

Japan's Public-Private Approach to Energy Security Cooperation in Northeast Asia

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In this chapter I review the Japanese government's strategy towards managing security of energy supplies, and the implications of this strategy for regional cooperation and competition. I focus in particular on how the government's approach to Northeast Asian energy security is influenced by the weak commercial position of Japanese firms in international markets, and by the structure of the fuel markets within which they compete.

I make two arguments. First, the supply-side approach taken by the Japanese government towards risk management in the energy sector has focused on diversifying the fuels and locations from which fuels are imported, and on strengthening the competitive position of domestic firms in international fuel markets. Second, the implications of its approach for the likelihood of regional cooperation and competition are conditioned by the structure of the private markets for fuels. In particular, while often overlooked, I argue that the *private regime governing trade and investment in oil and gas enables a significant degree of cooperation between Japan, China, South Korea, Russia, and other countries*, even as the Japanese government maintains parochial elements in its strategy towards managing perceived risks associated with fuel imports.

In the first part of this chapter I describe the strategies pursued by the Japanese government, and by Japanese firms, as they have sought to manage the perceived risks associated with fuel imports. I begin by outlining the capabilities of the government in the energy sector, and the most prevalent forms of industrial organization, across different fuels. I also discuss how this has affected the structure of supply and demand for fuels within the Japanese economy.

In the second section I argue that substantial cooperation occurs between Japan and its neighbors, although this is mediated by private markets rather than intergovernmental agreements. I also delineate areas in which the Japanese government has actively promoted international cooperation at the intergovernmental level. In the third and final section of the chapter I move on to consider the effect of the March 11, 2011 earthquake and nuclear crisis on the makeup of Japan's energy mix, and how forms of private and public governance are changing as a result of the disaster.

I. Government Interests and Firm Capabilities

Japan as a country consumes more energy products than are produced domestically. This makes it reliant on imports to meet a substantial share of this demand. Japanese firms also control a small share of resources internationally relative to the volumes consumed at home. These enduring facts of Japanese energy supply and demand place the perceived national security risks associated with energy imports at the center of Japanese energy policy.

Japan has few reserves of fossil fuels domestically that are exploitable at competitive prices. Even for coal, which is the most abundant fuel domestically, production is low relative to demand. In 1981, for example, Japan produced eighteen percent of total coal consumed domestically, yet this fell to less than one percent by 2012. In volume terms, consumption stood at 124.4 million tonnes of oil equivalent (mtoe) of anthracite, bituminous, sub-bituminous and lignite coal in 2012, while firms produced just 700,000 tonnes of oil equivalent domestically.

Japan has even fewer reserves of crude oil and natural gas available to be produced. Crude oil consumption domestically stood at 24 million tonnes in 1981 and 204 million tonnes in 2010, yet there is almost no crude oil produced domestically. This is also the case for natural gas, where consumption increasing from 22 mtoe in 1981 to 85 mtoe in 2010, and then increased once again to 105.1 mtoe in 2012 as Japan's electricity firms substituted nuclear power generation with natural gas following the March 11, 2011 disaster.¹

The deficit in domestic energy production positions energy security, and environmental stewardship, at the core of the Japanese government's public policy goals in the energy sector. The Basic Law on Energy, which was passed in 2001 and codified the government's long-standing approach to governance in the energy sector, identifies energy security and environmental stewardship as the most important goals of public policy, with the use of market principles relegated to a third principle. Nuclear energy has been central to this strategy, although its share of the fuel mix has plummeted as a result of the Fukushima disaster of March 11, 2011 and its future remains uncertain.

One policy response to the lack of domestic reserves focuses on lowering energy demand per unit of output. The government applies a variety of subsidies, taxes and regulations to improve the efficiency with which energy is used. Excise taxes are levied on a wide range of energy sources, including crude oil, oil products such as gasoline and diesel, liquid petroleum gas, coal, and electricity.² The energy intensity of the Japanese economy is one of the lowest in the OECD, although it has remained static since the 1990s, and the result is not wholly attributable to the incentives put in place by the government.³ Japan has high population density, for example, relative to many of its peers. Energy prices are higher than other OECD countries for reasons unrelated to attempts by the government to lower energy use per unit of output. The share of manufacturing, which tends to be more energy intensive than the services sector, has fallen as a ratio of total economic output. In addition, there is evidence that Japan's energy efficiency policies are influenced by

¹ *BP Statistical Review of World Energy 2012*. See: <http://www.bp.com/statisticalreview>

² For a summary of Japanese energy-related taxes in English see Ministry of Finance, *Comprehensive Handbook of Japanese Taxes 2010* (Tokyo: Ministry of Finance, 2010): 198-213.

³ Energy intensity is a measure of how much energy is used in order to produce a unit of economic output.

electoral politics and other considerations that are unrelated to the public policy goal of reducing the amount of energy per unit of economic output.⁴

On the supply side, which is the focus of this chapter, the government uses fiscal instruments, in the form of incentives to firms, to diversify the fuels used within the economy to meet energy demand, and the location from which these fuels are sourced.

Geographic diversification aims to reduce geopolitical risk by broadening the countries from which fuel is drawn to supply the domestic market, and lowering producer market power. On the revenue side, public investment since 1972 has been supported by an expansion in the use of special taxes as the revenue base for oil (1972), nuclear power siting (1973), natural gas (1980), and energy efficiency (1993).⁵ In terms of spending, state finance corporations the Japan Oil, Gas, and Metals National Corporation (JOGMEC), and the Japan Bank for International Cooperation (JBIC), subsidize firms operating in oil and gas, and include geographic diversification as a core criterion for determining which energy related projects receive state subsidies.

The most important vehicles used to promote fuel diversification through public financing are private sector firms. The government retains a 18.9 percent equity stake in INPEX, along with a preferred share with veto rights that gives it veto power over important managerial decisions.⁶ In addition, the government holds a 34 percent share of Japan Petroleum Exploration (Japex), with a further five percent held indirectly through INPEX.

Given its deep involvement in shaping incentives in the energy sector, the Japanese government unsurprisingly has a well developed set of institutions through which it incorporates industry and other interests as they seek to shape patterns of energy supply and demand in their favor.⁷ The most important entity with responsibility over Japan's energy security policy is the Ministry of Economy, Trade and Industry (METI). Data shows energy and environmental policy, including energy security, has increased within the portfolio of areas that the government is charged with managing: in budgetary terms energy plays a larger role than other sectors within the METI budget; the number of employees working on energy related issues has increased in relative terms, and the number of energy-related laws passed by the ministry has increased over time.⁸

⁴ See, for example, Phillip Lipsky and Lee Schipper, "Energy Efficiency in the Japanese Transport Sector," *Energy Policy* 56 (2013): 248-258.

⁵ Llewelyn Hughes, "Climate Converts: Institutional Redeployment, Industrial Policy, and Public Investment in Energy in Japan," *Journal of East Asian Studies* vol. 12 no. 1 (2012): 100-101.

⁶ Article 108 of Japan's 2006 revised company law establishes a share class enabling special voting rights.

⁷ Llewelyn Hughes, "Climate Converts": 89-117.

⁸ See Hughes, "Climate Converts": 98, for calculations. The management of energy policy is complicated by the March 11, 2011 nuclear disaster, described below.

The foundations of Japan's energy policy, including security energy security of supplies, are codified in The Basic Law on Energy, which passed into law in 2001. Article Three of the Law requires the government to submit a Basic Energy Plan (BEP) to cabinet every three years, outlining out how Japan will achieve energy policy-related goals. This provides industry and the government an opportunity to renegotiate how Japan's energy security, environmental, and other energy-related public policy goals are pursued both domestically and internationally. As with the standing committees, the BEP is developed through negotiations between the government, industry, and specialists. The plan is then submitted to cabinet for approval, and forms the basis for the provision of subsidies and other incentives provided to firms.

Policy in energy security is managed through a series of advisory councils that incorporate the interests of organizations including with an interest in energy policy, including consumer representatives and firms. They also have substantial representation from technical experts. In 2010, for example, of 244 members within these committees 41 percent were industry representatives, 43 percent were academics, think tank members and other researchers, 6 percent were from local and central governments, and 10 percent were from consumer associations and other civil society bodies.

These committees have an important influence on the strategy the Japanese government uses to support exploration and production efforts internationally, and the industrial organization of the Japanese energy sector. In response to the poor performance of international investments subsidized by the government, for example, on the recommendation of a review committee within the ministry the terms under which project financing is provided to firms was reorganized in the 2000s to reduce the share of risk money provided by the government.⁹ Project companies invested in by the government were also reorganized in order to increase scale, with one result the completion of a merger between INPEX and Teikoku Oil in 2008. Although small in international terms and not vertically integrated into refining or marketing like its international peers, the firm is positioned as a Japanese "mini-major," and produced 246,000 barrels per day of crude and 162,000 barrels of oil equivalent a day of natural gas in 2013.¹⁰

The largely private organization of Japan's energy sector means the Japanese government's energy security strategy unfolds through the provision of subsidies to change the incentives facing private sector entities. It also gives firms a substantial role in determining which projects receive support from the state. Two public finance organizations – Japan Oil, Gas, and Metals, National Corporation and the Japan Bank for international Cooperation - are particularly important.

The Japan Oil, Gas, and Metals, National Corporation

⁹ Llewelyn Hughes, *Globalizing Oil: Firms and Oil Market Governance in France, Japan, and the United States* (London: Cambridge University Press, 2014)

¹⁰ INPEX, *Annual Report 2013* (Tokyo: INPEX, 2013): 17.

The Japan Oil, Gas, and Metals, National Corporation (JOGMEC) is a public corporation created in 2004 by the Law Concerning the Japan Oil, Gas and Metals National Corporation. It replaced the Japan National Oil Company (JNOC), which was abolished following the poor performance of its investments. JOGMEC is responsible for maintaining the strategic stockpile held by the Japanese government. (Firms with storage capacity in Japan are also required to maintain and make available to the government stocks of oil and oil products for use during supply disruptions.) JOGMEC is also responsible for providing financing to Japanese firms operating in the upstream in oil, natural gas, metals and minerals, coal, and geothermal energy.

Formally, JOGMEC's mission is defined as "making contributions in a wide range of fields, from surveys of oil and gas resources, through exploration, development, production, to stockpiling, as its mission to ensure a stable supply of oil and gas, under Japan's energy policy."¹¹ It carries out this mission by providing project financing to companies engaged in exploration, development and production, and supporting energy-related infrastructure projects such as the development of liquefaction facilities. JOGMEC also finances firms seeking to purchase assets in the upstream. In the exploration phase, where financial risks are greater, JOGMEC provides a substantial share of the exploration costs – up to 75 percent of required capital. For the acquisition of assets, JOGMEC provides up to 50 percent of the capital needed to move to the production phase, up to a limit of 50 percent of the total investment of the project company.

Financing provided by JOGMEC to project companies requires participation by firms with headquarters based in Japan. Firms can, however, engage in joint exploration and development opportunities with non-Japanese firms. Japanese firms are also not required to participate in projects as the operator. JOGMEC also provides financing for the development of natural gas projects, and the infrastructure needed to liquefy the gas for maritime transport. JOGMEC's support for firms extends beyond early exploratory work into guaranteeing the liabilities associated with the development of projects, including project financing provided by the Japan Bank of International Cooperation. JOGMEC can guarantee up to 75 percent of the debt for financing provided by JBIC or private banks to the Japanese project company participating in the project. Total equity finance provided for oil and gas exploration and production, and gas liquefaction facilities, to the end of fiscal year 2011 stood at 104.3 billion yen (1.043 billion dollars at 100 yen to the dollar), with guarantees standing at 250.9 billion yen (2.509 billion).¹²

In terms of geographic location, projects in the Asia-Pacific region make up the largest number of projects invested in by JOGMEC, with 166 projects (excluding Japan) receiving financing, against fifty-three projects in the Americas, thirty-three in Africa, twenty-six in the Middle East, twenty-one in Europe, and ten in the former-Soviet Union.

¹¹ JOGMEC, *JOGMEC's Activities: Oil and Natural Gas Resources Field* (Tokyo: JOGMEC, 2012): 2.

¹² JOGMEC, *2012 Annual Report* (Tokyo: JOGMEC, 2012), p. 27.

In terms of volumes of crude oil lifted, the Asia-Pacific lies behind the Middle East as the second most important region.¹³

Japan Bank for International Cooperation

The second public body with a role in supporting private firms in managing the energy security in oil and gas is the Japan Bank for international Cooperation (JBIC). JBIC has a broader remit than that of JOGMEC, focusing on the provision of public financing not only to support upstream resources acquisition, but also financing climate change-related products, as well as industry and infrastructure finance, and supporting financial sector stability.¹⁴ In the energy sector, like JOGMEC, JBIC has the mission of “supporting development/acquisition of resources in the upstream sector and a stable supply of resources.” It does so by providing project finance and loan guarantees, focused on the development phase of upstream energy projects. Overseas investment loans made up sixty percent of the total commitments from JBIC in fiscal year 2011.

JBIC’s activities are explicitly linked to Japan’s international position in energy markets. JBIC notes that lending from the Energy, Natural Resources and Environmental Finance Group is driven by increased competition for acquiring and developing upstream resources in order to increase stability of energy supplies into Japan. It further notes that supply risks are increasing because of increasing demand in developing states in the Asia-Pacific. Consistent with the energy strategy developed by the government, JBIC sees geographic and fuel diversification at the core of Japan’s strategy to manage security of supply risks. JBIC also identifies overseas financing as an important instrument for improving relations between it and the governments of resource producing countries. This includes offering financing for packaged infrastructure projects in those countries.

The Asia-Pacific is an important focus of JBIC investments in the energy sector. In 2011 JBIC signed a Memorandum of Understanding (MoU) to establish a fund designed to increase energy efficiency in China, with the goal of promoting joint projects between Chinese and Japanese firms using the latter’s more advanced environmental technologies. JBIC also signed an MoU with Mongolia’s Ministry of Finance with the goal of increasing economic cooperation between the two countries, including in upstream resources development.

The Asia-Pacific received the second largest of total JBIC commitments in fiscal year 2011, at 17 percent of total investments, against 26 percent for Latin America and the Caribbean, 15 percent in the Middle East, and 14 percent in Europe. Of the 458 billion

¹³ JOGMEC, *JOGMEC’s Activities: Oil and Natural Gas Resources field* (Tokyo: JOGMEC, 2012), p. 4-6.

¹⁴ JBIC, *JIBC Profile: Role and Function* (Tokyo: JBIC, 2012). Project financing has undergone a number of reorganizations, with JBIC emerging from a combination of the Export-Import Bank of Japan and the Overseas Economic Cooperation Fund in 1999, before the latter was spun-off into the Japan International Cooperation Agency (JICA) in 2006.

yen of loans disbursed by JBIC in the natural resources sector in fiscal year 2011, energy-related resources made up 59 percent, with 40 percent in natural gas, 12 percent in coal and 7 percent in crude oil.¹⁵ In FY2011, export loans were provided at between 1.1 percent and 1.39 percent, depending on the length of the repayment period, with an upper limit of 60 percent of the total project financing able to be covered by JBIC. For overseas investment loans, import loans, and untied loans, on the other hand, the rate stood at 0.875 percent, with an upper limit of 60 percent applied once again.¹⁶

To summarize, the government has significant institutional capacity in the energy sector, both in terms of policy development and the deployment of state resources. The government's interest in developing these capabilities is to promote security of energy supplies through the geographic diversification of supply across the markets for different fuels, and by diversifying fuel types themselves, in order to reduce the risks associated with the over-reliance on any given fuel-type. It has also sought to enhance the competitiveness of domestic firms in the energy sector. In the next section I describe how this has helped to affect the structure of energy supply and demand within the Japanese economy, and the competitiveness of Japanese firms.

Japanese Firm Capabilities

The government has had some success diversifying fuels, particularly towards nuclear power. It has had less success, however, promoting domestic firms' competitiveness. Japan does not have an integrated and diversified energy firm operating across multiple fuels and stages of production. Instead, it has multiple firms that tend to operate within discrete fuel markets in terms of the final delivery of energy. The exception to this is the Japanese trading companies. These firms operate in the upstream segment across multiple fuels, but are not integrated across the supply chain, preferring instead to supply fuels to other firms for processing, distribution and marketing to the final consumer. In the case of oil and gas, they also typically participate financially in return for a share of production, rather than acting as operators.

Across each of the most important fuels there are thus a number of firms that focus on that sector, generating a variety of forms of corporate organization across different fuels, and at different stages of the supply chain. This is also the case in electricity, where the most important electric power companies (EPCOs) manage generation across different fuels, and have traditionally been vertically integrated, but have not transformed into general energy firm model with operations encompassing upstream fuel production in addition to electricity generation, transmission, and sales.

Japanese firms in oil and natural gas are weak relative to those based in other major industrialized economies as a result. One Japanese firm features in Platt's index of the top 50 energy firms, and five firms in the top 100. The highest ranked firm is JX Holdings, which stands at number 45, followed by Inpex Corporation (59), Tokyo Gas (68), Tonen

¹⁵ JBIC, *JIBC Profile: Role and Function* (Tokyo: JBIC, 2012): 84-86.

¹⁶ JBIC, *JIBC Profile: Role and Function* (Tokyo: JBIC, 2012): 97.

General (82) and Idemitsu Kosan (94). Returns on investment are also relatively poor. JX Holdings, for example, ranks 177th in terms of its Return on Capital Invested (ROIC), while Inpex Corp. stands 97th, Tokyo Gas 83rd, Tonen General 47th, and Idemitsu Kosan 184th.

Table 1: Global Ranking of Japanese Energy Firms

Firm	Industry	Global Rank	Assets (US\$ Million)	Rank	ROIC (%)	Rank
JX Holdings	Refining	45	\$73,332	32	3	177
Inpex Corp.	E&P	59	\$36,451	78	6	97
Tokyo Gas	Gas Utility	68	\$20,084	128	6	83
Tonen General	Refining	82	\$13,961	175	9	47
Idemitsu Kosan	Refining	94	\$27,503	104	3	184
Osaka Gas	Gas Utility	120	\$15,795	156	4	148
Tokyo Electric	Electric Utility	162	\$151,092	15	-8	315
Chubu Electric	Electric Utility	168	\$59,299	45	-1	292
Kansai Electric	Electric Utility	174	\$76,963	28	-4	307
EPDC	IPP	175	\$21,873	120	2	243
Tohoku Electric	Electric Utility	199	\$43,187	69	-3	298
Kyushi Electric	Electric Utility	209	\$45,628	59	-10	320
Showa Shell	Refining	214	\$12,431	188	0	281
Chugoku Electric	Electric Utility	215	\$29,226	101	-1	293

Note: IPP means Independent Power Producer.

Source: Platt's Top 250 Energy Companies 2013.

In addition, Japan's group companies within the diversified trading houses of Mitsubishi, Mitsui, Sumitomo, Itochu, and Marubeni take physical positions upstream, and have also benefited from the government's willingness to underwrite project risk through financing and loan provision. They typically do not act as operators, however, instead taking a financial position in return for a share of production. Mitsubishi Exploration, for example, invests in oil and LNG projects spanning West Africa, the Asia-Pacific, the Gulf of Mexico, and the North Sea, and is invested in the Sakhalin II project. Mitsui Oil Exploration also has positions globally, although it seldom functions as operator, preferring instead to hold rights to gas and oil produced from fields in which it is invested. Group companies within the trading firms also take physical positions in upstream coal development and production, including investments in Australia.

Japanese energy firms remain weak on a global basis despite long-standing attempts by the government to improve their competitiveness. A particular focus has been on creating a vertically integrated oil and gas major that can function as an operator and can compete with major integrated firms. As Table 1 shows, this attempt has failed. Japanese firms operating in oil remaining largely vertically and horizontally fragmented. In the case of refining, the government erected barriers to trade in order to protect the domestic refining industry, however this tended to consolidated industry fragmentation rather than increase scale. The negative effect of import barriers on refining firms' performance can be seen in the effects of the liberalization of refined product imports, which began in 1986 and was driven both by a recognition of the failure of protectionism to promote scale among Japan's refiners, and demands from industry and consumers for lower costs. Import liberalization led to substantial reorganization of the industry, including mergers and acquisitions, although returns in the refining segment of the industry remain low.

Beginning in 1995, the Japanese government also implemented limited liberalization of the regional monopoly model that historically provided supply in both the gas and power sectors. Demand in the power sector has been met by ten regional monopolies (including Okinawa), and while liberalization of the power sector saw limited falls in electricity prices, there have been few new market entrants. The regional power monopolies have also largely avoided competing in each other's service areas.¹⁷ Similarly, in the case of gas, Japan has a limited domestic pipeline infrastructure centered on the major population centers of Kansai and Tokyo, with supply met by Osaka Gas and Tokyo Gas, but little direct competition between them.¹⁸ Both Japanese gas and power firms remain overwhelmingly domestic in orientation, and have not diversified beyond their traditional business areas. This stands in contrast to the diversified, multinational energy business models chosen by ENI (Italy), Centrica (United Kingdom), Iberdrola (Spain), E.ON (Germany), and RWE (Germany).

The Result - Japan's Energy Landscape

Oil continues to dominate primary energy supply to the Japanese economy, largely because substitutes for oil products in transport are unavailable at competitive prices.¹⁹ The Japanese government intervened heavily in the energy sector in the attempt to reduce the role of oil, and this has affected the types of fuels used by final consumers.²⁰ Prior to

¹⁷ As I discuss below, the power sector is now undergoing fundamental reorganization as a result of the nuclear accident following the March 11, 2011 earthquake and tsunami in the Tohoku region.

¹⁸ There is competition between the power and gas firms over final consumers in the residential sector, as noted by Hattori (2011).

¹⁹ Oil-fired generation (heavy and crude) constituted 41.4 percent of installed capacity, and 57.6 percent of total electricity generated in 1970, falling to 17.8 percent of the installed base and 2.2 percent of electricity generated in 2010.

²⁰ For a historical overview see Richard J. Samuels, *The Business of the Japanese State: Energy Markets in Comparative and Historical Perspective* (Ithaca, NY: Cornell University Press, 1987).

the disaster of March 11, 2011 – which has had a profound effect on the fuel mix in Japanese electricity generation, crude oil made up approximately 41 percent of the country's Total Primary Energy Supply (TPES), due to the continued dominance of gasoline and diesel in the transportation sector.

Within the electricity sector, the diversification of fuels has focused on nuclear power, which constituted approximately 20 percent of the installed base, and 26 percent of total generated electricity prior to the 2011 disaster. Natural gas stood at approximately 24 percent of generation capacity and 28 percent of generated electricity. Coal was 16 percent of generation capacity and 25 percent of generated electricity, oil was 19 percent of generation capacity and 13 percent of generated electricity. Finally, renewable energy sources, including hydropower, stood at 21 percent of generation capacity and 9 percent of generated electricity.²¹

Incentives to shift the balance of fuels away from substitutes for oil (and coal) have thus demonstrated some success. This has also led to greater diversification of suppliers across all fuels, although within single fuel segments suppliers remain geographically concentrated.

Crude supplies remain focused in the Middle East, with Saudi Arabia supplying almost a third of total crude imports in 2011 (31.1 percent), the United Arab Emirates at 22.5 percent, Qatar at 10.2 percent, Iran 7.8 percent, and Kuwait 7 percent. Russia is the largest producer outside the Middle East, supplying 4.1 percent of total imports in 2011, with total imports from the Middle East standing at 85.1 percent of total imports.²² Natural gas suppliers are more diversified geographically. Total imports from the Middle East stood at 29.5 percent in 2011. Major exporters outside the Middle East were Malaysia (18.2 percent), Australia (16.3), Indonesia (9.5), Russia (9.3) and Brunei (7.4). Finally, coal supplies are less diversified, but are focused on areas with less geopolitical risk. Most notably, Australia represents 61.5 percent of total imports, followed by Indonesia (19.4 percent), Russia (6.5), and Canada (5.1)

Japan's energy security regime thus extends across a range of different fuels, each of which present the government, and firms, with different challenges in terms of securing energy supplies. Firms tend to be vertically specialized and operate within particular fuel

²¹ Ministry of Economy, Trade and Industry, *The Strategic Energy Plan 2010 - Meeting Global Challenges and Securing Energy Futures* (Tokyo: METI, 2010). The difference between generation capacity and electricity generated emerges because of the fuel costs and differences in the stability of different fuel types supplying electricity to the grid. The higher fuel costs for heavy oil relative to nuclear power and coal, for example, means it tends to be used for power generation only when demand is high.

²² Reliance on Middle Eastern suppliers fell to a low 67.9 percent in 1987. METI identifies the reduction of the exports as a share of total production in China, Indonesia, Malaysia, and Vietnam, as an important reason for the reorientation of supply back towards the Middle East. Ministry of Economy, Trade and Industry, *Enerugii Hakusho 2013 [Energy White Paper 2013]* (Tokyo: METI, 2013), p. 115-17.

markets; Japan does not have the kind of diversified energy group found in Italy with ENI, or in France with Total. While the government has significant institutional capabilities in developing and implementing energy policy, its ability to shape energy markets in order to improve Japanese energy security of supply is constrained both by the capabilities of private sector firms, and the structure of the fuel markets these firms operate in. The complexity of managing energy security within these markets has increased as a result of the March 11, 2011 disaster, and the consequent drop of nuclear power within Japan's energy mix.

II. *Implications for Energy Cooperation and Competition*

What are the implications of the Japanese government's strategy towards managing energy security risks, described above, for cooperation and competition in Northeast Asia? The Japanese government identifies the rise of demand in the Asia-Pacific as a factor increasing energy security risks, this requiring greater effort to improve the competitive position of domestic firms in international markets. The 2010 BEP noted the rise of demand in the Asia-Pacific as justification for reinvigorating public financing of upstream subsidy development, for example, as well as identifying increased competition over securing the rights to exploit upstream resources.²³ This leads some analysts to raise concerns about the risks associated with state-backed competition between firms based in the Northeast Asian states, and the governments that support them.

In this section I argue that focusing on the prospects for interstate cooperation or competition between states alone misses the crucial role that *the private regime governing trade and investment in oil, gas, coal, and other natural resource markets play in promoting cooperation between firms based in the Northeast Asian states*. This means that parochial efforts to promote the interests of firms headquartered domestically can lead to cooperative outcomes, although these are mediated by private markets rather than intergovernmental agreements. The private regime governing trade and investment in natural resources has two characteristics. First, the central participants are private actors, rather than states.²⁴ Second, the regime is focused on voluntary contracting between these

²³ “Ajia wo chushin ni sekai no enerugii juyo ha kyuzo wo tuzuketeori, shigen keneki kakuho wo meguri kokusai kyoso ha shiretsuka shiteiru.” [International competition for securing resource rights is heating up as world energy demand continues to rapidly increase, centered on Asia.” See Agency for Natural Resources and Energy, *Enerugii Kihon Keikaku [Basic Energy Plan]* (Tokyo: METI, 2010), 2.

²⁴ For the purposes of this chapter I conceive of National Oil Companies (NoCs) as private actors, for two reasons. First, they operate within private markets, which have different incentives to those facing governments. Second, there is substantial variation in the degree to which governments are able to align the incentives of NoC management with those of the firms, however in most cases their ability to do so is limited. See David G. Victor, David R. Hults, and Mark C. Thurber, *Oil and Governance: State-Owned Enterprises and the World Energy Supply* (New York: Cambridge University Press, 2012).

private actors.²⁵ This does not mean that states are irrelevant, but rather they play a secondary role by influencing the incentives of private actors through subsidizing firm activities, controlling managerial appointments, and other policy instruments. Governments in resource producing countries are also able to determine the distribution of wealth associated with the exploitation of those resources.

In the case of fossil fuels, this private, voluntary contracting enables multiple firms to bid for, and participate in, the financing and development of energy-related projects. As I describe below, this makes it possible for China, South Korea, and Japan to cooperate in the joint development of energy resources, and meet the perceived risks associated with energy imports, even as governments subsidize domestic firms in order to promote energy security.

Cooperation in the Private Regime Governing Resource Markets

Access to the rights to exploit upstream resources is often portrayed as a zero-sum game that generates important security externalities. There is little doubt that competition can be intensely competitive as firms – backed by home governments – seek to secure the rights to develop fields, and to increase the share of production allocated to them. Competition for upstream resources has also been used by governments, including in Japan, to justify the reinvigoration of support for firms developing resources in oil and natural gas upstream.

Yet despite this framing of upstream resource competition, evidence shows there is substantial cooperation between Japanese firms backed by the Japanese government, with firms based elsewhere in Northeast Asia, in oil and natural gas. This cooperation is mediated through private contracts, however, rather than intergovernmental agreements at the bilateral or regional level.

Proven reserves of crude oil in the Asia-Pacific– and in Northeast Asia in particular – are limited. Data shows the Asia-Pacific holds just 2.5 percent of global proven crude oil reserves. Other than in China, which has 0.9 percent of global proven reserves, countries in Northeast Asia have negligible reserves of crude available to be exploited domestically.²⁶ Proven reserves of natural gas in the Asia-Pacific and Russia are a larger share of global reserves than is the case for crude oil. Proven reserves of natural gas in the Asia-Pacific were 8 percent of the global total in 2011, with Russia holding 21.4 percent. The Middle East, on the other hand, held 38.4 percent of the global total, against 48.1 percent of proven reserves in the Middle East in the case of crude oil in 2011, 5.3 percent for Russia, and just 2.5 percent for the Asia-Pacific.

²⁵ Kenneth W. Abbott and Duncan Snidal, “Strengthening International Regulation Through Transnational New Governance: Overcoming the Orchestration Deficit,” *Vanderbilt Journal of Transnational Law* Vol. 42 (2010): 506.

²⁶ *BP Statistical Review of World Energy 2012*. See: <http://www.bp.com/statisticalreview>

The Asia-Pacific was responsible for 14.6 percent of total gas produced globally in 2011, with China at 3.1 percent, Indonesia at 2.3 percent, Malaysia at 1.9 percent, and Australia at 1.4 percent of this total. The Middle East, on the other hand, was 16 percent of global gas production, while Europe and Eurasia was 31.6 percent, including Russia responsible for 18.5 percent of total global gas production. This contrasts with oil, where the Asia-Pacific makes up 9.7 percent of global production, 5.1 percent of which is China, while the Middle East made up 32.6 percent, and Europe and Eurasia responsible for 21 percent of global production in 2011, of which 12.8 percent was Russia.

The goals of fuel and geographic diversification, coupled with the less carbon intensive nature of natural gas, makes it an increasingly important share of the energy mix throughout Northeast Asia, including in Japan. Japan dominated the consumption of natural gas in the Asia-Pacific before the rise in Chinese demand. In 1990 Japanese consumers made up 31.1 percent of total demand, while China stood at 9.9 percent. This shifted in 2011 to Japan being responsible for 17.9 percent of total regional demand, against 22.1 percent in China.²⁷ The absence of regional pipeline infrastructure means gas reaches the Japanese market as liquefied natural gas (LNG), before being regasified to allow distribution through the domestic pipeline network.

In the 1990s Japan and South Korea were responsible for approximately 70 percent of total LNG demand in the Pacific.²⁸ China has substantial domestic reserves of natural gas, in contrast to Japan. While infrastructure constraints remain, investments in pipelines also enable it to play an increasingly important role in the energy mix on China's east coast. In addition, Chinese firms CNOOC and CNPC have signed a series of long-term contracts through the 2000s, and constructing new LNG terminal capacity to land the new supplies.²⁹ This is likely to lead to a shift in the relative market share of Japan regionally.

Most important, the flexible structure of private contracting means that while access to both oil and gas reserves upstream is often portrayed in zero-sum terms, efforts by the Japanese government to improve the position of domestic firms in the international oil market have not precluded cooperation with other states in Northeast Asia. On a bilateral basis, in 1978 Japan and China inked a Long Term Trade Agreement for the period 1978-1985. In return for Japan exporting machinery and materials to China, the latter agreed to export crude oil to Japan from the Daqing field, as well as coking and steam coal for use in steel fabrication and power generation. Beginning in 1978 Japanese firms explored for and developed offshore reserves in the Bohai Sea, and in December 1979 the two countries signed the Agreement on the Joint Exploration and Exploitation of Petroleum

²⁷ *BP Statistical Review of World Energy 2012*. See: <http://www.bp.com/statisticalreview>. The totals for natural gas are likely to change significantly in the future given the ongoing shale gas and tight oil revolutions.

²⁸ Charles Ebinger, Kevin Massy, and Govinda Avasarala, *Liquid Markets: Assessing the Case for US Exports of Liquefied Natural Gas* (Washington DC: Brookings Institution, 2012).

²⁹ Nobuyuki Higashi, "Natural gas in China: market evolution and strategy," *International Energy Agency Working Paper Series* (June 2009).

and Natural Gas. The agreement covered over 25,000 square kilometers in the Bohai Sea. Exploratory drilling commenced in December 1980.³⁰

More importantly, recent cases from the oil industry demonstrate the ability of the private regime governing natural resource markets to bring about bilateral cooperation between Chinese and Japanese firms. The Japanese refinery market has struggled with overcapacity since the 1980s and 1990s. One response has been to orient domestic refineries to meet rising demand in other markets. Given this, in 2004 JX Nippon Oil and Energy (formerly Nippon Oil) signed an agreement with PetroChina to export a share of its oil products refined in Japan into the Chinese market, thus facilitating the integration of trade flows between the two economies. Cooperation was deepened in 2010 when PetroChina then bought a 49 percent stake in JX Nippon Oil's Takaishi refinery, located in Osaka, with the two firms forming a joint venture structure to use the refinery for supplying oil products to the Asian market using PetroChina's regional marketing capabilities.

Regional energy security cooperation occurs through the market-based activities of Northeast Asian firms, even absent formal cooperation between firms in the form of cross-border acquisitions or joint marketing agreements such as those described above. Exports of oil products to Japan from South Korea, for example, grew significantly in the wake of the March 11, 2011 disaster, which harmed Japan's refinery capacity, reaching US\$7.39 billion in 2011, and making Japan the second largest market for South Korean product exports after China.³¹ Over 2013, Japanese consumers imported an average of over 160,000 kiloliters of gasoline monthly from South Korea, over 380,000 kiloliters of naphtha, and almost 140,000 kiloliters of heavy oil. It also imported products from China, although more intermittently.³²

Cooperation through the private regime governing energy markets also occurs in natural gas. The market structure of gas differs substantially from that of crude oil both because it is more regionalized, and because the political risks associated with producer countries differ. There is nevertheless also evidence of cooperation between firms. In Indonesia, the largest oil and gas upstream developer in Japan – INPEX - participates in the Tangguh gas field, along with a number of other Japanese firms, including Mitsubishi Corporation, Nippon Oil Exploration, Mitsui and Co., and Sumitomo Corporation. Production began in 2009, with BP as the main operator of the project. The China National Overseas Oil Corporation (CNOOC) also participates through a 13.9 percent stake. Similarly, in the Prelude Floating LNG project in Western Australia, Shell acts as operator of Permit Area WA-44-L, a with 72.5 percent of the rights to the project, INPEX

³⁰ Chae-jin Lee, *China and Japan: New Economic Diplomacy* (Stanford: Hoover Institute,): p. 22.

³¹

<http://english.yonhapnews.co.kr/business/2012/02/02/30/0501000000AEN20120202001000320F.html> (accessed July 22, 2013)

³² Data drawn from monthly import statistics compiled by the Petroleum Association of Japan.

controlling 17.5 percent, and the South Korean KOGAS controlling 10 percent of the project. In addition, Kogas agreed to purchase 3.64 million tonnes a year from Shell's LNG global supply portfolio. Taiwan's CPC controls a 5 percent stake in the project, and signed an agreement to buy 2 million tonnes per year for 20 years from Shell, beginning in 2016.³³

Another case of cooperation is Nexen, which owns a portfolio of oil and gas projects in the North Sea, West Africa, the United States, and Canada. The firm became a wholly-owned subsidiary of China's CNOOC after its acquisition in 2013. Nexen is also a partner with INPEX and JGC Corporation, both Japanese firms, in the development of shale gas projects in the Cordova, Horn River, and Liard basin's in Alberta, Canada, with the gas expected to be converted to LNG for shipping to Asian markets. The acquisition of Nexen has not altered the commercial terms agreed to by the Japanese firms, meaning Japanese firms are cooperating in joint project development, rather than simply financial investors in which a third firm acts as operator.

In addition, Shell has proposed constructing an LNG facility on the coast of British Columbia in Canada with South Korea's Kogas, the China National Petroleum Company, and Japan's Mitsubishi Corporation. The project includes a natural gas receiving and LNG production facility and a marine terminal capable of accommodating two LNG carriers, with the goal of transporting gas across the Pacific to Northeast Asia. The facility is designed to be able to process up to 24 million tonnes per annum of LNG, and is expected to operate for 25 years.³⁴

Governments are not irrelevant to this cooperation. In many cases Japanese firms are supported financially by the government through subsidies and other forms of support as they engaged in projects internationally in order to increase their share of exploration and production activities. While headlines often focus on competition between Japan and China over resource access, Japanese firms, with the support of public finance from the government, are nevertheless involved in a number of cooperative ventures with Chinese and South Korean firms.

Japanese consortia are also involved in projects in Russia, most notably the Sakhalin I project, which is operated by Exxon-Neftegas, a subsidiary of ExxonMobil. A Japanese consortium Sakhalin Oil & Gas Development Company (SODECO) owns thirty percent of the project, with an investment of 3.6 billion dollars in to the 12 billion dollar project. JOGMEC agreed in 2010 to provide liability guarantees covering fifty percent of the loan to SODECO in developing the first stage of the Odoptu field. The Japanese government also participates directly in the project through its stake in Japan Petroleum Exploration (Japex), which is a member of the SODECO consortium. In 2013 Rosneft and SODECO,

³³ Rick Wilkinson, "Shell sells more of Prelude floating LNG project," *Oil & Gas Journal*, May 10, 2012.

³⁴ Shawn McCarthy, "Nexen forms shale gas venture with Japan's Inpex," *The Globe and Mail*, September 6, 2012; LNG Canada, "LNG Canada Project: Summary of the Project Description," March 21, 2013.

which are partners in Sakhalin I, signed a long-term contract for Rosneft to supply one million tons of LNG annually, with delivery to begin in 2019.³⁵ Rosneft also has an agreement to sell LNG to Marubeni Corporation from the Russian Far East, beginning in 2019.³⁶ Japanese firms Mitsui (12.5 percent) and Mitsubishi (10 percent) are also invested in Sakhalin II. Once again project finance is provided by the Japanese government, through JBIC, which provided 3.7 billion dollars in financing. Sakhalin II is expected to meet about eight percent of Japan's total LNG imports. More limited volumes of crude are also produced.³⁷

Hard Cases – Pipelines and Territorial Disputes

Efforts by the Japanese government to diversify suppliers and promote the competitiveness of domestic firms has thus not precluded cooperation between firms and governments in China, South Korea, and Russia, though this is mediated by commercial arrangements rather than interstate agreements. There are nevertheless cases in which attempts to promote the diversification of suppliers has seen governments replace firms as the central actors in managing competition and negotiating cooperation. An important case is the financing of the construction of a pipeline to enable the transportation of East and West Siberian oil to markets in the Asia-Pacific, and competition between China and Japan over the development of gas fields in the East China Sea.

The pipeline matters because it unlocks stranded oil and gas reserves in East and West Siberia.³⁸ For consumers in Northeast Asia, access to Russian oil reserves enables the diversification of supply from the Middle East. This is also the case in Japan, where analysts argue that oil and gas resources in Siberia are attractive because of their proximity to Japan, and their potential to contribute to the improvement of energy-related infrastructure in the Asia-Pacific. There are also commercial benefits of securing access to Russian oil: a tanker journey from Nakhodka to Japan takes approximately three days. This compares to an average of twenty days from the Middle East, thus enabling refiners to reduce inventory costs.

The Japanese government supported the development of infrastructure enabling the transportation of Eastern Siberian oil to markets in the Asia-Pacific. The first Energy Basic Plan released by the Agency for Natural Resources and Energy in 2003 noted the usefulness of an Eastern Siberia–Pacific Ocean oil pipeline (ESPO) for diversifying supply from the Middle East.³⁹ Then Japanese prime minister Junichiro Koizumi noted Japan's interest in supporting the construction of a pipeline to Nakhodka during a state

³⁵ <http://www.rosneft.com/news/pressrelease/2106201315.html> (accessed October 29, 2013).

³⁶ <http://www.rosneft.com/news/pressrelease/2106201313.html> (accessed October 29, 2013).

³⁷ <http://www.jbic.go.jp/en/about/press/2008/0616-01/>.

³⁸ See the Stulberg chapter in this volume for more details.

³⁹ Agency for Natural Resources and Energy, *Enerugii Kihon Keikaku 2003 [Basic Plan for Energy 2003]* (Tokyo: METI, 2002), pp. 23-24.

visit to Moscow in January 2003. The head of the Agency of Natural Resources and Energy (ANRE) visited Russia five times in the same year, and reports suggest the Japanese government proposed seven billion dollars in financing through JBIC, with five billion dollars earmarked for the pipeline.⁴⁰ In November 2005 the two governments announced a program for energy cooperation noting both countries' desire to develop a "long-term strategic partnership" in the energy sector, encompassing oil, gas, and coal project development and processing, as well as cooperation in energy efficiency and renewable energy technologies. The agreement specifically noted the interest of both governments in promoting cooperating in the ESPO, and in the development of oil and gas reserves in Sakhalin.

After protracted negotiations between the Japanese, Chinese, and Russian governments, the ESPO is being completed in two phases, with the latter stage connecting East Siberian oil to the Pacific Coast. The pipeline already supplies Russian oil to East Asian markets, including both China and Japan, representing an important shift in the balance of supply. Previously Russian oil flowed almost exclusively west to European markets. From 2010, crude began to flow to East Asia through the ESPO, with an average of 300,000 barrels a day exported through 2010.⁴¹ Construction of stage one of the pipeline (ESPO-I) began in April 2006, and was completed in October 2009, with oil shipped by rail to the Kozmino terminal on the Pacific Coast for export. Shipments to Japan began in February 2010, with Japan supplied with 30 percent of total ESPO crude in 2010, with South Korea taking 29 percent, the United States 16 percent, Thailand 11 percent, China 8 percent, the Philippines 3 percent, Singapore 2 percent, and Taiwan 1 percent.⁴² The second stage of the ESPO (ESPO-II) connects directly to the Kozmino port, although questions remain regarding the volumes of crude that will be available.

The East China Sea

The most intractable energy dispute in Northeast Asia concerns the right to exploit gas reserves in and near a disputed area of the East China Sea (EAS). Bilateral attempts to

⁴⁰ "Nihon ga 70 oku doru yushi teian sekiyu paipurain kensetsu roshia tantosho akasu [Japan Proposed a \$7 billion Loan for Oil Pipeline Construction: Russia's Minister Reveals]," *Chunichi Shimbun*, October 14, 2003; Leszek Buszynski, "Oil and Territory in Putin's Relations with China and Japan," *The Pacific Review* 19, no. 3 (September 2006): 294. Reported in Haruna Minoura, "Energy Security and Japan-China Relations: Competition or Cooperation?" unpublished manuscript, George Washington University, January 31, 2011, p. 39-40.

⁴¹ Masui Motomura, "Kakudai suru Hokuto Ajia no Enerugii Furo- [Expanding Energy Flows from North East Asia]," *Sekiyu Tennen Gasu Rebyu* vo. 46, no. 2 (2012), pp. 13-34.

⁴² The terminal is capable of managing 13-14 tankers per month of the 10,000 ton Aframax class, for a total of 1,300,000-1,400,000 tons per month of export potential. Masui Motomura, "Kakudai suru Hokuto Ajia no Enerugii Furo- [Expanding Energy Flows from North East Asia]," *Sekiyu Tennen Gasu Rebyu* vo. 46, no. 2 (2012), pp. 13-15.

develop gas and oil reserves jointly that are located in the disputed Exclusive Economic Zone (EEZ) claimed by both countries have stalled.

Differences in the geological claims that form the basis of the dispute are summarized elsewhere.⁴³ The resource potential of the East China Sea was first noted by a survey by the Economic Commission for Asia and the Far East in 1969. Following basic seismic testing the survey team noted that “sediments beneath the continental shelf and in the Yellow Sea are believed to have great potential as oil and gas reservoirs,” and that “a high probability exists that the continental shelf between Taiwan and Japan may be one of the most prolific oil reservoirs in the world.” It also noted that detailed seismic testing, as well as exploratory drilling, was required to determine the size of the resource base.⁴⁴

Today estimates of the total amount of oil and gas reserves exploitable in the East China Sea vary. The Energy Information Agency (EIA) estimates that between 60 and 100 million barrels of proven and provable oil reserves, far short of the optimistic assessment of the 1969 UN survey. Estimates for natural gas stand at between one and two trillion cubic feet, although assessments produced by the China National Offshore Oil Corporation (CNOOC) are more optimistic.⁴⁵

The commercial value of the reserves remains an open question. Since 1992 CNOOC has contracted with sixteen non-Chinese firms to conduct exploratory drilling around the area of Chunxiao, however all were dry.⁴⁶ In 2003 the China Petroleum and Chemical Corporation (Sinopec – 30 percent share) signed an agreement with CNOOC (30 percent), Shell (20 percent) and Unocal (20 percent) to jointly explore for, develop, and market gas and oil resources in the East China Sea, with CNOOC functioning as operator. CNOOC booked 21 million barrels of oil, and 402 billion cubic feet of gas in net reserves in

⁴³ See Mark J. Valencia, “The East China Sea Dispute: Context, Claims, Issues, and Possible Solutions,” *Asian Perspective*, 31, no. 1 (2007): 127-167. On Japan’s position see Sheila A. Smith, “Japan and the East China Sea Dispute,” *Orbis* (Summer 2012), pp. 370-390.

⁴⁴ K.O. Emery et al., “Geological Structure and Some Water Characteristics of the East China Sea and the Yellow Sea,” in Committee for Co-ordination of Joint Prospecting for Mineral Resources in Asian Offshore Areas (C.C.O.P.), Economic Commission for Asia and the Far East, Technical Bulletin Vol. 2, 1969, p. 4 and 41. A description of the methods used in the seismic testing are available on p. 12. The report notes that positions described “are considered accurate within 3 km, except in the northern part of the Yellow Sea and in Taiwan Strait where some of them may be as much as 6 km in error.”

⁴⁵ <http://www.eia.gov/countries/regions-topics.cfm?fips=ECS> (accessed November 4, 2013)

⁴⁶ The first successful drill was conducted by Primeline Petroleum in October 1997. Akihiko Endo, “Higashi shinakai ni okeru yugasuden kaihatu to sono haikai [The Background and Development of Gas Fields in the East China Sea,” *Kaikanko Senryaku Kenkyu* vol. 2 no. 1 (2012), p. 101.

2005.⁴⁷ The foreign partners to CNOOC and Sinopec - Shell and Unocal - withdrew from the joint agreement to develop gas reserves after the appraisal stage, however, citing uncertainty about reserves and development costs.⁴⁸ Sinopec downgraded its proven oil and gas reserves in 2004, citing a reclassification of reserves booked from the Xihu trough in the East China Sea.⁴⁹

Regardless, the development of oil and gas resources in the East China Sea remains a source of tension between the Japanese and Chinese governments. An important reason for this is that, unlike the other cases described in this chapter, the energy problem in the East China Sea overlays a sovereignty dispute. Both governments have thus been careful to ensure that the behavior of the other does not compromise their territorial claims. In a press conference of June 22, 2004, the press secretary of the Ministry of Foreign Affairs noted that the Japanese government's concern over the right to exploit resources within sovereign territory, and the possibility that the commercialization of the gas field at Chunxiao may contravene this right: "As Foreign Minister Kawaguchi pointed out, even if the exploration takes place on the part, even from our understanding, of China's sovereign rights, it may lead to the exploitation of natural resources which actually lie under Japan's sovereign rights."⁵⁰

The center of negotiations between the two governments is the Chunxiao oil and gas field (referred to as Shirakaba in Japanese). In August 2003 China began to construct a production platform at the field, located approximately five kilometers from the median line proposed by Japan as a potential settlement for the maritime territorial dispute in the East China Sea between the two countries. The Japanese government recorded its concern about the development of the field, requesting information on the structure of the field be provided to Japan so that it can determine whether the gas reserves in the field may be located across the proposed median line. After conducting seismic testing on Japan's side of the proposed median line between 2004 and 2005, it announced that both the Chunxiao and Duanqiao (Kusunoki) fields breached the median line, and that there is a possibility that the Tianwaitien (Kashi) field is also connected.⁵¹

⁴⁷ <http://www.china.org.cn/english/2004/Sep/108515.htm> (accessed November 4, 2013). CNOOC net reserves recorded in CNOOC, *Annual Report 2005* (Hong Kong: CNOOC, 2005), p. 21.

⁴⁸ This statement is not inconsistent with the possibility that the firms made this decision because of the possibility of political risk, which is a component of any decision over the commercial exploitability of resources. There is also some evidence that the Japanese government engaged the firms regarding the disputed sovereignty of the reserve base. See, for example, "Chugoku gasuden kaihatsu: meja tettai – nihon seifu ga hatarakikake [Chinese Gas Field Development: Majors Withdraw – Japanese Government Engaged Them]," *Mainichi Shinbun*, October 1, 2010.

⁴⁹ China Petroleum and Chemical Corporation, *2003 Annual Report and Accounts* (Beijing: China Petroleum and Chemical Corporation, 2003), p. 18.

⁵⁰ <http://www.mofa.go.jp/announce/press/2004/6/0622.html#3> (accessed November 4, 2013)

⁵¹ Ministry of Economy, Trade, and Industry, *Annual Report 2005* (Tokyo: METI, 2005).

The two governments began consultations over the East China Sea in 2004. In 2008 they reached a “Principled Consensus on the East China Sea Issue,” which included an agreement carry out joint exploration activities within an area overlapping the median line, thus attempting to use state resources to facilitate private sector cooperation. It also allowed for equity participation by Japanese firms in the development of the Chunxiao field, and the joint development of gas fields over the median line, without prejudicing the maritime claims made by the two countries.⁵² In March 2011, however, a representative of CNOOC announced the firm begun to produce at the Chunxiao field. The Japanese government interpreted the shift to the production phase as breaking the agreement reached between the two governments. In July 2013 media reported CNOOC submitted plans to develop seven further fields on the Chinese side of the median line to the Chinese government. In Japan, Secretary General Suga of the Liberal Democratic Party stated the government had noted its “grave concern” to China regarding this change. Prime Minister Abe Shinzo also referred to this as “clearly in contravention to the agreement” reached between the two countries.⁵³

March 11, 2011 and the Prospects for Northeast Asian Energy Cooperation

The Japanese government’s energy security strategy has thus focused on two goals: diversifying the fuels and the geographic location of imports, and promoting the competitiveness of domestic firms. This has met with mixed success. While the range of fuels used by Japanese consumers are more diverse than would have been the case absent government intervention, Japanese firms operating in oil and gas remain weak in international terms.

The parochial attempt to improve the competitive position of Japanese firms in international resource markets has nevertheless not precluded cooperation between Japanese firms and firms based in other countries in the region. There are numerous examples, detailed above, of firms from Japan, China, and South Korea jointly participating in oil and gas projects, as well as in marketing and sales in refining, even when sponsored explicitly or implicitly by their home governments. The private regime governing oil and gas thus functions to ameliorate any security implications associated with the approaches adopted by these countries.

An important exception noted above lies in the dispute between Japan and China over the development of gas and oil reserves located in a region of the East China Sea. The

⁵² http://www.mofa.go.jp/mofaj/area/china/higashi_shina/press.html (accessed November 5, 2013)

⁵³ “Chugoku, higashi shina kai ni gasu shisetsu kensetsu ka – seifu ‘judai na kenen’ [Is China Constructing Gas Infrastructure in the East China Sea? Government: “Grave Concern,” *Asahi Shinbun*, July 3, 2013; “Abe shusho ‘chugoku ha goi ihan’ – higashi shinakai no gasu den tandoku kaihatsu [PM Abe States “China is Contravening the Agreement” - Unilateral Development of Gas Fields in East China Sea], *Asahi Shinbun*, July 6, 2013;

dispute has thus far proven impossible for the two governments to mediate, in part because it is complicated by a disagreement over maritime sovereignty. A second reason may lie in the poor competitive position of Japanese oil firms relative to their Chinese counterparts. While the Japanese and Chinese governments initially negotiated equity participation for Japanese firms in the Chunxiao field and joint development of fields in the northern area within disputed maritime boundaries in the East China Sea, INPEX has little technology to offer CNOOC or other Chinese firms when compared to Shell and Unocal, CNOOC's original partners in the East China Sea development. CNOOC management has also noted that it has little need for Japanese financing in the project. It is thus plausible that the difficulty in negotiating a resolution the East China Sea reflects the commercial interests of Chinese firms, in addition to the zero-sum structure of the maritime dispute.⁵⁴

In this last section of this chapter I consider how the March 11, 2011 tsunami and nuclear disaster has affected Japanese energy planning, and what the implications of this change are likely to be for regional cooperation in energy security.

For decades nuclear power was central to the Japanese government's strategy for managing energy security and environmental problems. Nuclear power was positioned by the government as low-cost relative to fossil fuels on a per kilowatt hour basis. It was also positioned as less risky in geopolitical terms than other fuels, and as useful for meeting the government's climate change commitments. Echoing this, the 2010 BEP established a target of constructing 9 additional nuclear units by 2020, and more than 14 by 2030, while also increasing the capacity utilization rate, with the goal of increasing the share of nuclear power to 50 percent of total electricity generated. In contrast, coal-fired generation was targeted to fall in terms of installed capacity and generated electricity by 2030, as was natural gas.

It is unsurprising, given this, that the disaster is fundamentally reorganizing the structure of supply and demand for electricity. The revised Basic Energy Plan (BEP), released publicly in February 2014, signals a smaller role for nuclear power in Japan's energy mix than envisioned in the previous plan. Indeed, the establishment of an independent safety regulator – housed separately from the industry regulator in the Ministry of Environment – institutionalizes a new constraint on the development of nuclear generation. The law establishing the regulatory agency also enshrined a limit to the operation of nuclear units of 40 years in law, extendable by 20 years if the regulator finds the plant meets safety requirements. Given that the first generation units became operational in Japan beginning in 1970, this increases the institutional constraint on the further use of nuclear energy.

The revised BEP continues to emphasize nuclear power as an important source of energy that meets Japan's energy security, environment, and economic goals. Its future share in Japan's electricity generation mix remains uncertain, however, and depends on public

⁵⁴ This possibility is alluded to by Masui Motomura, "Kakudai suru Hokuto Ajia no Enerugii Furo [Expanding Energy Flows from North East Asia]," *Sekiyu Tennen Gasu Rebyu* vo. 46, no. 2 (2012): 105-6.

opinion, the commercial health of Japan's electricity utilities, how the government chooses to manage the spent-fuel reprocessing program, and other factors. A further influence on the development of nuclear power within Japan's generation mix is the reform of the electricity market and how this will affect the willingness and ability of the private-sector electricity utilities to finance the costs of additional nuclear capacity.

The implications of this change in the relative importance of fuels within Japan has mixed implications for the prospects of cooperation between Northeast Asian states. Regardless of the future status of nuclear power, the March 11 disaster promises to increase state support for Japanese firms' attempts to procure resources internationally. The 2014 BEP notes that the fundamental weakness of Japan's energy system is its reliance on non-domestic resources, and the March 11 disaster has increased the reliance on imported fossil fuels, particularly from the Middle East.⁵⁵ Data bears this conclusion out. The loss of nuclear power led utilities to increase the amount of oil-fired power generation, for example, rising in 2011 from 2.2 percent to 12.8 percent of electricity generated. Japan's electricity utilities also planned on adding 5.2 gigawatts of natural gas capacity to the 66.3 gigawatts already in operation (7.8 percent) in 2014.⁵⁶ To manage the loss of nuclear power, the government shortened the environmental assessment period for coal-fired thermal capacity, easing the replacement of nuclear power with coal following negotiations between the Ministry of the Environment and METI.⁵⁷ Coal was also repositioned as an important baseload fuel in Japan's electricity generation mix in the new energy plan.⁵⁸

The response of the Japanese government to this shift, unsurprisingly, is to reemphasize the importance of strengthening the competitiveness of Japanese firms in fuel procurement internationally.

“Taking into consideration our country's energy supply structure, which has a high degree of reliance on overseas resources, and weakening domestic energy demand, domestic firms must positively promote internationalization, strengthen overseas operations, and actively work to develop overseas demand as their own market, if the energy sector is to contribute to stability of energy supplies, and further strengthen its competitiveness.”⁵⁹

⁵⁵ Ministry of Economy, Trade and Industry, *Basic Energy Plan 2014 (Proposed)*, February 25, 2014.

⁵⁶ Data from a Reuters survey of utilities. See <http://uk.reuters.com/article/2013/10/16/uk-japan-power-outlook-idUKBRE99F02120131016> (accessed November 7, 2014).

⁵⁷ http://www.nikkei.com/article/DGXNASGG02002_S3A400C1EB2000/ (accessed November 7, 2014).

⁵⁸ Ministry of Economy, Trade and Industry, *Basic Energy Plan 2014 (Proposed)*, February 25, 2014, p. 20.

⁵⁹ “Kaigai shigen he no takai izondo to iu wagakuni no enerugi kyokyu kozo ya, kongo, kokunai enerugi juyo ga yowafukundeiku koto wo fumuaereba, enerugii sangyo ga wagakuni no enerugii kyokyu no anteika ni koken shitsutsu, keiei kiban wo kyoka shite

This may serve to increase the importance of the private regime governing natural resources in enhancing Japan's energy security, and by extension, increase opportunities for cooperation between firms based in Japan and elsewhere. Nevertheless, Japanese firms face daunting challenges in improving their competitive position internationally. Nine of every ten barrels of global oil reserves are controlled by national oil companies, limiting the ability of firms to increase scale. This problem is exacerbated by ongoing political risk in countries such as Iraq and Libya, where new opportunities exist that could potentially be exploited by firms other than the national oil companies. Stagnant demand for oil products and the poor performance of refiners in Japan reduce the merits of vertical integration for upstream operators. In addition, Japanese firms lack the technical expertise of their competitors that might give them a commercial advantage in bidding for a positions in areas where it is more difficult to operate. Given this, JOGMEC is identified as crucial in supporting state efforts to strengthen the international position of domestic firms in the upstream through the provision of risk money.

In addition, the Japanese government has identified the possibility of greater formal intergovernmental-cooperation in order to improve the negotiating power of consumer states through initiatives such as the Japan-South Korea gas dialogue, and the LNG Producer-Consumer Dialogue. The second Dialogue conference was held in Tokyo in September 2013, and included representatives from South Korea, Taiwan, and India, in addition to private sector and government representatives from Qatar, Indonesia, and other producer countries, and elsewhere, with the third Dialogue held in 2014. Thus, other than special cases in which resource extraction is overlaid with sovereignty disputes, the structure of private contracting upstream is likely to invigorate of state support for domestic firms internationally within a cooperative framework of private contracting. The March 11 disaster is thus likely to have a positive effect on the prospects for cooperation in energy security in Northeast Asia.

Implications

There are three implications that emerge from the chapter. First, the evidence presented above shows that the Japanese government continues to place improving the competitive position of domestic firms at the center of its strategy for managing energy security risks. It also suggests that any assessment of the implications of this strategy for the prospects of international cooperation in Northeast Asia must take into account not only for how governments and firms have sought to shape resource markets to their benefit, but also how the private regimes governing trade and investment in these markets condition the implications of this intervention for cooperation and competition. Although often overlooked, this chapter shows there is substantial cooperation between firms based in

sara ni hatten shite iku tame ni, mizukara sekkyokuteki ni kokusaika wo susume, kaigai jigyo wo kyoka shi, kaigai no juyo wo mizukara no shijo to shite sekkyokuteki ni torikundeiku koto ga motomerareru.” Ministry of Economy, Trade and Industry, *Basic Energy Plan 2014 (Proposed)*, February 25, 2014, p. 15.

South Korea, China, Japan, and Russia, although this is mediated through private contracting, rather than formal intergovernmental cooperation.

Second, the strategy developed by the government following the March 11, 2011 earthquake and nuclear disaster remains a work in progress, but is unlikely to have negative implications for the prospects of cooperation between states in Northeast Asia. In the short-term the disaster increased demand for heavy oil, which was used as a substitute for the nuclear generating capacity. While the commercial position of Japan's electricity utilities has been undermined by the disaster, the different demand functions for oil products and for nuclear power imply it is unlikely to have a long-term effect on the demand for oil. Further, although the government has announced its intention to reinvigorate efforts to promote the commercial interests of domestic firms in both oil and natural gas, it has continued to emphasize the provision of risk money to private actors, rather than seeking to use bilateral contracting between governments to ensure security of energy supplies, as was done in the wake of the energy crises of the 1970s.

Third, although it is not a focus of this chapter, at COP 19 held in November 2013 Warsaw, the governing Liberal Democratic Party announced it was abandoning the extremely aggressive climate change goals announced by the former government at COP 15. Instead, it committed to reducing greenhouse gas emissions by 3.8 percent from 2005, equivalent to a 3.1 percent increase from 1990. Mechanisms promoting regional and multilateral cooperation in climate change already play a role in the new climate strategy, and these are also likely to play a larger role in response to the March 11 disaster. In the 2010 Bill for the Basic Act on Global Warming Countermeasures the government linked bilateral cooperation with developing countries to its own efforts to reduce CO₂ emissions through the Clean Development Mechanism/Joint Implementation instruments enshrined in the Kyoto Protocol, as well as through a Bilateral Offset Credit Mechanism (BOCM) it began to pilot in 2010, and for which it has signed agreements with Thailand, Vietnam, Indonesia, India, and the Mekong Region.⁶⁰ The loss of nuclear power generation domestically thus has profound implications for the role of regional cooperation in Japan's climate change strategy.

⁶⁰ Japan will not participate in the second commitment period of the Kyoto Protocol, but it has not withdrawn from the Protocol, and continues to use the Kyoto Mechanisms.