INTERDISZIPLINÄRES ZENTRUM FÜR OSTASIENSTUDIEN

GOETHE UNIVERSITÄT FRANKFURT AM MAIN

Japan's Quest for Energy Security

Risks and Opportunities in a Changing Geopolitical Landscape

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Frankfurt Working Papers on East Asia

IZO | Interdisciplinary Centre of East Asian Studies
Goethe University Frankfurt am Main
www.izo.uni-frankfurt.de

No. 5
March 2011
ISSN 2190-7080

Frankfurt Working Papers on East Asia 5/2011

Edited by
IZO | Interdisziplinäres Zentrum für Ostasienstudien
Interdisciplinary Centre for East Asian Studies
Goethe University Frankfurt am Main

ISSN number (Print) ISSN 1869-6872
ISSN number (Online) ISSN 2190-7080

Executive editor of the series: Thomas Feldhoff

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Japan's Quest for Energy Security: Risks and Opportunities in a Changing Geopolitical Landscape

Abstract

For much of the 20th century, economic growth was fueled by cheap oil-based energy supply. Due to increasing resource constraints, however, the political and strategic importance of oil has become a significant part of energy and foreign policy making in East and Southeast Asian countries. In Japan, the rise of China's economic and military power is a source of considerable concern. To enhance energy security, the Japanese government has recently amended its energy regulatory framework, which reveals high political awareness of risks resulting from the looming key resources shortage and competition over access. An essential understanding that national energy security is a politically and economically sensitive area with a clear international dimension affecting everyday life is critical in shaping a nation's energy future.

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1. Introduction

The struggles over the world's energy and mineral resources have often provided impetus for conflicts between nations, whether of a limited local or regional scope or world-wide. The rich resources of East and Southeast Asia were highly sought after by Imperial Japan to support its industrial and military expansion program in the aftermath of the Meiji-Restoration (*Meiji ishin*, 1868). After hundreds of years of seclusion from the outside world during the Tokugawa period (1603-1854), Japan emerged as the first Asian industrialized nation, and the need for raw materials and markets expanded as the Japanese economy grew. As a rapidly industrializing country with a very limited natural resource endowment Japan became highly dependent upon seaborne trade and the free movement of shipping for its well being. Japan's ambitions on the East Asian mainland and in Southeast Asia and its military capability to advance them grew rapidly as well. As a "rich country with a strong army" (*fukoku kyōhei*), military expenditure was a priority and made Japan itself for the first time a colonial power.[1] Japanese colonialism and rising ultra-nationalism culminated in the idea to develop the Great East Asian Co-Prosperity Sphere (*Dai Tōa Kyōeiken*,) in the 1930s; a mutually cooperative and self-sufficient economic and political region under exclusive Japanese leadership, intended to reshape the western-dominated world order.

> "The dream of the Co-Prosperity Sphere offered a way out of the economic impasse that Japan faced as a rapidly industrializing economy with a limited resource base and stressed the commonalities of economic interest among the people of Asia as much as the cultural commonalities as a vision of regional unity."[2]

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1 See Janet E. Hunter, *The Emergence of Modern Japan. An Introductory History since 1853* (London; New York: Longman, 1989), Chapter 12 "The Role of the Military".

2 See Peter Duus, "The Greater East Asian Co-Prosperity Sphere: Dream and Reality", *Journal of Northeast Asian History* 5, 1 (June 2008), 143-154.

Japan's international relations with its neighbors are still today burdened with the legacy of its wartime geopolitics. At the same time, in a context of growing global competition for natural resources, it is important to identify the national and transnational dimensions of energy security related risks and increase awareness of the interconnectedness of the energy issue with the current resurgence of geopolitics. This paper places Japan's energy security issues into the context of a changing geopolitical landscape and gives an overview of Japan's responses to this issue.

2. Changing Geopolitics and Energy Security Issues

The term "geopolitics" basically refers to "the study of the geographical distribution of power among states across the world, especially the rivalry between the major powers."[3] It is concerned with their external strategies to produce a global balance of power and the rise and fall of great powers. Whereas geopolitical thinking in the early 20th century, authoritatively developed by Sir Halford J. Mackinder, Karl Haushofer or Nicholas J. Spykman[4], has inextricably linked interstate rivalry to the struggle for ideological and military supremacy, in the post-Cold War era and under conditions of globalization economic strength has gained importance as a major source of power. China's increasing economic weight in the world has already changed the global balance of power, and it has major consequences for global energy supply and demand. Thus, competition over access to natural resources is a geopolitical phenomenon with strategic importance in international relationships. The territorial control, exploitation and commercialization of natural resources are increasingly becoming the focus of geopolitical strategies and policy responses relating to energy security. With regard to

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3 See Colin Flint and Peter Taylor, *Political Geography: World-Economy, Nation-State and Locality* (Harlow: Pearson Education, 2007), 318.

4 See Hans-Adolf Jacobsen, "Kampf um Lebensraum. Karl Haushofers ‚Geopolitik' und der Nationalsozialismus", *Aus Politik und Zeitgeschichte* 25.8.1979, 17-29; Halford J. Mackinder, "The geographical pivot of history", *Geographical Journal* 23 (1904), 421-442; Nicholas J. Spykman, *The Geography of the Peace* (New York: Harcourt, Brace, 1944).

oil, this has to do with M. King Hubbert's Peak Oil Theory, predicting that the economic importance of oil will ultimately decline in the 21st century due to the decline of global reserves.[5] The sources of oil that remain to be discovered are likely to be relatively smaller and more expensive to exploit and ever more concentrated in unstable or unfriendly regions.[6] Moreover, energy resources are inherently territorialized, a clear physical manifestation of unequal access to resources.

East Asia is the fastest-growing economic region in the world, rapidly integrating through trade, foreign direct investment and the transfer of knowledge and technologies. The demand for oil, in particular, is still growing and East Asian countries are heavily reliant on oil imports (see Figure 1, 2). Oil consumption has increased more than twice as fast in East and Southeast Asia between 1999 and 2009 as in the world as a whole.[7] The main reasons are economic growth, industrialization and urbanization, demand for mobility increases and rising standards of living. During the same period, however, oil production has remained relatively flat. The result is that the region has become heavily dependent on oil imports to meet its growing demand. Most oil comes from the Middle East, which is one of the most politically volatile regions in the world. Highly industrialized countries like Japan, South Korea and Taiwan rely almost exclusively on oil imports to meet their consumption needs. Even China as one of the region's major oil producers has become net oil importer since 1993, most of its imports coming from the Middle East. Only Brunei, Malaysia, and Vietnam are net exporters of oil.[8]

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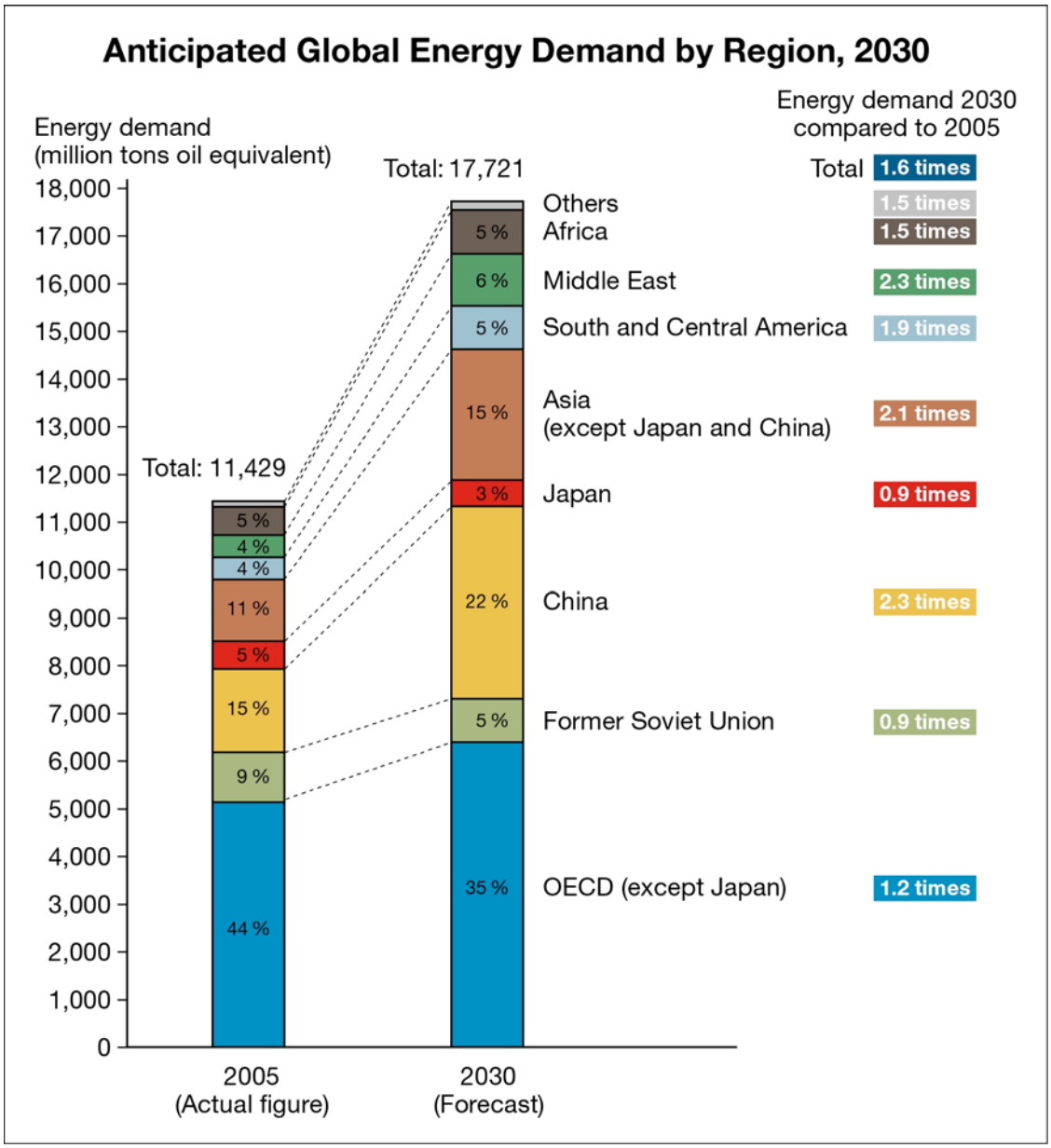
5 See Steve Connor, "Warning: Oil supplies are running out fast", *The Independent*, August 3,2009, http://www.independent.co.uk/news/science/warning-oil-supplies-are-running-out-fast-1766585.html (accessed October 8, 2010).

6 See Antony Froggatt and Michael A. Levi, "Climate and energy security policies and measures: synergies and conflicts", *International Affairs* 85, 6 (2009), 1129-1141.

7 See BP, *BP Statistical Review of World Energy, June 2010*, http://bp.com/statisticalreview (accessed October 1, 2010).

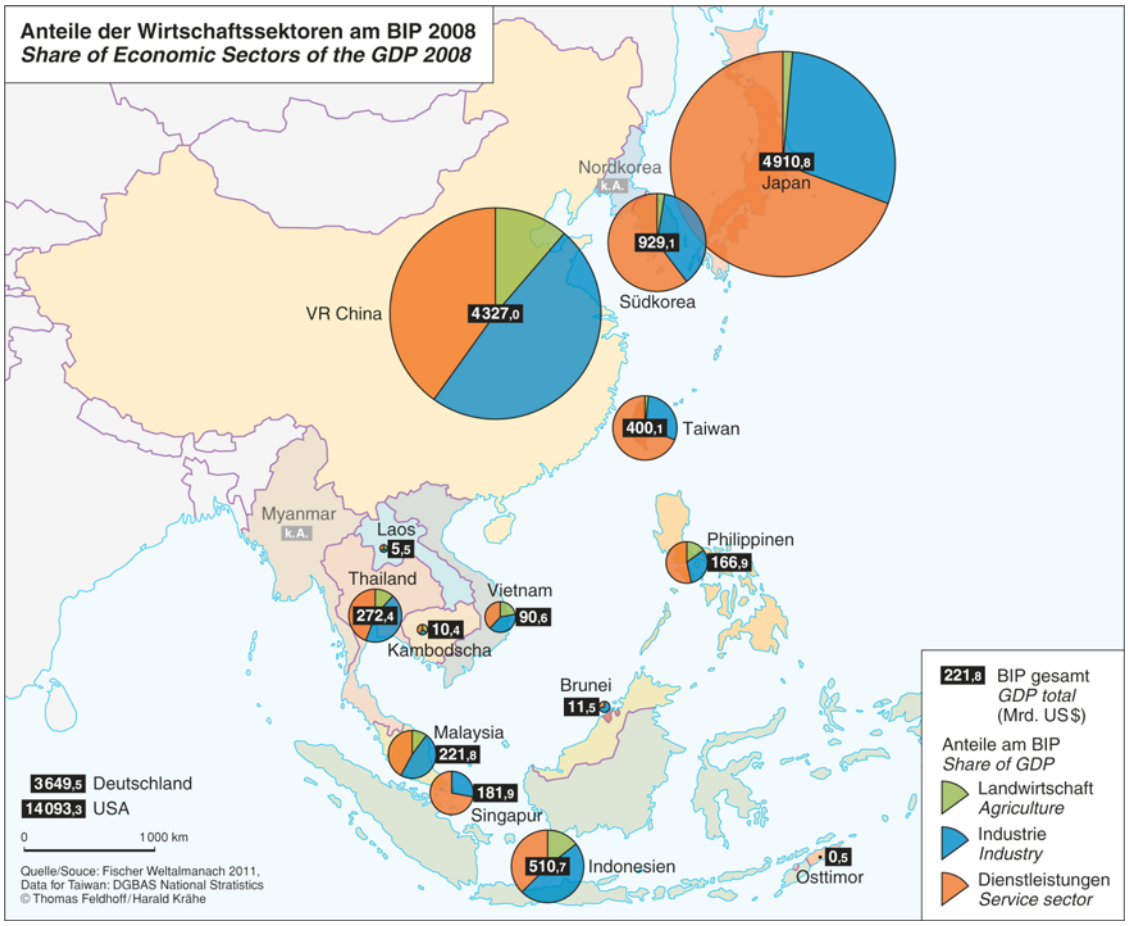
8 See Kang Wu et.al., "Oil in Asia and the Pacific: Production, Consumption, Imports, and Policy Options", *Analysis from the East-West Center* No. 85 (August 2008), 6.

Figure 1: Anticipated global energy demand by region, 2030



Data source: Agency for Natural Resources and Energy, *Energy in Japan 2008*, http://www.enecho.meti.go.jp/topics/energy-in-japan/english2008.pdf (accessed October 7, 2010)

Figure 2: Gross domestic product and share of economic sectors in East and Southeast Asian countries 2008



Data sources: Fischer Weltalmanach 2011, DGBAS (Directorate-General of Budget, Accounting and Statistics, Taiwan) National Statistics, http://eng.stat.gov.tw/mp.asp?mp=5 (accessed February 1, 2010)

However, the fact that East and Southeast Asia's proved reserves of oil are the lowest among the world's major regions[9] is of great strategic importance with regard to future geopolitical risks linked to resource nationalism.

9 See BP, *BP Statistical Review of World Energy, June 2010*, http://bp.com/statisticalreview (accessed October 1, 2010).

Energy security is, thus, related to the potential vulnerability of rising resource supply dependence, the security of access to resources, and the risk of supply interruptions and price manipulation. The increasing weight of new leading actors in international relations could create new tensions in international energy-related power politics in the coming years.

3. Japan's Responses to the Energy Security Issue

Let us sketch Japan's responses to the energy security issue and link them to the more general geopolitical issues of resource access and China's emergence as a new major rival. After World War Two, the Japanese economy not only recovered rapidly from severe damage but also surpassed the growth rates of earlier times during the period of high economic growth (1952-1965).[10] Rapid economic development happened though Japan lacked major natural resources, desperately needed for growing industrial production outputs. The objective of MITI's (Ministry of International Trade and Industry) industrial policy was to shift investment to specific key industries in order to gain international competitive advantage for Japanese corporations. The iron and steel, shipbuilding and petrochemical industries required large-scale import of raw materials. Geographical concentration of these industries and the realization of agglomeration economies on reclaimed land on Japan's Pacific Coast was one key factor for their success. The ubiquitous availability and relatively low prices of raw materials in the world market was another factor. Owing to the exploration and exploitation of huge new oil fields in the Middle East since the late 1950s, low-priced crude oil was beginning to flow into Japan and to replace coal as Japan's major source of energy.

The situation changed after the oil shocks of the 1970s and 1980s when supply disruptions became a major risk for Japan. The key energy and security policy targets were to reduce the risks of oil supply disruptions, to diversify oil import sources and to change the country's energy mix. Before the oil crises, oil supplied 77 per cent of the

10 See Takafusa Nakamura, *Lectures on Modern Japanese Economic History 1926–1994* (Tokyo: LTCB International Library Foundation, 1994).

nation's primary energy needs. This ratio is now less than 50 per cent, but overall the carbon based fossil energy sources oil, coal, and natural gas still provide 83 per cent of Japan's primary energy supply (see Figure 3).[11] Moreover, Japan exhibits a total energy import dependency rate of 80 per cent leaving the country vulnerable to the potential of supply disruptions.

Japan takes a diversity of initiatives for ensuring energy security these days. Strategic oil stocks equivalent to at least 70 days of net oil imports (168 days of domestic consumption respectively) are maintained by private oil companies and JOGMEC (Japan Oil, Gas and Metals National Corporation), a Japanese government independent administrative institution that manages Japan's national stockpiling of oil, Liquefied Petroleum Gas (LPG) and rare metals programs.[12] Among other activities, JOGMEC manages ten national oil stockpiling bases on the coasts of northeastern and southwestern Japan.

Concerns about oil-dependency, climate change and cuts in carbon emissions were leading to a new legislative initiative. Based on the "Basic Act on Global Warming Countermeasures" (*Chikyū ondanka taisaku no suishin ni kan suru hōritsu*), approved by the Cabinet in March 2010, the Japanese government specified its goal of reducing greenhouse gas emissions by 25 per cent from 1990 levels by 2020. Basic domestic policy measures to achieve the reduction target include the following:

- the establishment of a domestic emission trading scheme; the promotion of the use of renewable energy, including the introduction of a feed-in tariff system for all types of renewable energy;

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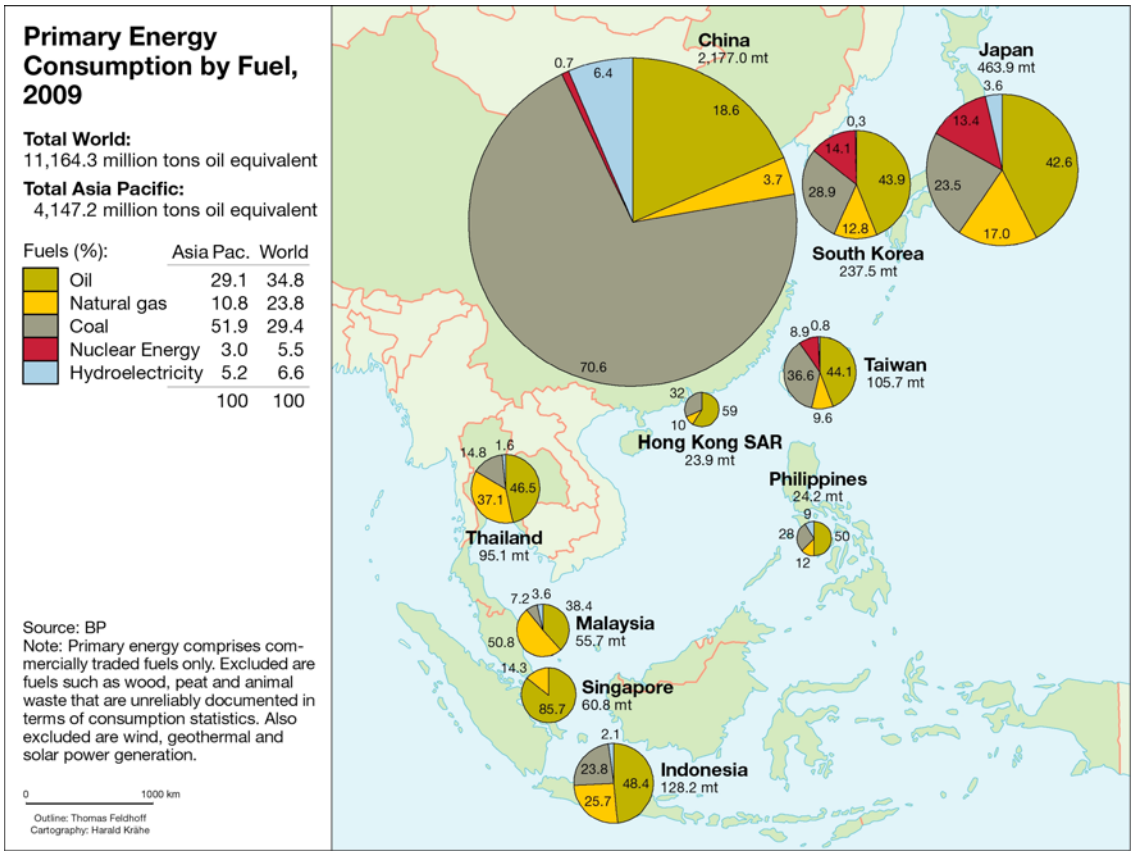
11 For more detailed data see Agency for Natural Resources and Energy, *Energy in Japan 2008*, http://www.enecho.meti.go.jp/topics/energy-in-japan/english2008.pdf (accessed October 7, 2010).

12 See JOGMEC's homepage at http://www.jogmec.go.jp/english/activities/stockpiling_oil/index.html (accessed October 8, 2010).

Figure 3: Primary energy consumption of East and Southeast Asian countries by fuel, 2009



Data source: BP, *BP Statistical Review of World Energy, June 2010*, http://bp.com/statisticalreview (accessed October 1, 2010).

- the promotion of increased energy efficiency including the development of Smart Grids;
- the development and deployment of innovative technologies in the energy sector such as clean coal-fired plants, IGCC (Integrated Gasification Combined Cycle) power plants with CCS (Carbon Capture and Storage) capability and the commercialization of fast breeder nuclear power reactors;
- the promotion of long-term energy research to develop new sources of future energy supply (e.g. fusion energy);

- the strengthening of international partnership for mitigation and adaptation to climate change.

With regard to nuclear energy, the new "Basic Plan on Energy" (*Enerugī kihon keikaku*), published by the Ministry of Economy, Trade and Industry (METI) in June 2010, includes construction of nine new reactors by 2020 and more than 14 new reactors by 2030.[13]

Despite being the only country to have suffered the devastating effects of nuclear weapons during World War Two, Japan has embarked on programs to promote the peaceful use of nuclear technology (see Figure 4). Today, nuclear energy accounts for about 13 per cent of the country's primary energy supply and 30 per cent of its total electricity production. Efforts are being made to acquire a complete nuclear fuel cycle, including reprocessing of used nuclear fuel. Local residents frequently oppose the construction of nuclear facilities in their community, showing an attitude which is well-known as the NIMBY ("Not In My Backyard") syndrome, although the importance of nuclear energy is widely accepted among the general public. Due to public resentments concerning the siting of nuclear facilities, the government and the energy supply companies have developed a highly sophisticated, institutionalized compensation system being flexible and adaptive and reducing the uncertainties of bargaining processes.[14]

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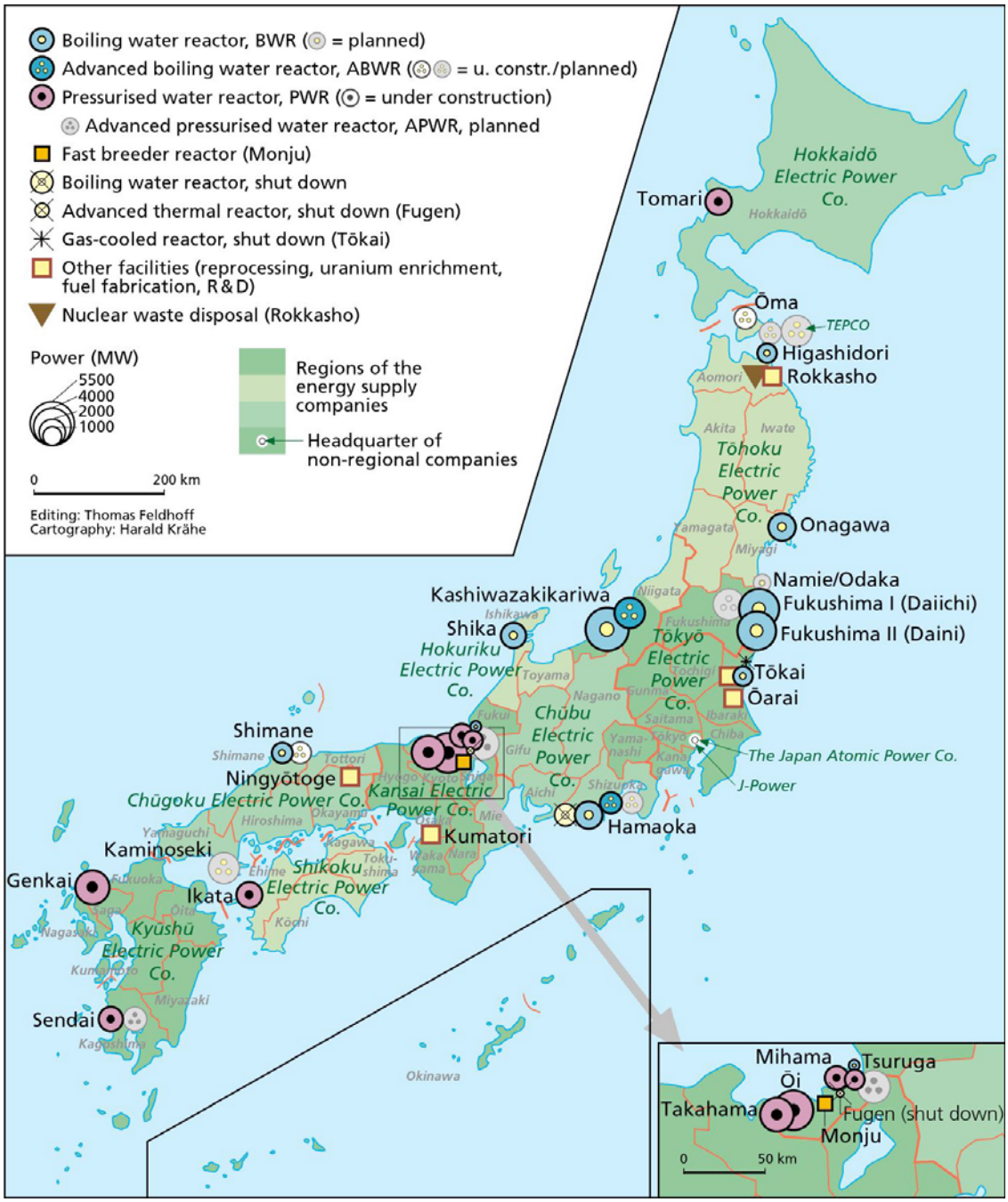
13 See Ministry of Economy, Trade and Industry, *Enerugī kihon keikaku*, http://www.enecho.meti.go.jp/topics/kihonkeikaku/100618honbun.pdf (accessed October 7, 2010).

14 See Daniel P. Aldrich, *Site Fights: Divisive Facilities and Civil Society in Japan and the West* (2nd edition. Ithaca, NY: Cornell University Press, 2008). For the limits of the compensation system, see Daniel P. Aldrich, "The Limits of Flexible and Adaptive Institutions: The Japanese Government's Role in Nuclear Power Plant Siting over the Post War Period", in S. Hayden Lesbirel and Daigee Shaw, eds., *Managing Conflict in Facility Siting* (Cheltenham; Northampton: Edward Elgar 2005), 109-133.

Figure 4: Nuclear power plants and facilities for uranium enrichment, fuel fabrication, reprocessing and storage of radioactive materials in Japan



Data source: World Nuclear Association, Agency for Natural Resources and Energy

Figure 5: Nuclear power related public relations activities by Japan Atomic Energy Relations Organization (JAERO)

Source: JAERO, http://www.jaero.or.jp/ (accessed June 20, 2008)

Although hosting cities are highly subsidized based on this compensation system, campaigns against new nuclear facilities are no exception. Consequently, Japan's nuclear siting policy is based on the expansion of existing sites, not on the development of new ones, and promoting nuclear energy as a safe and secure contribution to ensure the country's energy security (e.g. Japan Atomic Energy Relations Organization, see Figure 5).

In order to meet their increasing energy demands, some East and Southeast Asian countries are building and planning new nuclear power reactors. Based on the availability of modern technology, Japan's nuclear power industry seeks to participate in the growing markets, especially in China. The diffusion of nuclear technology is difficult to control. The regional nuclear energy market is growing, but problems like proneness to natural disasters (earthquakes, tsunami) and reactor safety, political-military affairs, export controls for dual-use nuclear technologies and non-proliferation as well as nuclear waste storage are remaining unsolved. These are very important

aspects of Japan' relations with East and Southeast Asia with relevance for all the key players: energy corporations; policy-makers; international and non-governmental organizations. In face of the problems associated with nuclear energy use, one might ask whether development as a "catch-up" process in which less developed countries take advantage of the technological paths previously forged by more developed countries is anything favourable and desirable in the case of nuclear energy use. This shared conception of developmental catch-up is seriously criticized because it is a technological-determinism and an uncritical stance towards potential hazards. The background to the increasing use of nuclear power is, of course, the increasing number of conflicts over energy and other natural resources around the world which indicates that resource development still is an important economic activity.

4. The Maritime Dimensions of Japan's Energy Security

With regard to oil supply, increasing demands and a greater reliance on foreign oil are spurring offshore exploration for new sources of oil production. Japanese oil companies are primarily involved in projects in the Middle East and Southeast Asia. This leads us to considering additional international dimensions of energy security with regard to maritime strategic trends in the Asia-Pacific. Japan and most of the East and Southeast Asian states have claims and counterclaims on the right to establish exclusive economic zones (EEZ) in parts of the East China Sea and the South China Sea, originating from ambiguous provisions of the United Nations Convention on the Law of the Sea (UNCLOS).[15] Though usually ancillary to more fundamental geopolitical issues, such conflicts sometimes become central to international military and diplomatic affairs.

The ongoing dispute over ownership of the Senkaku (chin. Diaoyu) Islands between Japan, China and Taiwan is symbolic of the very fundamental economic and political

15 For details in the context of East Asia see Zou Keyuan, *Law of the Sea in East Asia. Issues and Prospects (*London; New York: Routledge, 2005). Gaye Christofferson, "Japan and the East Asian Maritime Security Order: Prospects for trilateral and Multilateral Cooperation", *Asian Perspective* 33, 3 (2009), 107-149.

power struggle. In the second quarter of 2010, Japan lost its place to China as the world's second-largest economy in terms of nominal gross domestic product. Uneasy perceptions of the economic, diplomatic and military rise of China are no exception among its neighbors and a major risk to regional stability. In fact, China as an emerging superpower has vital interests to protect which are no longer solely domestic, but rapidly expanding beyond the region. China is stressing its maritime interests, in particular, by heavy investment in its naval force. Mao Zedong's Theory of the Three Worlds, which was presented by Chinese leader Deng Xiaoping at the UN General Assembly in 1974, has long been discarded by the post-Mao leadership.[16]

The Strait of Malacca is a symbol of the vulnerability of Japan's energy security. It is one of the most important shipping routes in the world. For centuries, it has been part of the Arab trade routes linking the Middle East with Southeast and East Asia. Singapore, located at the southern tip of the Strait of Malacca (see Photo), developed into a key nodal point of the Indian Ocean–Strait of Malacca–South China Sea–Pacific Ocean trade route. Competition between the great powers for access to these straits will remain an integral part of future geopolitics. The strait leads to the South China Sea and serves as major choke point for a significant share of world trade including mineral and other natural resources. More than 90 per cent of oil imports into Asia and the Pacific are transported by sea tanker through this strait.[17] The capacity of the various nations in the region to control navigation, project military power and conduct naval operations has become increasingly important. The security interests of extra-regional powers like

16 See Herbert S. Yee, "The Three World theory and post-Mao China's global strategy", *International Affairs* 59, 2 (1983), 239-249. The concept identified the two superpowers, the United States and the former Soviet Union, as the First World; the developing countries as the Third World; and the developed countries between the two as the Second World. China declared itself belonging to the Third World, never seeking to become a superpower.

17 See Kang Wu et al., "Oil in Asia and the Pacific: Production, Consumption, Imports, and Policy Options", *Analysis from the East-West Center* No. 85 (August 2008), 6.

the United States and Russia are also involved. China is under suspect as to seize sole control of the shipping traffic in the region and building-up its military capabilities.[18]

Photo: Singapore and harbor, at the southern gateway to the Strait of Malacca

Source: *Malacca, Strait of.* Photograph. *Encyclopædia Britannica Online,* http://media-2.web.britannica.com/eb-media/69/93569-050-949C2CDA.jpg (accessed October 26, 2010)

What makes the situation most complicated is the fact that the conflicting claims over maritime space are fueled not only by resource rivalries but also by historical unresolved grief and resurgent nationalism. The common understanding that peace is

18 On the maritime history of Asian seas see James R. Holmes, "The Twentieth Century: Asia Returns to the Sea", *Education About Asia* 14, 3 (Winter 2009), 31-36.

simply too important, however, may be the catalyst necessary for political leaders to reduce tensions and to stabilize the relations between countries.

5. Conclusion: Energy Policies for Peaceful Co-existence

What else can be done to improve the situation? More emphasis needs to be placed on the role of preventive diplomacy and the creation of new institutions for dispute management and conflict prevention on a regional rather than a global level. Practical compromises, including joint development of resources in disputed areas, a universal commitment to freedom of passage through international straits, technology transfer and more multilateral and bilateral cooperation on energy issues (e.g. ASEAN Plan of Action on Energy Cooperation; Pacific Energy Summit) might offer opportunities to enhance energy security and political stability collectively. Japan's advanced energy and environmental technologies, in particular, could serve as a bridge to enable Asian nations to reduce their energy consumption and stimulate more cooperative international relations. However, some countries in the region seem to be less concerned about their ties to each other than about intensifying links with resource-rich countries in the Middle East, Africa and elsewhere.[19] China's engagement in Africa is the most prominent example and illustrates the reality of a rapidly changing world. Many western countries have already criticized China's neo-colonial policy for Africa, neglecting the existence of illegitimate regimes, corruption and human rights abuse in favor of access to natural resources.[20]

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19 See Kang Wu et al., "Oil in Asia and the Pacific: Production, Consumption, Imports, and Policy Options", *Analysis from the East-West Center* No. 85 (August 2008), 9.

20 On "China in Africa" see Deborah Brautigam, *The Dragon's Gift: The Real Story of China in Africa* (Oxford: Oxford University Press, 2009). John Ghazvinian, *Untapped: The Scramble for Africa's Oil* (San Diego, CA: Harcourt, 2007).

"Asia is resuming its central place in world politics, at sea as in other fields of endeavour"[21] – and the questions being asked over energy security are global in consequence. Both cooperation and competition among the countries, concerned with the looming end of the cheap fossil fuel age, will continue to coexist. Both Japan and China, bound together by strong economies ties, will surely play an important role for a stable regional order. They have no interest of military conflict because the economic effects would be unpredictable. An integrated strategy aiming at decarbonising energy to reduce the depend on fossil fuels, including a proactive nuclear and renewable energy policy, decreased energy demand through energy efficiency, and increased investment in energy research and development activities forms an essential part of Japan's energy future. With regard to the overall economic structure, the critical trend is from natural resources to the knowledge economy**.** Japan's vulnerability, however, remains an important aspect of the geopolitical reality for the time being.

21 James R. Holmes, "The Twentieth Century: Asia Returns to the Sea", *Education About Asia* 14, 3 (Winter 2009), 36.

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