

ENERGY SECURITY IN EAST ASIA

Nearly three years into the global war on terrorism, there is still an incomplete recognition of the strategic importance of energy security. The current focus on energy security remains lacking and limited, with a rather outdated reliance on the more traditional perspective of concentrating on the risks posed by instability and insecurity in the Middle Eastern oil-producing region. The Middle Eastern theater mandates such focus for three reasons: by virtue of its role as the major source and gateway for global energy, due to the instability rooted in the very nature of its regimes, and as the original source of the new wave of Islamist terrorism.

Yet as the repercussions of the attacks of 9/11 continue to alter the global geopolitical landscape on several levels, comprehensive energy security is the integral edifice absent from the newly evolving architecture of international security. This absence is most evident in the vulnerabilities of key components of the global energy network, including troubling deficiencies in the transport of liquefied natural gas (LNG) and the exposed weakness of pipelines.¹

The Evolution of Strategic Energy Security

Recognition of energy as a global security concern first garnered strategic attention in the 1970s, with the OPEC oil embargo of 1973 and the overthrow of a key regional Western ally in Iran. From the start, the initial stage of energy security was linked to the volatile Middle East and was elevated as the defining issue in relations with the region. The evolution of this geopolitical marriage of the Middle East to Western energy consumers resulted in a cumulative disregard for the fundamental signs of discord mounting in the region that eventually erupted in the backlash of Islamist terror and rigid anti-Americanism.

But with a shortsighted preference of regime stability to ensure the steady flow of oil, longer-term security was sacrificed. It was this painful lesson that defines the very nature of the region as a challenge to security and stability today. Thus, the warning signs emanating from within the region were always there but generally neglected, leading to the current threats rooted in decades of dictatorship, a deficit of democracy, and looming demographic disaster.

Another lesson learned from the first stage of energy security was the danger of ignoring the domestic political, economic and social dimensions of energy security. This set of dynamic internal factors has contributed to the emergence of the Middle East as a breeding ground for global insecurity and has combined with the external dependence on Middle Eastern oil to endanger new "regions at risk."

A Region at Risk: The Asia-Pacific

The dramatic geopolitical shifts stemming from the end of the Cold War and the global war on terrorism in the wake of September 11th have resulted in an abrupt restructuring of the traditionally bipolar system of global governance that has served as the norm for 20th century. Of all the regions subject to the repercussions of this new geopolitical landscape, the Asia Pacific region has emerged as one of the key arenas. A convergence of new factors, ranging from the threats posed by Al Qaeda to the sweeping engagement of the U.S. military throughout the region, has endowed the region with a significantly enhanced strategic importance.

The implications for the Asia-Pacific region from within this new prism of global geopolitics and a greater reliance on military security have also been deepened by several underlying characteristics. Specifically, the Asia-Pacific has seen a pattern of increasing insecurity in recent years that has exposed the absence of any regional institution capable of forging common and cooperative security. This pattern of mounting threats has been marked by three escalating crises: the Taiwan Straits crisis in 1996, the Asian financial crisis of 1997-1999 and the recent

North Korean nuclear crisis. There is also a danger of a fourth crisis, involving Chinese frustration with the intricacies of Taiwan's political ambitions.

This absence of a governing regional structure has only exacerbated the region's vulnerability within a new post-Cold War/post-September 11th threat matrix. Although there has been some attempt to address this regional insecurity through existing regional organizations such as the Association of Southeast Asian Nations (ASEAN), the regional states still lack the political will, military capability and experience to adequately enforce security in any significant multilateral approach. And as the only substantive security architecture in the region is limited to the web of bilateral security treaties centered around the United States, there is a serious need for a new security regionalism. Such an effort can link Asian-Pacific economic cooperation to a regional security process and also build on the regional powers of Australia, Japan and South Korea, each of which have been recently "deputized" by the United States. Therefore, energy security may offer the most effective avenue toward this "securitized regionalism," especially given the genuine level of cooperation and shared interests in seeking adequate and secure supplies of energy.

Such a need for regionalized security is also reflected in the less visible security challenges facing the Asia-Pacific region. These security problems are concentrated in the core of the region, in the very foundations of the still incomplete state- and nation-building process, and stem from the fragility and weakness of these states. Coupled with the economic, social and environmental issues in the region, the complexity of these threats requires a multilateral, yet regionally based approach.

The Economics of Energy Security

In terms of pure economics, the outlook for energy security in the Asia-Pacific looks particularly troubling, with rising levels of oil consumption and an even stronger rise in demand. Some experts, such as Ji Guoxing of the Shanghai Institute of International Strategy Studies, contend that the Asia-Pacific region's dependence on Middle Eastern oil may exceed 90% by 2010. While oil fields in Russian Siberia and Central Asia do offer some short-term energy relief, the lack of existing infrastructure to facilitate the transport of this oil poses costly political and economic challenges of their own.

Aside from the dependence on imports from the Middle East, there is also a danger of tension stemming from such an oil shortage within the Asia-Pacific region itself. The growing demand for energy may strain relations between such important regional actors as China and Japan, for example, which may then engender a set of new destabilizing regional or international conflicts. But an even more immediate problem is the effect of oil market volatility on the region, with the sharp rise in oil prices putting particular pressure on the currencies of some crude importing emerging market countries and the dangers of soaring current account deficits and weaker economic growth. This also threatens to impact the record of growth that has served as the driving force for Asian stability and development since the end of World War II. And while Asia is seen as the most affected region, the surge in oil prices, an increase of 48% over the last two years, also threatens other struggling oil importers.

The Dangers of Soaring Oil Prices

The danger of an “oil shock” is an important, but underestimated element of energy security. In a July 2004 Financial Times article, two analysts confirmed this “link between oil prices and financial markets” by noting it “has profound implications for both energy security and economics.”² The market volatility further reveals the structural weakness of all commodity-based economies, not just oil producing states. In terms of economic theory, the fundamental danger of an over-reliance on one commodity for economic growth and development has been fairly well established, articulated as the so-called “Dutch disease.”

There is a further link between price rises for oil and other commodities. A broad commodity-wide pattern was revealed in the oil shocks of 1973-1974 and 1979-1982, as the prices for gold and soybeans doubled and wheat reached an all-time high. This pattern also reveals the deeper vulnerabilities of developing countries to this economic aspect of energy security. It also merits more attention given the grave implications for social unrest and political instability in key energy-dependent states that may result from a sustained global surge in oil prices.

Several key Asian economies are the most at risk from persistently high crude prices, with the major net importing countries of China, India, Singapore, South Korea, and Taiwan being the most vulnerable. The danger for these economies lies in the impact on the current account and growth, and domestic purchasing power. This has already been demonstrated in regional currency markets, as the Singapore dollar hit near three-month lows against the U.S. dollar and the Thai baht one-year lows in late July 2004. The North Asian currencies like the South Korean won and Taiwan dollar are also seen at risk.

Regional Energy Security in the Asia-Pacific

Energy security in the Asia-Pacific remains a complex and multifaceted challenge, with four main strategic issues mandating coordinated action:

1. Measures are needed to reduce Asian dependence on fossil fuel or to secure an adequate alternative supply to meet rising demand,
2. The need to address the environmental impact of the region’s energy structure, as seen by the environmental repercussions from the heavy coal use in Chinese industries, for example,
3. The necessity for ensuring nuclear security in the face of regional ambitions to expand nuclear power, and
4. Specific policies to improve the vulnerable regional energy infrastructure and transportation networks, as well as safeguarding vital sea-lanes and “chokepoints.”

As demonstrated by the set of four strategic priorities areas listed above, regional energy security in the Asia-Pacific requires a multilateral approach. There is a potential for regional cooperation, stemming from the convergence of national interests in the face of recent transnational threats. Much of these shared interests and threats have only been revealed in the aftermath of September 11 and the ensuing global “war on terrorism.”

To date, the regional approach to Asia-Pacific energy security has been focused on petroleum security, conservation and the search for alternative fuels. Specific examples of regional cooperation are largely through the Association of Southeast Asian Nations (ASEAN), and include a Petroleum Security Agreement, requiring ASEAN member states to provide crude oil and/or petroleum products for countries in short supply. Studies for a Trans-ASEAN Gas Transmission System and an ASEAN Power Grid have also been initiated aimed at ensuring a reliable supply of energy to the region, with some notable progress to date related to cooperation in natural gas use and energy management.

Regional energy security was formalized as a priority issue at an Asia-Pacific Economic Cooperation (APEC) Energy Security Initiative Workshop on “Elements of Energy Security Policy in the Context of Petroleum,” held in Bangkok, Thailand in September 2001. Dr. Piyasvasti Amranand, the Secretary General of Thailand’s National Energy Policy Office (NEPO), reported to the APEC workshop that the current imbalance between reserves, production, and consumption of oil within the region has elevated oil security as a major concern for APEC officials. Amranand stated that the total reserves in the APEC region are far less than regional demand, exacerbating the regional dependence on oil imports, especially from the Middle East, therefore, made energy security a key element in establishing economic development policies.

Thailand has long been sharing information with the Asia-Pacific Energy Research Center (APERC) and other research centers, such as the ASEAN Center for Energy (ACE), and has also implemented other measures that have substantially enhanced the energy security of the country. Strategic oil stockpiling by the Thai private sector is one of the measures, but there is an inadequate government role in developing a state-owned stockpile.

The 2001 APEC workshop also recognized the security of tanker traffic as a main concern. In an address to the workshop, APERC President Tatsuo Masuda explained that the combination of vulnerable transport from the Middle East and West Africa with the fact that tankers are getting smaller, while the number of tankers crossing the Indian Ocean to Asia triples or quadruples, necessitates a reduction of the risks posed by tanker traffic. Masuda specifically pointed to the need for pipeline infrastructure projects connecting Russia, China, Korea, and Japan, as a means by which to reduce this risk.

Limits to Cooperation

Despite a degree of potential for regional cooperation, energy security remains hindered by the divide between the states of the Asia-Pacific. The sheer scale of diversity and scope of diverging national interests have significantly impeded even these early effort at coordination. The absence of a recognized common goal is profound, making the pledges for joint strategic reserves and region-wide gas pipelines unfulfilled promises.

According to energy analyst Tomoko Hosoe of Facts, Inc. and the East-West Center, “although the ASEAN grouping is a dynamic, populous region, its total economy and oil consumption are more on the scale of Korea's than that of Japan or China,” as seen by the fact that “Japan's current oil stockholdings are large enough to supply all of ASEAN's net oil imports for more than two years.” Hosoe further recognizes that the “ASEAN can be important in enhancing Japanese energy security, but on the oil front, ASEAN can do very little in terms of supply to East Asia in general or Japan in particular.”³

The Importance of Strategic Petroleum Reserves

The role of strategic petroleum reserves in energy security has long been recognized as a crucial component to protect against unexpected shortages or disruptions of energy supplies. But adequate stockpiles have been difficult and costly to create and maintain, as the most vulnerable import-dependent economies are most often the least able to handle the prohibitive cost. The United States, as the world's largest oil importer, established a Strategic Petroleum Reserve ([SPR](#)) in 1975 to help prevent a repetition of the economic dislocation caused by the 1973 Arab oil embargo. The U.S. strategic reserve comprises five underground storage facilities, hollowed out from naturally occurring salt domes, located in Texas and Louisiana. Oil stored at one of the sites, Weeks Island, was transferred after problems with the structural integrity of the cavern were discovered in the mid-1990s.

As an important element in U.S. energy security, the mere existence of a large, operational reserve of crude oil was seen as an effective way to deter future oil cutoffs and to discourage the use of oil as tool for geopolitical leverage. In the event of an interruption, introduction of oil from the reserve onto the market was expected to help calm market-driven crises, mitigate sharp price spikes, and reduce the economic effects of the shocks that had accompanied the 1973 disruption. It was further held that the reserve would buy precious time for any crisis to sort itself out or for diplomacy to seek some resolution before a potentially severe oil shortage escalated the crisis beyond the parameters of state diplomacy.

The International Energy Agency (IEA)

With energy security as a core mission of the International Energy Agency (IEA), there has been a significant effort to foster a communal approach to the issue, with oil stockpiling as a central element. The IEA seeks to cooperate and complement the work of regional organizations such as APEC and ASEAN, and promotes the shared goals of energy security, high economic efficiency, and a cleaner environment.

In terms of stockpiling, the IEA's Agreement on an International Energy Program (IEP) requires participating countries to: maintain emergency oil reserves equivalent to at least 90 days of net oil imports, 7-10% restraint on national oil demand, and requiring their participate in a crisis allocation system through an Emergency Sharing System. Stocks of IEA net importers have decreased substantially from a peak of 160-days during the mid-1980s to 116-days by July 2001. The decrease in oil stocks was mainly due to industry restructuring, which moved to a "just-in-time" stockpiling. This decrease in IEA stocks is also expected to continue over the coming decade due to increasing oil imports and a lack of automatic stock adjustments within the IEA economies.

Generally, the IEA holds that stock drawdowns are one of the most concrete and effective emergency response measures. IEA stocks are seen to be adequate to handle a medium-scale disruption of short- to medium-term duration and larger disruptions of up to 12 mb/d are also believed to be within IEA control, although only for a limited duration. Industry stocks are seen as less reliable than public stocks, as they are partly needed for operating purposes and are subject to much weaker governmental control.

The ASEAN Position on Stockpiling

The ASEAN Petroleum Security Agreement (APSA), reached in Manila in 1986, formulated an important strategic approach to containing sudden shortfalls in oil supplies. The agreement specifically established an ASEAN Emergency Petroleum Sharing Scheme for petroleum products in times of both shortage and oversupply. In cases of shortage, which the agreement defines as “a critical shortage or when at least one Member Country is in distress,” the oil exporting members of ASEAN would move to aid the affected member state or states. The assistance would be triggered by crises involving cases where the total supply is less than 80% of the normal domestic consumption requirements. Such emergency oil supplies would be limited for domestic consumption in the distressed countries, however. In times of broader crises, where more than one ASEAN member state is affected, the agreement calls for the distribution to be initially allocated in proportion to their respective normal domestic consumption and exports for the 12-month period prior to the crisis. Since its inception in 1986, APSA has never been actually executed, although it was once nearly implemented during the Gulf War crisis in the early 1990s.

Although such formal ASEAN assistance through shared resources is important in times of regional crises, there has been a recent move recognizing the importance of establishing strategic stocks of oil as a reserve against sudden cuts or shortfalls in oil supplies. According to Robert Priddle, the Executive Director of the International Energy Agency (IEA), “despite the fact that for many ASEAN nations, the cost of maintaining such oil inventories appears prohibitive, such an effective insurance against major economic risks is worth a considerable price.”⁴

The imperative for such stockpiling has been bolstered in recent years by the threat to world supply and transport in the wake of September 11th and unease over the implications for instability in the Middle East as a result of the war in Iraq and its post-war uncertainty. Other developments, such as an overall trend of decreasing oil stocks among IEA members for the past fifteen years and a steady decline in OPEC spare capacity, have also served to reinforce the importance of such strategic reserves.

Some recent cost benefit analyses of expanding emergency oil stocks have found that, for smaller Asian oil importing economies, a stockpile covering around 30-days of net imports is optimal. These studies have also recommended a joint stockpiling scheme sharing a common large-scale facility for the APEC region.⁵

Within ASEAN+3, both Japan and South Korea maintain government-owned emergency petroleum reserve stocks as a strategic protection against short-term disruption in oil supply. As members of the International Energy Agency (IEA), both Japan and Korea are required by the organization’s Agreement of the International Energy Program (IEP) to hold stocks equivalent to at least 90 days of net imports. Both the Japanese and Korean reserves are also reportedly well above that requirement.

The Japanese Approach

Japan's vulnerability to disruptions in oil supplies was most profoundly exposed during the global oil crisis of 1973. That first oil crisis affected Japan greatly, both psychologically and economically, and resulted in a sharp reduction in Japanese GDP growth, from 5.1 to -0.5%. The crisis was also seen as an embarrassment to the government, with some critics pointing to its failure to foresee or contain the crisis. The shock gave a new impetus to the need for addressing the country's energy security. By 1975, the Japanese government enacted a stockpiling law, with private requirements creating a 90-day stockpile (government stockpiling was not initiated until 1978, with a 30 million kiloliter (kl) target, later reaching 50 million kl by February 1998). A second oil crisis in 1978 renewed concerns over Japan's vulnerability, with a volatility in oil prices demonstrated by a price rise from \$13.7/barrel to \$34/barrel by 1980.

During the relatively smaller energy crisis stemming from the Gulf War of 1991, there were no serious supply shortages, although prices did increase sharply. Through this crisis, real GDP growth declined from 5.6% in 1990 to 3.1% in 1991. In 1990, the government announced that private sector stockpiling would be utilized, increases in stockpiling were postponed, and the private sector was allowed to reduce stockpiling by four days in January 1991 to allow a release of supply.

After the Gulf War, ten sites for a government stockpile were constructed in August 1996. ⁶

The current private Japanese stockpile operates according to a 70-day requirement and utilizes existing tanks and facilities in private companies. This private stockpiling system counts oil reserves in transportation, operation and distribution, and counts both crude oil and petroleum products. In contrast, national stockpiling, initiated in 1978-1979, uses only storage tanks and counts only crude oil. The Japanese approach to stockpiling, with its priority on a private structure, recognizes a number of advantages and disadvantages to the system.

The Japanese position sees three main advantages to private stockpiling: less time and cost to meet target level; swift, flexible and effective release; and a tendency to reduce panic in the market (stockpiling as a "first-aid" kit). There are also three disadvantages identified under the Japanese system: an insufficient amount, and if stock falls below 45 days, it becomes difficult to release; a significant barrier for newcomers, encouraging a need for government subsidy; and less transparency in the market, thereby making it difficult to see or measure the effects of the release.

Overall, the Japanese conclusion is that stockpiling is primarily a government concern, linked to national security, but sees private stockpiling as necessary to obtain swiftness, flexibility, and economizing. Private companies are expected to supply and release stock swiftly and flexibly, and provide accurate and timely information, especially during emergencies. For its part, the Japanese government is expected to recognize and appreciate the function of private stockpiling and provide sufficient political support to the private sector.

According to information provided by Kazuyoshi Takayama of the Nippon Mitsubishi Oil Corp, the Japanese stockpiling system can only be reduced or released ("drawn down") by the government in times of a crisis involving an abrupt disruption in supply, although there is some consideration underway of an implementation of a draw down in cases of severe price fluctuation. Takayama also pointed to the importance of Russia's (East Siberia) vast resource potential to supply Japan and other East Asian economies. One of the most important appeals of this option is the price competitiveness of Russian energy to the Asian market, making it an important source for import diversification.

Japan's Four-Part Strategy

In addition, Japan has also adopted a number of related measures to buffer the effects of oil disruptions and price volatility. The Japanese approach consists of four parts:

1. **Diversification of Energy:** with a special focus on the alternative sources of nuclear energy, ⁷ LNG, now accounting for about 13 and 12% respectively, and coal, once Japan's dominant energy source until shift to oil in 1970s.
2. **Sourcing Diversification:** to offset its high dependence on Middle Eastern oil, seeks to promote other sources of crude oil, from China, Indonesia, Mexico. Imports from these countries declined since the late 1980s due to economic constraints, mainly after the Japanese liberalization and deregulation of the oil industry. Japan also invests in producing crude oil overseas, as the share of Japanese-developed crude oil overseas is about 15% of total oil imports. Overall energy imports from the Middle East have been reduced to about 40%.
3. **Energy Conservation:** involving multiple measures of energy conservation: to reduce demand, improve self-sufficiency, reduce emissions, and reduce energy costs. Japan also pursues energy conservation through an improvement of energy efficiency in appliances (micro energy conservation) and by shifting to less energy intensive industries (macro energy conservation). As a result of these policies and financial support, Japan's energy efficiency has improved by almost 30%.
4. **Emergency Preparedness:** driven by past experience of oil crises, Japan has established a mandatory private oil stock (currently 70 days); a government (national) stockpile of 50 million kl, and a combined private and national stockpile of 160 days.

The Korean Stockpile

As the world's fourth largest oil importer, there is an acute Korean appreciation of the need for sufficient oil reserves. The Korean stockpiling system consists of a combination of government (KNOC) and private reserve, with the KNOC storage capacity expected to reach 164 million barrels (Mbb) by 2006. As of June 2001, the KNOC capacity was 132 Mbb (65-days), comprising some 60 Mbb in the government stockpile and 72 Mbb held by the private stockpile. The Korean government considers the drawing down of the stockpile as authorized in the event of a short-term disruption or to stabilize supply and demand.

There is also a degree of flexibility, with mechanisms allowing for a limited release of a portion of the KNOC stockpile and a temporary lease and redelivery mechanism or "time exchange," which is strictly limited for increasing stock level. Korea sees this joint stockpiling between KNOC and private oil producers as a strategic alliance for securing stable supply and demand. KNOC also provides the use of its unused facilities to private oil companies.

The Thai Reserve

Thailand is also developing measures to prepare for emergency disruptions in supply. Although Thailand's dependency on energy imports has been substantially reduced in recent years, from 98% in 1980 to 63% in 2000, the Thai fuel import dependency is projected to increase to 70 percent over the coming decade (for 2000-2010). Thailand's dependency on oil imports has also followed a similar trajectory, decreasing to 55.1% in 2000 from a 1980 level of 93.6%. The Thai approach to energy security is multifaceted and includes measures to promote the development of indigenous energy resources, diversify energy supplies and utilize renewable energy, as well as pursuing greater overall efficiency.

Thailand's current total storage capacity for crude oil is roughly 28 Mbbl and for petroleum products, excluding liquified petroleum gas (LPG,) about 39 Mbbl. The total existing storage capacity, therefore, stands at roughly 67 Mbbl, representing about 110 days of consumption (at 2000 levels). Although this is well above the normal working requirements of 40-45 days, Thai officials have reported that actual stocks are lower than the storage capacity. Thailand's six refineries account for nearly all crude oil storage. For the storage capacity of petroleum products, however, oil traders and distributors hold a significant portion of this storage capacity, with 22.2 Mbbl compared to 16.8 Mbbl held by the refineries.

Currently, Thailand has a limited stockpile, mandated by its Fuel Act of 1978, required to be maintained by the Thai private sector. For crude oil, refineries are required to stock 3% of annual throughput (equivalent to about 11 days), and marketers and importers to stock 3-6% of different petroleum products based on sales, to this mandatory stockpile. Leading experts estimate that for the Thai economy, the ideal stockpile would be of about 27 Mbbl by 2010.

In October 2003, Thai Energy Minister Prommin Lertsuridej signed a Memorandum of Understanding (MoU) with Philippine Energy Minister Vincent Perez to conduct a joint feasibility study on petroleum reserves and investment. The Thai energy ministry reported that the two countries have pledged to share their existing petroleum facilities under the cooperative agreement in order to strengthen their respective petroleum reserves as well as to create business opportunities.

This is particularly important for the Philippines, due to a current shortage in local oil supply. This shortage, due to the government's implementation of a Clean Air Act, has prompted higher imports of refined oil to the country through the Subic Bay where Thai subsidiaries in the Philippines have been granted concessionaires for the oil depots.

The Philippines

Under the leadership of President Gloria Macapagal-Arroyo, the Philippines has undertaken an economic transformation, deregulating its energy sector and offering new incentives for foreign investment. Although the Philippines was able to increase its crude oil production from 1,000 barrels per day (bpd) in 2001 to an average of 23,512 bpd in 2002, the rise in production volume is still modest in relation to the country's needs.⁸ The Philippines consumed 342,000 bpd on average in 2002, resulting in net oil imports of 318,488 bpd.

This dependence on imported oil is compounded by a projected annual increase in oil consumption of 5% over the next several years as economic growth increases demand in most sectors. Oil demand for power generation, however, is expected to be declining sharply, as many aging oil-fired electric power plants are shut down or converted to burn natural gas. And with more than 90% of the Philippines' oil imports coming from the Middle East, the issue of an oil stockpile is a grave concern. The Philippines has been without any stockpile whatsoever since required contributions ended in 1998.

Indonesia also maintains oil stocks, but these reserves stem from the country's role as an archipelago, ensuring adequate supplies to its islands than from a strategic imperative. Thus, the Indonesian stocks are not generally thought to be large enough for effective protection in times of crisis.

Conclusion

Therefore, the imperative for energy security in such vulnerable strategic regions as the Asia-Pacific is paramount for global stability and development. The priority of this challenge for the Asia-Pacific region is also no accident, as it is the world's fastest growing energy consumer, with projected demand to steadily surpass other regions for some time. But it remains to be seen whether this troubled region will be able to forge a collective and cooperative approach in the wake of the daunting challenges and demands posed by the global "war on terrorism" and an increasingly destabilizing unipolar world.

Richard Giragosian is an IAGS Research Associate.

¹ For a more detailed on security threats to global energy, see: Gal Luft and Anne Korin, "[Terror's next target](#)," *The Journal of International Security Affairs*, December 2003.

² Chares Clover and Ana Fifield, "More to oil shocks than Middle East," *Financial Times*, July 29, 2004.

³ Tomoko Hosoe, Senior Researcher, FACTS, Inc. and Professional Associates, East-West Center, Honolulu, Hawaii, comments to author via email, August 6, 2004.

⁴ Robert Priddle, "Living in Interesting Times: Energy Security," presentation to the Asia Energy Security Seminar, Tokyo, Japan, March 4, 2002.

⁵ Asia Pacific Energy Research Centre (APEREC), [Energy Security Initiative: Emergency Oil Stocks as an Option to Respond to Oil Supply Disruptions](#), APEREC Background Report, Tokyo, Japan, 2002.

⁶ Information provided by Tadahisa Okabe, Director of Petroleum Reserve, Agency of Natural Resources and Energy (ANRE), METI, Japan.

⁷ Japanese nuclear power remains a priority and the Japanese Atomic Ministry's [White Paper](#) of December 2003, the first such official policy statement on nuclear energy in five years, reaffirms this priority. The White Paper did, however, call for greater transparency in several areas of the country's nuclear energy sector.

⁸ This sharp rise in oil production was due to the development of new deep-sea deposits beneath the natural gas-bearing structures in the Malampaya field.