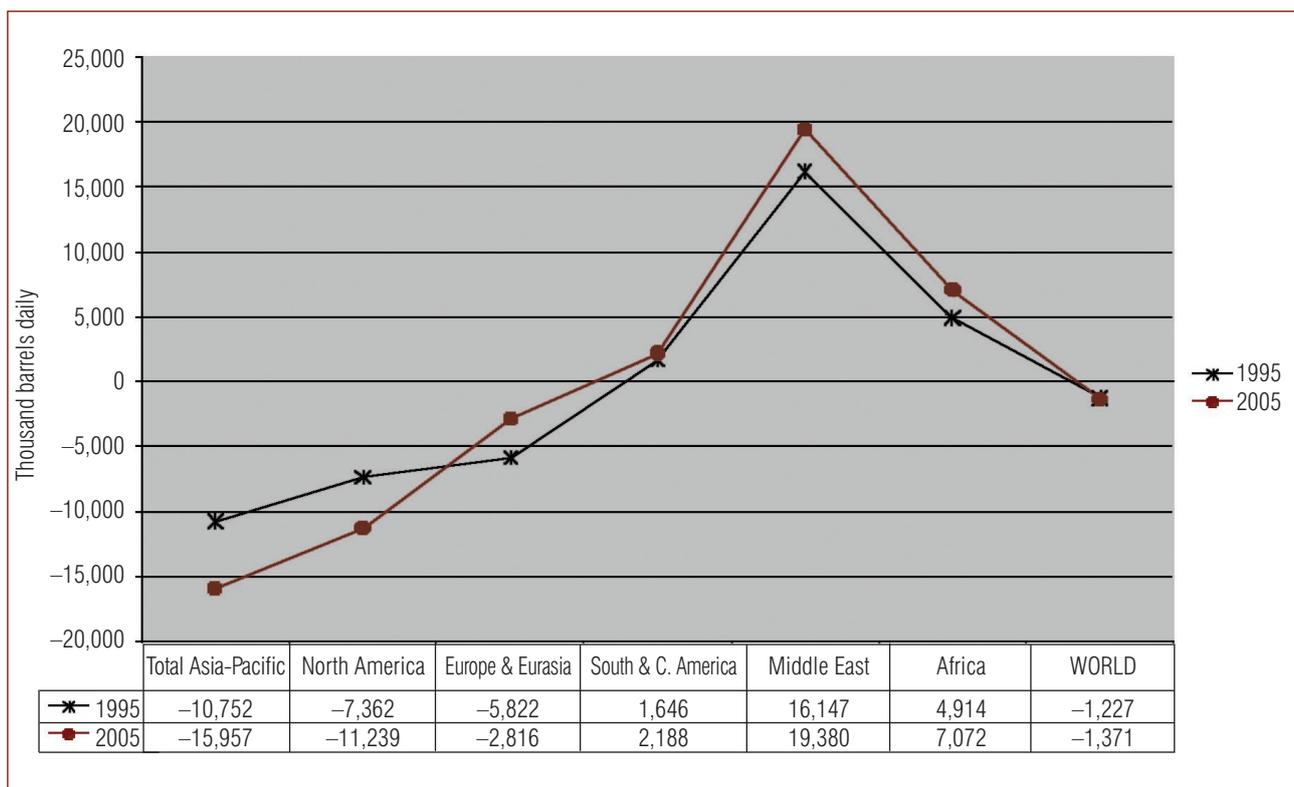
OVERVIEW OF ENERGY SECURITY IN ASIA

Chang Youngho

INTRODUCTION

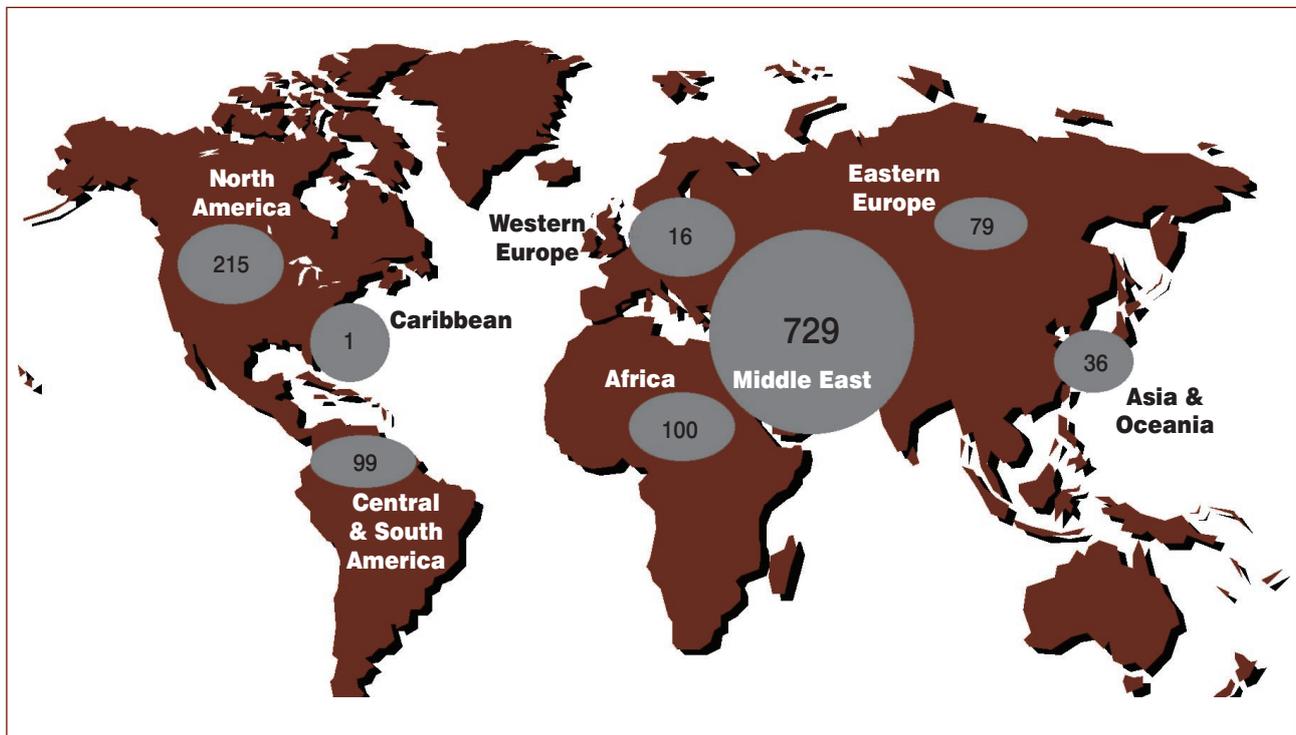
The total consumption of oil exceeds the production of oil worldwide. This imbalance is especially noteworthy in the Asia-Pacific region. Figure 1 shows that the current oil imbalance in the Asia-Pacific and North America has widened considerably since 1995, while the reverse is true of Europe, Eurasia, the Middle East and Africa. This section of the report reviews the energy security challenges currently confronting countries in the Asia-Pacific.

Figure 1
Oil Imbalance by Region (1995 and 2005)



Countries in the Asia-Pacific have stepped up their efforts to meet their demand for oil. As oil is a fungible commodity, these endeavours will affect energy markets and energy policies worldwide. The pressure on the world energy market is expected to increase, and the increased demand for oil will aggravate the oil imbalance. This oil imbalance is one of the main determinants of energy security. Along with the oil imbalance, the ultimate depletion

Figure 2
World Oil Reserves in Billions of Barrels¹



of abundant, cheap and viable energy sources such as oil and natural gas is another main determinant of energy security.

The production of primary energy resources is concentrated in relatively few areas. As Figure 2 indicates, the Middle East has the largest proportion of the globe's proven oil reserves. By 2020, analysts estimate that the Middle East alone will supply about 60 per cent of the world's total oil requirements. The significant contributions that energy resources such as oil and natural gas make to a state's socio-economic well-being and military power render energy security a critical security issue. Countries in the Asia-Pacific are therefore concerned about security in the world's major oilfields, and the certainty of energy supply from those regions. In addition, most countries in Asia are less energy efficient compared to developed countries. In other words, Asia uses more energy to produce one unit of output or GDP than developed countries, and this puts more pressure on Asian states to secure their energy supply.

The underlying geographical mismatch in supply of and demand for oil and natural gas, and the dominance of oil in energy uses, makes securing energy supply at relatively reasonable prices for a long period – a serious policy issue.

¹ Kevin R. Petak, "Oil and Gas Prices: Will They Stay Linked?", presented at the 2006 EIA Energy Outlook and Modeling Conference, Washington, DC, 27 March 2006.

ENERGY SECURITY: DEFINITIONS AND DIMENSIONS

Energy security is perceived differently by different people and in different contexts. For example, while some see energy security as a serious policy issue, others view the power of the oil market, and not oil itself, as the force that actuates the state of energy security. Energy security can be simply defined as “reliable and adequate supply of energy at reasonable prices”. In other words, energy must be supplied without interruption and must meet fully the needs of the world economy. The interpretation of the term “reasonable prices” varies; however, an acceptable definition is that reasonable prices are determined through competitive market dynamics where demand equals supply.

Energy security is centred on the imminence of capacity in the supply of fossil fuels and the availability of alternative energy resources. One way of securing energy supply is to increase one’s economic pie and to purchase the necessary energy resources with the resultant increased income. This strategy will work as long as the cost of increasing the economic pie is lower than that of developing a new technology or enhancing existing technologies to secure the energy supply. All this assumes that there are viable energy resources that can be purchased. Faced the ultimate depletion of fossil fuels, however, this may not be a viable long-term solution.

Other than economic considerations, inter-state tensions can also affect the supply of oil. This was clearly evident during the 1973 Arab oil embargo. More recently, troubled US- Venezuela and US-Iran relations have also affected the oil market. Additionally, global environmental agreements such as the Kyoto Protocol – now a binding international environmental agreement – put constraints on the unlimited use of fossil fuels. Hence, energy security can be affected by economics, the environment, international relations and politics.

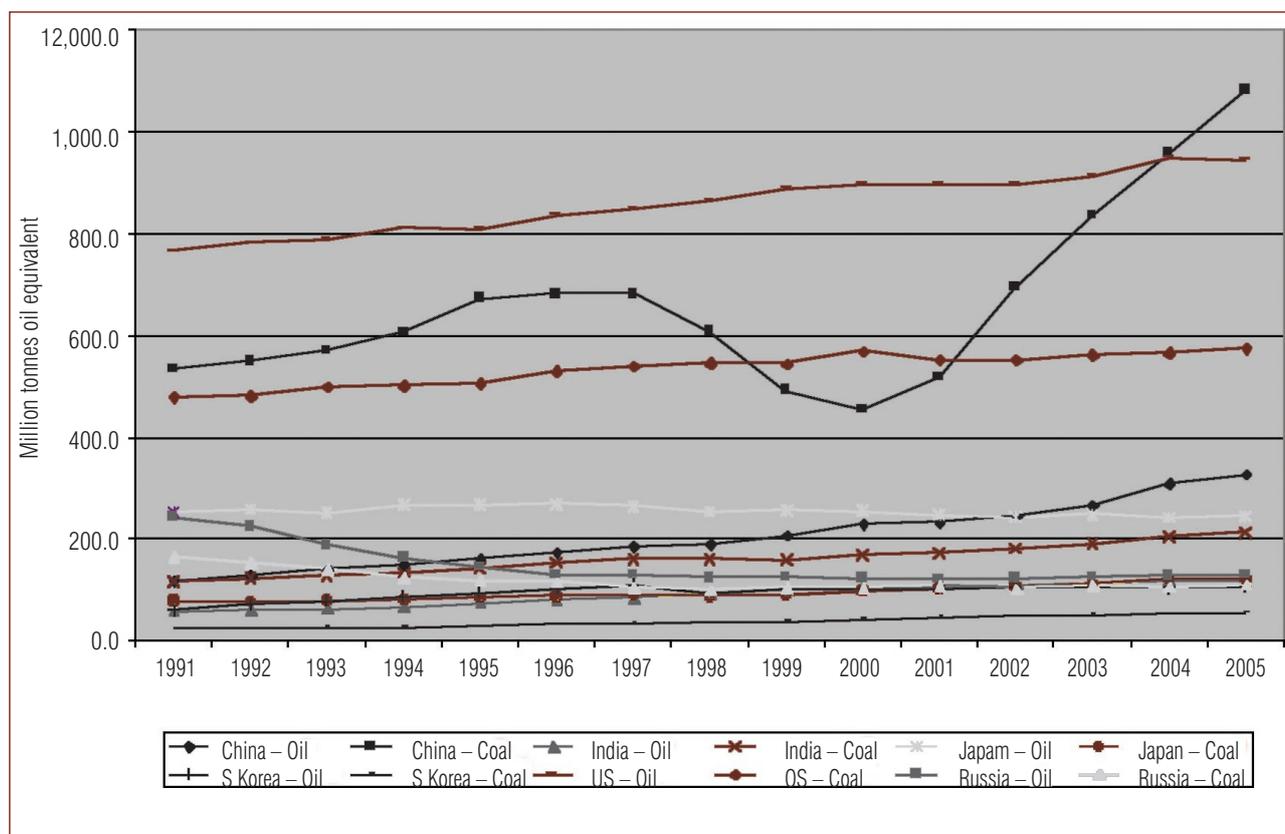
Energy security can be pursued at the national, regional and international levels. Setting up a statutory body that handles energy security issues is one way to deal with energy security at national level. Promoting regional and international cooperation in bolstering energy supply and minimizing fluctuations in energy supply and price volatility will also help. Energy security, in sum, requires local action and global cooperation to enhance domestic energy efficiency and conservation efforts, and to tackle international energy security issues such as the security of supplier states and the energy supply.

There are six factors that affect the imminence, urgency or intensity of energy security. First, whether oil production has peaked or not, the ultimate depletion of fossil fuels, particularly oil and natural gas, is the main determinant of energy security. The ultimate depletion of fossil fuels intensifies competition among countries to obtain the dwindling energy resources.

Second, the closest backstop technology – abundant, cheap, viable alternative energy sources that can be supplied infinitely – is not in the offing. In 2004, fossil fuels such as oil, natural gas and coal supplied about 90 per cent of total primary energy consumption in the world. The remainder was met by nuclear energy and hydroelectricity, and a small amount (around two per cent) by renewable energy resources.

Third, oil dominates virtually all energy end-uses – residential and commercial, industry, transportation, and electricity. There are no other energy resources apart from oil that are more convenient and efficient in meeting the demand from the transportation sector. Bio-fuels such as bio-diesel or ethanol are slowly emerging as substitute fuels for combustion engines, but their contribution to ameliorating the demand for oil is still minimal.

Figure 3
Consumption of Oil and Coal (1991–2005)



Fourth, the aforementioned imbalance between the demand for and the supply of oil would have severe repercussions for oil-importing countries. Energy price instability can adversely affect a country's growth. For example, rising energy costs due to higher oil prices caused Japanese wholesale prices to rise for a second straight year, pushing its import prices up to their highest level on record. This demonstrates that even Japan, the most energy-efficient economy in the world, has been severely affected by higher energy prices.

Fifth, there is a mismatch between the global nature of energy security and the local aspects of suggested or implemented solutions, which in turn result in the near absence of global or international cooperation in energy development and policy. Narrow solutions implemented by individual countries may solve problems of those individual countries in the short term, but they may negatively affect other countries in the longer term.

Finally, the unprecedented growth in oil consumption in China and India puts upward pressure on oil prices. Both countries' efforts to secure oil supply make the already highly competitive oil market even more so. Along with the supply of energy, demand for energy must also be considered because they are the two sides of the same coin. The optimistic prognosis for Asian economic growth – including India, China and Japan – puts upward pressures on energy demand. After a period of relative stasis, ASEAN economies are also catching up again and would demand more energy than before to promote their economic growth. Figure 3 shows the consumption of oil and coal in China, India, Japan, South Korea, the US and Russia from 1991 to 2004.

ENERGY SECURITY IN ASIA: ISSUES AND CHALLENGES

Issues

Following the definitions and dimensions of energy security, five issues are identified in the context of Asia regarding energy security. First, oil imbalance is deteriorating as demand outstrips supply, with demand expected to accelerate driven by economic growth. Moreover, most Asian economies are net importers of energy. The demand for oil is generally inelastic both in the short- and long-run due to the fact that oil has few readily available substitutes. This inelasticity adds to the severity of the oil imbalance.

Second, unlike OECD countries, stockpiling activity is neither vigorous nor undertaken in any significant fashion, though countries like Singapore have stipulated a clear requirement for oil stockpiles under the Electricity Generation License Act. During the second ASEAN, China, Japan and South Korea Ministers on Energy Meeting (AMEM + 3) at Siem Reap, Cambodia, in 2005, the participating countries “reaffirmed the importance of oil stockpiling and to strengthen dialogue with the Middle East and other oil producing countries to foster mutual understanding”.

Third, there has been limited progress in developing alternative energy sources in Asia. Research in alternatives energy sources such as a “coal fuel alliance” among universities in the US could develop a new technology that enables coal to power vehicles. Coal is abundant in Asia and it can be a cheap and viable option. This area of research deserves more attention from Asian countries seeking to reduce their dependence on oil.

Fourth, the lack of policy coordination in energy security among countries in the region makes an individual country’s efforts ineffective. However, the AMEM + 3 meeting highlighted the need for energy cooperation between ASEAN and China, Japan and South Korea. What tangible results will be produced remain to be seen.

The lack of policy coordination in energy security among countries in the region makes an individual country’s efforts ineffective.

Fifth, the intensification of non-cooperative efforts to secure energy supplies will intensify competition among states both regionally and globally. China has been reaching out to resource-abundant countries especially in Africa and South America. India is also increasing its efforts to secure energy supplies in every viable way. Japan and South Korea are also reaching out to countries in Africa and South America to secure and diversify their energy supplies. One possible option is to increase the production of nuclear power. Recently, China announced its plans to build 32 nuclear power plants over the next 15 years. And Japan has started commercial operation of its 55th nuclear power generator amidst a string of nuclear safety scandals. Again, it is important to highlight that these individual non-cooperative efforts will heighten competition in the already tight world energy market.

Challenges

These energy-related issues are giving rise to numerous challenges. First, as discussed during the AMEM + 3 meeting in 2005, Asian countries need to design an implementation plan for collective oil stockpiling in the region. However, it remains to be seen if these states would

be able to collectively stockpile oil in order to mitigate the impact of short- and long-term fluctuations in oil supply.

Second, policy coordination among countries in the region needs to be activated more rigorously. The recent publication of the European Commission's green paper on energy calls for a common European Union strategy as it has found that nationalism and protectionism get intertwined and ultimately undermine regional energy security. Asian countries should assess whether a similar common strategy for the region can be implemented. Asian states are already assessing the viability of energy cooperation. For example, at the energy ministers meeting in 2004, the Asia-Pacific Economic Cooperation (APEC) called for flexible, responsive efforts to enhance energy security. The AMEM+3 forum is another forum where the viability of energy cooperation is being assessed.

Third, there should be more cooperation among countries in developing alternative energy sources. Recently, India and the US signed a milestone nuclear deal, which will create a new joint science and technology fund, and a bilateral commission to promote technical cooperation. This will help India meet its growing energy needs and reduce its dependence on fossil fuels. However, this misses or neglects the point of whether nuclear power can be considered an alternative source, given the difficulty of disposing nuclear waste safely. Japan's efforts to reduce its energy dependence on foreign sources resulted in the development of a hybrid car. These efforts to search for alternative sources should continue.

Fourth, institutional efforts to achieve effective coordination of energy policies by country as well as by region need to be emphasized. After two oil shocks, oil-importing countries formed an institutional entity to tackle energy issues. China has been seeking to build an energy authority agency for a long time, but has yet to establish a coordinated or effective energy authority body.

In sum, any disruptions in the oil supply will mean higher oil prices for all countries. Each country's efforts to secure its energy supplies will simply intensify competition in the world energy markets and hence intensifies the importance of energy security. The lack of cooperation or coordination will exacerbate the competition. The fungible nature of oil makes energy security a global concern.

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COUNTRY STUDIES



In order to understand the world's emerging energy security paradigm, it is important to understand the energy dependence, challenges and responses of the most important Asian and global players. By focusing on the US, Russia, China, India, Japan and South Korea, this section will provide an overview of their energy dependence, policies (including military and security policies) implemented to meet their respective energy challenges, and their likely implications.

THE UNITED STATES

by Joey Long Shi Ruey

The US Senate Foreign Relations Committee Chairman Dick Lugar recently mentioned that “energy is the albatross of US national security” and that “oil will become an even stronger magnet for conflicts and threats of military action, than it already is”. The US remains addicted to fossil fuels and is extremely vulnerable to supply disruptions. This was most clearly demonstrated during the world's first “integrated energy shock” due to Hurricanes Katrina and Rita in the Gulf of Mexico in 2005 when supplies of oil, natural gas and electric power were simultaneously disrupted. Political developments in Latin America and the Middle East have heightened the US's energy security concerns as has the phenomenal rise of the Chinese economy with its growing appetite for energy.

US Energy Profile

In 2004, the US consumed approximately 99 quadrillion British thermal units of energy. About 70 quadrillion btu of the energy used was produced indigenously from fossil fuels, coal, nuclear energy, hydroelectric power, bio-fuels, geothermal power and solar/wind forces. The US is self-sufficient in virtually all of its energy resources, except in natural gas and oil.

Natural gas imports, mainly from Canada, rose steadily from 1987. In 2004, imports constituted 15 per cent of total US consumption and this figure is only likely to increase. If current consumption and domestic supply trends continue, the US dependence on natural gas will rise for the next twenty years. Similarly, the US dependence on petroleum imports will also increase. America's petroleum production peaked in 1970 and has declined since. By 2004, net imports exceeded domestic output by 4.7 million barrels per day. Over the next two decades, US domestic petroleum production will fall from 9.1 million barrels per day in 2003 to 8.8 million barrels per day in 2025 as oil wells mature and productions costs remain high. Domestic demand, however, is estimated to increase by some 12 per cent over two decades.

Sustained high oil prices may stimulate the government or market forces to intervene and

cool demand for higher oil imports. In such a scenario, net imports will comprise 58 per cent rather than 68 per cent of the total petroleum supply. It seems likely that for the next two decades, the US, which consumes about 25 per cent of the total global oil output annually, will continue to rely on suppliers abroad for more than half of its petroleum needs. Of these suppliers, the US has obtained more from non-OPEC rather than OPEC countries. In 2004, about 56 per cent of US petroleum imports originated from non-OPEC countries while 24 per cent came from the Persian Gulf states. While the Western Hemisphere has long supplied the majority of American petroleum needs, the US sees the Middle East as the most vital region for its oil requirements in the long term.

The US obtains the majority of its energy imports from non-OPEC countries, especially from those in the Western Hemisphere. However, the US sees the Middle East as the most vital region for its oil requirements in the long term.

In order to maintain its current living standards and way of life, to enable the US economy to continue to grow, to sustain the capability of the federal government to operate effectively, and to preserve American war-fighting capacities, the US will sustain its keen interest in the security of its oil interests worldwide.

The state of California, the world's sixth largest economy, consumed energy equivalent to that of Korea's consumption, some four times Singapore's annual consumption. A 90-minute blackout in Silicon Valley could lose companies anywhere between US\$1 million per minute to US\$1 million per hour, depending on the type of commercial activity. If California is any indication, a severe disruption in energy supplies will adversely affect US social and economic life.

The US government is also the largest domestic institutional user of energy. In 2004, its energy usage was 1.2 per cent of the US total. Of that volume, the US Defense Department expended the most (about 82 per cent of the federal government's total). Energy difficulties can critically affect government operations.

US war-fighting capacities are also highly dependent on secure energy supplies. During Operation Iraqi Freedom, the US Air Force guzzled close to one billion litres of fuel between March and April 2003. The US Army V Corps expended about 1.8 million litres of fuel daily during a seven-day operation while the US Third Infantry Division averaged between 700,000 and 1.2 million litres daily. Although Kuwait's provision of fuel to US forces removed some of the problems of stockpiling petroleum supplies, the modern US military forces' energy demands indicate that fuel shortfalls can critically undermine their agility and killing capacities.

The US, therefore, has important strategic and economic reasons to be concerned that it not be denied access to critical energy resources – principally oil – overseas. As the National Energy Policy Development Group, chaired by Vice President Richard Cheney, maintained, "A significant disruption in world oil supplies could adversely affect our economy and our ability to promote key foreign and economic policy objectives, regardless of the level of US dependence on oil imports." Foremost, of course, is to ensure that US access to vital oil-fields remains unblocked or unthreatened by adversaries. More generally, the US will seek to preserve a global energy sector that is both liberalized and accessible to American energy needs.

Key Challenges

There are two key challenges to US energy security: the vulnerability of the supplier state to deliberate disruption of its production; and the designs of emerging peer competitors. Certainly, there is currently less fear among governments that supplier states will use oil as a political weapon. The oil shocks of the 1970s and 1980s moved governments and industry to source for supplies beyond OPEC states and to invest in alternative energy resources. If buyers worry about high oil prices, sellers agonize over severe cutbacks in demand. The international market for oil is as competitive as any other industry.

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Yet small changes in supply can still result in significant price swings given the inelastic demand for oil in the short run. This will destabilize the US economy. One worst case scenario posits: if political instability causes Arab OPEC members to disrupt 10 out of the 21.7 million barrels per day that Arab states export to global buyers, crude oil prices will spike to US\$161 per barrel. This will cause the US GDP to drop by roughly five per cent annually, resulting in a sharp recession.² Washington has consequently articulated its apprehensions about unstable oil-rich regimes. Indeed, the 2006 US National Security Strategy identified the US dependence on “unstable parts of the world” for oil as a security problem.

Washington has also expressed concerns about the energy security policies of emerging peer competitors like China. Chinese oil deals with Myanmar, Sudan and Iran have irked US policymakers not only because US companies cannot compete with the Chinese in those territories where sanctions have been in force, but China’s actions are also undermining the US sanctions policy toward the states. China’s long-term intentions, which appear to be to secure oilfields and attempt to deny them to the US, have also generated unease. Again, the latest National Security Strategy document highlights Washington’s apprehensions about China’s energy policy and further accuses China of “supporting resource-rich countries without regard to the misrule at home or misbehaviour abroad of those regimes”.

US Energy Security Strategy

With the US economy and its capacity to advance its foreign interests at stake, Washington has sought to address the threats to its energy security appropriately. The US energy security strategy has five key elements. These are collectively aimed at reducing American dependence on foreign supplies, and undercutting the ability of potential adversaries from using oil as a strategic weapon against the US. Ultimately, these initiatives have been pursued to break “the American addiction to oil”, as President George Bush pronounced in his 2006 State of the Union address. In numbers, the objective is “to replace more than 75 of our [US] oil imports from the Middle East by 2025”.

² Gerry L. Perry, “The War on Terrorism, the World Oil Market and the US Economy”, The Brookings Institution Analysis Paper, no. 7 (24 October 2001; revised, 28 November 2001).

First, the US has diversified its sources of energy supply. The logic underpinning the diversification strategy is that generating options will enable Washington to develop more robust responses to changes confronting its energy demands. A dislocation from one source can be compensated by drawing from another. This will ensure security of supply and help contain sustained price hikes over the long run. Indeed, the US currently imports crude oil and petroleum commodities from more than 40 suppliers and refiners. One region that the US has begun to aggressively source for oil supplies is Africa.

Second, the Bush administration has announced plans to embark on a Global Nuclear Energy Partnership. This embryonic programme envisages states that now possess nuclear reprocessing capacities leasing reprocessed nuclear reactor fuel to states that do not have the production capabilities but would like an alternative source of energy. Under the plan, reprocessed fuel that is leased to country X will be despatched to its country of origin once it has been fully exploited. Such a scheme will enable users to lease nuclear fuel and reactors from the nuclear powers while discouraging them from acquiring dual-use nuclear fuel processing technology. Spent nuclear fuel from the US, for example, could be reprocessed and leased to other states seeking nuclear energy for civilian use. The reprocessed fuel could also provide the US with another potential source of energy for domestic use, thus reducing the American dependence on oil imports.

Third, the US has embarked on projects to develop alternative sources of energy. One initiative is to create a coal-based (a resource which the US possesses in abundance), zero-emissions electricity and hydrogen power plant. Such a coal-burning power plant would exploit gasification technology to convert coal into a gaseous state, separate and remove the pollutants, and exploit the end product to fuel electric or steam generators. The Bush administration has termed it the FutureGen initiative. Other potential sources include solar and wind power, and ethanol.

Fourth, the US has developed a strategic petroleum reserve as a “supply source of last resort”. Deep caverns lined across the Texas and Louisiana coastline have been built to hold a maximum of 727 million barrels of oil; plans are afoot to expand the reserve’s capacity to one billion barrels. As of April 2006, the reserve has approximately 688 million barrels in store. Built up after the 1970s oil shocks, the reserve enables the US to cushion any sudden disruption in oil imports. At current consumption rates, the reserve would theoretically be capable of cushioning a sudden and total disruption of oil imports to the US for roughly 83 days.

Finally, the US has indicated it will intervene militarily to protect its energy interests abroad. The 1990–1991 Gulf War demonstrated that the US would be prepared to rally the international community to protect energy-supplying states (particularly in the Middle East) against external aggression. Even now, the US continues to extend to one of the world’s biggest oil and gas producers, Saudi Arabia, a commitment to protect it from external threats. Although Washington has removed the bulk of American forces from Saudi Arabia since 2003, a remnant remains as a training detachment. Still, apart from forces in Iraq, the US also operates from Qatar to maintain a military presence in the region.

Implications

What are the implications, then, of the US energy security strategy to the rest of the world? First, US investments in the energy market, together with Chinese investments, enhance inter-supplier competition internationally and can potentially help to stabilize long-term in-

ternational oil prices. They provide incentives for industry to attempt to develop new oil markets, and to advance new exploration and exploitation technology so that new oilfields, particularly those located offshore, can be found and developed. Such developments can lead to the discovery of new proven reserves, and a greater probability of their recoverability. Additionally, a knock-on effect of such initiatives is that they contribute to growth in support industries. Singapore's rig-building sector, for example, has seen a significant surge in orders of late as demand for oil rigs soar. Such activities contribute to overall economic growth in states like Singapore.³ In strictly economic terms, then, the American diversification strategy has the potential to further develop the international energy trade. And because of the assertive moves into new oilfields, it appears that the international oil supply will shift slightly from the Middle East as Africa, Russia and the Caspian Sea compete with the traditional suppliers. Such diversifications should be welcomed as they reduce the risks of international energy disruptions and undercut the ability of cartels to distort prices.

Second, despite the Sino-American rivalry in the global oil market, there is little likelihood that armed conflict will result between the two because of energy competition. Whether or not China intends to "lock up" the oilfields it has control over can be best answered by China specialists. Suffice it to say that, with energy markets, price matters more than ownership. Oil and gas are such widely traded international goods that it becomes more efficient for states to buy them on the world markets rather than control oilfields. China's activities might, thus, irk American policymakers who are ideologically committed to free-trade principles and believe that China intends to practise mercantilism. Nevertheless, the probability of such a dispute becoming a *casus belli* appears small given the open and competitive nature of the energy market. IN any case, while China's moves into Latin America for oil and markets might have gotten the US's attention, China, as a Latin American specialist observed, "is still a long way from threatening or even really competing with the influence of the United States in Latin America".

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Finally, there is potential for external parties to pursue bilateral and multilateral ventures with the US on alternative energies. As demand for energy increase worldwide, alternative fuels can become a growth industry for national economies seeking the next big thing to generate new wealth, employment and energy. Indeed, according to the International Energy Agency, about US\$17 trillion of investment will be required to bring new energy resources to the market over the next two-and-a-half decades. Still, if there are opportunities, there are also demands. Governments need to facilitate energy-related ventures, and create business climates conducive to such enterprises. If current trends are any indication, the energy industry will continue to be a lively one for the next twenty years.

³ Wayne Arnold, "Demand for Oil Rigs Helps Push Economic Growth in Singapore", The New York Times, 11 October 2005.

RUSSIA

by Vladimir I. Ivanov

As Russia opens itself to global competition, the role of geo-economic factors grows in importance. The country is attracting a lot of attention recently as the world's leading producer and exporter of hydrocarbons, as well as the economy that is surpassing average growth rates in all other G8 countries. Measured in barrels of oil equivalent, Russia's combined daily oil and gas production is double that of Saudi Arabia, making it a true energy superpower. Russia's role as a strategic source of energy for its neighbours in the west has been widely recognized. However, new projects may require new pipelines and sea terminals to transport hydrocarbons, as well as additional markets in the east.

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Russia's Energy Profile

Russia holds the world's largest natural gas reserves, the second largest coal reserves, the eighth largest oil reserves, and is the third largest energy consumer. Russia's ranking in oil reserves could further improve, considering that part of the reserves data has been kept from the public eye as classified information. Russia also possesses the highly developed civilian nuclear power industry, in addition to rich and vastly underdeveloped resources of hydroelectric power and biomass. Moreover, its energy sector is becoming increasingly dependent on advanced technologies.

The priority direction for the energy sector development is the expansion of the processing industries and petrochemicals. The state is recovering part of its former role in the energy sector. The private sector's presence in the oil and gas sector is also strong, including large foreign oil companies such as British Petroleum, ConocoPhillips, ExxonMobil, RD Shell and some others operating in Russia. In fact, unlike in many other oil and gas exporting countries, the Russian business model in the oil and gas sector tends to lean towards a "51 per cent state - 49 per cent private" split that improves the companies' finances. Moreover, large companies with global ambitions such as Gazprom and Rosneft compete internally. In addition, by choosing foreign "strategic partners" for certain companies and specific projects, Moscow can cement state-to-state energy ties.

The government, on the other hand, controls and promotes the transportation infrastructure, providing for its maintenance and expansion to facilitate energy exports. In addition, the state is using diplomatic tools in opening up new exports destinations such as China, Japan and other markets. For example, Japanese and Chinese companies import Russian oil in growing volumes. China agreed to open its gas market for Gazprom. India has invested in the Sakhalin I project. Oil exports to the US have almost doubled since 2004, rising to almost 500,000 barrels per day of crude oil and products.

Key Challenges

Over the last decade, Russia's security policy has been in transition from the old-style defence posture towards a comprehensive security policy. The main emphasis now is on economic

instruments in solving domestic problems, improving the external conditions and enhancing Russia's international profile. Moreover, in the 1990s, the internal threats became Russia's main source of insecurity. Because of Islamic separatism and the terrorist attacks, Russia was aware of the danger of international terrorism long before Al Qaeda attacked the US. Moscow's head start in the fight against terrorism greatly contributed to its more favourable international situation after 9/11.

Despite this, Washington in particular is seen as capable of causing problems, as symbolized by the advance of NATO troops into Russia's immediate neighbourhood and other unfriendly gestures. Understandably, rising oil and gas revenues could make some countries in the West nervous simply because Russia retains a potent strategic arsenal. However, Russia's leaders have openly stated that Moscow has moved away from Soviet-era arrangements of subsidizing the energy prices for its neighbours and turned to market-based pricing mechanisms and that it is time for the West to recognize and acknowledge Russia's maturing role and the progress that it has achieved.

From Russia's perspective, increasingly close economic and political linkages with its Western partners contrast deeply with the security-military consolidation that is taking place in Europe under the NATO's auspices. Russia's energy links with the West helped to maintain stability in Europe during the decades of the Cold War. With the current NATO's expansion eastwards, it is conceived that these very same links could also additional security assurances to Moscow. This is highly debatable, and will be borne out in time.

Since 2000, Moscow has become increasingly interested in expanding the oil and gas industry to Eastern Russia. Obviously, these new mega-projects require access to the markets in East Asia and the Pacific Rim. While the domestic economic and development needs serve as a foundation of this ongoing "eastern energy shift", one should not entirely rule out Moscow's calculations that are driven solely by traditional security worries.

While Russia's domestic economic and development needs serve as a foundation for its "eastern energy shift", one should not entirely rule out Moscow's calculations driven by traditional security worries.

Russia's Energy Security Strategy

Currently, Russian oil and gas industry is focused on Europe. In 2002, Russian supplies accounted for 22 per cent of net EU oil imports and in 2003, 58 per cent of Russian oil exports were bound for the EU. In addition, 88 per cent of Russian natural gas exports were delivered to European countries, of which roughly two-thirds went to the EU. Currently, Europe relies to a very significant degree on oil and natural gas extracted in Western Siberia and other regions to the west of this oil- and gas-producing centre. Likewise, European oil and gas markets dominate Russia's energy exports.

But, again, these relationships of growing economic interdependence do not correspond with recent developments on the security and political fronts. NATO expansion and the EU's support for the so-called "coloured revolutions" were seen by Moscow as sources insecurity and political expansionism.

The assumption is that these traditional European markets are not expected to expand significantly, unlike markets in Asia, including China, India and ASEAN countries. Hence,

the idea of diversifying destinations for oil exports aimed at, first, reduced dependence on Europe, second, to gain access to new markets in Asia and North America and, finally, the expansion of the oil and gas industry, including Eastern Siberia and the Far Eastern region, as well as the continental shelf and the Arctic.

Moscow obviously favours an option of moving closer to Beijing, New Delhi, as well as Washington and Tokyo on the various trade and investment fronts. From Russia's perspective, Japan and the US could also offer opportunities for trade diversification, including natural gas and crude oil exports, as well as access to investment and technology. The oil and gas projects offshore from Sakhalin, for example, are introducing a new dimension to the relationship, combining access to investment from both the US and Japan, technology from US-based multinationals, and oil and LNG deliveries to both allies.

Russia's interest in diversification of energy markets stems from economic and development interests. On the other hand, its oil and gas industry is part of the global energy production, transportation and supply system, but more specifically the "European segment" of the system. From the oil industry's perspective, western markets have been already "saturated" with Russian oil. Inflexible dependence on European markets, for example, unfavourably affects the export price of Russian oil and complicates transit.

Importantly, the desire to diversify exports of hydrocarbons also involves the United States. For example, an additional option for reducing dependence on Europe could be a northern oil pipeline to be built from Pechora region to the Barents Sea coast in order to access the American markets. In addition, the giant offshore Shtokman LNG project, which is planned as an international joint venture led by Gazprom, may focus almost exclusively on the US market. At the same time, rapidly developing relations with China can further progress on the basis of Russia's energy sector's expansion to the east.

Eastern Siberia and the Far Eastern region are strategically important for Russia's long-term economic development and its geo-economic survival. These two regions contain up to 50 per cent of Russia's estimated oil reserves. To some degree, underdeveloped economic exchanges with Northeast Asia reflect Russia's current incapacity to supply energy resources to Asia, where energy demand is growing fast. The establishment of new production centres in Eastern Russia to meet this demand will lead to long-term economic bonds, which could define the development path of Eastern Russia.

In 2003, the energy supply from Eastern Russia to Asia has been defined by the Energy Strategy 2020 that envisages supplying oil, natural gas and electric power to China and other Asian states. In this context, the Eastern Siberia–Pacific Ocean oil pipeline (abbreviated in Russian to VSTO) is attracting considerable attention as a mega-project important not only for Russia, but also for Japan, the US, South Korea and China. Obviously, the effect of the VSTO pipeline on Russia's oil exports will be crucial. It is expected that up to one-third of Russia's entire oil exports will be directed to new markets, beginning with China, by the time the project is completed around 2012–2015.

In late March 2006, during the Russia-China summit meeting in Beijing, an agreement was reached to link the VSTO main pipeline with Daqing in northeastern China via a branch pipeline. In exchange, Beijing promised to open up its natural gas market for Gazprom, which is now preparing to build a 30 billion cubic meter capacity gas pipeline from Western Siberia to Western China via Altai region.

It is important to note that, beginning in 2009, the VSTO oil pipeline project would depend for the time being on oil extracted from existing sources in Western Siberia, meaning that this oil would be diverted away from Europe. However, the construction of the VSTO

pipeline will be followed by the development of new oilfields in Eastern Russia.

There are also plans to build oil refineries connected to the pipeline, including the one planned on the Pacific coast. For Japan, an oil refinery built in the vicinity of the planned sea terminal could have significant implications for its trade and investment links with Russia. This hypothetical scenario is in line with the approach adopted by the Japanese government that seeks to reduce Tokyo's overwhelming dependency on the Middle East.

Implications

Russia is leaning towards a concept of cooperation among the multiple centres of power and influence. In fact, Moscow cherished a concept of a multi-polar world alongside with Beijing and New Delhi. On 2 June 2005, Russia even hosted a trilateral foreign ministers conference with India and China in Vladivostok.

At the same time, Russia is adjusting to the “one superpower plus one dominant alliance” world. The new relationships with NATO were guided by the doctrine of partnership. Still, from the Kremlin's perspective, the post-Cold War international architecture is overly NATO-centric and is excessively dependent on US geopolitical influence. The expansion of NATO has led to increased concerns and diminishing hopes that the “direct and indirect anti-Russian manifestations” will be removed from both the military planning and political declarations of the NATO member states.

Russia's foreign policy and its strategy of economic engagement with the world remain multi-directional. Moscow is keen to foster links with the EU, the US and Asia.

In East and Central Asia, on the other hand, there were new forums created, including the six-party process and other frameworks such as ASEAN Regional Forum (ARF) and Shanghai Cooperation Organization (SCO). Military-to-military dialogues with China and Japan were progressing well, accompanied by expanding exchanges between the navies. It is now nearly impossible to find a negative reference to the US-Japan Alliance not only in Russian official documents, press briefings, or official interviews, but also in the national news media. Similarly, US and Japanese official sources have avoided linking Russia to the allied policies in the Asia-Pacific region in a negative way, although some potential issues of concern have been raised, e.g. the normalization of Japan-Russia relations.

The political-security transformation in the region was significant and generally favourable for Russia. Moscow also made important steps forward in promoting bilateral and multilateral relationships – with South Korea, Japan, China and India. Nonetheless, domestic concerns dominate the external security agenda. Thus, the border areas, including the Far Eastern region and the western enclave represented by Kaliningradskaya Oblast were named as strategic. The challenge is the weakened economic and transportation links between these territories and other regions in Russia, as well as difficult economic conditions of these territories. It seems that a response strategy to these problems is in strengthening infrastructure connections, including transport, telecommunications and energy delivery systems. These measures could provide incentives for regional development, supporting at the same time closer economic links with the neighbouring states.

In sum, the energy sector development in Eastern Russia became the priority goal. Russia's eastern energy strategy is aimed at industrial development and the improved socio-economic situation in the eastern regions, closer economic, infrastructure and technology links with the neighbouring economies, and Russia's sustainable future as a leading exporter of energy, including the new markets in Asia. However, Russia's foreign policy line, as well as its strategy of economic engagement with the world remains multi-directional. Its relationship with the EU – no matter how difficult these could become – cannot be replaced by other partners. Energy is perhaps the most important factor in EU-Russian economic interactions and its significance is likely to continue.

CHINA

by Tang Shiping

The phenomenal economic rise of China is one of the most important features of the current international system. The Chinese economy has grown between 8–10 per cent annually for over twenty years now and is projected to be among the world's fastest growing economies for the foreseeable future. China's energy consumption is expected to accelerate driven by its economic growth. China is already dependent on imported hydrocarbons to fuel its economy. Until recently, Beijing had focused narrowly on the Middle East for its energy needs. However, in recent years China has also been looking at all the major energy producing regions in the world – Southeast Asia, Australia, Latin America and Africa – to satisfy its growing energy needs. Given the close links between energy and geopolitics, China's energy policy is likely to have important implications for the international system. According to a recent report by the National Bureau of Asian Research, "China is emerging as a major force in both world energy markets and global energy geopolitics".

China's Energy Profile

Coal remains the most important source of energy in China. In 2000, coal supplied 69 per cent of China's total energy output, with oil coming in second at 25 per cent, natural gas third at three per cent in 2000, and nuclear power and hydro power fourth at about two per cent. This picture will not change significantly even by 2030. Because China has the largest reserves of coal in the world (equivalent to half of the total oil reserves in the Middle East), China will continue to rely on domestic supply of coal to satisfy 60–70 per cent of its energy demand for the foreseeable future. China's dependence on imported energy in its total energy supply is likely to remain around 30 per cent.

Despite the fact that coal will remain the most important source of energy for China in the years to come, it has been China's rapid growth in demand for imported oil (and to a lesser extent, natural gas) in the last decade or so that has generated the most attention, both inside and outside of China. Domestic oil production in China has been stagnant for years, yet the use of oil has continued to grow. Various agencies have projected China's oil use to grow by 50 per cent, if not more, by 2020. This means that China will have to import between four to seven million barrels of oil per day by 2020, thus increasing its dependence on imported oil from 40 per cent in 2004 to around 50 per cent by 2020. As a result, China's dependence on imported energy in its total energy supply is likely to reach around 15–20 per cent.

From 1993 to 2003, about 50 per cent of China's import oil came from the Middle East, 20 per cent from Africa, 10 per cent from Asia-Pacific and 10 per cent from the Western Hemisphere. With an oil pipeline from Kazakhstan already in operation, and another pipeline from Russia to become fully operational by 2010, China's dependence on oil from distant regions is likely to decrease in the coming years.

China has made tremendous progress in improving energy efficiency in the last 25 years. Between 1980 and 2000, China achieved a 66 per cent reduction in energy consumption per unit GDP. In comparison, the world average reduction in energy consumption during the same period was 19 per cent, while the OECD countries managed close to a 20 per cent reduction. Despite this achievement, China's energy efficiency is lower when compared with that of the developed states. China has enacted many energy-efficient initiatives and policies in recent years, with more in the pipeline to slow down the growth of overall energy demand, especially the demand on imported energy. In spite of these policies, Beijing will have to rely on imported oil in the short term. Moreover, even if the rate of oil consumption slows down, the demand for oil in absolute terms will steadily increase.

Key Challenges

Energy security for China is not merely about traditional security concerns. China's quest for energy security revolves around issues of economics and politics. China's quest for energy security often raises the following security, economic and environmental concerns for the outside world:

- China may use force or threaten to use force to claim sources of oil supply.
- In the event of a war between the US and China over Taiwan, oil pipelines to China may become military targets. The United States may also close the sea lanes of communication (e.g. the Straits of Malacca) to China with the goal of imposing an oil embargo against Beijing. Under this scenario, countries around these potential military targets may well become the victims of war.
- China's demand for oil will drive up oil prices, thus raising energy security concerns for other countries.
- China's extensive use of fossil energy will cause regional, if not global, environmental problems.

Energy security for China is not merely about traditional security concerns. China's quest for energy security revolves around issues of economics and politics.

The Chinese strategic community has long been debating the approach to China's energy security. One critical question in this debate has been whether force or the threat of the use of force should be considered as an option for securing China's oil supply. The emerging consensus is against employing the military instrument to secure China's oil supply.

This consensus is based upon two important considerations. First, within the foreseeable future, there is no possibility of China building a blue-water navy that can single-handedly protect China's oil supply. Such a navy must necessarily be one that can fight the US Navy on roughly equal terms. Even attempting to build up such naval capabilities would raise US

and Japanese suspicions. Hence, even if it is economically feasible, such naval modernization would greatly complicate China's overall foreign policy.

Second, the primary objective of the PLA, including its Navy, is to fight and win a war against a possible US intervention if Taiwan declares independence. Most Chinese experts agree that such an operational objective does not require a navy that can single-handedly protect China's oil supply. Indeed, most US experts on China's military modernization will also agree on this point, except a handful of "Blue Team" pundits who tend to view any military modernization by China as fundamentally threatening to US interests.

Because China is unlikely to develop the power projection capabilities that are needed to protect its oil supplies in the foreseeable future, China has no choice but to rely on diplomatic means to secure its supplies. In other words, while China is acutely aware of its dependence on the US (for the protection for its oil supplies from the Middle East and the protection of the sea lanes of communication for the safe passage of its tankers) and Russian goodwill (for the supply of oil and gas), there is precious it can currently do to ameliorate such dependence.

Interestingly, this vulnerability and dependence on others' goodwill may turn out to be a stabilizing factor. Because China's welfare would depend upon the goodwill of other states like the United States, Russia, Indonesia, Malaysia and Singapore, Beijing will promote good relations with these states. Consequently, China's dependence and vulnerability can be an important stabilizer for relationships between China and these other states.

There are at least two solid pieces of evidence to support this assertion. First, while steadily building a blue-water navy, China has decided against building a navy that can single-handedly secure its energy supply and transportation. Such a navy must necessarily be a multi-aircraft-carrier-based navy. Thus far, China seems to have no plans to build an aircraft carrier, much less a carrier-centred navy. Second, China has pursued a largely market-driven approach (with political backing from Beijing) toward securing energy equities. China has yet to demonstrate an inclination to rely on its military power for securing energy equities in its neighbouring regions (where it could conceivably employ military power). Moreover, those projects that may undermine China's efforts to establish a benign regional environment have not been supported by Beijing. For example, Beijing has not supported the Burma-Yunnan pipeline despite the strong advocacy for it by the government of Burma and the province of Yunnan.

China is unlikely to build a blue-water navy within the foreseeable future that can single-handedly protect China's oil supply. China will depend upon diplomacy as well as on the US Navy for the security its oil supplies.

China's Energy Security Strategy

It is alleged that China has been on a rapacious buying spree to "lock in" the rights to equity oil and gas overseas. It is further argued that China is out to secure the energy supply for its economy at all costs. This behaviour is then labelled as one of the major factors behind the rising price of oil. A more balanced analysis reveals a different picture.

To begin with, global oil reserves are finite. As a result, it makes economic sense for an oil company to pay a price that may seem high according to the current market price in anticipation that the price will eventually increase. The other less rational options include pay-

Table 1
China's Oil Companies in Comparison

Fortune 500 global rank	Company name	Country	Revenue (US\$ billion)	Profit (US\$ billion)
2	British Petroleum	UK	285.06	15.37
3	ExxonMobil	US	270.77	25.33
4	Royal Dutch/Shell Group	Netherlands/UK	265.19	18.54
10	Total	France	152.64	11.95
11	ChevronTexaco	US	147	13.3
12	ConocoPhillips	US	118.72	8.13
30	ENI	Italy	79.31	9.89
31	Sinopec	China	75	1.26
46	CNPC	China	67.7	8.76

Source: Fortune 500, 2005

ing higher price for oil in the future or even getting out of the business (as there may not be enough oil to process). The sound economic rationale underlying this policy is also followed by other global oil companies.

Second, as Table 1 illustrates, the global oil industry is dominated by a few colossal players, most of whom are from the US, Britain, the Netherlands and France. These companies have control over the major equities oil in the world, often with strong political backing from their respective governments. By comparison, all three national oil companies (NOCs) of China were latecomers to the global oil business. As such, they are much weaker players compared to the established western energy giants like ExxonMobile, Royal Dutch Shell and British Petroleum.

Third, China trades only four per cent of the world's total crude oil output. As a result, it is highly unlikely that China was alone responsible for the rising price of oil. It is more plausible that the major oil producers and oil companies were using China's demand as their excuse for hiking the price of oil.

Despite being newcomers in the big business of oil, Chinese oil companies are quickly learning the rules of the game. They are already beginning to act like and compete against global oil companies. As a result, the more established oil giants are unhappy with the new competition (as indicated by the fact that they have labelled China's NOC's moves as "mercantilist"). With their vastly superior access to international media (i.e. Anglo-American media), the more established energy giants have consistently painted an alarmist picture of the behaviour of China's oil companies.

This alarmist picture has two major dimensions. The first major dimension of this alarmist picture is that only Chinese oil companies are trying to secure equities of energy supply. This is simply untrue. Chinese NOCs are only learning from the success of Anglo-Saxon energy companies and the failure of the Japanese oil companies in the 1970–1980s.

The second major dimension of this alarmist picture has been that only China deals with states that may not conform to certain Western standards in human rights and democracy.

This is again not true. The Anglo-Saxon companies (and other energy giants) have long dealt with states that do not conform to these Western standards in human rights and democracy. Moreover, with limited supply, states with oil reserve have far more bargaining power compared to states without oil. Consequently, a state seeking energy supplies must deal with any oil and gas producing state in the market.

China's energy-driven relationships with other countries have had a significant impact on China's foreign policy. To begin with, many countries that were not on China's foreign policy radar screen have become increasingly important for Beijing. This development is most evident in China's relationship with some African (e.g. Algeria, Nigeria and Sudan) and Latin American countries (e.g. Venezuela). As highlighted above, China's business dealings with these countries have been mostly economic, thus contributing to the economic development of these countries. It is likely that China's energy interest in these countries will require Beijing to safeguard them. However, China is likely to rely on political as opposed to military means to safeguard its energy interests in these countries.

Second, energy relationship has solidified China's relationship with many countries like Russia and Kazakhstan. On the other hand, the competition for energy has added a new dimension to the ongoing deterioration of the Sino-Japanese relationship. Energy relationship, however, is not the major force behind the changing quality of China's relationship with these countries as it is merely reinforcing an already existing trend.

Third, energy security has added a new dimension to the always fragile US-China relationship. But even here, the picture is not all gloomy. Both sides recognize the need to discuss energy issues in order to prevent the degeneration of their relations due to misunderstandings. There seems to be an emerging consensus on both sides that some kind of dialogue on energy security should be installed, and there is strong possibility that the newly launched "Strategic Dialogue" between the two sides will soon cover energy security and cooperation. Finally, there have also been calls for regional dialogues and cooperative schemes both inside China and outside.

In spite of the China's rising appetite for oil, the global oil industry is dominated by a few colossal players from the West that have strong political backing from their respective governments. These giant oil firms are primarily from the US, Britain, the Netherlands and France.

Implications

China's energy security strategy is centred on economics and politics, and not on a narrowly defined notion of security. However, China is acutely aware that its economy and consumer-driven energy policy will have a profound influence on its overall foreign and security policy. In this regard, China is acting like any other state by "subjugating its foreign policy to its energy concerns". As a result, while China's energy security policy may not pose real security challenges anytime soon, energy security has come to occupy a prominent place in the thinking of the Chinese leadership and has started influencing China's overall foreign policy. Paradoxically, the realization by Beijing that China's energy security problem may turn into a real security issue might end up stabilizing China's relationship with the US and other regional countries.

INDIA

by Manjeet Singh Pardesi

India is the sixth largest consumer of energy in the world, and it meets almost 30 per cent of its energy needs through imports. Since it liberalized its economy in the early 1990s, India has emerged as one of the fastest growing major economies in the world. Its economy has grown at an average rate of six per cent annually since the early 1990s, and the past two years have seen annual growth rates approaching eight per cent. At the same time, India, which is already the second most populous nation in the world, is all set to take over China as the largest nation in the world within the next three decades. India faces daunting challenges in meeting its energy needs to feed its fast growing economy and to meet the human developmental goals of its rising population. Highlighting its critical importance, Prime Minister Manmohan Singh mentioned that energy security was “second only in our [India’s] scheme of things to food security”. To further highlight the thrust that the search for energy was providing to Indian diplomacy, PM Singh mentioned that the demands for higher growth rates had “created new challenges for our [India’s] foreign policy in terms of seeking access to markets, sources of energy and investment and advanced technologies”.

India’s Energy Profile

Coal is the most important source of energy for India and provides for almost 51 per cent of the total energy consumed in the country. However, Indian coal suffers from low calorific value and causes considerable environmental degradation as it is high in sulphur and ash. Given its poor quality, India imports almost 25 per cent of the coking coal required by its steel industry. However, its sheer abundance in India which is home to the world’s fourth largest coal reserves means that it is likely to remain the principle source of energy for India until 2030 and possibly beyond.

Oil accounts for roughly 34 per cent of India’s energy consumption. India already imports close to 65 per cent of its oil needs and its import dependency is growing fast. It is estimated that in the worst-case scenario, almost 90 per cent of its oil consumption needs would be met by imported oil by 2030. Natural gas accounts for 10 per cent of India’s energy consumption. Moreover, it is fast emerging as a major alternative for India’s poor quality coal, especially for electricity production. It is estimated that India will be dependent on imported gas for more than 40 per cent of its total gas needs by 2030.

The remainder of India’s energy needs is provided by a mix of hydro power, nuclear power, wind power, biomass and other non-conventional energy sources. According to a recent study done by the Indian Planning Commission, the apex institution that formulates India’s Five-Year Plans, even if hydro power, nuclear power and other renewable sources were exploited to their full potential, their best possible contribution to India’s energy mix by 2030 would be around five to six per cent each.

Key Challenges

In order to meet its energy security challenges, India needs to search and tap domestic coal, gas and oil reserves. India is likely to seek new coal extraction technologies and clean coal technologies, both of which are available internationally to maximize the contribution of its domestic coal reserves. India’s dependence on imported oil is likely to be acute as no major oilfields have been discovered in India since the Bombay High fields were discovered in the

late 1960s. The outlook for gas discoveries in India looks more promising with the discovery of gas fields in the Krishna-Godavari Basin in 2002 and in the Bay of Bengal in 2004. On the whole, India's dependency on imported oil, gas and even coal and uranium is only going to increase in the coming decades. In the case of nuclear power, low concentrations of uranium in India and the poor quality of uranium ores mean that India will be dependent on imported uranium in the medium term before it can develop the technology to tap its vast thorium reserves beyond 2050. India needs to develop the thorium cycle to enhance the role of nuclear power and also needs to boost energy related R&D to increase the contribution of non-conventional energy sources to its total energy consumption. India's quest for energy sources and related technologies and investment is likely to have profound regional and geopolitical consequences – both political and military.

India's Energy Security Strategy

India depends for over 60 per cent of its oil needs on just four countries, namely Saudi Arabia, Nigeria, Kuwait and Iran. India is dependent on the Middle East for almost two-thirds of its oil imports. While India is pursuing a strategy to diversify its suppliers, its overwhelming dependency on Middle Eastern oil is likely to continue for reasons of geography and cost. ONGC Videsh, the overseas arm of India's Oil and Natural Gas Corporation has purchased exploration and production blocks in oilfields in a range of countries from Sudan, Libya and Iran to Myanmar and Russia. India's private sector oil company Reliance Industries has purchased exploration blocks in Yemen and Oman.

Apart from uncertainty regarding the availability of oil, India is also concerned about the possibility of a sudden increase in oil price and its negative impact on the Indian economy. In 2004, the Indian government decided to establish strategic petroleum reserves for 15 days of consumption. It was also decided that this stock of reserves would be over and above the existing storage with the country's oil companies. The Planning Commission has recently recommended that New Delhi should build and maintain a strategic reserve for 90 days of oil imports.

In addition to these concerns about availability and affordability for consumers, New Delhi is also keen to minimize the strain on its foreign exchange reserves as a result of massive oil imports bill. In the financial year 2003–2004, New Delhi spent US\$20.2 billion on oil imports. New Delhi is particularly concerned that any increase in oil prices would translate into a necessary drain on its foreign exchange reserves. India is pursuing several financial options like obtaining equity oil abroad and participating in futures trading in oil to mitigate this challenge. The Planning Commission has also recommended New Delhi to purchase buying options from large oil storages in neighbouring states like Singapore to deal with emergency situations. With recent investments in a special economic zone at Jamnagar in Gujarat, India is all set to emerge as an “energy outsourcing hub” by end 2008. Jamnagar already boasts the world's third largest oil refinery and is set to emerge as the largest when Reliance Petroleum Limited begins its operation in December 2008. India hopes to earn revenue from its investment in refineries by exporting petroleum products to markets in Europe and North America.

With recent investments in the western state of Gujarat, India is all set to emerge as an “energy outsourcing hub” by end 2008. In two years time, the combined refining capacity of the city of Jamnagar in Gujarat will be the world's largest.

India is also considering diversification of fuels in addition to sources of energy. In this regard, consumption of natural gas in the country is set to increase dramatically in the years ahead. India can import gas through pipelines from neighbouring states or import Liquefied Natural Gas (LNG) through long-term contracts. Since a pipeline traverses through several countries, it entails a complex contractual framework and has an important bearing on geopolitics. This is in stark contrast to LNG contracts that have a relatively minor impact on geopolitics.

India is interested in acquiring gas from Iran, Bangladesh and Myanmar. Since the early 1990s, India has considered various pipeline projects: Oman-India Deep Water Pipeline, Iran-Pakistan-India Pipeline, Turkmenistan-Afghanistan-Pakistan-India Pipeline, Qatar-Pakistan-India Pipeline and Myanmar-Bangladesh-India Pipeline. All of these projects have run into numerous troubles due to regional and geopolitical tensions. On the other hand, India's first LNG import terminal, Dahej in Gujarat, began operation in 2004 and is importing gas from Qatar. The Indian government has approved plans for 12 possible import terminals mostly along the country's western coast (from Gujarat to Kerala). These infrastructure projects highlight the importance of the Persian Gulf in meeting the country's LNG needs.

Nuclear power only constitutes about three per cent of India's electricity needs. India's meagre uranium reserves and the poor quality of its ores mean that India's nuclear reactors are operating at suboptimal levels. In the long term, beyond 2050, India's substantial thorium reserves can make the country self-sufficient in electricity production. This process can be accelerated if New Delhi can access uranium and other civil nuclear technologies from foreign sources that accelerate the process of converting India's thorium supplies into fissile material. These technologies are currently barred to New Delhi as it is not a signatory to the Nuclear Non-Proliferation Treaty. However, in July 2005, the US and India agreed to a broad framework that can potentially establish civil nuclear commerce between the two states if ratified by the US Congress. Meanwhile, Russia, which had agreed to cooperate with New Delhi on civil nuclear technology as early as 2000, supplied India with uranium supplies to power its nuclear reactors in April 2006. France has also signalled its intent to cooperate with New Delhi in this regard.

Implications

Gas pipelines from the Persian Gulf region or from Central Asia would need to traverse through Pakistani territory before supplying India. However, very little progress has been made on these pipelines due to tensions between New Delhi and Islamabad. Many Indian analysts are of the view that energy pipelines such as the Iran-Pakistan-India pipeline can effectively end the "economic partition" of the subcontinent, and give each country a stake in the other's economy. A pipeline from Iran to India via Pakistan would lower the cost of gas for Islamabad due to economies of scale. At the same time, Pakistan would also earn a significant transit fee for the pipeline. On the other hand, some Indian strategists are against the idea of such a crucial pipeline traversing through Pakistani territory as it would enable Islamabad to stop supplies to India in the event of a military standoff.

Geopolitical tensions between the US and Iran over the latter's nuclear programme have further complicated the Iran-Pakistan-India pipeline. The US has signalled that it would not like to see New Delhi or Islamabad cooperating with Tehran over this pipeline, as it would not only end Tehran's geopolitical isolation but will also allow Iran to use the revenues thus generated for its nuclear programme. The US is interested in extending the Tajikistan-Af-

ghanistan-Pakistan pipeline to India. However, this pipeline would also face the same political problems between New Delhi and Islamabad, while adding an unstable Afghanistan to the equation.

India is also interested in a gas pipeline from Myanmar. New Delhi would ideally like this pipeline to pass through northeastern India and Bangladesh before re-entering India in West Bengal. The aim is to tap the gas reserves in India's northeast as well as those of Bangladesh. However, progress along this front has been stalled by Dhaka's unwillingness to export gas to India. This is a product of uneasy political relations between Bangladesh and India. India is currently studying the feasibility of a longer and more expensive pipeline that bypasses Bangladesh altogether.

Energy cooperation with Pakistan and Bangladesh would tie the economies of these states with India's much larger and fast growing economy. This would not only confirm New Delhi's centrality in South Asia but would also allow India to exercise its influence in the region.

Several Indian analysts have also proposed that India's strategic petroleum reserves should be set up as a regional facility with New Delhi taking the lead. Energy cooperation with Nepal, Bhutan, Pakistan and Bangladesh would tie the economies of these smaller nations with India's much larger and fast growing economy. This would not only confirm New Delhi's centrality in South Asia but would also allow India to exercise its influence in the region.

Indian analysts have also proposed transmitting hydroelectricity from the Central Asian states of Tajikistan and Kyrgyzstan to northern India. Kazakhstan is also interested in selling oil to India via the Caspian Sea and Iran. In April 2006, the US put forth the idea of an electricity grid stretching from Central to South Asia. The US proposed a power grid fed by oil and gas from Kazakhstan and Turkmenistan and hydropower from Tajikistan and Kyrgyzstan to supply Afghanistan, Pakistan and India. The US is interested in integrating the economies of these regions and weaning the Central Asian republics away from Russian influence. From New Delhi's perspective, such a move would only enhance its own influence in Central Asia. However, there are several technical, financial and political difficulties that need to be overcome in order to go ahead with such an ambitious project.

India's huge and growing demands have led to calls for Indian membership of the International Energy Agency. India is also taking the lead to develop a framework for energy cooperation in Asia. New Delhi convened a major conference in January 2005 that brought together all major Asian oil producing and consuming nations. The participating nations agreed to work on an Asian oil market and on the creation of an Asian price signal mechanism. India's former Oil Minister, Mani Shankar Aiyar also proposed the formulation of an Asian gas grid. In this respect, he proposed extending the Iran-Pakistan-India gas pipeline to southern China. Some Indian analysts believe that an Asian energy grid would reduce America's geopolitical influence and help create a multi-polar world order.

Several Indian analysts have also proposed energy cooperation between Russia, China and India. In this regard, it has been suggested that New Delhi should seriously consider extending the Siberia to China gas pipelines to India. It has been further proposed that India should look at swap alternatives that would allow China to access India's oil and gas in

Sakhalin in eastern Russia in exchange for gas deposits in Xinjiang in western China. Some Indian energy experts have even proposed gas pipelines from Central Asia to northern India via Urumchi and Kashgar in Xinjiang. However, it is not clear if India would entrust its critical energy supplies to traverse Chinese territory given the fact that New Delhi and Beijing remain distrustful of one another as they have major unresolved political and territorial issues. In an attempt to reduce their mutual suspicions, India and China signed five memoranda on energy cooperation in January 2006. However, most of these memoranda were of commercial nature and the strategic implications, if any, of Sino-Indian energy cooperation are not yet clear. India and China won a joint stake in Syrian oilfields in late 2005.

Meanwhile, India has signed a civil nuclear cooperation deal with the US. If approved by the US Congress, the deal would pave the way for civil nuclear commerce between the two countries. From New Delhi's perspective, it would also end India's nuclear isolation. Some analysts have argued that cooperation with India is a part of US strategy to hedge against a rising China. Others have argued that civil nuclear cooperation with India weans New Delhi away from Moscow's orbit. The US has been concerned about Russia's emergence as an energy superpower as well as its energy and defence cooperation with Beijing and New Delhi. By cooperating with New Delhi, the US has pre-empted the emergence of a possible strategic alignment between Russia, China and India centred on Moscow. The US has also initiated an "Energy Dialogue" with India as a forum to discuss and address India's energy challenges.

India's quest for energy security also has a military dimension. Given its reliance on the Middle East for its oil supplies and the Persian Gulf for its gas needs, India is serious about the security of its sea lanes in the Indian Ocean Region. India has identified the Straits of Hormuz in the Persian Gulf as a strategic chokepoint that must be kept open to ensure smooth supplies of oil and gas. India's acquisition of energy fields in the Russian Far East and Vietnam mean that India is also interested in the security of the Straits of Malacca. New Delhi has identified this oceanic expanse as an area of vital concern for India's energy security and it is likely to expand its naval capabilities to make this region secure. India's Maritime Doctrine that was published in 2004 calls for a blue water navy to protect India's trade and energy interests in the Indian Ocean Region. Earlier this year, the chief of the Indian Air Force called for an expansion of India's air power to protect India's energy and economic interests.

In the eastern Indian Ocean Region, India has already established its first tri-service base in the Andaman and Nicobar islands at the mouth of the Straits of Malacca. In the future, New Delhi may be keen about seeking a naval access facility in Singapore. In the Western Indian Ocean Region, India's ambitious Project Seabird that consists of the Karwar naval base in Karnataka state together with an air force station and missile silos is already operational in part and is expected to be fully ready in five years time. Given India's interest in Central Asian oil and gas, India has reportedly acquired a military base at Ayni in Tajikistan. According to reports in the Indian media, New Delhi is likely to deploy a fleet of MiG-29 bombers there, and the base is expected to become operational by the end of this year.

New Delhi has identified the Indian Ocean Region spreading from the Straits of Hormuz to the Straits of Malacca as an area of vital concern for India's energy security. India is keen on playing an important maritime role in this region to ensure the safety of the sea lanes and the vital chokepoints.

At the Shangri-La Dialogue in Singapore in June 2006, the Indian Defence Minister Pranab Mukherjee extended India's offer of assistance in securing the Straits of Malacca if the littoral states (Singapore, Malaysia and Indonesia) desired New Delhi's help. The extension of this offer comes after India agreed on a broad framework for maritime security cooperation with the US in February 2006. Before visiting Singapore for the Shangri-La Dialogue, the Indian Defence Minister was in Japan where the two countries agreed on enhancing their defence cooperation. Importantly, India and Japan agreed to provide maritime security in the Indian Ocean Region and the Malacca Straits. India is acutely aware of its geographic location connecting the Middle East and East Asia in the Indian Ocean Region, and as such is keen to play an important security role in this region as it emerges as a great power in Asia and beyond.

JAPAN

Hiro Katsumata

Japan's defence policies are closely related to the issue of energy. Without considering the energy issue, Japan's security policies cannot be fully understood. Although it is the second largest economy in the world, Japan is a nation of few resources. For its domestic energy supply, it relies heavily on imports. Thus, maintaining a stable supply of energy is especially critical to Japan. The energy supply, in short, is a matter of national security for Japan. Furthermore, to better appreciate Japan's policies in this area, it is necessary to frame them in the context of Japan-China relations.

Japan's Energy Profile

Japan's lack of natural resources means it relies heavily on imports for its domestic energy supply. The rate of dependence on imports for the total energy supply is 96 per cent, including imports of uranium for nuclear power generation. Excluding uranium imports, the rate of dependence on foreign sources remains high at 80 per cent. Petroleum takes up approximately half the total supply of Japan's primary energy, and the three key fossil fuels – petroleum, coal and natural gas – take up about 85 per cent. Japan relies on imports for almost all its supply of fossil energies. The low level of self-sufficiency has not changed for decades.

A stable supply of petroleum is especially important for Tokyo. Japan is second only to the US in terms of the amount of petroleum imported, and the country's dependence rate on imports is more than 99 per cent. With respect to the sources of these petroleum imports, Japan relies heavily on the Middle East. Approximately 90 per cent of imports are from this region. By country, Saudi Arabia is the most important source, followed by the United Arab Emirates and Iran. The Middle East is followed by Southeast Asia, in which Indonesia is Japan's most important partner. The imports from Southeast Asia take up about five per cent of the country's total imports.

The shortage of energy is a chronic problem for Japan. The Japanese economy is export-oriented, driven by the conversion of raw materials and energy imports into manufactured exports. The country's economic growth therefore leads to increased demands for energy, which must of course be met by increasing imports.

Key Challenges

Japan's heavy reliance on overseas energy supplies inevitably links its energy policy closely with its defence policy. Two challenges in the area of energy have profound implications for Japan's defence policies, namely the safety of the sea lanes of communication as import routes and the defence of the potential sources of fossil energy (i.e. the areas which are believed to be rich in petroleum and natural gas).

Two challenges in the area of energy have profound implications for Japan's defence policies – the safety of the sea lanes of communication and the defence of potential sources of fossil energy.

Given its heavy reliance on imports for its energy supply, the safety of the sea lanes of communication is critical for Japan. The geographical scope of Tokyo's concern is broad, stretching from its home waters to the Middle East. Within this broad geographical range, there are three key strategic areas: the Pacific Ocean, the Straits of Malacca and the Indian Ocean.

Japan has been concerned with the safety of the sea lanes in the Pacific since the Cold War era. Its goal has been to safeguard the area within a thousand nautical miles from its main land, the main concern at that time being Soviet naval activities in the vicinity. This goal was set out in the early 1980s, during the height of the East-West confrontation. Even after the end of the Cold War, this goal has remained unchanged.

Japan regards the Malacca Straits as an important energy lifeline, with the vast majority of petroleum tankers from the Middle East to Japan passing through those straits. Japan has two main concerns about the situation in the Straits. The first is the increasing number of piracy incidents. The second reason is the relevance of the "China factor". Japan is well aware that it is not alone in regarding the Malacca Straits as a key strategic point. China too regards the Straits as a lifeline, connecting the Middle East with its coastal regions which are developing rapidly. The situation in the Straits is further complicated by the role of the US. As part of its attempt to address the problem of international terrorism, Washington has been keen to enhance its military role in the Straits. Any US military commitment would amplify Beijing's fear that Washington would be able to block the Straits if a military confrontation broke out in the Taiwan Straits. Japan, for its part, has few problems with America's role in the region, but is greatly concerned about the possible expansion of China's sphere of influence in Southeast Asia.

Finally, the Indian Ocean is another area whose importance cannot be neglected, not least because this area is also vital to China's strategic and economic interests. The worst-case scenario for Japan is that China is able to exercise dominance over the Indian Ocean. Japan is concerned about China's activities in distant areas such as the Malacca Straits and the Indian Ocean because of the lack of trust between the two countries.

The "China factor" is an important issue in Japan's energy security calculus. The two countries have disputes over the energy-rich EEZs in the East China Sea and the Senkaku/Diaoyu Islands with their energy-rich seabed. They also depend on the security of the same sea lanes for the smooth supplies of their energy imports from the Middle East.

The defence of any potential source of fossil fuels is a critical task for the Tokyo government. Japan strives to safeguard any area which is believed to be rich in petroleum or natural gas. Japan is in dispute with China over two such areas: the Senkaku Islands (known as Diaoyu Islands in Chinese) and the East China Sea. The Senkaku Islands are a group of inhabited islands located 300 kilometres southwest of the main island of Okinawa and 350 kilometres east of mainland China. According to surveys conducted by several international agencies, the seabed in this area contains a substantial amount of petroleum and natural gas. At present these islands are effectively controlled by Japan. However, Beijing also claims sovereignty and the dispute here has undoubtedly been one of the most serious sources of tension between the two countries.

Deposits of petroleum and natural gas can also be found in the seabed of the East China Sea. This has driven Tokyo and Beijing to disputes over the boundary between their Exclusive Economic Zones (EEZ). The tension between the two countries has in recent years become serious, with China even sending its military vessels to the disputed area for military exercises in order to track Japanese activity.

One might argue that what is at stake is not energy. Instead, tensions in the East China Sea should be seen as a clash of nationalisms. One reason for such an assessment is that the exploitation of resources in the East China Sea will be irrational in terms of cost-benefit calculations. The cost of transportation would be enormous, given the distance from the resource deposits to Japan's metropolitan areas. As a result, importation will be a more cost-effective option for Tokyo. However, it should be emphasized that from Tokyo's perspective the most important aspect of the East China Sea conflict is indeed the issue of energy. Attention should be paid to the discourse in Japanese domestic settings, including comments made by *diet* members, reports by the media, editorials in newspapers and the like. In the Japanese discourse, this conflict is framed in the context of the country's energy security. Energy is a sensitive issue for the Japanese and thus they often prioritize their country's level of self-sufficiency over cost-benefit calculations.

Japan's Energy Security Strategy

One of the key strands of Japan's energy security strategy centres on its Maritime Self-Defence Forces. All the challenges discussed above concern maritime security and thus the Tokyo government has placed particular emphasis on its naval capabilities. Japan's Maritime Self-Defence Forces has 16 submarines, 53 principal surface combatants – such as destroyers and frigates – and nine patrol and coastal combatants. Yet, on the naval front, Japan lags China in terms of quantity. China has almost five times the number of Japanese military ships in its naval arsenal. Thus, Japan's maritime forces concentrate on high-tech equipment in order to compensate for their numerical disadvantage.

Japan remains dependent on its security alliance with the US. However, Japan is strengthening its maritime posture to protect its energy assets. At the same time, Tokyo is also pursuing non-military means to ensure the safe passage of its oil supplies.

The Defence Agency of Japan has put out a slogan to describe the characteristics of its maritime defence capabilities: "First Line of Defence". The sea lanes of communication in the

Pacific constitute an essential element of the country's "first line". Japan's maritime forces have maintained a significant level of defence capabilities, with the aim of safeguarding the area within a thousand nautical miles. Today, the Defence Agency unequivocally states that, in a crisis situation, its maritime forces will use destroyers, supported by fighters for air defence, so as to ensure the safety of Japanese ships. Remarkably, the maritime forces patrol on a daily basis a wide maritime area, encompassing the East China Sea. In addition, the Defence Agency has recently drawn up a "response plan" to deal the possible intrusion by other countries' ships or submarines into Japan's territorial waters. This kind of activity epitomizes Tokyo's determination to strengthen its naval strategies *vis-à-vis* Beijing.

Defence cooperation with the US is also an integral element of Japan's defence policies. In Tokyo's efforts to deal with most of the challenges discussed above, the role of Washington has been essential. Tokyo frequently consults Washington in its dealings with Beijing and it is self-evident that the US forces will be involved either directly or indirectly in any territorial disputes between the two countries. Moreover, even in the Indian Ocean, Tokyo pursues its security policy through its relations with the US. It has been deploying its maritime defence forces to the Indian Ocean for several years, to provide rearguard support for the US-led operation in Afghanistan. Japan's mission started soon after the September 11 attacks in 2001 and since then supply ships and destroyers have been dispatched to the area on a regular basis, a remarkable development in Japan's security profile. This kind of military activity transcends the scope of anti-terror efforts and serves as a means for Tokyo to display its naval forces in the strategic area, or even to establish a military presence there as a *fait accompli*.

It is therefore not surprising that, in recent years, Tokyo has been keen on strengthening its defence cooperation with Washington. In the 2006 United States-Japan Security Consultative Committee, the foreign and defence ministers of the two countries – Secretary of State Condoleezza Rice, Secretary of Defence Donald Rumsfeld, Minister of Foreign Affairs Taro Aso and Minister of State for Defence Fukushima Nukaga – stressed the "imperative" of strengthening US-Japan bilateral security cooperation.

Last, but not least, Japan also pursues its strategic interests by non-military means. Diplomatic efforts have been made to address various challenges in the area of energy. To begin with, Japanese government officials have been engaged in a series of talks with their Chinese counterparts, to address the conflict in the East China Sea. It is also worth noting that Tokyo has been keen on strengthening its relations with the countries of Southeast Asia, with the aim of enhancing its level of involvement in the security of the Malacca Straits. Remarkably, Japan was the initiator of the Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia, adopted by Asian countries in November 2004. The central aim of this agreement is to ensure the safety of commercial ships passing through the Malacca Straits.

Implications

The various challenges which Japan is facing in its concern for a stable supply of energy are unlikely to be alleviated in the foreseeable future. On the contrary, most of them will probably become more serious. Importantly, due to geographical conditions, many of the challenges which Beijing is facing overlap with those of Tokyo. China, which is also a major energy importer, hopes to have command of the sea in strategic areas such as the Malacca Straits and the Indian Ocean, since its sea lanes also stretch from Asia to the Middle East. Furthermore, China seeks to secure any potential sources of fossil fuels and therefore is not likely to compromise on the issues of Senkaku Islands and the East China Sea.

The interests of these two countries will inevitably clash in various areas and, as a result,

their relations will probably become more strained. If the safety of sea lanes were the only problem to address, there would be some possibility of policy coordination. The two parties might be able to work toward a common goal, provided that they find a way to assuage the nationalist trend in their domestic societies. Unfortunately, the presence of territorial disputes negates any hope of policy coordination. When energy is at stake, the nature of the dispute becomes a zero sum game. It is hard to be optimistic about the implications of the energy issue for Japan-China relations.

Japan is bound to strengthen its military forces, especially its maritime capabilities. In addition to this, the defence relationship between Tokyo and Washington will probably become closer in the future. The situation will require the former to seek external support. Moreover, the geographical scope of Tokyo's defence policies is likely to be broader. Its activities in distant areas such as the Malacca Straits and the Indian Ocean will probably have various military dimensions, transcending the realm of diplomacy.

SOUTH KOREA

by Chang Youngho

Korea is the 12th largest economy in the world in terms of GDP and was the 10th largest consumer of energy in 2004. Along with Japan, the Philippines, Singapore, Taiwan and Thailand, Korea has been identified as one of the six Asian economies that are heavily dependent on oil. Korea imports most of its energy needs. Its import dependence rose from 47.5 per cent in 1970 to 96.7 per cent in 2004. Energy policy in Korea is designed based on the concept of sustainable development in which energy security is understood to ensure adequate and affordable access to energy in an economically viable, environmentally sound and socially acceptable way.

Energy security is understood in Korea as a way of achieving sustainable development.

South Korea's Energy Profile

Though Korea has reserves of anthracite coal and some minerals such as copper, lead, iron and tungsten, it is an energy deficient country and imports its entire oil requirements. Korea imports the entire requirement of oil and it is the seventh largest consumer of oil in the world. Korea's share of world oil consumption was 2.8 per cent in 2004. Furthermore, Korea's oil imbalance has worsened over the past decade. The amount of crude oil imported was 625 million barrels in 1995, but increased to 826 million barrels in 2004. Korea's large oil imbalance means that energy imports account for almost a quarter of Korea's total imports. The growth rate of primary energy consumption is expected to be around five per cent per annum and this is likely to only worsen Korea's already high degree of oil imbalance.

Until 1987, primary energy consumption in Korea was a little less than the equivalent of 30 million tonnes of oil. Oil was the major fuel (44 per cent) followed by coal (35 per cent) and nuclear (15 per cent). Since 1986, liquefied natural gas has been used and its share in the fuel mix has been gradually increasing. Hydroelectricity and firewood supplied a mere two

per cent each of the total primary energy mix. The share of coal in Korea's energy mix has steadily declined and was around 24 per cent in 2004. Nuclear energy and LNG account for 15 per cent and 13 per cent of Korea's energy mix. Firewood and other and hydroelectricity are still minimal sources of energy supply and their shares of total primary energy consumption are 1.8 per cent and 0.7 per cent respectively.

The majority of Korea's crude oil imports come from the Middle East followed by Asia and Africa. Its import dependence on Middle East crude oil was 78.13 per cent in 2004. Liquefied natural gas is imported mainly from Indonesia, Malaysia, Brunei, Qatar and Oman, while coking coal is imported mainly from Australia, Canada and China, and steaming coal is imported mainly from Australia, China and Russia.

Key Challenges

Korea faces two major energy challenges. First, the level of energy consumption is expected to increase due to a combination of higher oil consumption per capita and high energy intensity. Second, supply from alternative energy sources is unlikely to alleviate the current dependence on external sources of energy. As a result of this and due to its high energy import dependency, Korea is putting a lot of emphasis on energy cooperation. This is best illustrated by Korea's initiation of energy development and cooperation among countries in Northeast Asia such as China, Japan, Russia and Mongolia. Korea is keen to establish a Northeast Asia oil stockpile along with Japan and China. However, amid looming Sino-Russian oil and gas agreements, Korea needs to develop its own strategy to secure oil supply as it is simultaneously competing with China and Japan for scarce energy resources.

In this regard, Korea has increased its efforts to secure and diversify its energy resources. Korea is also exploring the possibility of technical cooperation with oil-producing countries. However, it continues to emphasize its energy security strategy in regional context in Northeast Asia. Cooperative strategies in Northeast Asia are focused on the petroleum industry, crude oil procurement, R&D efforts conservation efforts and efficiency improvements.

South Korea's Energy Strategy

Korea's energy intensity has been hovering around 0.36 tonnes of oil equivalent. The stagnating energy intensity implies that the level of economy-wide energy efficiency is not improving. As a result, Korea is putting more efforts to improve its energy efficiency. At the same time, it is also putting efforts to transform its economic infrastructure such that the overall consumption of energy is reduced significantly. Seoul is also trying to increase the contribution of its renewable energy sources such as hydroelectricity and nuclear to fill the increase in its overall energy demand. Korea is keen on reducing its carbon dioxide emissions as well. However, Seoul faces strong public opposition in expanding the contribution of its nuclear power – the most promising way to reduce the consumption of fossil fuels. Additionally, wind energy, geothermal energy and other renewable sources of energy are not developed enough for viable commercial implantation.

Korea is putting a lot of emphasis in regional energy cooperation under the Northeast Asia Energy Cooperation Framework. Korea is also keen to establish a Northeast Asia oil stockpile along with China and Japan.

Energy security is understood in Korea as a way of achieving sustainable development. In the short run, Korea is interested in increasing its oil stockpile and securing the sources of its energy supplies. In the long term, Korea intends to promote energy development and cooperation in other countries. At present, the level of energy development and cooperation is minimal and Seoul's long-term strategy, which includes issues such as the scale and scope of energy development and project finances, is not yet clear. Korea needs to develop a long-term and comprehensive strategy to secure its energy needs.

To ensure a sustainable energy future, Korea has been trying to provide adequate and affordable access to energy and is promoting the development of technologies that are energy efficient, economically viable and socially sound. Improving energy efficiency and strengthening implementation of such policies could be a short-term solution to ease the tightness of energy supply, but it might not be a long-term solution. The amount of energy needed could be met by new energy sources in a longer term.

Increasing the usage of renewable energy could be one possible solution. But several obstacles have to be overcome before the full-fledged usage of renewable energy is feasible. Renewable energy is technologically driven and hence it is costly. In most cases, renewable energy is not price competitive compared to conventional fuels. In order for renewable energy to become viable, a market instrument or price mechanism must be supported to help its penetration. Apart from developing renewable energy, developing new energy technologies could help increase Korea's energy efficiency. The current energy system in Korea is one that is large, concentrated and supply-oriented. A change in the energy system to one that is distributed, demand-oriented, small and medium-sized is necessary. This system will increase the flexibility or adaptability of an economic system to respond to a sudden shock in oil prices or a supply shortage.

Implications

Korea's energy dependence on foreign sources is increasing and this poses many challenges for Seoul. Korea has put a lot of effort on increasing energy efficiency, encouraging energy conservation, developing new energy technologies and is focusing on renewable sources. Korea is exploring ways to promote the energy industry in the region and is building a strategic oil stockpile facility. It is also examining how private and public sectors can contribute to promoting energy security in Korea and in Northeast Asia through mutual cooperation.

Korea perceives that strengthening its bilateral security alliance with the US will secure the crude oil produced in the Middle East. Moreover, it would also guarantee the smooth maritime passage of its imported oil.

There is some evidence that Korea now perceives energy security to be a part of its national security, for example the 2006 National Energy Act and the imminent establishment of the National Energy Commission. Korea is approaching the concept of energy security from the point of view of "comprehensive" security that includes the nurturing of private enterprises for energy acquisition, overseas energy development and cooperation in Northeast Asia, civil and military diplomacy, new strategic thinking and the development of an independent military capability. The Korean President's recent visit to seventeen countries

included many energy-rich countries like Kazakhstan, Azerbaijan, Nigeria and Mexico, confirms the link between Korea's foreign policy and energy security.

The Korean navy recently adopted the Guidelines for the Protection of Energy Sea-Lanes of Communication. Interestingly, Korea has not acquired any new weapons systems and there have been no changes in its force structure with respect to energy security. Korea relies on its bilateral security alliance with the US and believes that securing military security can bolster energy security. In the maritime realm, Korea is interested in ensuring the smooth passage of oil and LNG tankers through the critical Straits of Malacca. Korea also perceives that the strengthening of its bilateral security alliance with the US will secure the crude oil produced in the Middle East and that it would also make the maritime passage of its oil imports more secure. Korea's commitment to its military alliance with the US is best demonstrated by the fact that it sent the third largest number of troops to Iraq after the US and UK.

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THE QUEST FOR ENERGY AND THE EMERGING STRATEGIC ENVIRONMENT



Energy security once again dominates the global agenda. The increasing oil imbalance and the declining rate of discovery of new oilfields are two of the most important determinants of energy security. With the major economies of the Asia-Pacific projected to increase their consumption of oil and gas, there is concern about the impact of the competition for scarce energy resources on the region.

This growing competition over scarce energy sources is not necessarily destabilizing. Oil, which will remain the major source of energy despite attempts to develop alternative forms of energy, is a fungible commodity. Hence, a disruption of supplies anywhere would translate into higher prices everywhere. Therefore, every consuming state is equally vulnerable to the effects of such shocks. As such, all states have a stake in avoiding conflict. Moreover, competition over energy sources can actually be beneficial. Competition will provide incentives for the industry to develop new markets and to advance new exploration and exploitation technology, which can ultimately contribute to increased energy supplies. For example, China's search for energy in new places like Africa could bring more oil to the market. Additionally, the diversification of the sources of energy also reduces the risks of energy disruptions and undercuts the ability of cartels to distort prices, thus contributing price stability in the long term.

The growing competition over scarce energy sources is not necessarily destabilizing as all states will be equally vulnerable to the effects of disruption anywhere. However, competition over energy sources can be beneficial as it has the potential to contribute to increased energy supplies.

The past decade has seen Russia and other non-OPEC states like Canada, Kazakhstan and Brazil emerge as major oil producers. At the same time, Asia's oil consumption exceeded that of North America's in 2005, primarily because of the phenomenal economic growth of China and India. These significant changes in the demand centres and production areas of oil have the potential to significantly alter geopolitical dynamics. Indeed, some of these changes are already underway.

THE MIDDLE EAST REMAINS PROMINENT

The Middle East will remain the most important source of oil. China obtains almost half of its imported oil from the Middle East, while India relies on this region for almost two-thirds

of its total oil imports. For Japan and South Korea, this dependence is even more critical. All of these Asian nations are projected to increase their dependence on the Middle East for their oil needs in the years ahead. In stark contrast, the US obtains less than a quarter of its imported oil from this region. Moreover, the US has declared its intention to further reduce its dependence on the Middle East for its oil imports. This means that as Asia's rising powers – China and India – continue on their growth trajectories, and as Japan transforms into a “normal state” with its own military and defence policies (under a close alliance with the US), these states would demand a greater say in Middle Eastern affairs to ensure the safety of their supply of oil. However, given the fungibility of oil and the fact that energy security is a global concept, the US is unlikely to cede its political and military influence in the Middle East. On the other hand, there are signs indicating that the world's largest producer of oil, Saudi Arabia, is increasingly looking eastwards towards China and India to reduce its dependence on the US. As China's dependence on this region increases, China may feel the need to translate its economic and defence trade ties with states such as Saudi Arabia and Iran into tangible political influence. In such a scenario, there would be an intense security competition between China and the US in the Middle East.

THE CASPIAN SEA REGION COMES TO FORE

Given the political volatility in many oil-rich Middle Eastern states, the US and the Asian states are attempting to find alternative suppliers of oil. One of the most important sources of supply in this regard is the Caspian basin. However, the five states with ownership stakes here – Iran, Turkmenistan, Kazakhstan, Russia and Azerbaijan – have not resolved their outstanding boundary disputes in this oil rich region. Moreover, each of these states faces and poses significant political and strategic challenges. Another significant obstacle is transporting oil from this land-locked region to markets in Europe and Asia – a task posing both geophysical and strategic challenges.

All major oil-consuming nations are not only diversifying the sources of their oil supplies, but also looking towards other fossil fuels. In this regard natural gas has emerged as the most promising alternative fuel to oil. However, given oil's overarching importance to the transportation industry, it is likely to remain the most sought after fuel for the foreseeable future. Moreover, given that the same regions – the Middle East and the Caspian Sea Region – dominate oil and gas production, the political and strategic vulnerabilities faced by the Asian states and the US remains unchanged regardless of whether they depend on oil or natural gas to fuel their economies.

NEW “GREAT GAME” IN CENTRAL ASIA

The increasing demand for natural gas has led to the emergence of Central Asian as an important source of gas supplies. This region comprising Kazakhstan, Kyrgyzstan, Turkmenistan, Tajikistan and Uzbekistan also has substantial oil reserves, uranium supplies and hydropower potential. As a result, all the major players are vying for influence in this energy-rich region. China became the first major Asian player in the region with the establishment of a regional

politico-security organization – the Shanghai Five – in 1996. This organization was renamed the Shanghai Cooperation Organization (SCO) in 2001 after Uzbekistan was admitted.⁴ The SCO has legalized for the first time the projection of Chinese troops beyond China's borders if one or other signatories requests its support. Russia continues to remain a significant player in the region even though its strategic clout has diminished somewhat due to the presence of US military in the region, and with the creation of the SCO with China as its informal leader. The US obtained a strategic foothold in this region after gaining access to military bases in Uzbekistan and Kyrgyzstan in the post-9/11 strategic environment to conduct military operations against the Taliban regime in Afghanistan.

However, the Central Asian states have become wary of the US in recent months after the so-called “coloured revolutions” in the former Soviet republics in the Caucasus and Central Asia. Similarly, Russia and China have also become concerned about the US's political intentions in the region. Furthermore, Russia is also concerned about the eastward expansion of NATO. Interestingly, at the end of its 2005 summit in Astana, the SCO called on the US and its coalition partners to specify a timeframe to withdraw their forces from the region.

The US is clearly concerned about its declining influence in Central Asia and also of the emerging Sino-Russian strategic alignment. The US has renewed its diplomacy in the region as was demonstrated by Secretary of State Condoleezza Rice's recent visit to Central Asia. The US has also reorganized its State Department to reflect its geopolitical priorities. The Central Asia desk was recently transferred out of the Bureau of European and Eurasian Affairs and added to the Bureau of South Asian Affairs to create the new Bureau of South and Central Asian Affairs. The US has declared its intention to economically integrate South and Central Asian states in an attempt to draw this energy rich region away from Moscow and Beijing's influence. Washington wants to create an energy grid from Central to South Asia. New Delhi is clearly happy with this arrangement as India intends to increase its own influence in this important region. The contours of a new “Great Game” are beginning to emerge in Central Asia.

However, it would be premature to conclude that two antagonistic blocs with Russia and China on one side and the US and India on the other is emerging in Central Asia. To begin with, Russia is also looking towards the US as a new destination for its energy exports. Also, Russia also remains highly suspicious of Chinese intentions in the Russian Far East. Furthermore, China is dependent on access to US markets and investments for its economic growth. As for India, New Delhi has observer status in the SCO and may even be interested in becoming a full member of that organization. India is concerned about Beijing's rising influence in South Asia and its observer status in the South Asian Association for Regional Cooperation (SAARC). In addition to its economic and energy interests in Central Asia, New Delhi may be interested in becoming a full member of the SCO to counter China's moves in South Asia. Many analysts have also spoken of three-way energy cooperation between Russia, China and India as well as between Central Asia and India via Chinese Central Asia. On the other hand, India's cooperation with Central Asia under US-led initiatives is dependent on India's relations with Pakistan, given that the most viable land routes between India and Central Asia need to traverse through Pakistan.

⁴ The SCO includes China, Russia and all the Central Asian Republics with the exception of Turkmenistan.

MARITIME SECURITY – AN INTEGRAL PART OF THE ENERGY SECURITY AGENDA

Given that all the major players depend on imported sources of oil and gas, energy security now includes the security of the entire supply chain in addition to the security of the sources of these fuels. This includes the security of oil and LNG tankers traversing important choke-points like the Straits of Hormuz and the Straits of Malacca and the sea lanes connecting the supplier and the buyer nations. As a result, maritime security has become an integral part of the energy security agenda.

All the major Asian oil-consuming nations have embarked on naval modernization programmes. Energy security is providing a significant impetus to their naval modernization efforts, even though these states are modernizing their navies in response to their overall strategic environment. China, Japan and India are enhancing their maritime and air power projection capabilities to safeguard their energy (and trade) routes. The US and Japan have strengthened their defence cooperation and India has agreed on broad maritime cooperation frameworks with both Japan and the US.

The country study on China indicates that it is unlikely to develop the power projection capabilities that are needed to protect its oil supplies in the foreseeable future. As a result, China has no choice but to rely on diplomatic means to secure its energy supplies. In other words, China is acutely aware of the vulnerability of its dependence on the US – for the protection of its oil supplies from the Middle East and the protection of the sea lanes of communication for the safe passage of its tankers. Paradoxically, China's realization of its vulnerability in securing supplies may contribute to stabilizing China's relationship with the US and other regional countries.

At the same time, India has its own historical and geopolitical concerns regarding the Indian Ocean. New Delhi is determined to play an important maritime role in the region capitalizing on its strategic location in the Indian Ocean Region. India has already established its first tri-services military base at the Andaman and Nicobar Islands at the mouth of the Straits of Malacca. Moreover, India's naval base at Karwar in the Arabian Sea is all set to emerge as Asia's largest over the next few years. At the same time, military-to-military ties, and naval ties in particular, are providing a significant boost to India-US relations. However, it must be emphasized that the India-US naval (and military) relationship does not represent a military bloc, especially one directed against China. Instead, it is reflective of the emerging political and security relationships.

Japan is also in the process of rethinking its role in South and East China Seas. In this region, strategic stability will be a function of the interaction between the Chinese navy on the one hand and the Japanese navy (and Japan's security alliance with the US) on the other. In East Asia, Sino-Japanese maritime border disputes (involving island territories and EEZs in the East China Sea) further complicate the issue especially because these maritime regions are energy-rich. Clearly, the quest for energy security has made maritime security an arena for great power competition.

NUCLEAR ENERGY AS AN ALTERNATIVE SOURCE

Given the precarious nature of the geopolitics of hydrocarbon fuels, the US and the Asian states are looking at alternative sources of energy (especially for electricity generation).

Nuclear energy has emerged as the most promising alternative source of energy in this regard. The US has embarked on a Global Nuclear Energy Partnership programme in this regard. Moreover, all the major Asian powers – China, Japan, India and South Korea – are keen on increasing the share of nuclear energy in their domestic energy consumption matrix. Not only are they constructing new civilian nuclear reactors for this purpose in their countries, but they are also collaborating on several international R&D projects to meet their common energy needs, e.g. the ITER project, the partner countries for which include the European Union (represented by EURATOM), Japan, China, India, South Korea, Russia and the US.

Significantly, India and the US embarked on a framework for civil nuclear cooperation in July 2005. If ratified by the legislatures of the two countries, this deal would effectively end all technology denial regimes that were imposed against India since it conducted its first nuclear test in 1974. The proponents of this deal in both the Indian and the US establishments are speaking of it as an energy cooperation agreement and are downplaying its strategic implications. However, given the phenomenal rise of China, there is widespread speculation that the decision to make the nuclear exception for India is a product of Washington's strategy to aid (and even accelerate) the rise of India in order to create a stable balance of power in Asia.

It is true that if this deal is successfully implemented, it will add a significant momentum to Indo-US strategic ties. However, it would be premature to read this deal as a sign of a China containment strategy led by the US. To begin with, US exporters already engage in civil nuclear commerce with China. And although New Delhi has many outstanding issues with Beijing, China is all set to emerge as India's single-largest trading partner (ahead of the US) over the next few years. India would like to deal with China independently (of the US) and from a position of strength as both states emerge as major powers in Asia. While a strategic alliance between India and the US is highly unlikely given New Delhi's cherished desire to maintain its strategic autonomy, "strategic coordination" between Washington and New Delhi to respond to China's rise should not be ruled out.

EMERGING COOPERATIVE FRAMEWORKS

While there is ample evidence of emerging security competition between the key Asian players and the US in the Middle East, Central Asia and Indian Ocean-South China Sea-East China Sea region, the contours of energy cooperation are also visible. For example, the US has initiated an Energy Dialogue with Russia as well as with India. The US has also launched a Strategic Dialogue with China that is likely to cover issues pertaining to energy security. At the same time, India and China are cooperating on energy security (especially the commercial aspects of energy security) through information-sharing and joint bidding for sources of energy. Energy security has also come on the G-8 agenda. As a part of the ASEAN + 3 forum, the ASEAN countries, China, Japan and South Korea have agreed to cooperate on energy issues. And in 2005, New Delhi hosted a major conference that brought all Asian oil producing and consuming nations together. The participating nations agreed to work on the creation of an Asian oil market as well as an Asian price signal mechanism. Furthermore, collaboration on the ITER project demonstrates that states are willing to come together to develop alternate technologies for commercial energy production.

In spite of these bilateral and multilateral initiatives, there are no pan-Asian/global initiatives or institutions to enhance energy security. In order to remedy this, it is imperative that China and India be made members of the International Energy Agency (IEA). Emergency or strategic oil stocks provide the most effective protection against short-term oil supply interruptions. Therefore, the primary goal should be the establishment of an emergency sharing system that can be operationalized during a crisis. In this system, the participating countries should build and maintain stocks for at least 60 days of net oil imports. In Asia, only Japan and South Korea, as members of the IEA, meet or surpass this standard. As important players that recognize the importance of strategic reserves, China and India should be made members of the IEA.

In addition to the joint development of stockpiles, a more open energy regionalism in Asia could include joint energy response programmes, expanded cross investment and the development of transnational (or intra-regional as well as inter-regional) infrastructure like pipelines and electric-power grids. Perhaps an Asian version of the Energy Charter Treaty (ECT) could be considered among the various countries of the region.

There are also several initiatives that can be contemplated at the regional level. In order to reduce competition over energy issues, South Korea is keen on the Northeast Asia Energy Cooperation framework. Seoul has already initiated energy development and cooperation in Northeast Asia that brings together Siberia, the Russian Far East and Sakhalin with China, Japan, Mongolia and, of course, South Korea. In South Asia, India is keen on pipelines from Iran and Central Asia via Pakistan and from Myanmar via Bangladesh. If successful, these pipelines promise to transform regional politics by integrating the economies of Pakistan and Bangladesh with India's much larger and fast growing economy.

CONCLUSION

It is safe to conclude that despite the Sino-American rivalry in the global oil market, there is little likelihood that armed conflict will arise between them because of energy competition. Market considerations drive China's efforts to secure energy supplies as much as security considerations. Moreover, China is also building a favourable political climate by using various diplomatic instruments in its interaction with its "energy-related" partners. China's growing involvement in the world energy market and greater dependence on oil imports can benefit US interests. After all, the US and China as well as other major players like Japan, India and South Korea share numerous common interests. Some of these include stability in the Middle East and Central Asia as well as the uninterrupted flow of oil and gas from these regions. As the leading power, the US must engage China and the other major players in the energy sector. In a nutshell, the challenge of assuaging energy insecurities can only be met through joint cooperation.

While issues pertaining to energy security have the potential to generate intense security competition, they also have the potential to create new regional and international cooperative frameworks.

The international environment is in a state of flux today. Conflict over sources of energy and/or supply routes is a dim prospect that all states would work to avoid. However, in the event of a conflict over other issues (non-energy issues) of international and geopolitical importance, it is likely that antagonistic states might attack their adversaries' energy sources/supplies. The world's major powers may also face one another in opposite camps as a result of domestic political instability in the energy-rich states or regional instability in energy-rich regions like the Middle East or Central Asia. While issues pertaining to energy security have the potential to generate intense security competition, they also have the potential to create new regional and international cooperative frameworks.



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ABOUT IDSS

The Institute of Defence and Strategic Studies (IDSS) was established in July 1996 as an autonomous research institute within the Nanyang Technological University. Its objectives are to:

- Conduct research on security, strategic and international issues.
- Provide general and graduate education in strategic studies, international relations, defence management and defence technology.
- Promote joint and exchange programmes with similar regional and international institutions; and organize seminars/conferences on topics salient to the strategic and policy communities of the Asia-Pacific.

Constituents of IDSS include the International Centre for Political Violence and Terrorism Research (ICPVTR), the Centre of Excellence for National Security (CENS) and the Asian Programme for Negotiation and Conflict Management (APNCM).

Research

Through its Working Paper Series, *IDSS Commentaries* and other publications, the Institute seeks to share its research findings with the strategic studies and defence policy communities. The Institute's researchers are also encouraged to publish their writings in refereed journals. The focus of research is on issues relating to the security and stability of the Asia-Pacific region and their implications for Singapore and other countries in the region. The Institute has also established the S. Rajaratnam Professorship in Strategic Studies (named after Singapore's first Foreign Minister), to bring distinguished scholars to participate in the work of the Institute. Previous holders of the Chair include Professors Stephen Walt (Harvard University), Jack Snyder (Columbia University), Wang Jisi (Chinese Academy of Social Sciences), Alastair Iain Johnston (Harvard University) and John Mearsheimer (University of Chicago). A Visiting Research Fellow Programme also enables overseas scholars to carry out related research in the Institute.

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The Institute provides educational opportunities at an advanced level to professionals from both the private and public sectors in Singapore as well as overseas through graduate programmes, namely, the Master of Science in Strategic Studies, the Master of Science in International Relations and the Master of Science in International Political Economy. These programmes are conducted full-time and part-time by an international faculty. The Institute also has a Doctoral programme for research in these fields of study. In addition to these graduate programmes, the Institute also teaches various modules in courses conducted by the SAFTI Military Institute, SAF Warrant Officers' School, Civil Defence Academy, and the Defence and Home Affairs Ministries. The Institute also runs a one-semester course on "The International Relations of the Asia-Pacific" for undergraduates in NTU.

Networking

The Institute convenes workshops, seminars and colloquia on aspects of international relations and security development that are of contemporary and historical significance. Highlights of the Institute's activities include a regular Colloquium on Strategic Trends in the 21st Century, the annual Asia Pacific Programme for Senior Military Officers (APPSMO) and the biennial Asia Pacific Security Conference. IDSS staff participate in Track II security dialogues and scholarly conferences in the Asia-Pacific. IDSS has contacts and collaborations with many international think tanks and research institutes throughout Asia, Europe and the United States. The Institute has also participated in research projects funded by the Ford Foundation and the Sasakawa Peace Foundation. It also serves as the Secretariat for the Council for Security Cooperation in the Asia Pacific (CSCAP), Singapore. Through these activities, the Institute aims to develop and nurture a network of researchers whose collaborative efforts will yield new insights into security issues of interest to Singapore and the region.

On 1 January 2007, the Institute of Defence and Strategic Studies will be upgraded to become the S. Rajaratnam School of International Studies (RSIS), Nanyang Technological University.

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