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Foreword

Each international political summit in 2007 had energy issues on its agenda. In January political leaders signed an agreement at the Second East Asian Summit to promote energy security and to find alternatives to fossil fuels. Although they refrained from setting numerical targets for the desirable share of renewable energy, this agreement was an important step. At the same time Germany under its presidency of the EU Council made energy a focus. The aim of the EU-Summit was to control important dependency and to secure constant as well as economical and environmental friendly supply of energy. The EU also is building a comprehensive energy package, while Japan has already published a new Energy Strategy in 2006.

The overwhelming presence of energy topics on the political agenda is not surprising, but well justified by its urgency, especially if we include issues of climate change, which of course are closely related to energy.

So there is hardly a subject more appropriate for the programs of the Japanese-German Center Berlin for its (JDZB) than energy. The JDZB's aim is to foster Japanese-German cooperation in an international context with regards to subjects that are of strategic importance for both countries. Energy is such a subject, for Japan and Germany as well as the EU. We are therefore very grateful to the Ministry of Foreign Affairs of Japan, the EU Presidency and the European Commission for their kind cooperation in this conference on "Resource Competition and Power Balance in East Asia—An EU and Japan-Perspective." Also we would like to thank the Fujitsu Research Institute for—once again—in the project.

The latest World Energy Outlook forecasts that global energy demands will increase by more than fifty percent over the next twenty-five years. And so will emission of carbon dioxide. Climate change therefore is one aspect within the energy discussion. Competition and power is another one. If demand for energy worldwide increases and its production stagnates, fossil fuel may become an instrument in the political power play. The stop on gas deliveries that Russia implemented towards Belarus or Russia's tendency to enforce state control on energy companies like in the Sakhalin 2 LNG project are obvious examples.

We need energy to sustain our economies and our living standard. Therefore we need a reliable supply of energy. But we should avoid “wars over energy” and find ways to achieve this in a sustainable way in order to preserve the global environment. No single nation can accomplish these challenges alone but only with partners. Japan and Europe already are partners here but this cooperation has to be strengthened. Since both partners are mainly energy consumers, they also need to maintain reliable relationships with energy producers as well as stable power balance among all of us.

Since energy is such a vast topic, the papers and discussions in the conference had to focus on specific issues, especially on the strategic dimension. The role of Russia and China was discussed repeatedly as well as how Europe and Japan could expand their cooperation. The conference was rounded off by prognosis on energy demand and the development of renewable energy as a possible alternative. Most of the papers you will find in these proceedings, for which I would like to thank all contributors. But even the most thorough conference documentation can only show clearly, that energy will continue to be on the political agenda for some time to come.

Friederike BOSSE
Secretary General
Japanese-German Center Berlin

Opening Remarks

Excellencies, Ladies and Gentlemen,

On behalf of the Ministry of Foreign Affairs of Japan as co-organizer of today's symposium, allow me to make some short remarks.

The energy issue, in particular energy security, has not attracted as much attention as it does today for a long time. Currently, the international energy environment faces large-scale structural changes, which have become evident both on the demand and on the supply side.

On the demand side, the energy demand is rapidly increasing worldwide, especially in Asian countries including China and India. These countries exert more and more influence on the international energy market by intensifying efforts to secure their expanding energy need. Industrial countries, including the U.S., which is the biggest energy consumer in the world, are also more dependent on energy import.

On the supply side, state control over energy resources has been strengthened worldwide. Rigorous state control could reduce foreign investment in the energy sector, which could again result in lower energy production. Lack of large-scale distribution infrastructure, too, can lead to many difficulties. Recent quarrels between Russia and Belarus over transit fee for the oil pipeline early this year clearly showed how serious such problems are.

Energy questions are also closely related to the climate change issue. From a scientific point of view, the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) issued last month made it clear that the global warming almost certainly can be attributed to artificial causes. We have to recognize that the warming is in a more serious stage than ever and we have to achieve emission reduction globally by rapid and determined actions. For this sake we need rigorous energy saving and improvement of energy efficiency.

Under these circumstances, Japan and Europe, which are both major actors on the demand side, have indeed common challenges to tackle.

The European Commission in March 2006 issued a "Green Paper" on the energy policy for Europe, which is aimed at improving

long-term sustainability, security of energy supply, and economic competitiveness. A “Communication” over the external energy relations followed in October, which stipulated among others the coherence between the internal and external aspects of energy policy. Then, on January 10, 2007, the European Commission proposed a comprehensive package of measures to establish a “New Energy Policy” to combat climate change and boost the EU’s energy security and competitiveness. I understand that the energy issue is also going to be one of the main topics at the forthcoming European Council meeting next week in Brussels.

As for Japan, the Government presented a “New National Energy Strategy” on May 2006, which aims to formulate a structure for the energy security of Japan. According to this strategy, Japan intends to achieve the following goals until 2030: increase energy efficiency by at least 30 percent, reduce the dependence on the oil import upon less than 40 percent and raise the share of the nuclear energy in the entire electricity production up to 30 to 40 percent. Moreover, Japan commits itself to assisting Asian countries and other nations in addressing energy issues. Japan has advanced technologies in the areas of energy and environment, and is ready to play a leading role in tackling energy and climate change problems.

As you can see Japan and the EU share an overall perspective on their energy policies. They are strategic partners sharing fundamental values like democracy, the rule of law, human rights, and the market economy. Therefore, it is quite natural that Japan and the EU work together in dealing with such important challenges as energy security or climate change.

This is also the reason why the leaders of both sides at the last Japan-EU-Summit on April 24th, 2006, agreed that Japan and the EU will continue to focus on energy issues, such as security of energy supply, energy efficiency, and energy conservation as well as renewable sources, research and development of new energy technologies. As a follow-up the Government of Japan intends to intensify its dialogue with the EU over the energy security issues.

Besides such cooperation at the governmental level, however, it is essential to intensify first-hand exchanges between the experts of both sides. From this point of view, today’s symposium is an important contribution to the solution of these vital issues.

In cooperation with the German EU Presidency, the European Commission, the Japanese-German Center Berlin (JDZB) and

the Fujitsu Research Institute in Tōkyō, we have come to organize today's symposium "Resource Competition and Power Balance in East Asia: An EU-Japan Perspective". As this title makes clear, we will especially focus on situations in East Asia where rapid economic development in the region poses challenges in areas such as energy security, regional cooperation and security policy.

I would like to thank all the speakers and moderators from Europe, China and Japan who participate in today's symposium. Many special thanks to the JDZB, which took on the most difficult work of reconciling diverse requests from different organizers.

I would also like to thank the European Commission and the Federal Government of Germany. They both agreed to co-organize today's symposium and have given considerable support. Last but not least, I would like to warmly thank the Fujitsu Research Institute Tōkyō, whose initiative to organize an energy related symposium together with the JDZB has constituted the basis of today's event.

The Embassy of Japan in Germany and the Mission of Japan to the EU have given us also valuable support. I am very happy to be able to welcome and thank H.E. Mr. Kawamura, the Ambassador of Japan to the European Union, and my colleagues at the Embassy of Japan in Germany.

I am keen on exciting discussions and hope this symposium will be a considerable contribution to strengthening the Japan-EU partnership.

Thank you!

HONDA Etsurō
Deputy Director-General of the European Bureau
Ministry of Foreign Affairs, Japan

Resource Competition and Power Balance in East Asia—An EU-Japan Perspective (Summary)

Martin SCHULZ
Fujitsu Research Institute

On Friday, March 3, the Japanese-German Center Berlin (JDZB) and the Fujitsu Research Institute (FRI) hosted a Japanese-European Symposium at the JDZB in Berlin. The symposium was organized with the active participation and support of the Japanese Ministry of Foreign Affairs, the European Commission and the German EU Presidency. Under the title “Resource Competition and Power Balance in East Asia—An EU-Japan Perspective” the symposium investigated one of the key challenges for East Asia as it reemerges as the world’s growth center: the competition for scarce resources and the balancing of still fragile security relations.

The conference commenced with opening remarks from Friederike Bosse, the secretary general of JDZB, Viktor Elbing from the German Federal Foreign Office, Honda Etsurō from the Japanese Ministry of Foreign Affairs, and Nezu Risaburō of FRI. From the start it became obvious that the fast development of China in particular does not only provide enormous opportunities but also carries the potential for crises in the region. Determined political and economic support from Japan and the EU will therefore be necessary to ensure regional stability and resolve potential conflicts before they escalate into crises. The two opening addresses from Honda Etsurō and Nezu Risaburō therefore focused on two key strategies for Asia’s challenges: Japan–EU energy security policies, and energy savings through domestic best practices and international agreements. In the following, the conference proceeded by structuring further analysis into three blocks and holding a panel discussion concerning the results.

Energy and Competition for Resources: Challenges for the EU and Japan

Under the chairmanship of Honda Etsurō of Japan's Ministry of Foreign Affairs, Takeishi Reiji of FRI gave an overview of "The Future of Resource Competition and Energy Cooperation in East Asia." Because of Asia's strong development based on industrialization and product exports, energy consumption and its imports have significantly increased. Asia Pacific's growth is continuous and still extreme, so energy security issues will remain important in this region. As for CO₂ emission in Asia, China is discharging around four times more than Japan and India. Therefore, the efficiency of China's energy consumption, especially in coal consumption for electricity generation, is now among the most important issues in Asia. In terms of deepening mutual cooperation on energy, ASEAN already shows considerable progress, as in the case of gas grids and electricity transmission across borders. Northeast Asia, on the other hand, is not moving ahead fast enough despite its mutual economic dependence. A deeply rooted layer of political distrust seems to be a significant obstacle here. Fortunately, the end of grace periods for China's implementation of WTO regulations will soon offer the chance to intensify discussions with China about a further normalization of policies. This also provides an important basis for the EU, Japan, Korea and China to start discussion regarding energy issues. Cooperation should not be limited to China, however. Russian state intervention in the economy is another big issue for all of these countries when considering sustainable energy development. Most likely, ASEAN plus 3 offers the most promising platform for a future energy dialogue in Asia if the EU and Russia can be involved as additional partners.

Gerhard Lohan from the Directorate of External Relations of the EU Commission pointed out that the EU, Japan and China have important common stakes in the energy field that require "a truly global and multi-disciplinary approach." Zero-sum competition for solely national interests, on the other hand, which might spring from the fact that all three partners are heavy energy importers, would surely lead to negative overall results. Instead, competition should be used to strengthen the market mechanism in global energy markets so that energy savings and efficiency on all levels ultimately leads to a "low carbon economy." Cooperation is therefore required to avoid monopolies and rent-seeking vertical integration, while regionally inte-

grated energy markets should be supported to create economies of scale and help avoid energy shortages. To achieve this, an “energy diplomacy” is emerging that includes the G8 and needs the strong underpinning of bilateral forums as in the case of the EU-Japan industrial policy dialogue, the EU-China Energy Environment Program, and the Japan-China cooperation on energy efficiency and environment protection.

Roland Götz of the German Institute for International Security Affairs (SWP, Germany’s major government think tank) focused on another partner equally important in energy and security affairs: Russia. Dr. Goetz pointed out that Russia (including CIS) is a stable supplier of oil and gas for the European market but that the currently beginning diversification of Russia’s energy supplies to the East might cause bottlenecks and more diplomatic rifts in the future. In particular, Europe is currently the only customer of Russia’s oil. For Europe, on the other hand, the import share of Russian is only 44% (in 2002). By 2030, Russia can be expected to have diversified its exports, which should bring the export share to Europe down to 63%, while East Asia will likely become a recipient of 38% of Russia’s oil exports. This would reduce Europe’s share of oil imports (and dependency) from Russia by eight percentage points by 2030, while at the same time increase Europe’s dependency on imports from the Middle East to 50% (from 33% in 2002). For Russia’s significantly more important gas exports, Dr. Goetz was even more optimistic about Russia’s reliability as a partner, but much less optimistic about its ability to increase its supply as promised. Today, Europe is the only customer of Russia’s gas exports of 127 bcm, which makes up for 63% of Europe’s gas imports. By 2030, however, Europe will probably have diversified its sources so that imports from Russia would be reduced to a share of 33% (or 160 bcm). The biggest increase would come from Africa (then 209 bcm) and the Middle East (then 96 bcm). East Asia would probably follow the same course of diversification, and increase gas imports from Russia from 0 to 30 bcm, while the majority would come from the Middle East (95 bcm) and Australia (57 bcm). The development of Russian resources therefore seems to be of common interest, while the risk of Russia becoming an unreliable supplier seems to be limited.

Working Together: Regional Policy and Resource Cooperation

The second block of the conference was chaired by Sebastian Bersick from the European Institute for Asian Studies. It began with a presentation from Jimbo Ken from Keio University, who was much less optimistic about future stability and resource cooperation in Asia than the previous speakers. He started his presentation by plotting an “Arc of Instability” that covered the coastal regions of China and almost all of Southeast and South Asia, including India and up to the Middle East. The main underlying forces of this instability are asymmetrical warfare (terrorism, WMD), lingering traditional risks (North Korea, the Taiwan Strait), and the rise of China (shifting the entire power balance in Asia). Especially the rise of China, which leads to new security relations within and beyond Asia, requires strategies that consider a future with China as a “responsible stakeholder” and, at least for the near future, strategies that address the dissolution of existing security agreements while China’s course of action and impact is not yet entirely clear. Professor Jimbo outlined the different implications with concrete examples for the Japan-U.S. and Korea-U.S. alliances, as well as for multi-layered cooperation in ASEAN and ad-hoc functional mechanisms such as the Proliferation Security Initiatives and Energy Cooperation. Finally, long term strategy needs to focus on replacing the “Arc of Instability” with an “Arc of Freedom and Prosperity.” This requires broad cooperation in Asia beyond the current U.S.-Japan Security Alliance, including policies on strategic ODA, UN reform, and international peacekeeping operations. The EU-Japan Strategic Cooperation is therefore more important than ever and needs to develop more far-reaching strategies on risk management and synergy development.

Maria Sicilia of the International Energy Agency (IEA) further developed the topic by focusing on the upstream supply risks of energy security, including bottlenecks, weather, investment disruptions, sabotage, nuclear ambitions, civil unrest and piracy. To avoid a rocky future, global cooperation seems necessary in five essential steps: by securing more capacity, more efficiency, more diversity, more transparency, and ultimately by building a safety net. Already today, the emergency response system of the IEA, which was founded in 1974, demonstrates an important and successful step to such cooperation by building up oil stocks worth 90 days of net imports and clear-cut emergency response measures. An appropriate response to

current security challenges could therefore follow this script by building up appropriate stocks and response storage especially in China and India, while deepening cooperative emergency response exercises and workshops. In addition to such added stability and security, further “mobilization” of oil, gas, coal and uranium could be achieved, which might help to avoid the current explosion of coal consumption with its disastrous consequences for CO₂ output. Since answers to the most difficult problems and sources of instability—the growing poverty and carbon gap—will most likely evade us for years to come, it seems to be the best response to focus on a coordinated “ambulance service” that could provide the basis for more fundamental solutions to our security problems.

Oliver Schaefer from the European Renewable Energy Council presented visions for energy security that focused on the sustainability of energy supply as well. He added, however, a strong focus on alternative energy sources and reductions in energy demand. His model targeted the ambitious objective of limiting global temperature increases to below two degrees Celsius. Increasing efficiency through development cooperation and a more effective market mechanism that reflects the “true costs” of energy consumption were presented as his key strategies. Furthermore, under his model assumptions, it should be possible to reach the two degrees target only with proven technologies and without unstable nuclear energy while achieving sustainable economic development at the same time. Most gains in his scenario come from efficiency gains on the demand side, which, if fully exploited, have the capacity to limit energy demand at today’s levels without disrupting economic growth. On the supply side, wind energy and photovoltaic will play an important role in reducing the current use of 80% fossil primary sources to only 52% by 2050. To achieve such a scenario, important barriers, such as the unfair price competition of alternative with conventional energy sources, complicated planning and permitting systems, problems with grid connections and “embedded” generation, as well as discriminatory transmission and access tariffs need to be overcome. International political cooperation between the EU and East Asia is therefore an important step to “getting energy prices right” and setting appropriate incentives for the development of renewable energy markets.

The Impact of Corporate Strategies and Private Interests

The third block of the conference, under the chairmanship of Nezu Risaburō of FRI, started with Jin Jianmin's view on "China's Energy Strategy and Emerging Major Oil Companies." Because China has become the production center of the world, stable energy supply has become a core issue. To face the challenge, China is trying to preserve energy as much as possible—without hindering production and employment growth—and increase energy supply by developing nuclear energy at home and energy market access abroad. Especially the latter has become an important strategy because it fits China's global growth strategy in government and industry circles. To work effectively abroad, the government is nurturing major energy companies that now increasingly invest abroad. Furthermore, the government is even using domestic market access as leverage in negotiations with foreign energy companies that are seen as potential suppliers of technology and partnerships for China's internationalizing companies. Currently, this "resource diplomacy" extends even to using its UN Security Council vote strategically, as in the case of trading a favor with Myanmar. It therefore seems to be certain that the emergence of China's major oil companies, with up to 1.5 million employees in one case, is becoming a significant issue internationally. These companies are expanding fast in the world's major regions as China's initial interface to long-term investment strategies and as a possible key to improvements in energy efficiency and upgrades in corporate governance.

Martin Schulz, also of FRI, added a macroeconomic view on East Asia's booming oil and resource demand. He stressed that the largest current security and cooperation risk is not due to excessive competition for energy sources, but is a problem of outmoded governmental restrictions and policies that restrict competition in energy, utility, and logistics markets. He demonstrated that the current explosion in raw material demand and prices is driven by a new Asian demand bubble that is potentially even more problematic than the Asian Crisis in 1997. Compared to that crisis, today's East Asia current accounts only look healthier because of massive liquidity inflows and unsustainable high manufacturing exports with final demand in the U.S. A shock or only a leveling off of one of these growth sources would likely trigger a new crisis that would reveal the vulnerability of Asia's still unbalanced growth model. But his presen-

tation did not provide a doom-scenario for Asia. On the contrary, he showed that, driven by the current manufacturing boom, East Asia is integrating from the “bottom up” by laying the groundwork for sophisticated production networks that can sustain a temporary shock. Already today, on back of increasing resource demand and soaring prices, efficiency gains in transport and logistics are becoming an important source of growth. Further dispersion and integration of highly efficient Japanese affiliates’ production technologies in their developing host countries is becoming another sustainable source of growth. A still missing step is, however, the further improvement of resource allocation by developing Asia’s financial centers and markets. Consequently, future cooperation policies would gain more from international support for the balanced development of regional markets, improvements in the price mechanisms, and investment frameworks than from a strong focus on (limited) energy cooperation.

The final speaker from industry, Hans van der Loo from Royal Dutch Shell concluded that Public and Private Partnerships are needed to secure appropriate access to resources, to create a level playing field for private companies, and to better manage risk while sharing costs and opportunities. So far, for example, the access to 37% of proven oil reserves is limited to national companies (champions), while only 30% of reserves can be developed effectively on a concession basis by private international companies. This remains to be a barrier to industry investment growth of a necessary additional \$200 billion per year. Additionally, the lack of comprehensive international cooperation is undermining sustainable resource development. China’s national oil companies’ strategies to exploit energy opportunities in countries that remain off limits to Western oil companies, for example, are undermining the peaceful development of resources. Similarly, new obstacles to the joint European-Japanese Sakhalin LNG project, the first ever such project in Russia and the largest energy project in the world (\$20 billion), demonstrates how short-sited government policies might impact future developments in a new market. To avoid such inefficient and costly developments, the need for policy makers and industry to work in partnership is now greater than ever. Concrete examples of collaboration targets include the development of new evacuation routes, international standards & mechanisms (governance, environment, post-Kyoto), alternative energy and carbon capture, as well as synthetic and biofuels. Only in such a cooperative way is it possible to solve the challenges for the

triangle of problems of economic growth, energy security, and the environment.

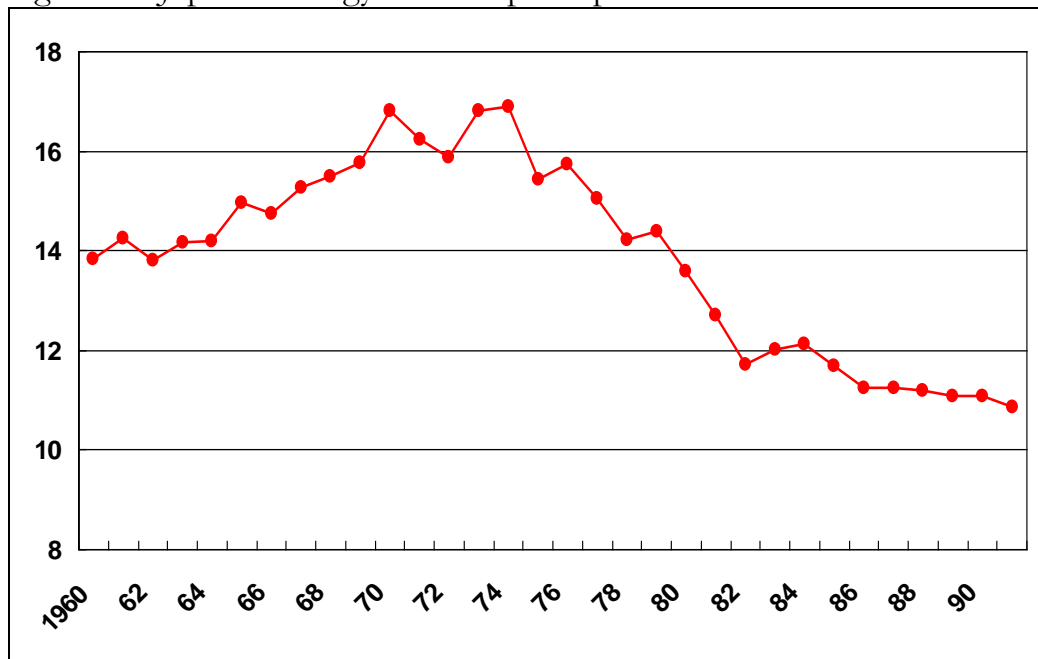
Finally, a podium discussion under the chairmanship of Joern Keck, the former Ambassador and Head of Delegation of the EU to Japan wrapped up the conference and recommended to compile this report as one basis for discussion of energy policy in the EU-Japan Dialog and the upcoming EU-Japan Summit.

Energy and Security Strategies of Japan

NEZU Risaburō
Fujitsu Research Institute, Tōkyō

Energy can again constrain economic growth of Japan. In the 1970s, Japan was hit severely by an abrupt disruption of oil supply from OPEC countries. Until that time, Japan took it for granted that its economy would continue to grow at more than 10% per annum, but by the end of the decade, Japan realized that its long term growth potential was reduced to somewhere between five and six percent. In fact, its economy continued to expand at a rate of four to five percent until 1990, when its economy dived into a decade long slump after its asset bubble burst. Between these two periods, Japan managed to transform its economy from an energy-intensive industrial structure to an energy efficient one. Its energy consumption to produce a unit of GDP went down from 17 Kcal in 1974 to 12, a remarkable achievement that even surpassed Japanese hopes of the time.

Figure 1 Japan's Energy Consumption per GDP

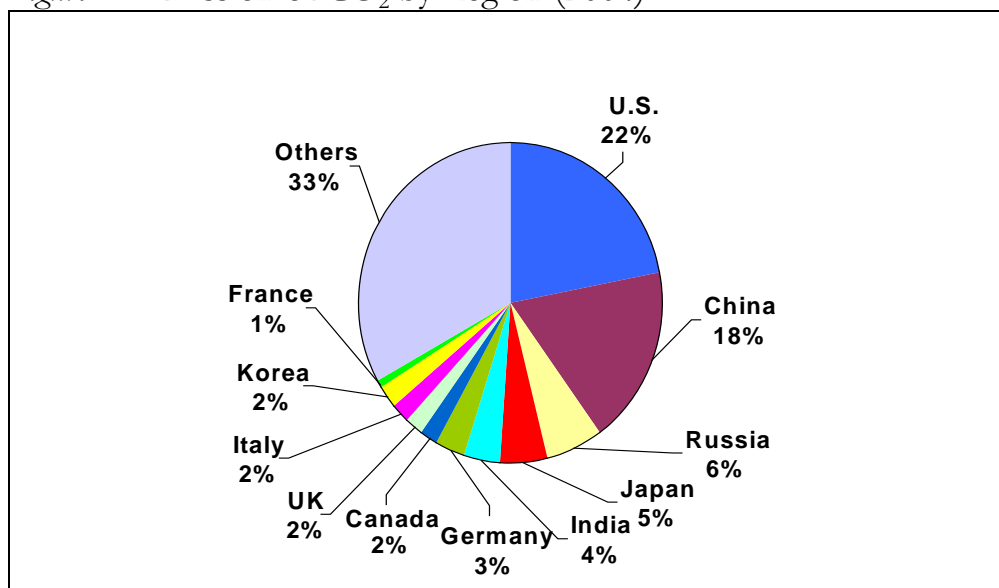


Source: The Institute of Energy Economics, Japan.

Most of those gains in energy efficiency were realized in the first ten years after the second oil crisis of 1979. Certainly, during this initial stage Japan could easily find targets for energy savings. Unfortunately today, however, little savings potential seems to remain that could be exploited with small expenditure. In addition, due to an oil glut in the 80s, with the crude oil price remaining at less than \$10 per barrel for most of the decade, energy intensity stopped making further gains in the 90s. Particularly, the household and transport sectors even started to increase the use of energy—higher penetration of cars and air-conditioners were to blame for this.

The Kyoto Protocol, which Japan decided to accept in 1999 after a great deal of internal debate, still remains embattled. To many Japanese, it remains especially problematic in that most major polluting countries opted out of the Protocol, particularly the U.S. and China, the number one and two emitters of carbon dioxide. These two countries account for 40% of global CO₂ emission. Partially because of this deficiency of the Kyoto Protocol, Japan is aggressively pursuing a bilateral cooperative approach in Asia. By 2007, it had started bilateral programs with China, India, Indonesia and Vietnam. The central objective of these bilateral policies is to assist these countries in using energy more efficiently. In addition, Japan proposed regional cooperation in East Asia to promote energy saving and the use of biomass.

For its bilateral policies, Japan stresses energy saving because Asian countries' wasteful use of energy provides a huge potential for saving without sacrificing economic growth. China, for example, consumes about ten times as much energy to produce the same amount of GDP as Japan. This year, China has even surpassed the U.S. in terms of CO₂ emission. In particular, the three industries of steel, cement and utility account for 44% of CO₂ emissions in the industrial sector worldwide. Automobiles and electronic appliances are also sectors with high savings potential. The technology for realizing such cost-effective gains in efficiency exists—not least in Japan—and Japan is willing to make such technologies available to cooperating countries and partners.

Figure 2 Emission of CO₂ by Region (2004)

Source: IEA.

When heading towards the post Kyoto Protocol regime, such partnerships might seem to be more promising than an insistence on strict energy saving targets that might discourage important partner countries. In Japan, for example, the Kyoto base-year of 1990 was a year when gains in energy efficiency had already been reaped, while in Europe it was a year of integration with the former socialist countries, which provided exceptional savings potentials. Given such shifts in international relations and fortunes, it seems logical that any regime that follows the expiry of the present Kyoto Protocol should take into account the energy efficiency of each economy. This way, the potential of each country could be brought to better use than by trying to squeeze margins that might be hard to accept.

As of June 2007, Japan understands that the next G8 Summit hosted by Japan (in Tōyako, Hokkaidō) is most likely to be dominated by the question of global warming. Over the next twelve months, the Japanese government must work hard first to establish a common position within the Japanese government, and then to find a common platform that all G8 countries can subscribe to. While it would be rather straightforward to argue that all important players must join, it is far from clear whether Mr. Bush of the U.S.—despite more recent positive signals—will support far-reaching schemes at the very last stage of his presidency. It is even less conceivable that China, which is not a member of the G8, can be wooed by Japan to join a major initiative without offering significant incentives.

Furthermore, a significant change of direction in the post-Kyoto Protocol negotiations might be advisable for other reasons as well. If new countries join the Protocol, a debate about a more recent base-year would certainly develop, which would be favored by Japan, but most likely opposed by Europe, which is very much ahead in emission trading. The EU commission is eager to advance this scheme. Even in some states in the U.S., trading schemes are already in place. But Japan still regards emission trading as enormously cumbersome and hard to implement. In Europe, emission quotas are set for 12,000 companies and factories. Each of them must be monitored to see how much CO₂ is emitted, and how much they are trading due to their quotas with whom. From an economist's perspective, a carbon tax would be a far more effective and equitable approach if one key deficiency can be overcome: It is very difficult to establish an agreed upon and effective level of carbon taxation in relation with emission volumes.

The Future of Resource Competition and Energy Cooperation in East Asia

TAKEISHI Reiji
Fujitsu Research Institute, Tōkyō

1. Main Issues on Energy in Asia

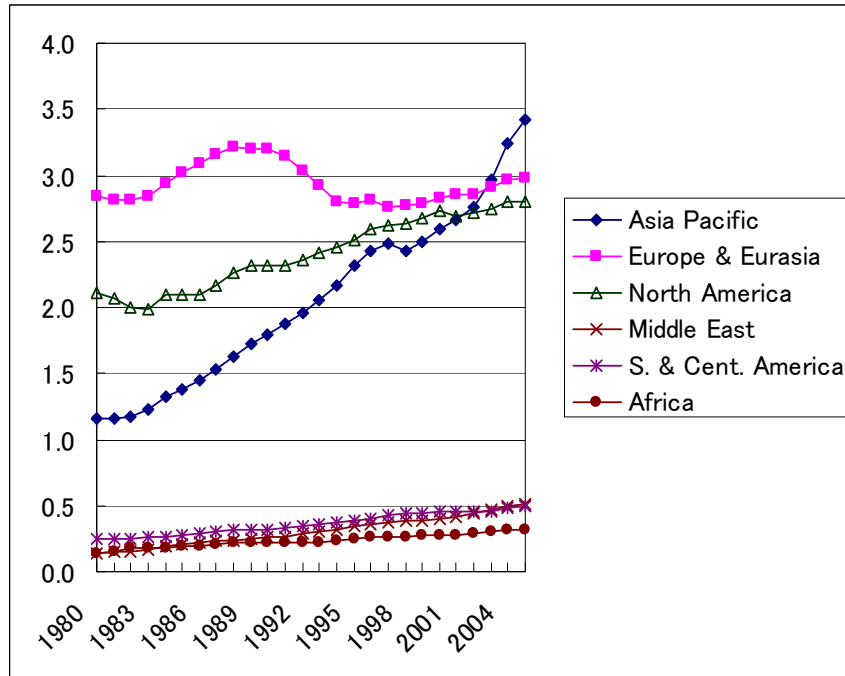
Asia's economic development is based on industrialization and products export, energy consumption has therefore significantly increased. The flipside of the coin is that Asian countries must import more and more energy from other regions and that the dependency ratio of energy imports has inevitably increased. Similarly, Asia's economies have been receiving the benefit of globalization, but insecurities remain concerning the transition process of non-democratized countries, such as China and North Korea.

The increase of nuclear generation plants is continuing in Asia, although proliferation of nuclear weapons has been a serious problem. As is well known, China is expanding arms export to other countries, which remains a real threat to neighboring countries including Japan. Instability is further increased by surrounding countries such as in Russia and Middle East. Finally, the low energy utilization efficiency in Asia with its high CO₂ emission and other air polluting substances is providing to serious long-term threats that might hamper future growth.

2. Primary Energy Consumption in the World: 1980–2005

Figure 1 divides primary energy consumption in the world into six sectors. As can be seen in the graph, the Asia Pacific region has already passed other sectors in terms of energy consumption. Unlike Europe and Eurasia as well as North America, where demand has been moderate from the mid-1990's, Asia Pacific's demand continues to increase by exorbitant rates.

Figure 1 Primary Energy Consumption in the World: 1980–2005
(Unit: Billion tons oil equivalent)

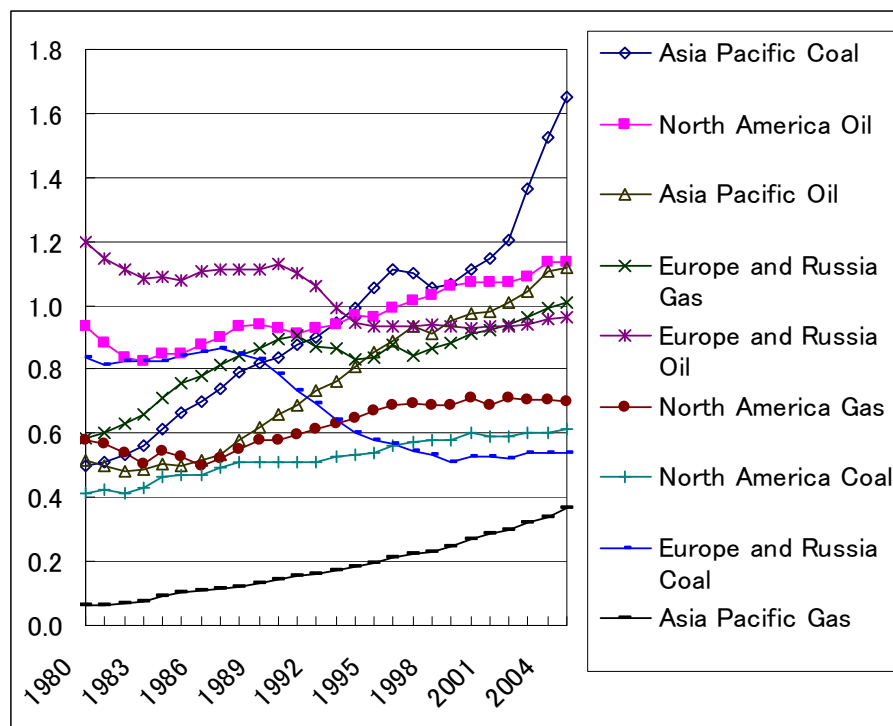


Source: BP statistics

3. Energy Consumption Trends Classified by Three Main Energy Consuming Areas

When we look at energy consumption trends classified by the kind of energy in three main energy consuming areas, such as in the Asia Pacific, Europe and Eurasia, and North America in figure 2, we see that coal consumption in Asia catches the highest share today. From 2000, increasing of coal consumption in Asia has even reached another stage. Following coal consumption in the Asia Pacific, oil consumption in North America ranks number two, but oil consumption in the Asia Pacific is now catching up fast, while gas demand in Europe and Eurasia is increasing in fourth place as well. But gas utilization in the Asia Pacific, too, although coming from a comparatively low level, is now increasing fast.

Figure 2 Oil, Coal and Gas Consumption in the main energy consuming areas in the world: 1980–2005
(Unit: Billion tons oil equivalent)

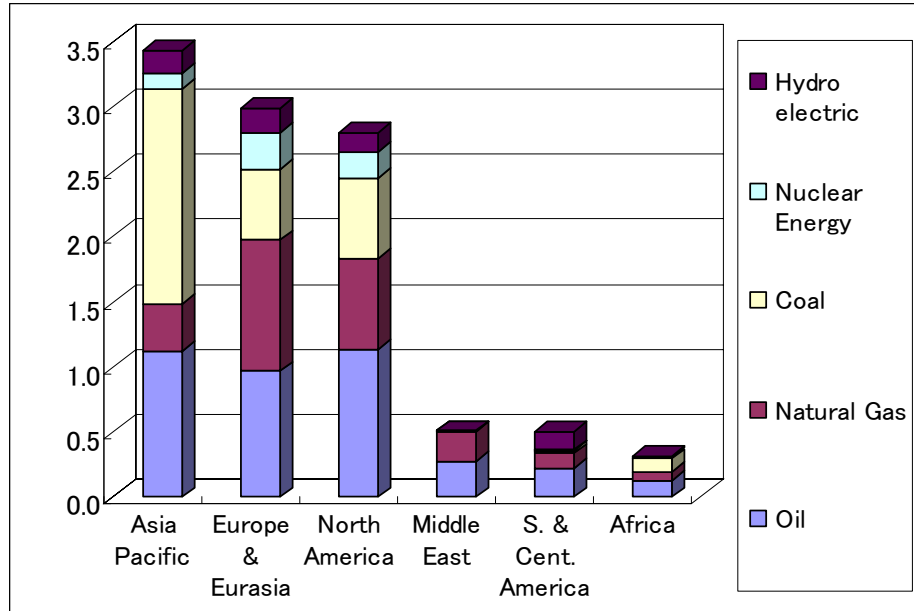


Source: BP statistics

4. World Energy Demand in 2005

Compared with the other areas, the ratio of coal consumption in the Asia Pacific is exceptionally high at 48% in 2005 as shown on figure 3. In North America the coal ratio is 22%, while in Europe and Eurasia, the coal ratio is 18% because gas has become the dominant source of energy of 34%. In North America oil provides the most energy with 40% of the total.

Figure 3 World energy demand in 2005
(Unit: Billion tons oil equivalent)



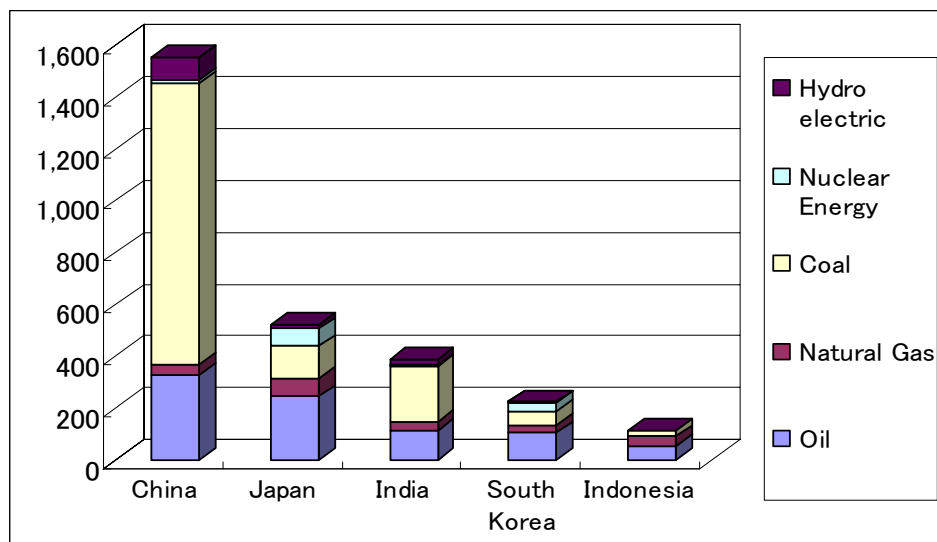
Source: BP statistics

5. Asia's Top Five Energy Consuming Countries

China's consumption of coal is over 1 billion tons oil equivalent and three times more than China's oil consumption. It surpasses all other Asian countries' energy consumption as shown in figure 4.

Coal consumption in China is twice as much as Japan's total energy consumption and almost three times India's total energy consumption. Asia's energy and environmental issues therefore highly depend on the efficiency of the use of coal in China.

Figure 4 World energy demand in 2005
(Unit: Million tons oil equivalent)



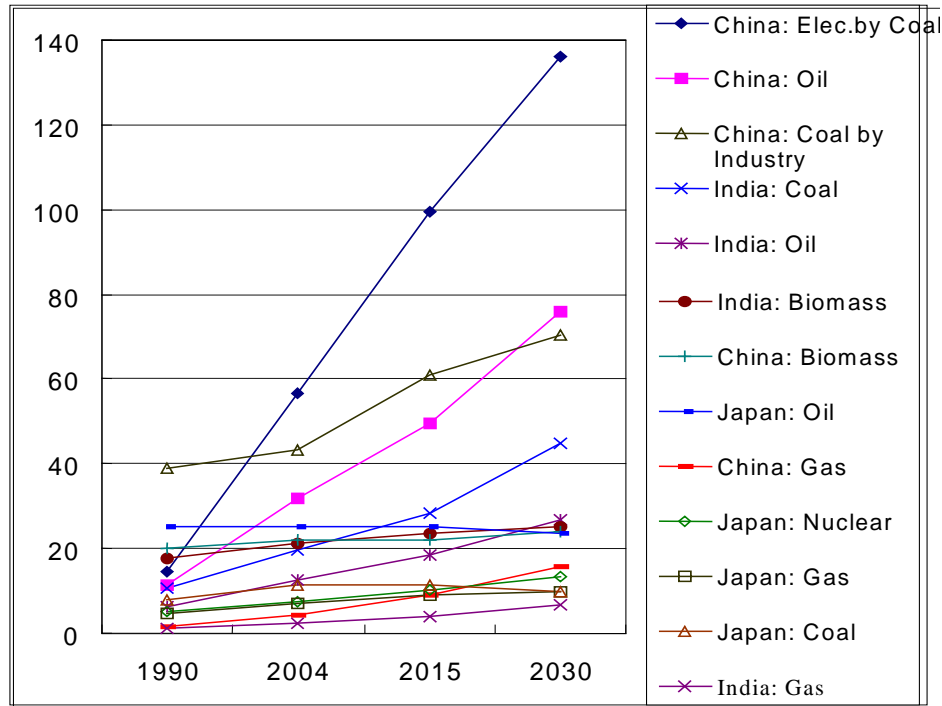
Source: BP statistics

6. Asia's Big Three Energy Consuming Countries and Future Prospects

China, Japan and India are Asia's big three energy consuming countries. According to the OECD IEA's "World Energy Outlook 2006," future prospects of these three countries' energy consumption until 2030 are dominated by China's coal consumption for electricity generation as shown in figure 5. China's oil consumption for transportation and industry comes next, and China's coal consumption for industry comes in as number three.

Only after these main blocks of China's rapid increase in energy consumption follows India's coal consumption, mainly for electricity. India's oil consumption is increasingly moderately, while most other demand is increasing only slowly or even falling, as Japan's oil consumption.

Figure 5 Asia's big three energy consuming countries and future Prospects
(Unit: Billion tons oil equivalent)



Source: OECD IEA, "World Energy Outlook 2006"

7. World Oil Reserves, Production and Consumption in 2005

As shown in table 1, more than half of world oil reserves are concentrated in Middle East countries. There are plenty of coal reserves within China and India but little oil, so the import of oil from outside the region will become an even bigger issue than today. When we compare the reserve to production ratio in the world, the Asia Pacific has only 13.8 years of reserves, while the Middle East has 81.0 years. North America sits on 11.9 years, South and Central America has 40.7 years, and Africa is 31.8 years. Europe has only 8.2 years while the CIS adds 28.0 years. The world total average reserve to production ratio is 40.6 years.

With only around 10 years of reserves, Europe, North America and Asia Pacific are all in a fragile position and must rely on imports from other areas—especially the Middle East.

Table 1 Comparison of world oil reserves, production and consumption in 2005

(Unit: Reserves: 100 Billion barrels; Production and consumption: Billion barrels per year)

	Reserves billion barrels	Production bb/year	Consumption bb/year
Middle East	742.7	9.2	2.1
CIS	124.4	4.4	1.4
Africa	114.3	3.6	1.0
South and Central America	103.5	2.5	1.7
North America	59.5	5.0	9.1
Asia Pacific	40.2	2.9	8.7
Europe	16.2	2.0	6.0
Total	1,200.8	29.6	30.0

Figures of production and consumption differ due to stock adjustment

Source: BP statistics

8. CO₂ Emission in Asian Countries

As for CO₂ emission in Asia, China is discharging emissions around four times more than Japan or India as shown in figure 6. China's CO₂ emissions actually surpass the rest of Asia's total CO₂ emissions. This number demonstrates the overwhelming importance of the efficiency of China's coal consumption for electricity generation.

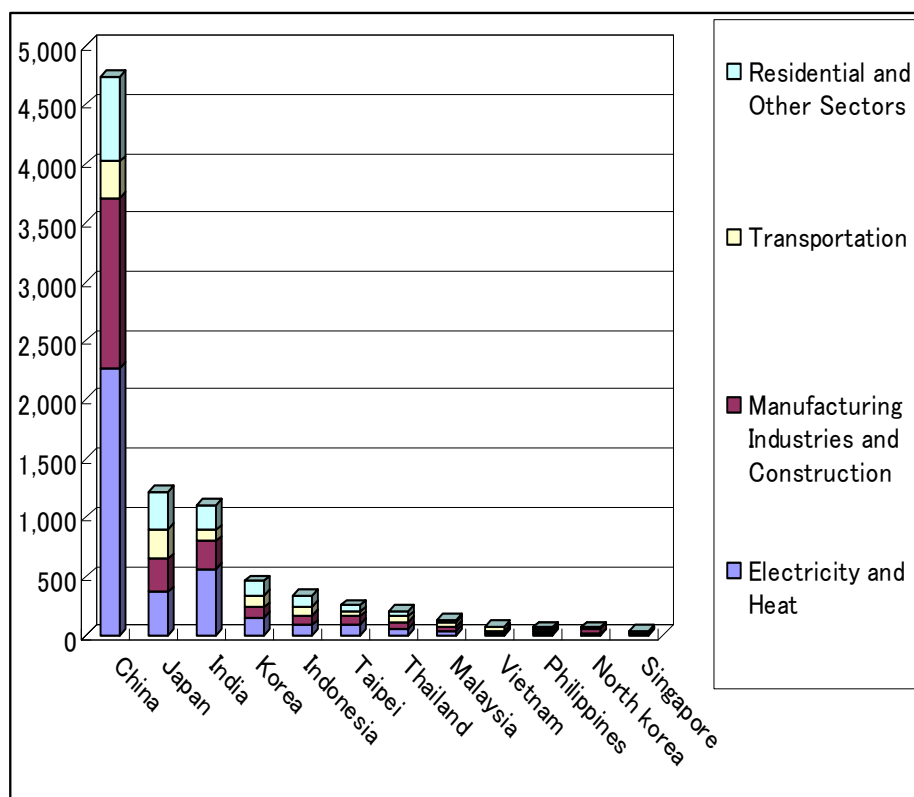
9. Asia's Energy Situation

Although Asia has abundant coal reserves it will need to import more oil and gas in the future. Whether Asia can continue to import safely and securely is therefore a crucial issue for maintaining economic stability and developing the economy further. Alternatives, such as nuclear utilization are still very problematic in their use because security issues still exist not only in North Korea but also in China. China's nuclear policy is still a major factor of concern for the entire region.

How to demarcate China's nuclear utilization for power generation and the country's holding of nuclear weapons? Today, China is not in agreement with the nuclear nonproliferation treaty (NPT). China is contributing or has contributed to the spread of nuclear weapons in developing countries such as Pakistan and Iran.

10. Energy Cooperation in Asia

Figure 6 CO₂ emission in Asian countries in 2004 (Unit: Mt of CO₂)



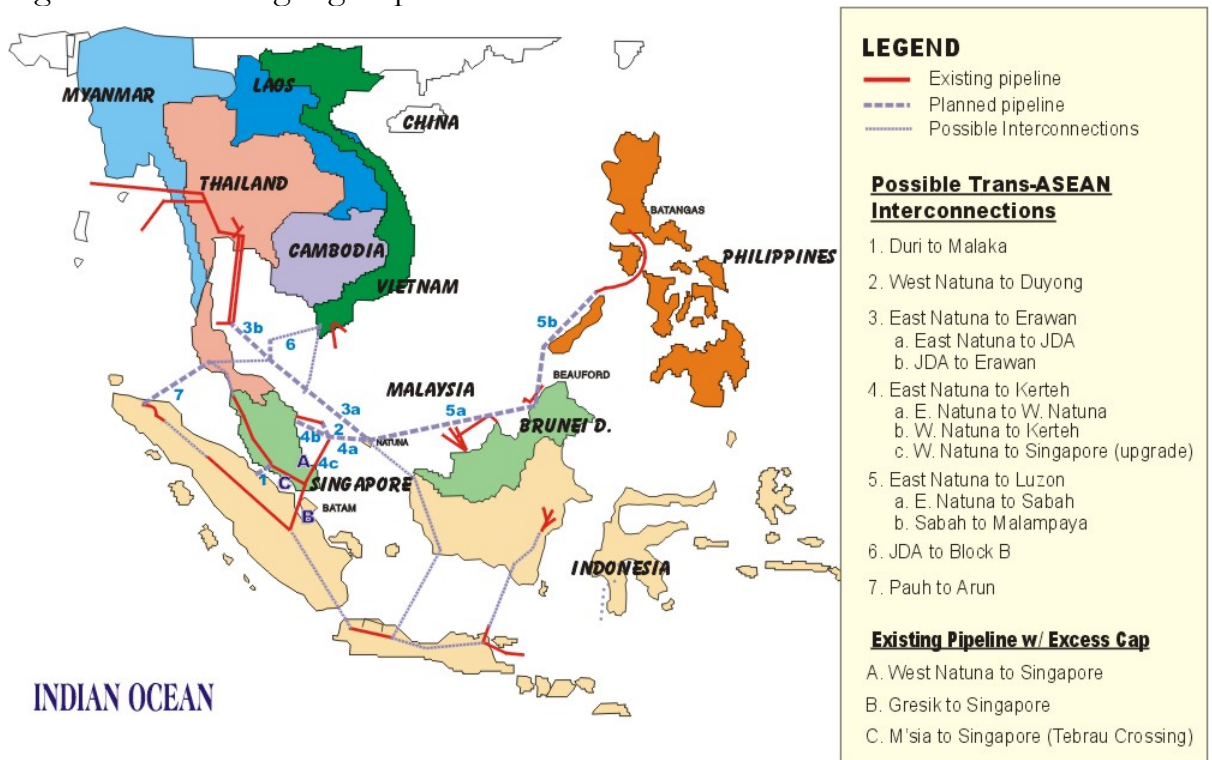
Source: OECD IEA

Energy cooperation in Northeast Asia is still limited due to unresolved issues of political distrust—even though mutual economic dependence promises high cooperation gains. ASEAN, in contrast, is already rather advanced in terms of deepening mutual cooperation on energy. ASEAN's efforts and results on gas grid and electricity transmission through the border, for example, provide good intermediary examples for an Asian dialogue.

11. ASEAN Gas Grid Plan

ASEAN's natural gas pipeline project has improved and is already connecting many countries. Current plans further target to connect most ASEAN countries as shown in figure 7.

Figure 7 ASEAN gas grid plan



Source: ASEAN

12. Gas Pipeline Projects from Russia and Central Asia to Northeast Asia and the EU

Northeast Asian, pipeline projects and electricity transmission projects that cross borders, in contrast, are still only in conceptual stages and have not yet started as shown in figure 8. Furthermore, ongoing Russian state intervention regarding the Sakhalin 2 and 1 projects is forcing China and Japan to compete regarding the East Siberian gas import route by pipeline, which is not positive for overall cooperation.

Figure 8 Gas pipeline projects from Russia and Central Asia to Northeast Asia and the EU



Source: Rafael Kandiyoti: Asia in The Pipeline. Moscow and Beijing, Asia's Roaring Economies. *Le Monde Diplomatique*, May 1, 2005.

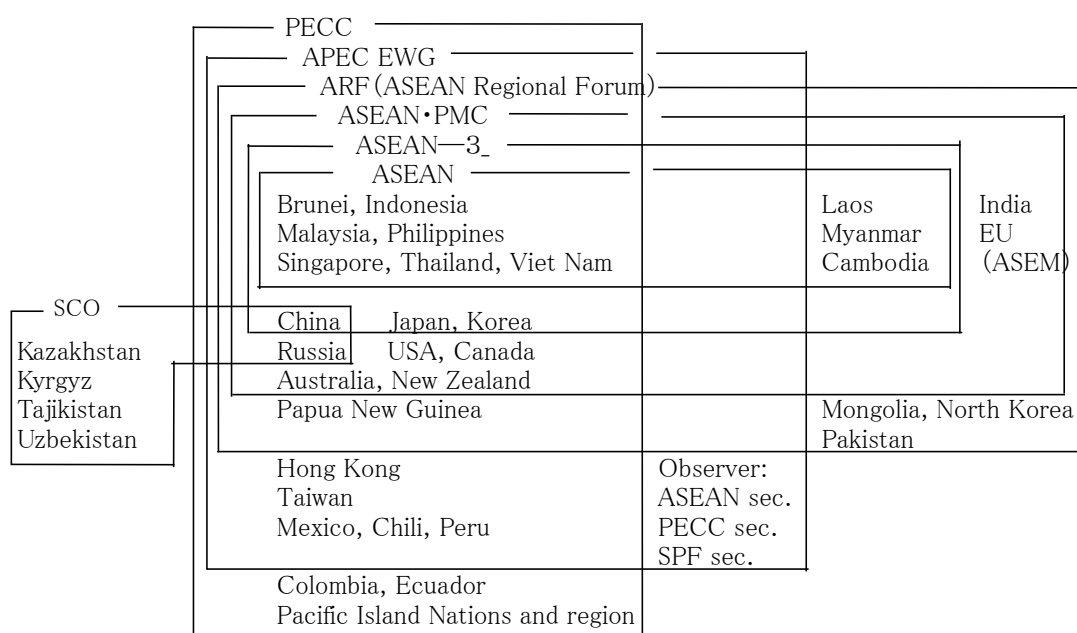
13. Promotion of FTA and RTA

As in stagnating energy cooperation in North East Asia, progress in Free Trade Agreements (FTA) and Regional Trade Agreement (RTA) is still limited. In contrast to other areas such as ASEAN, EU, North and South America, no customs union has been established in East Asia.

14. Asia's Energy Related Dialogues

Concerning the dialogue for energy talks in Asia, several levels of common grounds have been developed as shown in figure 9. ASEAN is the core for these talks, while ASEAN plus 3, the ASEAN+PMC (Post-Ministerial Conference), the ARF (ASEAN Regional Forum), the APEC EWG (Energy Working Group), and the PECC (Pacific Economic Cooperation Council) can build on this framework. An important obstacle is, however, the coordination of the layers of dialogue to achieve fast tangible results.

Figure 9 Asia's energy related dialogues



PECC: Pacific Economic Cooperation Council

APEC: Asia-Pacific Economic Cooperation

EWG: Energy Working Group in APEC

ASEM: Asia-Europe Meeting, composed by ASEAN and EU

ARF: ASEAN Regional Forum

ASEAN PMC: ASEAN Post-Ministerial Conferences

SPF: South Pacific Forum

Source: WTO and other various reports

15. Future Cooperation in Asia

Grace periods for China's implementation of WTO regulations are expiring soon. This offers a window of opportunity for additional requests for democratization and normalization of policies in China. Increased transparency and reliability of China's political process would greatly add to further deepening of international cooperation between the EU, Japan, China and Korea especially on energy issues. Today, for example, all these countries share common concerns about Russian state intervention in energy, which might serve as basis for further talks between all these partners. ASEAN plus 3 could provide an important example for a future energy dialogue in Asia on common cross-border projects.

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Common Stakes for the EU, Japan, and China: Pressure on Natural Resources and Energy Competition in East Asia

Gerhard LOHAN
European Commission

What I am going to say are my personal views, reflecting my—very indirect—involvement with energy matters over the last years.

As the keynote speakers have already underlined energy issues and, in particular, the security of energy supplies, have moved to the top of the political agenda, along with the increasing concerns about climate change. Indeed, both are inextricably linked: all climate change emissions, except methane from cattle-breeding, are fossil-fuel related. The forthcoming fourth Intergovernmental Panel on Climate Change (IPCC) report, and the recent Al Gore movie are sending strong wake-up calls. Thus, energy and climate change have become equal in terms of political importance, geographic scope, and economic weight.

Some of the instruments that are available for either policy may produce beneficial effects on both energy saving and climate change—for example, automobile exhaust emission standards serve both. Yet, such complementary effects are not always obvious—for example: bio-fuels production to the detriment of tropical forests and wildlife.

Ultimately, a truly global and multi-disciplinary approach will be needed. Would it be stretching imagination too far that a successor to the Kyoto Protocol for the period post-2012 may address not only climate change as such but also include strong energy-related components?

One part of my task this morning can probably be done rather easily. That is, answering the question as to whether the EU, Japan, and China have common stakes in the energy field. Of course we have. Each of the three partners is a major economic power at world-scale and a major consumer of fossil fuels. Therefore each has a responsibility for helping to manage our planet in a sustainable way—whether we like it or not, whether we accept it or not, whether we act accordingly or not.

However, I should like to ask you to stay with me a little longer after having made this rather categorical statement. Because we also need to explore how this responsibility is being recognized and discharged.

I see two particular dangers in that respect:

- First, we should not underestimate the power of “industrial policy” factors in government policy making, including, of course, energy and climate change questions. I would rather not try to guess, which one of the three partners feels most tempted in that respect. Also, I shall leave aside the question, which industry sectors are most exposed to energy costs and energy competition such as steel, aluminium, cement, precious metals, and other highly energy-intensive sectors. Suffice it to say that energy policy clearly has a strong impact on industrial competitiveness (where we are competitors).

But energy, because of its link with climate change, must not be considered as a zero-sum game, and hence what counts are the accumulated chances for success in securing “clean,” sustainable energy for all of us on a long-term base.

- Second, energy risks being increasingly used as a political weapon. There is a resurgence of energy nationalism and re-nationalization among some of the producer countries, and such tendencies seem to be based on both national security considerations and power-politics tactics.

What I should like to do is address two main topics:

- First, to establish the “energy profile” of the three partners—that is to look at the current energy mix in consumption, the import dependence, and the policy response.

The energy mix is particularly important because of major differences among fossil fuels—gas, oil and coal—, and between them and nuclear fuels. Oil is a commodity that is traded world-wide and to a considerable extent on the spot market, as is coal. However gas is still essentially a regional market, tied mainly to pipeline networks and hence less mobile, that is until liquified natural gas (LNG) plays a greater role. We should take a closer look: Intended changes in the energy mix

may be relevant for the way, in which countries may want to develop their supply routes.

- Second, it would be useful to look at the cooperation between the three partners in the world-wide context. We are witnessing an emerging “energy diplomacy,” but what chance of success does it have?

The common challenge is, as the Commission has underlined in its recent package proposals, to move to a “low carbon economy,” a move that may indeed be tantamount to a new industrial revolution.

Energy Profiles

The EU is just over 50% dependent upon imports of energy from third countries, with a broad energy consumption mix (for the EU-25 comprising 37% oil, 24% gas, 15% nuclear, 18% coal, and 6% other.

East Asia is a “show-case” for a wide range of differences, including the world leader in energy efficiency (Japan) and the world champion in terms of energy consumption growth (China).

Japan is almost 100% dependent on imports of energy. It has managed to combine world leadership in terms of energy efficiency with excellent competitiveness. The current energy mix is 48% oil, 13% gas, 14% nuclear, 22% coal, and 3% other.

China is now the world’s third importer of oil (after the U.S. and Japan). However, its current energy mix is rather different from the other two: only 19% oil and 3% gas and 1% nuclear, but 62% coal and 15% other. On oil, China almost certainly will score an import dependence of 74% by 2030. China is also both the largest consumer and producer of coal in the world. On the demand side, China is one of the most energy-intensive economies.

Table: The current mix of energy sources in domestic consumption, and import dependence (brackets)

Country	Oil	Gas	Nuclear	Coal	Other	(Total)
Japan	48% (99%)	13% (96%)	14%	22% (100%)	3%	(82%)
China	19% (48%)	3% (0%)	1% (0%)	62% (0%)	15%	(5%)
EU-25	37% (90%)	24% (52%)	15 % (0%)	18% (38%)	6%	(51%)

Source: International Energy Agency and European Commission.

Other = hydro, geothermal, solar, biomass and waste

Government Responses

How efficient are the three partners in reacting to the challenge?

The answer may be found in their respective policy strategies: how do they intend to ensure the secure supply of energy? How do they deal with domestic resources? How do they intend to reduce energy consumption, to increase energy efficiency, and to promote research and technology? What about industrial policy implications, foreign trade measures, and cooperation with suppliers?

These are of course very complex questions, and the more so if we do this on a comparative basis. We have to limit ourselves to a very brief look at the approaches chosen, or in the process of being determined, on each side.

European Union

An EU Energy Strategy is in the making following increased concerns about the need to improve competition in the EU internal energy market and to be more ambitious with energy efficiency, as well as

rising worries about the reliability of external energy supplies. This was exacerbated by the Russian/Ukraine dispute over gas prices in early 2006. Based on a COM Green Paper of January 2006, energy has been the subject of discussion at all the European Councils in 2006.

COM made further elaborate proposals for an integrated energy and climate change package in January 2007, which were taken up by favorable Council conclusions in February 2007. This is where the “minus 20% target” became widely visible (this is the minimum target. If other partners come along, the reduction should be 30%). But it should be noted that the COM proposals do indeed feature four major highlights: the EU internal market; a faster shift to low carbon energy; energy efficiency and the need for a more coherent approach to external energy issues.

The current objective is to obtain European Council conclusions in March 2007.

What are the priorities that the Commission has identified for the new external energy policy? Security of supply is the overriding objective. As stated before, the challenge to be addressed is that energy risks being increasingly used as a political weapon. There is a resurgence of energy nationalism and renationalization among a number of producer countries. But we can also observe a deterioration of governance principles in the management of those resources, aggressive and nontransparent energy security policies from certain important consuming countries; all of this in addition to the absolute need to fight climate change.

One key point is that the EU—whether as the EU as a whole, or the individual Member States—should speak with a single voice in international discussions.

Our key priorities include in particular: a new energy relationship with Russia; extension of the Energy Community Treaty to other partners like Norway and Ukraine; strong energy elements in the European Neighbourhood Policy and an Africa-Europe Energy Partnership; diversification of supply sources and routes through facilitation of construction of new infrastructures; an international agreement on energy efficiency; and enhanced bilateral energy relations with key partners whether energy producers or consumers or transit countries.

Japan

Japan's Energy Strategy is already in place since May 2006, and it covers up to 2030. The strategy identifies driving factors on the demand and the supply side and sets five target figures for 2030, including: to improve energy efficiency by 30%; to increase the self-development ratio in oil supplies, mainly overseas of course, to 40% while reducing the overall share of oil in the energy mix to 40%; to increase the alternative fuel share in the transport sector to 80%; to increase the share of nuclear power to 30–40%.

It also includes a strong international component: an Asia Energy and Environment Cooperation Strategy, covering energy conservation, electricity for consumers and transport, technology on clean coal use, nuclear power effective stock-piling system in Asia, preparedness for oil crisis.

However, the Japanese strategy is not quite complete yet. Yet to come is an Energy Technology Strategy, a roadmap for technological development up to 2030.

China

The eleventh five-year plan includes energy as a key area. China's status as No. 3 world importer of oil has led to a redefinition of its energy diplomacy towards several producers such as Russia, Venezuela, the Middle East, and Africa. China seeks to contain its future energy dependency through two main means: long-term supply deals around the world and energy efficiency.

There are just 21 days of domestic stock-pile. On coal, China recently created a joint Group on Clean Coal Technology with Australia (in the margins of the East Asia Summit in Cebu). New power plants to be built by 2030 include coal and 32 new nuclear reactors, while hydro-power should increase to 15% of consumption.

Comparison

The EU approach is special by way of having to achieve two objectives at the same time: to forge a common energy policy for all 27

member states, and to ensure a close link between energy and environmental objectives.

The Japanese approach is broadly similar on the main policy components but different in some respects, notably with regard to the post-Kyoto period (after 2012), and with regard to the contribution that large developing countries should make.

The Chinese approach, in turn, is different in that it appears uncompromising as regards the objective of further economic growth—this is the top priority while energy and environmental objectives must reflect this.

“Energy Diplomacy”—Building International Energy Security

So, are we witnessing the emergence of a specific “energy diplomacy,” and what chances for success would it have? Let’s try to take stock of specific bilateral energy discussions and cooperation in the triangle EU-Japan-China.

Bilateral

EU-Japan: Energy is recognized as one of the key common challenges for a long time to come, as reconfirmed during the visit of Prime-minister Abe to the Commission in January. There is already a track record of joint events, such as the international roundtable on 1 February where the EU promoted its proposal for an international agreement on energy efficiency. The EU-Japan Business Dialogue Round Table (BDRT) has made energy one of its priorities for its annual meeting on 4 June.

The government side is responding: in January, the EU-Japan industrial policy dialogue made energy one of its four top agenda points. Regular expert talks on energy will be launched between our Directorate General Transport and Energy (DG TREN) and the Ministry of Economy, Trade and Industry (METI) Agency for Natural Resources and Energy (ANRE), starting in April.

Japan and the EU think along the same lines on many of the issues involved, for example on energy performance labeling and

minimum performance standards for internationally traded goods. We could usefully pool resources in international bodies to influence nations less inclined to make energy a priority.

EU-China: The EU and China have been cooperating for many years on energy issues, with a regular dialogue at a technical level and a joint energy industry conference every two years. In addition, we agreed a joint declaration on climate change at the 2005 Summit and have signed a Memorandum of Understanding on the development of near-zero emissions power generation technology through carbon dioxide capture and storage. The Council of Ministers also devoted a detailed paragraph to energy security and climate change in its conclusions of December 2006 on the EU-China Strategic Partnership. Collaboration should be intensified accordingly with a view to creating a stable, secure, efficient and clean energy environment, and to promoting open and competitive energy markets, in particular, speeding up cooperation on near zero-emissions coal technology.

An EU-China Energy Environment Program worth 42 million (2004 to 2008) is under way on a 50/50 co-financing basis. Under the FP7 nonnuclear energy research worth 2.3 billion is open to cooperation with China—these are just examples, indicative for the order of magnitude that we are speaking about.

Japan-China: While China and Japan are competing for energy resources around the globe they have also started a dialogue on energy saving in May 2006, aiming to enhance the two countries' cooperation on energy efficiency and environment protection.

Regional

Northeast Asia: Energy plays a major role already in most of the regional cooperation/integration structures such as ASEAN, ARF, ASEM, etc.

The most recent major initiative may be the Cebu Declaration on East Asian Energy Security of December 2006. On this occasion, the Government of Japan proposed a cooperation package with four main objectives: energy efficiency and conservation; promotion of bio-mass energy; clean use of coal; financial assistance (Japan will provide \$ 2 billion energy-related ODA in the next three years. The Cebu Declaration sets common goals and calls for measures but without setting concrete measurable targets. The EU will clearly follow further developments very closely.

In ASEM, Vietnam and others have recently proposed to hold the first ASEM Forum on Energy Security Policy later this year, with a view to exchange policy advice between the more advanced members like the EU and Japan and the other members.

Energy cooperation may be hampered by factors like territorial disputes with underlying economic interests (e.g. Japan-Russia Northern Territories: natural resources under the sea?). However, the nuclear weapons ambitions of North Korea may turn out to be triggering more energy cooperation, at least between Japan, China, and Korea, but possibly also including Russia and the US: under the relaunched Six-Party-Talks an Economic and Energy Working Group will be created. It would of course in the first place deal with the energy situation in North Korea, but if it were to become permanent, energy policy might over time be on its agenda in more general terms.

Multilateral

In the G8, we can see permanent high attention given to energy, at least since the Gleneagles Declaration and Action Plan, through the Statement on global energy security at St. Petersburg last year, to Heiligendamm this year and probably onwards to the Japanese chairmanship in 2008. Energy will continue to be very high on the G8 agenda for some time to come.

A common framework for demand/supplier relationship and for transit countries are laid down in the Energy Charter Treaty and the related transit protocol, the EU and Japan have ratified. Ambassador Kawamura, who is here with us today, has taken over the chairmanship of the Energy Charter Conference. China and South Korea are observers to the ECT. Some other key players have not ratified, like Russia because of the Transit Protocol, and all parties are interested that Russia in particular abides by those principles.

Conclusions

For summing up the main thoughts that I have tried to sketch out:

The three partners have a common challenge in the energy field, and a shared overall responsibility for sustainable development at global scale.

More particularly, we have many common stakes in terms of being energy importers. Thus, we have common needs, but at different levels, in terms of close cooperation with energy suppliers. We also share the pressure to improve energy efficiency and savings, and to develop new and renewable energy resources.

On the short-term, however, the risk is that differences may prevail. It is true that we are all energy consumers, but with very different characteristics: Japan, EU being fully developed and highly import-independent economies, China being subject to the driving factors and temptations of a quickly growing economy.

I can see two major dangers for constructive cooperation and short-term progress: industrial policy and competitiveness considerations; and national security and power politics.

A very diverse “energy diplomacy” is under way, with no shortage of forums and at different levels. As I said in the beginning, we must hope for these processes to convince all players that energy must not be considered as a zero-sum game, and hence what counts are the accumulated chances for addressing the future. It has to remain everybody’s own guess whether we can fully rely on that happening automatically.

To that end we need to use every possible way to make progress through ever more intensive international cooperation.

In the process, one key element to ensuring that energy insecurity does not fuel political or geo-strategic competition is that market based mechanisms should be allowed to play a role in global energy markets.

Competition should be allowed to play its role to achieve energy savings and efficiency: separation of energy production from energy transport and distribution to help avoid rent-seeking vertical integration; regionally integrated energy markets like the EU or the concept of the European Energy Community to create economies of scale and to help avoid energy shortages.

I hope that this—necessarily very broad—brush has helped to set the stage for today’s discussions, including concrete information and leading to better insights into our chances for success.

East Asian Cooperation and Security Strategy

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Introduction

Security impact of the rise of asymmetrical threats has posed multi-faceted dimensions of risks and opportunities in Asia. Aaron Friedberg once argued that East Asia is “ripe for rivalry” and a place likely to emerge as the “cockpit of great-power conflict.”¹ Pre-September 11 regional security environment had certainly been shaped by geo-strategic factors as if Friedberg’s contention were likely to be sustained: lingering North Korean nuclear and missile developments, Taiwan Straits’ tensions with the rise of China and the prospects for Sino–U.S. rivalry, India-Pakistan nuclear rivalry and tensions over Kashmir, and the political fallout of the economic crisis and weak governance in Southeast Asia.² While these instabilities in the region still reside as major security concerns of today, the rise of transnational terrorism after the September 11 ushered the new dimension in Asian Security. While terrorism was neither a new security threat nor a particularly new phenomenon to Asia, impacts of the rise of the “transnational” nature of terrorism with having the “connectivity” to the global network of terror have ranked it as a core security concern for policy makers in Asia.

The rise of the transnational terror has not only added the new chapter in their security perception, but also demanded their old chapters to be revised. In other words, the traditional threats are reloaded. The advent of terrorists or terrorist organizations as core threats in international security has also impacted upon the traditional threats in Asia, when foreseeing the potential “connectivity” between

¹ Aaron Friedberg, “Ripe for Rivalry: Prospects for Peace in a Multipolar Asia,” *International Security*, Vol. 18, No. 3 (Winter), 1993.

² Amitav Acharya, “Terrorism and Security in Asia: Redefining Regional Order?” Working Paper No. 113, Asia Research Center, Murdoch University. October 2004.

two. For example, North Korean nuclear, chemical and biological capabilities need to be reassessed with the increased risks of proliferation to those asymmetrical actors. When these traditional geostrategic risks are connected with “transnational” actors, the nature of threats will have a global impact. The world has become more flat (Thomas Friedman), by the emergence of new threats and by “reloaded” threats in Asia.³ This is where Europe and Asia need to work together.

In the wake of the September 11 terrorist attacks in 2001, the necessity for antiterrorism cooperation created an incentive for a broader multilateral security cooperative framework in the Asia-Pacific region. There are also other types of multinational security cooperation emerging in East Asia that are not necessarily based on geographical groupings but on common security concerns and the necessity to combine capabilities among the countries to address them. They have often led to the formation of a “regional security complex” or new forms of the “coalition of the willing.”⁴ In particular, such “function (or capability)-based” security cooperation frameworks quickly emerged particularly in the area of counterterrorism cooperation after the September 11 terrorist attacks. These multidimensional developments indicate that security cooperation in East Asia is far more complex today than a traditional bilateral/multilateral nexus model.

Bilaterally-Networked Multilateral Security: “Web-Networks” of U.S.-Led Cooperation

When discussing a multilateral approach, there should be a distinction between two types of multilateral security for analytical purposes. One is multilateral security cooperation based on a network of preexisting bilateral relations (expanded bilateralism), the other is multilateral security cooperation in a genuinely multilateral setting (enhanced multilateralism).⁵

³ Thomas L. Friedman, *The World is Flat: A Brief History of the Twenty-first Century*, Updated and Expanded, Straus and Giroux, 2006.

⁴ Morgan, Patrick M. “Regional Security Complexes and Regional Orders,” in David Lake and Patrick M. Morgan eds., *Regional Orders: Building Security in a New World*, The Pennsylvania State University Press, Pennsylvania, 1997, 20–42.

⁵ Brian L. Job, “Multilateralism in the Asia-Pacific Region,” in William Tow,

Multilateral Military Exercises

“Expanded bilateralism” is one of the emerging features of multilateral security in the Asia–Pacific region. The concept is based on the belief that the bilateralism would be the best form of cooperation, but it could also serve as a base for multilateral cooperation.⁶ In the United States, the primary driver of expanded bilateralism has been the U.S. Pacific Command (PACOM), which has been advocating the creation of a “security community” based on “enriched bilateralism.”⁷ Admiral Dennis Blair, former PACOM commander, argues that it is essential for the Asia–Pacific region to develop a multilateral approach to the region’s common security challenges. He believes that the most effective method is to develop policy coordination mechanisms, including combined military cooperation, whether it may be to respond to a particular issue or to address a series of related security issues. For that purpose, he suggests that the U.S. military, in conjunction with its allies and partners in the region, should undertake to enhance regional readiness for combined operations.

Evolution in the PACOM-led multilateral military exercises provides a good example of how to develop expanded bilateralism. For instance, PACOM held a multinational joint exercise *Team Challenge* (TC-01) between April and May in 2001. This came about as a result of combining *Cobra Gold* (bilateral military exercise between the United States and Thailand) with two other existing U.S. bilateral military exercises—*Tandem Thrust* with Australia and *Balikatan* with the Philippines—based on the concept outlined above. The United States, Thailand, Australia, the Philippines and Singapore participated in this umbrella exercise while twenty-two countries sent observers. The purpose of linking existing exercises under TC-01 was to improve readiness and interoperability, and to increase security cooperation within the Asia–Pacific region. A multilateral cooperative framework such as TC-01 can compliment the existing bilateral relationships

Russel Trood and Toshiya Hoshino eds., *Bilateralism in a Multilateral Era: The Future of the San Francisco Alliance System in the Asia–Pacific*, The Japan Institute of International Affairs, 1997.

⁶ Ruggie, John Gerald. “Multilateralism: The Anatomy of an Institution,” in John Gerald Ruggie ed., *Multilateralism Matters: The Theory and Practices of an Institutional Form*, New York: Columbia University Press, 1993.

⁷ Blair, Dennis C. and John T. Hanley Jr., “From Wheel to Webs: Reconstructing Asia-Pacific Security Arrangements,” *The Washington Quarterly*, vol. 24, no. 1, Winter 2001. 7–17.

throughout the region, and provides additional training and engagement opportunities. TC-01 also set an ambitious two-phase plan for the future development, including the creation of the Combined Joint Task Force (CJTF) for maritime, air and army forces among participating countries.

The focus of PACOM-led military exercises has shifted toward counterterrorism operations especially after the September 11 terrorist attacks in 2001. Increased commitment by the U.S. military to provide security assistance to the countries in the region labeled as the “second front in the global war on terror” are particularly underscored. For instance, the primary focus of the operations in the multinational exercise *Balitakan* in 2002 was virtually the “search and hunt” of the antigovernmental group Abu Sayaff, which is suspected to have strong links with Al-Qaeda. The future premise of *Team Challenge* is yet to be given, but these are examples that demonstrate the growing potential for the web of U.S.-led military cooperation to evolve into a solid foundation for multilateral security cooperation.

Counter-Proliferation Operations: The Proliferation Security Initiative

The concept of the Proliferation Security Initiative (PSI) first appeared in the Bush Administration’s National Strategy to Combat Weapons of Mass Destruction, released in December 2002. Under the PSI concept, interdiction is listed first among various counter proliferation measures which, in turn, were given prominence over more traditional nonproliferation efforts.⁸

After President Bush formally announced the launch of the PSI in May 2003, following the meetings in Madrid (12 June), Brisbane (9–10 July), and Paris (4 September), all of which took place in 2003, the core participants developed the principles for the PSI, which culminated in the Paris Agreement in September 2003. The membership of the PSI currently comprises eleven nations: Australia, France, Germany, Italy, Japan, the Netherlands, Poland, Portugal, Spain, the United Kingdom, and the United States. The PSI aims at:

⁸ U.S. White House. *National Strategy to Combat Weapons of Mass Destruction*, 11 December 2002.

<http://www.whitehouse.gov/news/releases/2002/12/WMDStrategy.pdf>;

The Institute of International Strategic Studies (IISS), “The Proliferation Security Initiative: An interdiction strategy,” *Strategic Comments*, Vol. 9, Issue 6, August 2003.

- Pre-emptive interdiction, including detaining and searching ships and aircraft as soon as they enter territorial waters or national airspace of a PSI member;
- Denial of suspicious aircraft overflying rights;
- Grounding of planes when they stop to refuel in member countries or in states willing to cooperate on a case-by-case basis; and
- Boarding and searching ships registered in a PSI member nation or operating under a ‘flag of convenience’ of another state prepared to authorize an interdiction in a particular instance.

The White House emphasized that the PSI “reinforces, not replaces” existing nonproliferation regimes to curb the spread of WMD, ballistic missiles and related technology to “state and nonstate actors of proliferation concern.”⁹

From 13 to 15 September 2003, a multinational exercise *Pacific Protector* took place in the Coral Sea. Led by Australia, the exercise focused on the interdiction of WMD and related materials, with the goal of enhancing the collective capabilities among the participants to cooperate in actual sea, air and ground interdiction operations. As part of *Pacific Protector*, France provided military assets. Japan offered its Coast Guard and law enforcement capabilities. Australia and the United States provided military equipment.¹⁰ Other PSI participating nations joined the exercise as observers. *Pacific Protector* sought to “improve the modalities, the processes, the standard operating procedures, the intelligence exchanges—all those things that allow us to think and react and act more quickly because often when you get actionable intelligence, you have to move quickly.”¹¹ It was also hoped to serve as a confidence-building measure for the PSI countries to be able to work together collectively.

Team Samurai 2004, the twelfth PSI training exercise, was hosted by Japan in October 2004. Japan was hailed as the first Asian nation to take the lead in weapons of mass destruction deterrence. The United States, Japan, Australia, and France participated in the exercise, while other countries including Cambodia, Canada,

⁹ U.S. White House, “White House Statement, Fact Sheet on Proliferation Security,” 5 September 2003.

<http://usinfo.state.gov/xarchives/display.html?p=washfile-english&y=2003>.

¹⁰ U.S. Department of State, “Pacific Exercise Stimulates on Interdiction on the High Seas,” Washington File, 12 September 2003.

¹¹ *Ibid.*

Germany, Greece, Italy, the Netherlands, New Zealand, Norway, the Philippines, Poland, Portugal, Russia, Singapore, Spain, Sweden, Thailand, Turkey, and the United Kingdom sent observers. Most recently, Singapore led a maritime and ground interdiction exercise *Deep Saber* that took place in the South China Sea in August 2005.

Counter-Terrorist Cooperation

As the United States continues to propel multinational security cooperation based on the existing bilateral relations between the United States and the countries in the Asia-Pacific region, some existing multinational cooperative frameworks in the region began to promote cooperation in common security concerns among the countries in the region. Emergence of antiterrorism cooperation within these multinational frameworks is a prime example that demonstrates how a common security concern can be a vehicle for regional security cooperation.

For instance, ASEAN has brought terrorism to the center stage of the security dialogue among the member states. In November 2001, ASEAN adopted the Declaration on Joint Actions to Counter Terrorism, which included practical measures to “review and strengthen ...[a] national mechanism to combat terrorism” and to establish “regional capacity building programs to enhance existing capabilities of ASEAN members countries to investigate, detect, monitor, and report on terrorist acts.”¹² Measures taken by the ASEAN to combat terrorism also include cooperation among law enforcement agencies and exchange of information and intelligence on terrorist organizations, their movement and funding. Following the adoption of the Declaration on Joint Actions to Counter Terrorism, the Special ASEAN Ministers’ Meeting for Transnational Crime (AMMTC) in Malaysia in May 2002 adopted a joint communiqué that envisaged the establishment of national focal points for information exchange and the sharing of technical expertise and best practices through training workshops.¹³

¹² Association of Southeast Asian Nations (ASEAN), *Declaration On Joint Action To Counter Terrorism*, 5 November 2001. <http://www.aseansec.org/3638.htm>.

¹³ ASEAN, *Joint Communiqué of the Special ASEAN Ministerial Meeting on Terrorism*, May 2002. www.aseansec.org/5618.htm.

The ARF has also responded to the emerging threat of international terrorism. The ARF first adopted the Statement on Measures against Terrorist Financing in July 2003, expressing the members' commitment to freeze terrorist assets, exchange information, conduct outreach activities, and provide technical assistance "in developing and implementing necessary laws, regulations and policies to combat terrorist financing and money laundering."¹⁴ Shortly after the adoption of the statement, the ARF launched the Intersessional Meeting on Counter-Terrorism and Transnational Crime (ISM on CT-TC). At its first meeting in May 2003, the ISM on CT-TC proposed that the ARF adopt a statement on border security.¹⁵ This proposal was accepted at the ARF ministerial meeting in June 2003, and the ARF issued the Statement on Cooperative Counter-Terrorist Actions on Border Security.¹⁶ Furthermore, the ARF issued the Statement on Strengthening Transport Security against International Terrorism at its ministerial meeting in July 2004. It was agreed that the implementation of the statement would be reviewed every year.¹⁷

In addition, the Asia-Pacific Economic Cooperation (APEC), which originally began as a forum for dialogue on economic issues, responded to the developments in the aftermath of the September 11 terrorism attacks in 2001: it has taken up international terrorism as part of its agenda since 2001. For example, at the 2002 APEC Summit, the leaders announced the Los Cabos Statement on Fighting Terrorism and Promoting Growth. In this statement, APEC leaders declared their commitment to block the financing of terrorist organizations, promote cyber security, and cooperate in capacity building.¹⁸ This statement led to the establishment of the Counter-Terrorism Task Force (CTTF) in February 2003, which, since its creation, has

¹⁴ ASEAN Regional Forum (ARF) *Statement on Measures Against Terrorist Financing*, 30 July 2002. <http://www.aseansec.org/12004.htm>.

¹⁵ ARF Inter-Sessional Meeting on Counter Terrorism and Transnational Crime (ISM on CT-TC), *Report of the ARF Inter-sessional Meeting on Counter-Terrorism and Transnational Crime (ISM CT-TC)*, March 2003. <http://www.aseansec.org/15134.htm>.

¹⁶ ARF, *Statement of Cooperative Counter Terrorist Action on Border Security*, June 2003. <http://www.aseansec.org/14836.htm>.

¹⁷ ARF, *Statement on Strengthening Transport Security against International Terrorism*, 2 July 2004. <http://www.aseansec.org/16250.htm>.

¹⁸ Asia-Pacific Economic Cooperation (APEC), *Leaders' Statement on Fighting Terrorism and Promoting Growth*, 26 October 2002. http://www.apecsec.org.sg/apec/leaders_declarations/2002/statement_on_fighting.html.

held three meetings, most recently in Vietnam in September 2006. The statement also led to the adoption of the APEC Counter-Terrorism Action Plans (CTAP) that set clear benchmarks for APEC member states to acquire key capacity to counter the threat of terrorism in the areas such as cargo security, cyber security, energy security, and measures to halt the financing of terrorism.¹⁹

Counter-terrorism cooperation, however, has had a mixed impact on China's agenda within the Shanghai Cooperation Organization (SCO). On the one hand, the war on terror has certainly provided significant opportunities for confidence-building between the United States and China. On the other hand, the ascendance of terrorism as a major security concern has also resulted in drawing greater international attention to the status of minorities in China, or the movements of domestically violent groups such as the Falun Gong. China's engagement in Central Asia has also developed with institutionalization of the SCO, with counter-terrorism occupying its central agenda.

“Coalition of the Willing”: New Forms of Multinational Security Cooperation

In recent years, security cooperation has been increasingly pursued in the existing multinational frameworks such as the ASEAN+3, Shanghai Cooperation Organization (SCO), ASEAN Regional Forum (ARF), Asia-Pacific Economic Cooperation (APEC), and other bilateral and multilateral security cooperation aside from above institutions. The premise of multilateral security by multilateralism such as the ARF is based on inclusiveness and equality among the member states, where countries in the region are free to participate in the forum. The membership of the regime is based on the countries' geographical location, not on the nature of their governments, or their policy toward specific issues. In these institutions, engagement is the core principle. As such, the ARF, for instance, has successfully engaged enlarged ASEAN with China, Russia, India, and North Korea.

What we have been witnessing in the aftermath of the September 11 terrorist attacks in 2001 is the emergence of the notion

¹⁹ APEC, *Counter-Terrorism Action Plans*.

of a “coalition of willing” in the Asia–Pacific region as a form of multinational security cooperation. Multilateral security cooperation that takes place under this concept does not necessarily adhere to the unequivocal inclusive nature offered by the existing multinational institutions in the region. The framework for cooperation is made up by the capable and willing countries. Most of the existing coalitions have principles of open membership and do not exclude future participation by nonmembers. But the tacit understanding among the members of the “coalition of the willing” is that they do not want the countries that are reluctant to accept the norms that are shared within the coalition. That sometimes effectively leads to the politics of exclusion.²⁰

The primary benefit of the “coalition of the willing” is that they can foster security cooperation with like-minded states to ensure closer cooperation. It could be even regarded as an alternative to the existing multinational institutions that are based on the inclusiveness and the geographical location such as the ARF, as they usually cannot respond to dynamic developments for security cooperation because of their consensus-based nature. Instead, the “coalition of the willing” can launch higher levels of cooperation without interference by dissenting voices. Nonmembers can be invited to participate after the coalition members have agreed on the agenda. This model provides new opportunities for security cooperation in the Asia–Pacific region, as well as a breakthrough for enhancing meaningful measures to be materialized.

In summary, we have been witnessing an emergence of multifaceted security cooperation in the Asia-Pacific region since 2001. The inter-relations among various cooperative frameworks can be organized in the chart below (Table 1).

²⁰ I owe this argument to Michael Wesley, “The Politics of Exclusion: Australia, Turkey and Definitions of Regionalism,” *The Pacific Review*, Vol. 10, No. 4, 1997.

forward-deployment strategy, as articulated by the “Quadrennial Defense Review” (QDR), stresses the importance of the U.S.–Japan alliance to play a more global role. In the context of the Asia–Pacific region, it also underscores the importance of gaining military access points in Southeast Asia.²¹ This concept may push Japan to support the U.S.–Japan alliance in a wider geographical context beyond North-east Asia to include Southeast Asia. Finally, the notion of “strategic convergence” (convergence of various security cooperative frameworks) would allow Japan to maintain its policy priorities toward Asia–Pacific security—to maintain the strong alliance and to expand the multilateral cooperation. Thus, Japan has a strong reason to be in favor of bridging the alliance and the concepts of multinational security cooperation.

Japan has adopted the “National Defense Program Guideline” (NDPG) in December 2004. The NDPG has outlined the two main objectives of Japanese security policy as (a) prevent any threat from reaching Japan, and (b) improve the international security environment. It further argued that Japan would attempt to achieve these goals by utilizing three approaches: (a) Japan’s own efforts; (b) cooperation with alliance partners; and (c) cooperation with the international community.²²

It is important that the concept of “international contribution” that was put forth in the 1995 “National Defense Program Outline” (NDPO) was replaced by “improving international security environment” through “systematic collaboration of the security-related measures” in the 2004 NDPG. In fact, one of the most significant undertakings of the 2004 NDPG was that it positioned the improvement of international security environment as one of the two core objectives of Japanese defense policy. This means that Japan will from now on regard global security issues including transnational threats as the factor that has potential impact on Japan’s national security. It should also be noted that the 2004 NDPG pays particular attention to “new threats and various situations” (i.e., terrorism and

²¹ U.S. Department of Defense, *2001 Quadrennial Defense Review*, 30 September 2001. <http://www.defenselink.mil/pubs/qdr2001.pdf>; and *2006 Quadrennial Defense Review*, 2 February 2006.

<http://www.defenselink.mil/pubs/pdfs/QDR20060203.pdf>.

²² Japan Defense Agency, *National Defense Program Guideline for FY 2005r*, 10 December 2004.

http://www.mod.go.jp/e/policy/f_work/taikou05/fy20050101.pdf.

proliferation of weapons of mass destruction) as the threats that Japan will have to focus in the current global security environment.²³

Furthermore, the 2004 NDPG upgrades the importance of SDF participation in international operations and granted an equal importance with the defense of Japan and the maintenance of the U.S.–Japan alliance, which have been the SDF’s primary duty since its establishment. It also called for Japan to have a defense capability that is “multi-functional, flexible, and effective ... with high level of readiness, mobility, and adaptability and intelligence capabilities compared to global military technological level.”²⁴ This reasoning would allow Japan to be more actively engaged in global security affairs, and it could enable the SDF to play a more proactive role in regional security, while improving the connectivity between national defense and regional security affairs (Table 2).

Table 2 Geographical/Functional Focus of NDPG

Geographical / Functional Focus of NDPG				
	Global	Regional	Bilateral	National
T H R E A T	International terrorism			Guerrilla and special operation units attack
		North Korea		Invasion against outlying islands
		China		
		Far Eastern Russia		Ballistic Missile Attack
	WMD•Missile Proliferation			
P O L I C Y	Region across Middle East to East Asia			
	Japan-US Security Cooperation			Joint Operation Capability
	Strategic ODA			Intelligence Capability
	UN Reform	ARF (CBM, PD)		
	International Peace Operation			
S Y S T E M	PKO Law	Japan-US Defense Cooperation Guideline		JDF Law
	Anti-Terrorism Special Measures Law		Japan-US Security Treaty	Emergency Law
	Iraq Special Measures Law	Law on Situations in the Areas Surrounding Japan		National Protection Law

²³ *Ibid.*

²⁴ *Ibid.*

Based on the policy priorities outlined in the 2004 NDPG, it is reasonable to conclude that Japan will likely become an active player in the process of security community building in East Asia. However, Japan's security policy, related legal framework and institutions are still divided into three separate categories of national, bilateral, and global, with the only institutional and policy framework that can transcend these categories being is the cooperation taken within the framework of the U.S.–Japan alliance. This makes the management of the U.S.–Japan alliance even more important for Japan in the coming years.

However, given the multi-faceted nature of multinational security cooperation in the Asia-Pacific region, it is desirable for Japan to enhance its ability to respond to evolving situations flexibly and in a timely manner. If the Asia–Pacific region fails to bridge the gap between global, regional, and bilateral security cooperative frameworks, it could recede into “stagnant regionalism.” Should the region successfully develop a regional architecture that will enhance regional security, foster regional economic growth, and promote the global values of democracy and the human rights, it can lead to the establishment of a regional community that will have better relations with the United States in the future. Japan will be well advised to take the initiative in setting higher goals for such a regional framework in order to bridge the gap that currently exists among global, regional, and bilateral cooperative frameworks to address regional security as well as nonsecurity concerns.

Toward Energy Security: Options for Resource Cooperation

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Today I would like to address what we think at the International Energy Agency (IEA) are the key challenges to energy security. These are not about a lack of resources, they are about our ability to invest in energy infrastructure and bring those resources to the markets. The IEA emergency response system is probably the most effective tool for cooperation among energy consuming countries in the view of a serious oil supply disruption. But today energy security is not only about oil—it's also about gas and electricity. And it's crucially about our ability to use those energy resources in a sustainable manner.

IEA World Energy Outlook 2006

In the World Energy Outlook 2006 Reference Scenario (RS), we project global primary energy demand to increase by 53% by 2030. Fossil fuels will still account for 83% of the increase. Oil will remain single largest fuel in the global primary energy mix. Demand for gas grows at the fastest rate of any fossil fuel at 2% per year. But coal stays the world's second-largest energy source in 2030. With sufficient investment and improving extraction technologies, the world's energy resources are adequate well into the century

The world's remaining economically-exploitable fossil fuel and uranium resources are adequate to meet the projected increases in demand, but this hinges on the adequacy of investment in production and transportation capacity. A long-term oil price of \$30–35 bbl (current “hurdle rate” in the industry) would have a large impact on reserve levels—we are clearly not running out of oil just yet. Similarly, identified conventional uranium resources are sufficient for several decades of operation. Exploitation of more geologically uncertain

“undiscovered” resources could provide uranium supplies for several hundred years. The oil is there, but is the investment available to find it, produce it and then refine it?

World Energy Outlook RS projections call for cumulative investment in energy-supply infrastructure of just over \$20 trillion (in year-2005 dollars) over 2005 to 2030. That is \$3 trillion higher than in WEO-2005 (due to recent sharp increases in unit capital costs, especially in the oil and gas industry). Just over half of total investment will go simply to maintain the current level of supply capacity, the rest to meeting demand growth. Split by sector, the investment requirements are:

- Power sector: more than \$11 trillion of investment
- Oil investment: \$4.3 trillion, or just over 1/5 of total
- Gas investment: \$3.9 trillion, or 19% (56% in upstream)
- Coal investment: \$560 billion, or 3% of total energy investment (supplying coal is much less capital-intensive than oil or gas)

More than half of all the energy investment needed worldwide is in developing countries, where demand and production increase most quickly. China alone needs to invest about 18% of the world total. Russia and other transition economies account for 9% of total world investment. OECD countries for the remaining 37%.

Investment Risks “Above Ground”

Oil production continues, however, to be dominated by a small number of major National Oil Companies in those countries where oil resources are concentrated—mainly in Middle East and North Africa (MENA). The same situation exists for gas, with MENA accounting for the bulk of the growth in global gas production. As a result of the lack of access by investor-owned oil companies to the world’s “cheapest” oil (or gas) reserves, they are increasingly forced to pursue opportunities in costlier and more technologically challenging fields. We therefore see “above ground” risks—resource nationalism, fiscal and regulatory changes and uncertainty, sector consolidation, transport infrastructure availability, manpower drilling and equipment

shortages, etc.—exceeding “below ground” risks. Political risks are ever present and threatening the physical availability of energy supplies. Particularly relevant for the Asia-Pacific region is:

Russia: As Asian countries contemplate to build up new pipelines from Russia to Asia, they should pay attention to what is happening in Europe before integrating those new projects in their energy systems. This is especially relevant for Sakhalin pipelines. Russia now faces a steep rise in gas production costs in order to open fields in deeper strata in the Arctic and East Siberia to compensate for the depletion at current fields. However, much of Gazprom’s capital budget has been directed to foreign acquisitions or new export infrastructure, and not upstream, while independent (non-Gazprom) gas producers have not been able to fully tap huge potential for efficiency gains from more competition in Russia’s upstream gas sector.

North Korea and regional energy cooperation on the Korean Peninsula: In particular, the key challenge will be how to deal with any eventual collapse of the current North Korean regime. We are ignorant of the North Korean energy sector, and we should be prepared to face the eventuality of having to turn the lights on and heat the country if the system completely fails. Ultimately, a massive migration could occur, which will be much more difficult to deal with.

Indonesia: Regarding gas, the IEA Asia-Pacific region is strongly reliant on imports from non-OECD countries. Japanese and Korean reliance on gas imports will remain almost total given their lack of reserves—Korean total proven gas reserves are equivalent to a fifth of one years consumption, although Australia will increase LNG exports (including to U.S. West Coast markets) the situation in Indonesia, with the biggest natural gas (also oil and coal) production in the region is uncertain. In 2005 Indonesia supplied almost half the gas used in Korea and Japan. However, in 2006, the country only exported at 80% of capacity. A poor investment environment, coupled with increasing domestic demand for gas to replace oil product imports and as a feed-stock (especially for the fertilizer industry) has significantly restricted Indonesia’s LNG export capacity and its reputation as a reliable supplier. The natural gas demand-supply mismatch in this important country for the region does not either have an “Asian solution”: it is more about good governance and institution building.

Maritime transportation: Around 85% of total MENA oil exports were shipped along at least one of three export routes: Hormuz, Malacca, Suez Canal and Sumed Pipeline. Much of the additional oil and LNG that will be exported in the future can be expected to be shipped along these three maritime routes.

Five-Steps Program to Improved Energy Security— The IEA “Safety Net”

Today, energy security does not mean “independence” or “self-sufficiency.” Such concepts are irrelevant for most energy consuming regions or countries, which may import 50, 70, or 90 percent of their energy. If these imported commodities are secure, such dependence is not necessarily a problem. What means energy security is reliable, clean, affordable energy. The challenge, however, is how to make energy supplies more secure, namely through:

1. Increased capacity (across the energy sector), which is linked to greater investment in oil and gas producing countries, as well as in power generation capacity in consuming countries;
2. Greater efficiency (produce more energy services with less energy), to reduce demand and increase capacity while keeping gross domestic product (GDP) constant;
3. Diversity of fuel types, sources of energy, and transportation links; and
4. Transparency to help the market work.
5. But energy security needs a safety net. In a period of crisis, however, the above mentioned may not be sufficient. Ultimately, energy security must also include a safety net. In the case of oil, the safety net is the IEA emergency response system.

Moreover, energy markets have become global and highly sophisticated, and so have to be our responses to today’s global challenges to energy security. With today’s integrating markets there is no regional solution. A crisis anywhere can become a crisis everywhere. Cases in point in 2005 are the hurricanes that hit the coast of the U.S.; in 2006 the Ukrainian gas dispute; and this year, the Druzhba pipeline cut-off.

The IEA today has 26 member countries (will soon be 28), but has grown over the years. New members strengthen the IEA's oil security potential and emergency response measures. Poland and the Slovak Republic are IEA candidate countries and future members of the IEA. But the IEA's work on oil security is not constrained by its IEA boundaries. The IEA has been cooperating with India, China and ASEAN countries to promote sound market oriented energy policies and help them establish oil security response measures and mechanisms. This is extremely important if the IEA is to remain effective. In a global market it must work ever closer with these major countries.

Concern about energy security was the driver behind the creation of the IEA in 1974 and it still is. To deal with oil supply disruptions IEA member countries have developed a sophisticated system:

- Net importing member countries have an obligation to hold oil stocks equivalent to 90 days of net imports
- Emergency response measures: strategic stocks, demand restraint, fuel-switching, increased domestic production and
- Procedures to implement a collective action in a supply crisis

In the case of oil, the safety net is the IEA emergency system that holds in strategic stocks at least 90 days of net imports for each IEA member country:

- 4 billion barrels are available in case of emergency
- 1.5 billion barrels are directly in the hands of governments or state-owned agencies

That is enough oil to replace an oil supply disruption of 2 mb/d for nearly 2 years. This preparedness proved its effectiveness in the later part of 2005 after hurricanes Katrina and Rita knocked-out much of the production and refining capacity in the Gulf of Mexico.

The IEA's IEP also provides for:

- To have ready programs of demand restraint measures equal to 7% and 10% of national oil consumption;
- To surge indigenous production—which Canada did during the IEA emergency response to hurricanes Katrina and Rita in 2005

Both mechanisms were used in our response to 2005 hurricanes. From this experience we could draw some important conclusions: First, oil Security is a public good, which left to the market typically will be under-provided and therefore governments have an important role to play here. Second, as I already mentioned, regional disruptions can have a global impact. Global oil security requires dialogue and information sharing amongst all major global stakeholders. No regional system could effectively respond to a global shortfall. An “Asian” emergency response would be only effective in the face of local phenomena like e.g. a typhoon or an industrial accident (like the one that took place last year in Japan or a loss of nuclear capacity). But regional responses can contain regional problems.

Cooperation with China and India on Emergency Policy is a Key

In the decades ahead, as the world confronts rising oil-import dependence, we will have to further increase our response mechanisms, and find new ways to work with other large consuming nations like China and India. In the coming decades, the net imports of China and India combined will reach a level of about 50% of the net imports of the OECD as a whole. So our impact on the market when using emergency measures would increase substantially if China and India would also have strategic stocks and were willing to coordinate with the IEA.

The plans for building up new stocks are progressing smoothly in China. China announced that they will build their SPR in three phases. The target level for phase 1 is 102 million barrel (mb). The construction work for phase 1 is on schedule and partly finished. Some reports say that actual filing has already started, but that is hard to verify. Phase 2 and 3 should be carried out to achieve the oil stock level of around 90 days of net import, which may take another 15 to 20 years. For phases 2 and 3, underground storage technologies are under consideration, as these technologies are more cost efficient.

India is moving more slowly. The Indian Government decided in 2004 to create 35 mb of strategic stocks. This was projected to be equivalent to about 15 days import cover. The decision further included the intention to increase those stock holdings to just over

100 mb (equivalent to 45 days) at a later stage. Though the sites have been identified in 2004, the Indian government spent considerable time to discuss and decide about funding and legal issues as well as obtain statutory clearances for the designated locations. A renewed commitment to the strategic stocks was made by the Government in late 2005. India's first integrated Energy Policy, issued in September 2006, not only explicitly welcomes the Government's decision but even encourages it aim at compliance with IEA standards of 90 days of imports equivalent. However, the originally envisaged schedule of having completed physical construction by end of 2008 had to be revised. Construction of storage facilities is now expected to commence in 3/2007 and to last for about four years while filling of reserves would take place of another three years.

Please note that as net imports for both countries are rising quickly, any reference to days of imports means a moving target. If our estimates for net imports in 2030 are correct, a cover of 90 days would mean an SPR for China of 1 billion barrels and for India over 400 million barrels. In total this is as much as the IEA has today on public stocks!

"Cooperation" on strategic oil stocks within the framework of the IEA received recently the back of the energy ministers of China, India, Japan, Korea, and the U.S. in its recent meeting held in Beijing in December last year as it is reflected in the final joint statement of the Five-Party Ministerial meeting. At this meeting Zhang Guobao stated that Chinese strategic stocks/reserves would only be used in the case of major supply emergencies, which is critical to enhancing global emergency response capabilities.

Despite progress made, neither of these countries is yet ready to "coordinate" their emergency systems with the IEA, as they are still in the process of building up their national strategic oil stocks. A formal commitment with the IEA release of stocks mechanism is envisaged in the longer term, being a key point of the overall IEA's outreach strategy. The IEA recognizes the sovereign nature of a nation's response to an emergency situation, and, consequently, "coordination" of these countries emergency response with the IEA is not realistic at this time. However, through the exchange of information and advice on "next steps," we hope to encourage a growing interest in "harmonization" with IEA crisis response.

Biggest Dimension of Investment Challenge—Gas and Electricity

The energy security problem is not confined to the oil markets. Last year Russia's decision to turn off gas supplies to Ukraine resulting in a shortfall of deliveries to many Western European countries reminded us the need to provide for enhanced security of gas supplies. We were all exposed. And there is no similar safety net for gas as for oil, as gas stocks are a much more complicated and expensive issue. Gas stocks cost 5 to 10 times as much as oil (on an equivalent energy basis). They are useful as part of a balance of policy measures but we need to pay attention to withdrawal rates and distribution channels as gas is not as easy to move as oil.

Globalizing LNG Market will mean that more underground storage can be used in North America and Europe to service the Asian market. But current levels of investment in underground storage are not sufficient for this because this is a new effect.

Similarly, blackouts nearly everywhere remind us from time to time that considerable investment in new power generation capacity will be required during the next decade to replace aging plants and to meet increasing demand. More advanced electricity networks, technologies and systems are needed in line with growing demand for power quality and transfer. Not to mention the challenge of integrating complex and more diversified generating sources to the grids, namely large shares of renewables.

There is no lack of capital to meet all energy investment requirements, but if conditions are not right, capital has options. Competition is a powerful tool that governments should promote to give incentives for investments, but cost-reflective prices are the corner stone. And even where a company has chosen to undertake a project, the NIMBY (not-in-my-backyard) syndrome blocks or delays any energy infrastructure investment. Again, governments need to take responsibility to protect the general interest.

IEA countries are slowly coming to grips with this (the investment challenge) and beginning to build incentives into their regulatory programs. But the real challenge is to be found in the developing world: politicians treat electricity as a free good; consumers don't pay; there is no history of regulatory institutions; no energy policies exist to influence the relative prices of fuels . . . Who will invest under these circumstances?

The Unsolved Challenges: Energy Poverty and Climate Change

There are at least two reasons that our current energy path is simply not sustainable. The first one relates to energy poverty. Electrification rates will rise over the projection period, from 66% of the population of developing countries in 2002 to 78% in 2030. Despite rising electrification rates, the total number of people without electricity will fall only slightly, from 1.6 billion in 2002 to just under 1.4 billion in 2030. Two billion more people will gain access to electricity, but this will be largely offset by a rising world population. Most of the net fall of 200 million people who will lack electricity will occur after 2015. The number of people without electricity will fall in Asia, but will continue to increase in Africa, peaking at just under 600 million by the end of the 2010s. The IEA has no mandate to work on energy poverty—this is not our business. But it has undoubtedly implications for energy security.

Climate change is of course the other reason posing as well a key challenge to energy security. The need to curb the growth in fossil-energy demand and to mitigate climate-destabilizing emissions is more urgent than ever. According to WEO 2006 RS, global energy-related carbon-dioxide emissions increase by 55% between 2004 and 2030, or 1.7% per year, in the Reference Scenario. They reach 40 gigatons in 2030, an increase of 14 gigatons over the 2004 level. Global energy-related carbon-dioxide emissions increase slightly faster than primary energy use, because the fuel mix becomes more carbon-intensive (mainly due to nuclear energy share decreasing in the mix). The power sector contributes around half the increase in emissions. Developing countries account for over three quarters of the increase in global emissions. China alone accounts for 39% of the increase between 2004 and 2030, overtaking the United States as the world's biggest emitter before 2010. Other Asian countries, notably India, also contribute heavily to the increase. Still, the per capital emissions of non-OECD countries remain well below those of the OECD.

Coal remains the leading contributor to global emissions over the Outlook period. Here is another impact of policies that set the stage for price volatility: oil prices started up in 1999; since our demand elasticity is so low, there was no reaction so oil prices kept going up. Then gas prices followed in many places because of linkages to oil. The answer around the world has been more coal. In develop-

ing countries, electricity demand grows three times as fast as in the OECD, tripling by 2030. India and China see the fastest growth, at annual rates of 4.9% and 4.5% respectively over the period to 2030. In both countries, strong demand for electricity will continue to be met primarily by domestic energy resources, i.e. coal. Increase of China's coal demand in two years from 2003 to 2005 exceeds that in ten years from 1993 to 2003.

Coal's greatest challenge—the commercialization of low carbon emission technologies—demands strong leadership from governments and great commitment from industry to encourage worldwide coordinated RD&D to deliver near-zero CO₂ emissions from coal use in the longer term. For this internalizing carbon price is urgent either through a global market for CO₂ credits (rather than imperfect regional markets) or a carbon tax to be evenly adopted across the world (which seems nevertheless more difficult).

Daunting—But We Know Them

To sum up, our energy systems continue to be vulnerable because they are not robust enough. The main reason is that large consuming countries are growing more and more reliant on oil and gas imports from an ever-smaller group of often distant suppliers. The Asia Pacific region is not an exception to this exposure, in particular countries with relatively high oil-import intensity such as in the ASEAN region, China, India, Japan and Korea. For long-term sustainability and security we need both diversified energy supplies and a very sharp reduction in CO₂ emissions to mitigate global warming.

Were we are still baffled is the growing poverty and carbon gaps. Their impact is not immediately apparent to public. They are cumulative and get tougher the longer we wait. Resolving them challenges important vested interests and therefore to date political will manifest in rhetoric is not reflected in action. The IPCC Fourth Assessment Report published on 2 Feb 2007 may come to an opportune moment. The world is alert to the globality of the issue; we may have a policy window of opportunity.

There are answers to these challenges:

- Good governance and institutions
- Well designed policies
- Investment climate friendly
- More technology
- Comity among nations

The common answer to both is economic growth.

Unfortunately there is no such thing as 100% security. We must continue to ensure that our emergency preparedness measures are appropriate to offer a rapid and effective response to any supply emergencies that might arise. At the time of emergency, international coordination of strategic oil stocks is a most effective form of protection against possible short-term oil disruptions. I would like to emphasize that the IEA will continue to press forward on cooperation with non-IEA countries in the area of strategic petroleum stockpiling.

China's Energy Strategy and Emerging Major Oil Companies

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The fundamental focus of this article is on the impact of foreign investment and resource strategies of internationally emerging Chinese (energy) companies, with a special focus on oil companies as revealing examples.

China's Economic Growth and Energy Problems

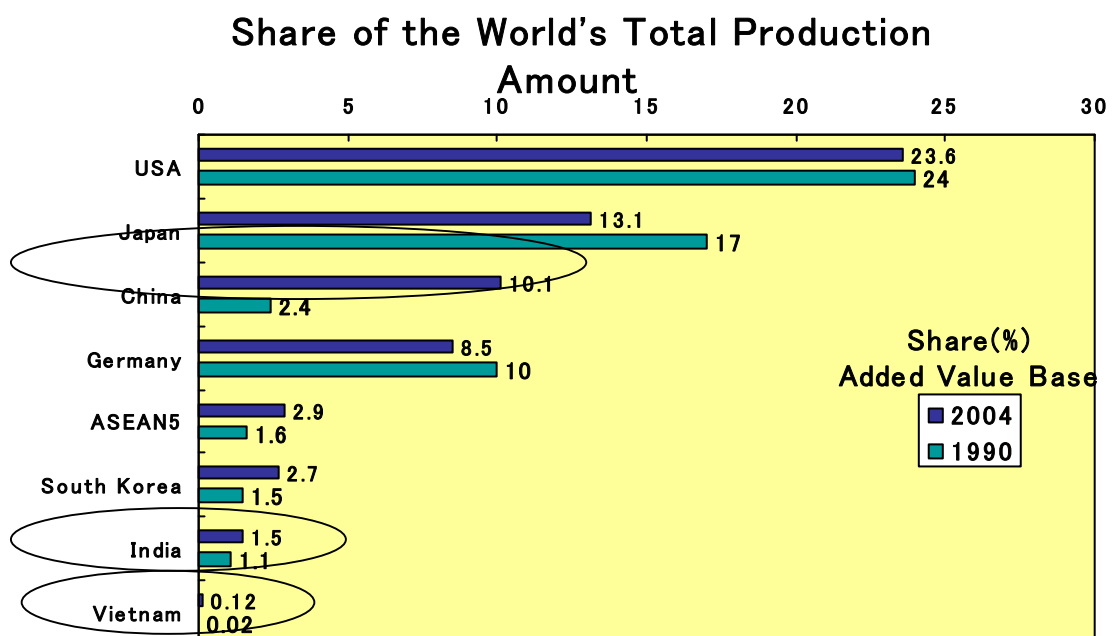
Chinese economic growth remains higher than that of more recent economic contenders like India and Vietnam. So far, China's economy has grown by overcoming various political, economic, social, and external risks. Stable energy supply represents a new risk to sustainable economic growth that China must now face.

China's rapid increase in energy consumption is due to its rapid development into a global production center. In the near future, China will surpass Japan to become the world's second largest producer, but it will take much longer until China will become the second largest economy. Goods produced by consuming energy in China are being consumed throughout the world. Therefore, stable energy supply in China is a global issue.

China's energy resource structure is summarized in the expression, "abundant coal, some gas, and scarce oil." High growth in oil and natural gas consumption is a cause for global concern, while further growth in coal consumption should be an even bigger concern because of coal's heavy carbon emission.

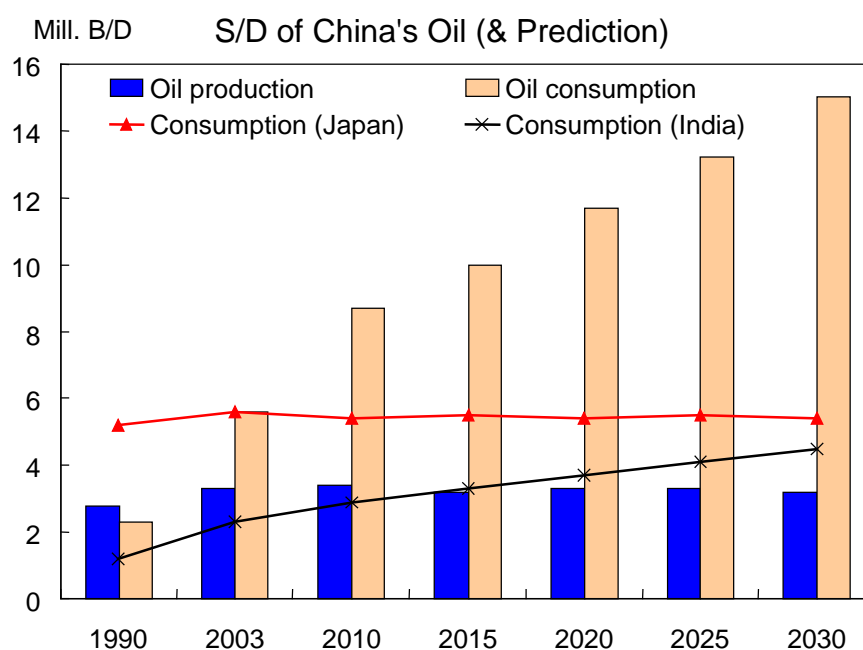


Source: Government statistics, news reports and etc.



Data Source: Calculations from World Development Indicators

As a result of China's economic growth and its linkage with the global economy, China's energy consumption is growing at double the average global rate. According to estimates by the EIA, growth rates in oil consumption until 2030 will be: China 3.8%, India 1.4%, U.S. 1.2%, EU 0.2%, and Japan 0.1%. The concern over stable energy supply in China is more serious than over that in Japan, the EU, the U.S., and India.



Source: EIA "International Energy Outlook 2006"

China's Energy Policy

China is not ignoring its energy squeeze. It is introducing the following "suppressing demand and expanding supply" strategies.

The first is energy saving and creation of new energy. In particular, energy saving represents the greatest security guarantee.

The second is new energy production. For example, China plans to construct two or three 1 million kW level nuclear power plants every year until 2020. However, there are safety concerns.

The third is further domestic resource development. However, increases in development-related costs are a significant obstacle.

The last is securing energy from overseas resources. China's "three roads towards securing oil" are through the market, through self-development, and through joint development of "downstream" oil products with foreign oil-producers in China. In this overall strategy, the market is the primary, self-development is a business measure, and crude oil in exchange for entry into China's domestic market is a leverage strategy. The aim of overseas development is ensuring oil in a crisis, as well as securing profits from high oil prices and exporting equipment, goods and labor power.

Currently, suppressing demand and increasing domestic supply cannot resolve the problem of oil shortages, while a lack of awareness and technology remain obstacles to planned energy-savings. In terms of demand, current high economic growth cannot be stopped if appropriate employment levels in the booming migration centers need to be maintained. Additionally, motorization will continue to accelerate. It is estimated that new car sales will reach 8.5 million in 2007. Regarding supply, conventional oil field production is falling. New oil field development can barely make up for the decline in conventional oil fields.

In macro terms China is in an energy squeeze, but for Chinese oil companies the rapid increase in domestic demand is considered to be a chance to become major global players. Here we find that the government's security strategy and oil companies' business strategy are in accord. Chinese oil companies have used the Chinese market as a way to attract major global oil companies, and have been absorbing technology and managerial know-how from joint ventures etc.

China's Emerging Major Oil Companies

Growing Chinese oil companies see high oil prices as an opportunity and have accelerated overseas business development. This is because fundraising and gaining state assistance is easier in these environments.

Government and businesses work in tandem when it comes to China's energy strategy. For example, the second-in-command of the government's energy strategy-making body is also the president of China's largest energy company.

The government is not only a stakeholder, but also a stockholder in oil companies, and exercises influence through its grip on top management and through price-control and subsidies. Companies are being pushed towards “self-management and self-support accounting,” and are becoming profit-driven. There are cases where companies go against government policy. For example, despite the fact that there was a shortage of domestic oil products in 2005, Chinese oil companies expanded profitable exports.

Of China's three largest oil companies, Sinopec and CNPC have developed over the past dozen years to resemble major global oil companies, while CNOOC still has lots of room to grow. According to recent statistics, CNPC's 2006 sales were roughly U.S.\$103.3 billion (20% increase), and net profits were U.S.\$16 billion (5.7% increase). Meanwhile, CNOOC's sales were U.S.\$15.5 billion (36% increase) and profits were U.S.\$4.2 billion (24% increase). Based not only on financial data but also on the operations side, it can be concluded that CNPC and Sinopec are catching up with the world's major players.

Outline of China's Three Major Oil Companies

State-run companies	CNPC	SINOPEC	CNOOC
Established	Sept.1988	July 1983	February 1982
Public subsidiaries	PetroChina	Sinopec Corp.	CNOOC Ltd.
Govt. owned stock	About 88%	About 77.5%	About 73%
Listing Date	April 2000	Oct. 2000, Aug. 2001	February 2001
Listing	Hong Kong, NYSE	Hong Kong, London, NYSE, Shanghai	Hong Kong, NYSE, London
Employees (Listed Co.)	1.5m (480,000)	1.2m (440,000)	27,000 (1000)

Note: Employees → Exxon Mobil 86,000, RDS 112,000, BP 103,000, Total 111,000, Nippon Oil 13,000

Source: Annual company reports, FRI interviews

Weak corporate governance and low-grade technology represent the greatest shortcomings of China's major oil companies. To tackle these obstacles as fast as possible, the failed attempt to acquire Unocal (US) in 2005 to obtain deep-sea search and drilling technology was only a first trial to develop Chinese energy corporations by acquisition. Further attempts will certainly follow.

Proactive Resource Diplomacy

Chinese “resource diplomacy” began around 2004, and China’s diplomatic methods do not differ much from other countries. There is only one major difference: China is willing to even use the power of its permanent membership in the UN Security Council for its resource diplomacy.

China has hitherto been very careful in exercising its permanent member “veto power.” In fact, China has exercised this power only six times, compared to well over 80 times by the U.S. and Russia. The previous five Chinese vetoes were done for political reasons, such as to prevent Taiwan’s independence. However, the purpose of the sixth veto was different. Immediately after the veto, the Myanmar government gave CNPC permission to develop gas fields in three different districts.

Overseas Business Expansion of China’s Oil Companies

Chinese companies are involved in 124 overseas oil and gas development projects in 31 countries. This number is similar to that of Japanese companies. However, equity oil came only to 20 million tons or 16% of China’s oil imports and about 6% of oil consumption.

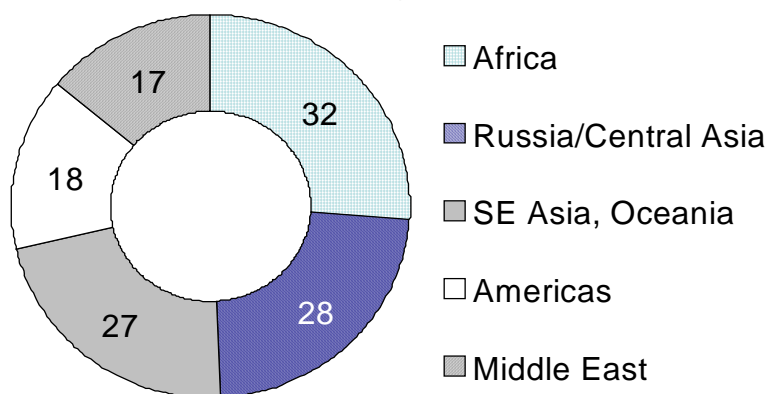
Target regions are generally the same as those of Japan. China, however, was not able to expand into the major markets, such as the U.S. and UK, and instead has targeted many developing regions such as African countries. According to new statistics, CNPC’s 2006 overseas oil production was 54.5 million tons (an 52.45% increase), and its equity oil production was 28.07 million tons (a 40.1% increase). Overseas expansion is certainly accelerating.

The overseas expansion of Chinese major oil companies has been met with resource nationalism, and there are many cases of failure. These companies have also experienced new political, social, cultural, and business risks. However, this is not the end of the story. These major oil companies are learning from their failures, and are slowly learning to communicate with the international community. For example, they have been responding to local demands, cooper-

ating with major global oil companies, establishing CSR activities, and improving transparency.

The overseas location strategy of China's major oil companies are expressed in sixteen Chinese characters, which can be summarized as, "reinforce the Middle East, develop China's surroundings, expand in Africa, and cultivate in the Americas." Furthermore, overseas expansion is only done after conducting a 10-item economic and political risk assessment. In politically troublesome regions such as the Sudan, Myanmar and Iran, instead of using foreign-listed subsidiaries, the parent holding company is leading operations at the front. Additionally, instead of prominent oil companies, state-run companies such as CITIC are also beginning overseas operations.

Breakdown of Individual Cases of China's Major Oil Companies' Overseas Expansion by Region



Source: Websites of related Chinese oil companies, Japan Petroleum Development Association website, Asian Research Center documents.

Overseas expansion has been met with political pressure from the US as well as pressure from existing major oil companies, and China is now competing with India and Japan. There have been three cases of direct competition with India, but each time there was no clear winner. After reflecting on this, the relationship was changed to a more cooperative "win-win" strategy. For example, China-India joint acquisition ventures in Syria and Colombia have been met with success, while China's Sinopec and India's ONGC are cooperating to develop gas fields in Yadavaran (Iran).

China and Japan do also compete. But issues go beyond rational competition. For example, the problem of gas field development in the East China Sea is loaded with emotions, and neither side is paying attention to international rules. Concerning the East Siberian oil pipeline, the lines asserted by China and Japan are in conflict, and Russia now controls the balance. Japan has also been dissatisfied concerning the supply of Sakhalin 1 natural gas. This situation is a reappearance of the zero-sum competitive relationship of China and India in the past, which might provide some reason for optimism because many of those issues are solved in the meantime. In fact, in the past there have been examples of Japanese and Chinese oil companies cooperating in oil development in China, but cooperation seems to be difficult to restart anytime soon.

Impact of the Emergence of China's Major Oil Companies

The emergence of China's major oil companies will likely have a large impact on the international community. Economically, expanded resource development investment will improve oil supply capabilities. On the other hand, the lack of transparency with regards to development makes it difficult for the international community to monitor corruption and issues of human rights, labor, and the environment. Furthermore, the collision of China's economic interests with the interests of other countries while expanding abroad will increase. The U.S. concern over China's recent development of gas fields in Iran is only one contentious example. Over time, China's overseas political and diplomatic power will increase as a result of the economic and operative strength of its major energy companies. Hopefully, these companies will provide an important interface for overall cooperative technological and governance upgrades.

East Asia's Manufacturing Boom, Resource Competition, and Solutions for Sustainable Growth

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Summary

The current explosion in raw material demand and prices is driven by a new Asian demand bubble that is potentially even more problematic than the Asian Crisis in 1997. The boom also has a positive side, however. Driven by the current manufacturing boom, East Asia is integrating from the “bottom up” by laying the groundwork for sophisticated production networks that can sustain a temporary shock. A still missing step is, however, the further improvement of resource allocation by further opening markets, and developing regional “service hubs” that introduce and promote the use of efficient (and resource preserving) technologies. Consequently, future cooperation policies would gain more from international support for the balanced development of regional markets, improvements in the price mechanisms, and investment frameworks than from a strong focus on (limited) energy cooperation.

1. Introduction

China's resource demand and especially its impact on international oil prices has become a major cause of concern. China now consumes more than 40% of world cement production, and between 20% to 30% of most key raw materials, including aluminum, steel, copper and coal. Its oil consumption, on the other hand, is still a reasonable 8.5% of world oil demand. But instead of indicating a coming “tsunami” of China's energy demand, these figures rather indicate that an investment and construction bubble is in the making. China's long-term demand, on the other hand, will certainly continue to increase fast, but its current explosive nature will be kept in check by decreasing demand for its exports abroad and environmental problems at home.

In the long run, it is very likely that China continues to develop on a fast track, and that its growth will spread from a limited middle class of professionals towards broad increases in domestic

consumption, which will certainly result in growing energy demand and continued pressure on the general environment. But this is not what we are seeing today. The current construction and manufacturing boom in the coastal regions is driven by unbalanced international supply and demand conditions that have shifted a major part of the world's production facilities into just one region in a very short period of time. This development should be considered as a shock to production, transport, and environmental efficiency with severe negative consequences for the environment. Ultimately, however, this production boom will run into strong resistance when import demand in the U.S. and/or the current liquidity flood from the U.S., Japan, and the Middle East will dry up. The right answers to the problem should therefore focus on solving the causing macroeconomic imbalance, and not to prepare for "global resource competition" in general.

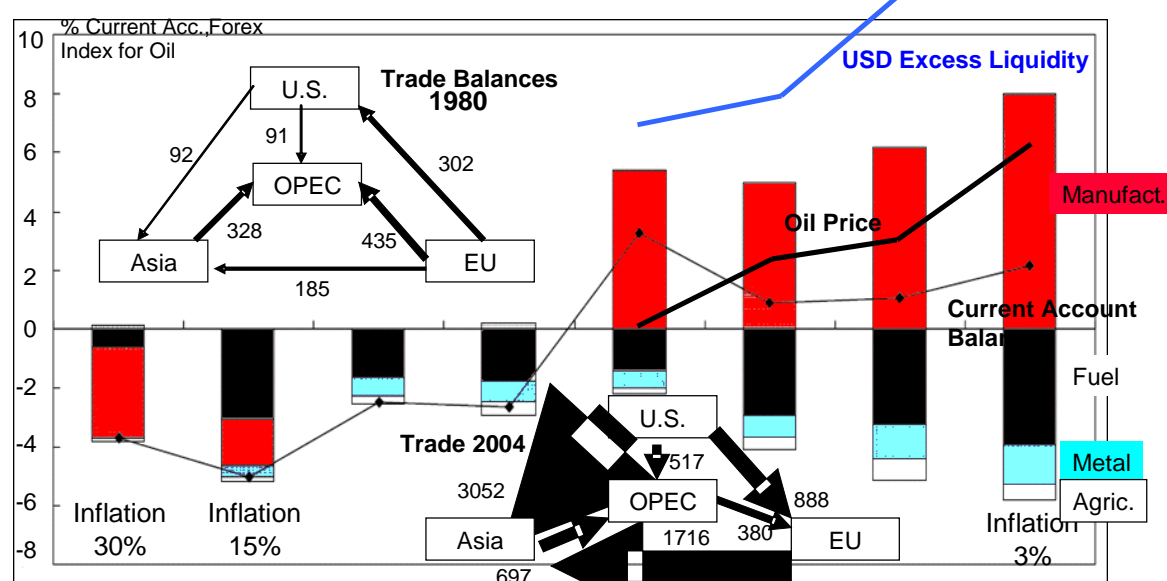
2. A New Asia Bubble Drives Resource Demand

In the wake of China's fast development a new Asian bubble has developed, and fears of a new Asian crisis, with a possibly even stronger impact than the 1997 crisis, are by no means overblown. Unlike the 1997 crisis, however, the current bubble is not driven by an Asian-wide investment boom, overly expansionary financial policies, and deteriorating domestic balances sheets. On the contrary, with the exception of China, overall investment levels in East and Southeast Asia are still comparatively low and financial system oversight has greatly been upgraded. The results have been strong exports, FDI inflows, and huge increases in currency reserves, which seem to add to the stability of Asia's current boom. But as figure 1 demonstrates, the calm is built on a new imbalance that has its roots in a global liquidity glut (large fueled by the U.S. and Japan) and an unprecedented shift of manufacturing capacity to China.

The figure depicts current account balances, trade flows, oil prices, and international USD liquidity before and after the Asian crisis in 1997. The main difference between the periods from a current account perspective is that current accounts in Southeast Asia are in surplus today while they have shown a strong deficit before the Asian

crisis. Today, manufacturing exports are counter balancing raw material imports (mainly fuel and metal). This picture is only partially soothing, however, because the comparison of regional trade balances (in the small graphs) show that by far the largest share of final demand for these manufacturing exports is concentrated in the U.S.

Figure 1 Asian Current Account Balances, the Dollar, and the Oil (Major Fuel-Importing Developing Countries)



Source: Compiled by author. Data from JETRO (2006): White Paper on Trade and FDI, METI (2006): White Paper on International Economy, FRI calculations.

Note: The arrows in the trade balance graphs symbolize size and direction of monetary flows. An arrow pointing from the U.S. to Asia, for example, stands for the dollar payment of exports from Asia to the U.S.

Current Account: Bangladesh, China, India, Hong Kong, Pakistan, Philippines, ROK, Singapore and Thailand. Trade Balance: Japan, China, ROK, Singapore, Philippines, Malaysia, and Thailand. U.S.\$ Excess Liquidity: U.S. M1+Deposits+Foreign Reserves of Major Countries. Oil Price are Indexed to 1998=1.

(with even the EU having become a net-exporter to the U.S.).¹ An expression of this imbalance is that, along with the current account surpluses, U.S. dollar reserves have been building up in Asia. In case these dollar inflows would dry up, either by a reduction in

¹ The flows in the small graphs show financial flows, so they show in opposite direction of volume flows.

manufacturing demand in the U.S. (because of a domestic slow down or a further deterioration of the U.S.D exchange rate) or because of decreasing investment inflows when major central banks tighten their credit supply further, Asia's current accounts might easily collapse again. If this happens, and it necessarily will, it is often hoped for that comparatively subdued domestic demand in Asia would fill this gap seamlessly. However, this is unlikely, because many employees who currently drive domestic consumption in Asia (the new middle class) depend on the export industry as much as the investment plans of domestic corporations do.

The same is likely due for oil prices and resource competition in Asia. Although raw material prices have undeniably increased in the long run on growth in Asia, particularly China, a large part of current stress in commodity markets is due to the unbalanced manufacturing bubble in Asia. Driven by regional imbalances, accommodative policies and exchange rate rigidities, too much production has shifted from one of the most (energy) efficient production locations, the U.S. (and Japan), to one of the most energy inefficient production locations: China. It is therefore very unlikely that when excess manufacturing demand (or excess liquidity) from the U.S. ebbs, peak commodity prices will fall. Hopefully, this will open a window of opportunity for re-equilibrating domestic and overseas demand along with international material and manufacturing prices.

This analysis has important consequences for resource competition and economic policies in and towards Asia. On basis of this bubble scenario, preparing mercantilist strategies that try to secure energy or material supplies internationally against the background of Asia's seemingly insatiable appetite would not only be inappropriate but even damaging. Similarly, cooperative policies that try to secure increasing supplies by coordinated investment and development in the short run would likely produce wasteful energy cycles as during the 80s and hurt the environment by pushing energy prices too low. On the contrary, more competition and deregulation is necessary to rebalance international supply and demand conditions. In particular, policies in Asia need to refocus on domestic supply and demand conditions instead of chasing the illusion of stability by relying on export growth, building up cash reserves, and subsidizing import prices. In the West and Japan, on the other hand, the best way to deal with Asia's exploding energy demand is to promote and invest in

efficiency enhancing and pollution decreasing technologies for production in Asia.

The Kyoto Protocol CO₂ emission trading framework, for example, is one way to do this, ODA and technology cooperation for technology transfers offer many more possibilities. Both strategies would, of course, increase prices for manufacturing products in the short run, but they would be more cost-efficient in the long run — especially if the environmental costs of Asia's current manufacturing bubble are considered.

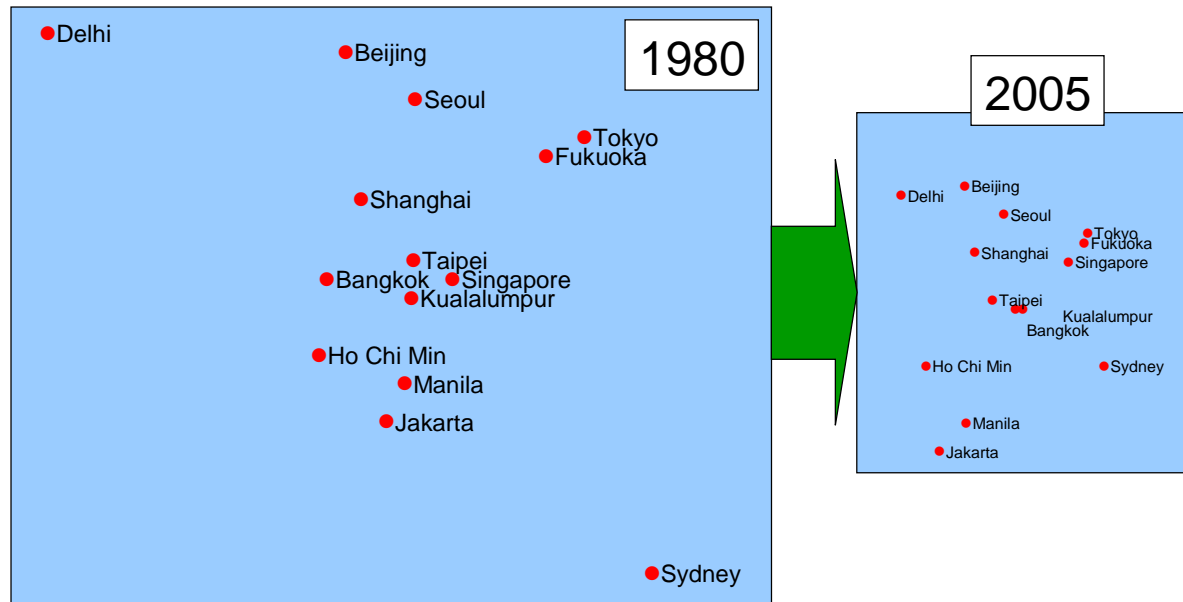
3. Asian Integration Bottom Up

It has been pointed out that East Asia's current manufacturing boom does not seem sustainable in the long run because much of current demand is still centered in the U.S. But the boom, beyond its negative effect on the environment and the likely hangover after it deflates, has also positive and lasting effects on growth and integration in Asia.

A positive side-effect of the current manufacturing boom is the development of Asian-wide production networks. International corporations—and increasingly Asian international corporations—have been expanding and linking up their various local production sites with their final assembly plants in China to serve their final demand in the U.S. These vertically and horizontally integrated production networks now greatly provide to efficiency gains. Following the example of Western international corporations and their Japanese peers, corporations from Korea, Taiwan, and Singapore have become major investors in China and beyond, and now Chinese corporations start investment offensives in the opposite direction. The result is a process of “bottom up” Asian integration that still suffers from imbalances due to insufficient investment frameworks but produces opportunities for growth and regional integration that did not exist before.

A good indicator for the already achieved integration progress is transportation costs. As figure 2 demonstrates, the current production boom and the competition for increasingly costly resources have already contributed to economic integration in Asia by significantly lowering transportation costs.

Figure 2 Distances in Asia Measured as “Business Costs” (from Tōkyō)



Source: Data from METI (2006): White Paper on Int. Economy.

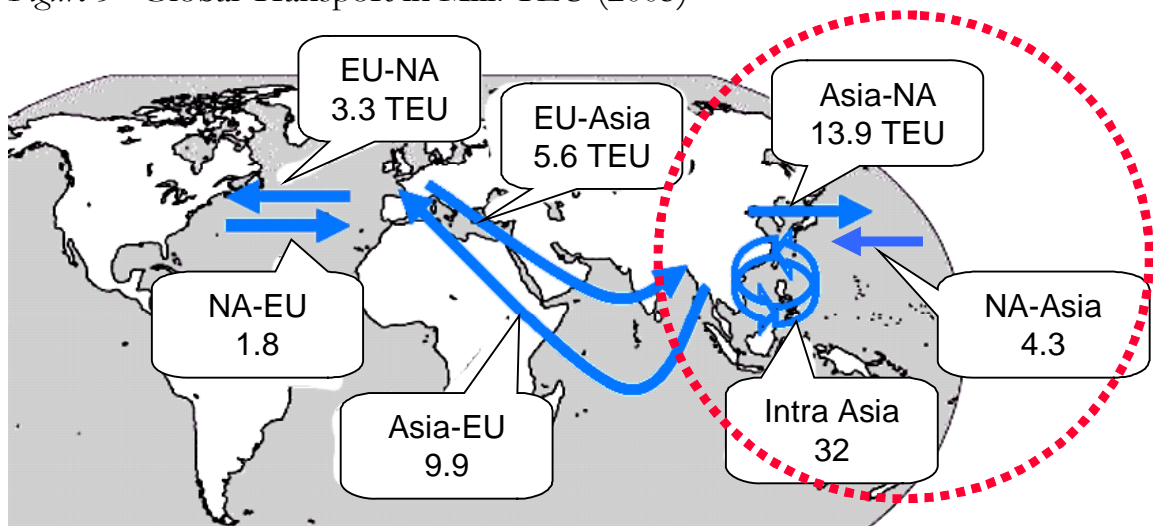
Note: Distances are based on Business Costs (Shipping, Handling, Tariffs etc.) from Tōkyō to Major Cities in Asia.

Compared to 1980, the costs of shipping from and to Tōkyō have not only imploded until 2005, they have come down to levels where Singapore is now as close to Tōkyō as was Fukuoka (Japan’s southern regional capital) in 1980. This development is not only remarkable in itself, it also provides the basis for further economic integration. Furthermore, the great advantages that Singapore now boasts as a regional hub and growth center demonstrates the possible gains from economic reform and liberalization. Its liberal trade and investment policies on one side, and its proactive embracing of regional integration and supporting not only export industries but also services (from logistics to ICT) on the other side is now showing the way for many regional hubs in Asia.

4. Asia-Networks: Thirst and Opportunity

In global transport flows, the unhealthy imbalance between production in Asia and consumption in the U.S. is clearly visible. While almost 14 million TEU (Twenty-Foot (Container) Equivalent Unit) of largely manufacturing products made their way east across the pacific to North America, only 4.3 million TEU of agricultural and other goods went the other way. Obviously, the impact on resources and the environment of such a one-sided production-consumption relationship is a strong one. Not only are most products now produced at one of the world's least resource efficient locations, the ships that carry them abroad also have to return largely empty (see figure 3).

Figure 3 Global Transport in Mill. TEU (2005)



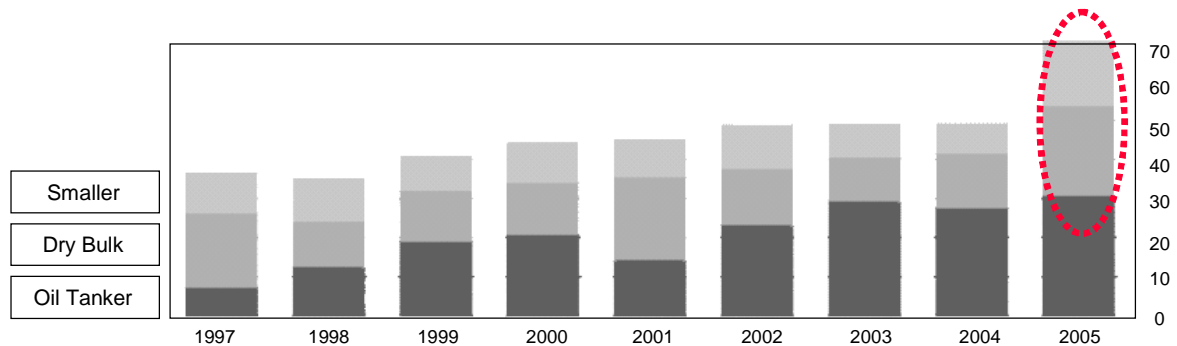
Source: Compiled by author. Data from Containerization International (October 2005).

Note: TEU are Twenty-Foot (Container) Equivalent Units.

Inside Asia, however, the production and transport boom led to major improvements in Asian production networks. Intra-Asia shipping now amounts to almost half of world shipping. Owing to this development, Asian shipping companies, such as Evergreen in Taiwan and COSCO in China, have surpassed leading Western companies like Maersk in Denmark. With this, carriers in Asia have started to improve efficiency throughout their networks. Figure 4, for example, shows that most shipping growth had been concentrated in oil tankers and huge dry bulk vessels for overseas trade so far. But from 2005,

shipping turned towards a hub-spoke concept with much smaller vessels between Asian locations. Currently, transportation efficiency and integration get further upgrades from alliances with truck/rail networks within and between the land-based regions.

Figure 4 Merchant Ship Building (1997–2005; Mill. DWT)

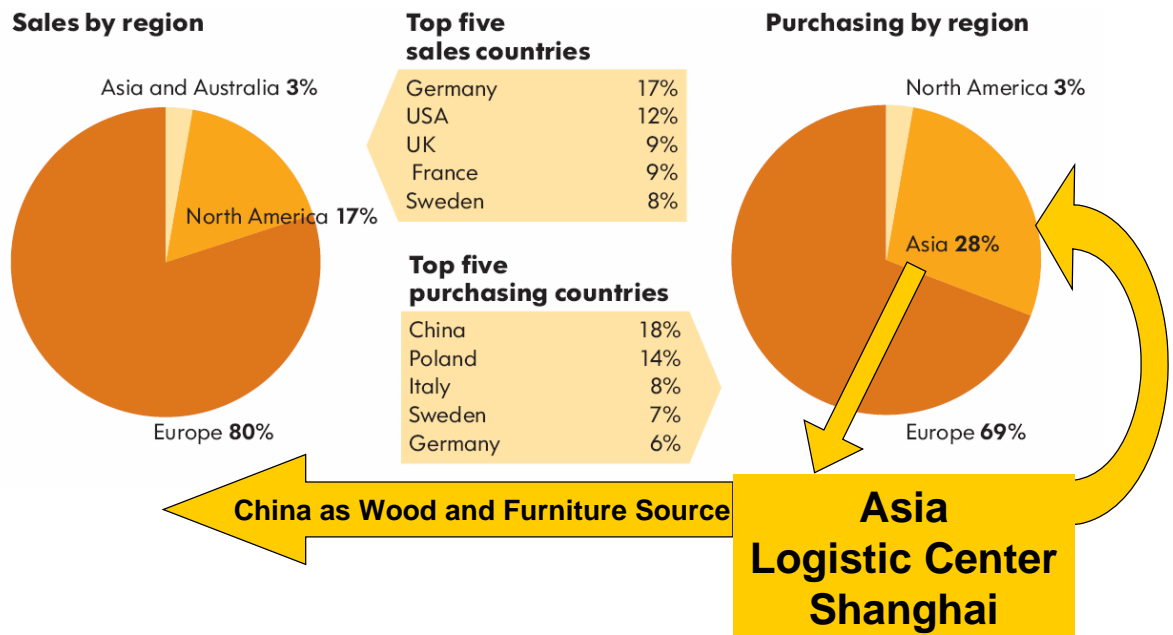


Source: Compiled by author. Data from Economist Intelligence Unit.

Note: Smaller Vessels: Over 1000 Gross Registered Tons; Dry Bulk/Tanker: Over 10,000 Deadweight Tons.

Efficiency in transport is only one important field with the potential to improve overall efficiency and hold resource demand at bay. Developing logistics along the supply chain to better serve fast growing regional demand is another. IKEA, for example, initially used Asia only as a source region. As much as 28% of purchases were coming from Asia in 2004. China alone accounted for 18% of all international purchases. With 80% of sales in Europe, this business model is certainly a good example for unbalanced production-consumption patterns. But the situation has changed remarkably—China is now not only the location of the company's main logistic center, it has also become its potential growth market.

Figure 5 From Sourcing to Asian Market Development: IKEA



Source: Data from Company Homepage.

Already from the Asian crisis in 1997, Ikea has successfully expanded in the Asian market. The company jumped the opportunity to expand while the Asian market was weak. In Hong Kong, it first built a test case to see if the admiration of consumers for imported European brand goods works for its products as well. As brand image, the company targeted a “clever but not necessarily expensive” image, and successfully tried to get consumers to embrace its do-it-yourself philosophy. In China, IKEA is trying to build a competitive advantage in the wake of improving living standards. The mix of interior design, better quality materials and do-it-yourself seems to become a winning strategy that also helps to preserve scarce resources.

As mentioned above, China is also the largest sourcing market for IKEA. The company has therefore opened a regional distribution center in Shanghai to serve as a base for the company's expansion in China and elsewhere in Asia. The new U.S.\$82 million distribution center will be built on 287,000 square meters of land that IKEA bought in Shanghai's Songjiang District and will finish construction by 2007. It will be able to process 60 containers of goods a day, twice the capacity at the company's current biggest Asian distribution center in Malaysia. Initially, the Shanghai hub was also planned to serve the Japanese market, but it could not be finished in time. So the company

had to build facilities in Japan as well. The company said at the opening that the outstanding geographical advantage of Shanghai and the government's support and management is the main reason that they choose Shanghai to establish such a center (Xinhua 2005.12.02: IKEA opens its Asia-Pacific region's biggest logistics distribution center in Shanghai). With companies such as IKEA expanding, Shanghai is now developing into an important logistics center and a hub for knowledge based services. The company said it is already facing tougher competition from Chinese companies that also provide low priced products. To deal with the issue, it is working closely with suppliers and cut prices in China's mainland this year by at least 20 percent (Shanghai Daily 2005.12.02: IKEA assembles local hub).

Other international companies, such as T-Systems in the following example, are building their business model around efficiency improvements in corporate production networks internationally and now target Asia. IT suppliers and outsourcers, such as T-Systems, have an enormous potential for cost and resource savings in Asia's still inefficient production and logistics networks. The following chart provides an overview about the possibilities of horizontal and vertical ICT integration, outsourcing and off-shoring.

Figure 6 Outsourcing for Asian Production Network Integration: T-Systems

Vertical Solutions	Telco, Media & Utilities	Manufacturing	Services	Finance	Public
	Billing BPO	Product Lifecycle Management Supply Chain Management	Online Services – Food Safety Road Charging	Multichannel Insurance Multichannel Banking European Transaction Banking	eGovernment Public Security
Horizontal Solutions	Managed Document Services	Finance & Accounting	HR BPO	Debt Collection	BPO
	Dynamic Infrastructure Services	Dynamic Computing	Dynamic Storage & Archive Solutions		IT
	Managed Desktop Services	Messaging & Collaboration Solutions	Managed Security Services		
	Dynamic Services for SAP® Solutions	SAP® Integration & Consolidation			
	Enterprise Application Integration	CRM	eHealth		
	MPLS	Hosted Services	Business Internet Access	Managed VoIP Networks	TC

Source: Soergel (2006).

For companies like T-Systems, Asia has become an important market with many potential customers in the production industries. T-Systems, for example, focuses on the important automobile industry. Basically, T-Systems has followed its (German automobile) customers into Asian markets, and is now trying to extend its reach as an outsourcing provider for Asian companies as well. The IT outsourcing market will become an increasingly important market because trends in technology development favor its growth. The international B2B services market, for example, has already shifted from providing international infrastructure towards application outsourcing (hosting) services. Along with this trend, more and more business processes, like payroll accounting, can be and will be outsourced and serviced by providers like T-Systems from regional “service hubs” like Singapore or Shanghai.

With the integration of regional service hubs, efficiency, together with a great reduction of operational waste, is expected to increase considerably in Asia. Further innovations from mobile applications to telematic services can be expected to further shrink distances and overhead costs in Asian production networks. Such integration is extremely important because the networking of foreign affiliates of international companies in Asia will be the key to future success and technological upgrading of production location in East Asia.

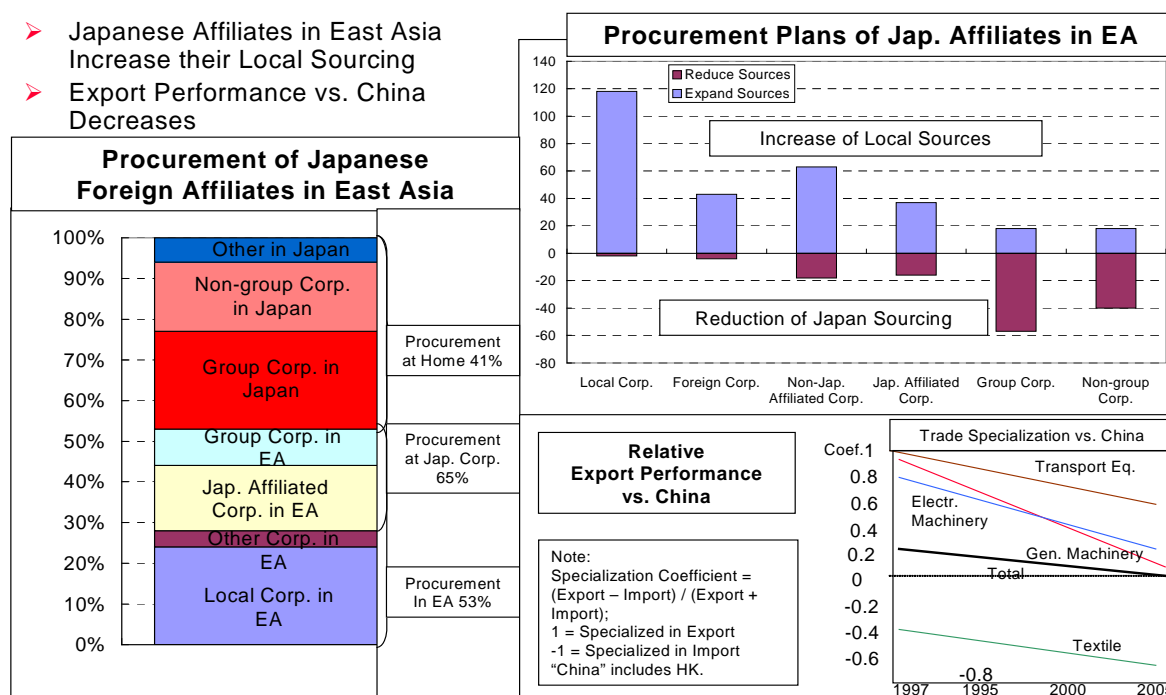
Figure 7 demonstrates the state of “bottom up” integration in Asian production networks for Japanese foreign affiliates in East Asia. Such companies often use their overseas locations as “extended workbenches” with comparatively low productivity levels at first. As a result, even in 2005, after many years of heightened production activity in East Asia, Japanese affiliates still procured as much as 41% of their inputs in Japan. Local procurement from local companies consisted of less than 25% of the total. Similarly, on the sales side, much of the production of Japanese companies was shipped back to Japan or exported to the U.S. But this picture is changing fast.

Today, most Japanese foreign affiliates plan to increase their procurement at local sources, while reducing their home-country sources (see figure 7). This change in procurement strategies will not only significantly improve “bottom up” integration; it will also decrease shipping costs and increase the technology level of production at local companies in East Asia. In Japan vs. China, as the small chart to the bottom-right demonstrates, Japan's supremacy in

technology goods and trade specialization is already decreasing fast. Much of machinery, and now even cars, are not exclusive by flowing from Japan to China anymore. In all of these comparatively high-grade industries China is fast catching and advancing to higher and more efficient production levels.

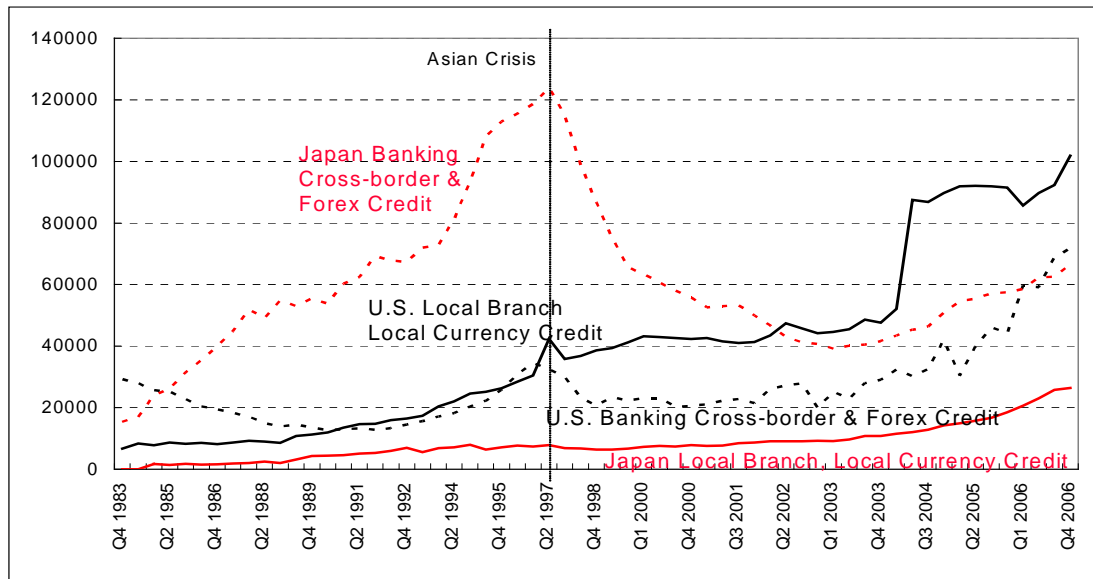
Finally, the following figure 8 shows that an important missing link for upgrading Asia's production networks is getting filled fast. So far, local companies in Asia had to rely almost exclusively on credit from their domestic banks or their domestic business partners to build and upgrade their production facilities. International credit was only available to major, internationally active companies. But this picture is fortunately changing as well.

Figure 7 Integration of Asian Production Networks: Japanese Affiliates



Source: Compiled by author. Data from Japan Industrial Policy Research Institute (2006); Cabinet Office (2006).

Figure 8 Japan vs. U.S. in ASEAN4 Cross-Border and Local Credit



Source: Compiled by author. Data from BIS Consolidated Banking Statistics (2006).

Note: Japan & U.S. Foreign Banking Claims on ASEAN4 Countries (Million U.S.\$). The jump in the 2003 U.S. data is due to newly introduced capital controls in Malaysia.

During the run-up to the Asian crisis, Japanese banks were major providers of credit to the largest four ASEAN countries. With the crisis, however, this picture changed dramatically and added to the credit crunch after the crisis. Only from 2003 are Japanese banks extending their credit towards Asia again. More important is, however, that the local branches of foreign banks have started to provide more local credit in local currency. This type of financial integration is very important for the development of international production networks in Asia because it increases the scope of international investments in collaboration with local partners. This, in turn, has a strong potential to increase the efficiency of local production, which is the key to efficient and resource conserving production.

The bottom line of this analysis of corporate activities in Asia is that the growth process is advancing on the technology ladder fast—if market frameworks support competition and international technology transfers. Asia therefore won't simply replay the Western industrialization process on a grander scale, with even more pollution. Technologies that are available will likely be used and can greatly improve the catch-up process—not least in terms of environmental

sustainability. So far, however, the catch-up process has not unfolded as orderly and sustainable as should be hoped for. The current manufacturing bubble has led to an enormous waste in resources and to pollution on an unprecedented scale. But this development is rather caused by failed macroeconomic policies—not least in the West and Japan—and not by growth in Asia in general.

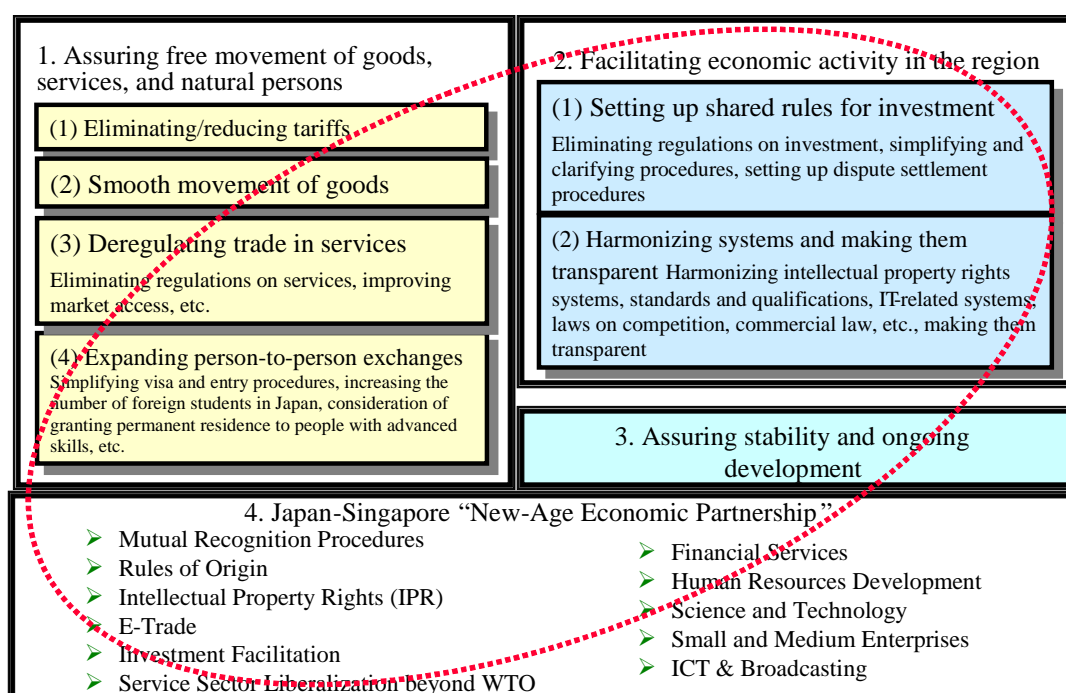
As in the section before, this analysis again has important policy implications: rather than preparing for “resource competition” with Asian governments and corporations, it seems to be necessary to encourage more market-price-based competition and to support cooperative technology transfer from developed to startup countries.

5. Cooperative Policies for Sustainability

Due to the comparatively strong export-orientation of most Asian countries, most governments have been supporter of international cooperative platforms and institutions. But all of these institutions, including ASEAN and APEC, are still lacking binding commitment and vision for cooperative policy action and the development of common market frameworks. Over the last years, and on the back of East Asia’s increasing regional trade, governments are therefore busily spinning free trade agreements (FTA) with clear-cut and binding regulations. Though being limited in scope, such negotiations currently get a wider impact by upgrading them to negotiations on economic partnership agreements (EPA), which also include investment frameworks and target governance improvements (see figure 9).

In the longer run, such investment frameworks that include dispute settlement procedures, service sector liberalization beyond WTO, and financial service liberalization, can be expected to become important tools for regional integration. Together with improvements in IPR, competition and commercial law, higher-grade and knowledge-based investment in technology, services, and R&D can be expected to spread throughout the region, which would greatly contribute to production efficiency.

Figure 9 Investment Framework Content of Japan-Asia EPAs

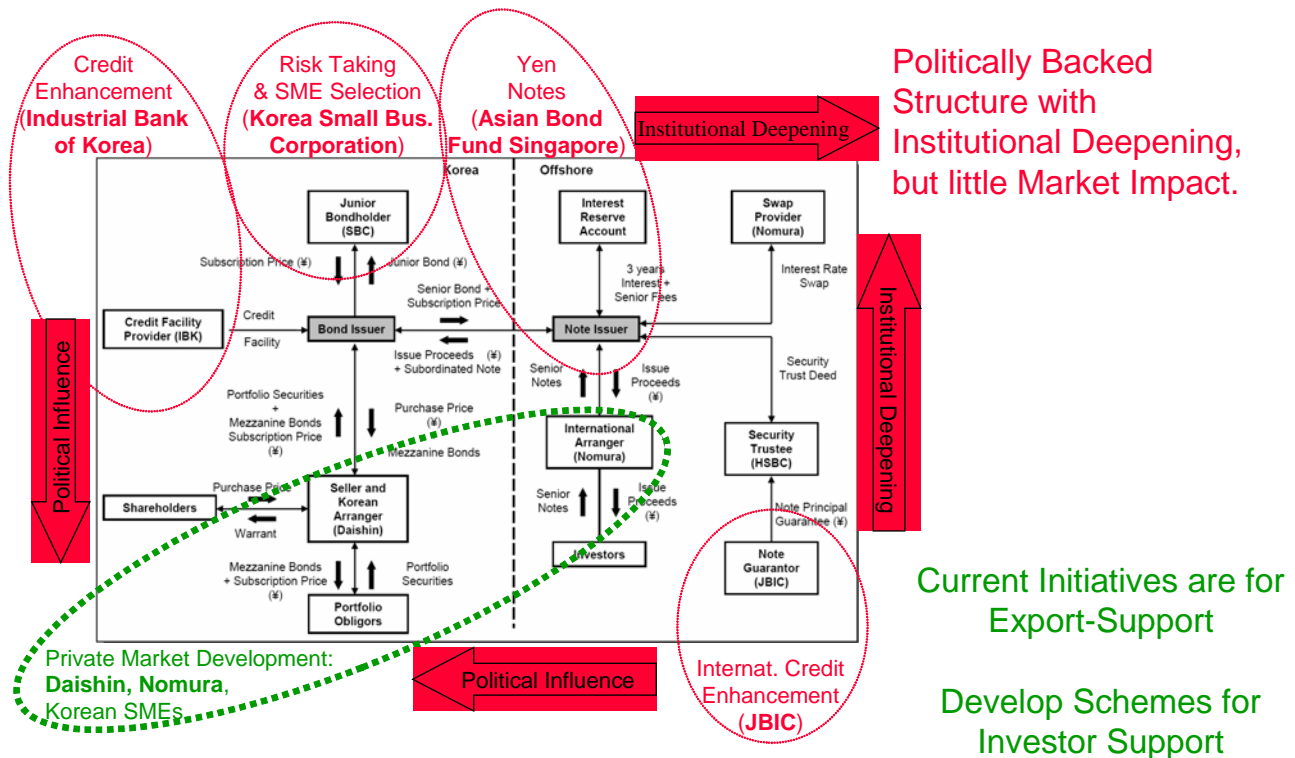


Source: Compiled by author. Topics from JETRO (2006a) presentation.

On basis of such EPAs, Asian international institutions and advanced cooperative policy frameworks are likely to thrive. The Asian Development Bank (ADB) and its Asian Bond Market Initiative, for example, have already come forward with initiatives that gain strong support and go well beyond policies of the earlier days. The "Yen-denominated Collateralized Bond Obligation" project in figure 10, for example, supports the financing and extended credit access of Korean small and medium size enterprises (SME) that produce for the Japanese market. With this, many of these firms are able to secure the necessary funds for important technology upgrades.

Certainly, such initiatives have little market impact so far, but they point into a direction where international cooperation with and in Asia promises efficiency upgrades that have the potential to preserve resources and aid the environment along with economic growth.

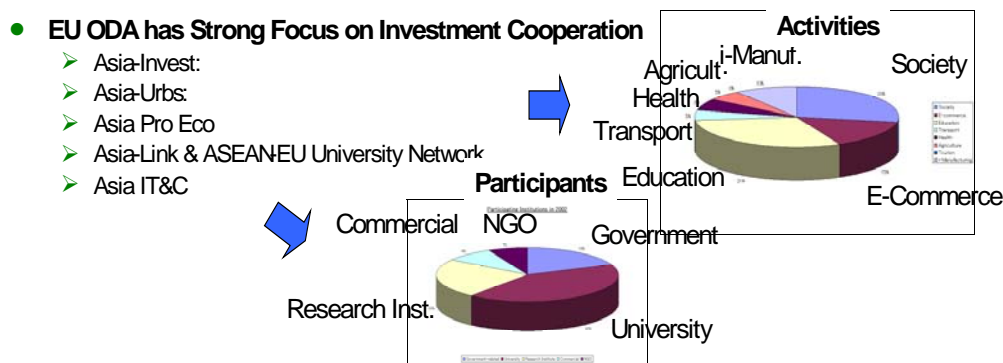
Figure 10 Asian Bond Markets Initiative P-CBO



Source: Compiled by author. P-CBO Graph from Asian Bond Markets Initiative.
 Note: Yen-denominated Collateralized Bond Obligation (CBO) of Korean SME Bonds.

Similarly, governmental ODA projects can focus on efficiency enhancing development projects, as in the case of the EU's projects towards Asia. Many of the projects, such as Asia-Invest, Asia-Urbs, and Asia Pro Eco have a distinct focus on effective investment along with positive environmental effects (see figure 11).

Figure 11 ODA Strategy: EU "Asia-Investment"



Source: Compiled by author. Data from EU (2006).

Japan's ODA has evolved into a similar direction and now supports country strategies and program-based aid strategies that focus on human resources and institution building. Among these programs, projects for standardization support, ITC, student exchange and research can be expected to greatly aid efficiency enhancing integration efforts.

These concepts and projects are only a few among a large number of cooperation possibilities with and within Asia. They are mentioned here to show that such "traditional" means of development and economic integration support might be best suited to face the challenge of sustainable growth in Asia. "New" policies to challenge Asia's growing resource demand, especially when they venture into mercantilist resource competition, would almost certainly have much less benign effects.

6. Conclusion

The largest current security and cooperation risk is not due to excessive competition for energy sources, but is a problem of outmoded governmental restrictions and policies that restrict competition in energy, utility, and logistics markets. Instead of preparing for "global resource competition" it therefore seems to be necessary to work into three directions: 1) to improve international supply and demand balances by ending overly expansionary fiscal policies in the U.S. and Japan while encouraging China to improve domestic consumption; 2) to improve the working of the international price mechanism by encouraging more flexible exchange rates and discouraging the built up of huge currency reserves; 3) supporting the use of high-efficiency technologies in developing countries such as China. The policy tools for such cooperative policies that support sustainable growth in Asia already exist.

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Acronyms and Abbreviations

ADB	Asian Development Bank
AMMTEC	ASEAN Ministers' Meeting for Transnational Crime
ANRE	Agency for Natural Resources and Energy
ARF	ASEAN Regional Forum (founded in 1994)
ASEAN	Association of South-East Asian Nations (Brunei, Indonesia, Malaysia, Philippines, Singapur, Thailand, Myanmar, Vietnam, Laos)
ASEAN PMC	Expanded Foreign Ministers Meeting (founded in 1978)
ASEM	Asia–Europe Meeting (April 1995 in Bangkok)
B2B	business to business
bbl(s)	barrel(s)
bcm	billion cubicmeter
BDRT	(The EU-Japan) Business Dialogue Round Table
bn	billion
CBO	collateralized bond obligation
CIS	Commonwealth of Independent States
CITIC	China International Trust and Investment Corporation
CJTF	Combined Joint Task Force
CNOOG	China National Offshore Oil Corporation
CNPC	Chinal National Petroleum Corporation

COM	Commission of the European Communities
CSR	corporate social responsibility
CTAP	Counter Terrorism Action Plans
CT-TC	counter terrorism and transnational crime
CTTF	Counter Terrorism Task Force
DG TREN	Directorate General Transport and Energy
DPRK	Democratic People's Republic of Korea (North Korea)
DWT	deadweight tons
ECT	Energy Charter Treaty
EIA	Energy Information Administration (official energy statistics from the U.S. government)
EPA	Economic Partnership Agreements
EWG	Energy Working Group in APEC
FDI	foreign direct investment
FP7	Seventh Research Framework Program for Research and Technological Development
FRI	Fujitsu Research Institute
FTA	free trade area // free trade agreements
DGP	gross domestic product
ICT	information and communication technology
IEA	International Energy Agency, Paris
IEP	International Energy Program

IISS	International Institute for Strategic Studies
IPCC	Intergovernmental Panel of Climate Change
IPR	intellectual property rights
ISM on CT-TC	Intersessional Meeting on Counter Terrorism and Transnational Crime
IT	information technology
ITC	information technology consulting
JDZB	Japanisch-Deutsches Zentrum Berlin / Japanese-German Center Berlin
LNG	liquefied natural gas
mb	million barrel
MENA	Middle East and North Africa
METI	Ministry of Economy, Trade and Industry (Japan)
NDPG	National Defense Program Guideline
NDPO	National Defense Program Outline
NPT	The Treaty of Non-Proliferation of Nuclear Weapons (= Non-Proliferation Treaty)
ODA	Official Development Assistance (Japan)
OECD	Organization for Economic Cooperation and Development
ONGC	Oil and Natural Gas Corporation Ltd., India
OPEC	Organization of Petroleum-Exporting Countries
PACOM	U.S. Pacific Command

PECC	Pacific Economic Cooperation Council
PSI	Proliferation Security Initiative (May 2003)
RD&D	research, development and demonstration
ROK	Republic of Korea
RS	reference scenario
RTA	regional trade agreements
SCO	Shanghai Cooperation Organization
SDF	Self-Defense Forces of Japan
SME	small and medium-sized enterprises
SPF	South Pacific Forum
SPR	strategic petroleum reserve
Sumed	Suez-Mediterranean (pipeline)
SWP	Stiftung Wissenschaft und Politik / German Institute for International Security Affairs
TC	team challenge
TEU	twenty-feet equivalent unit (container)
TREN	transport and energy
U.S.D	U.S. Dollar
WEO	World Energy Outlook
WMD	weapons of mass destruction
WTO	World Trade Organization

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Resource Competition and Power Balance in East Asia An EU-Japan Perspective

March 2, 2007, at the Japanese-German Center Berlin

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