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# Overseas oil-development policy of resource-poor countries: A case study from Japan

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**Abstract**

Japan, currently the world's third largest oil consumer, depends on imports for almost all of its oil needs. Owing to this high level of dependence, Japanese citizens as well as the economy have historically been vulnerable. In the past, certain incidents caused by the interruption of oil imports have resulted in fatal damages to the country. In order to reduce these risks, the Japanese government has supported overseas exploration and development activities of the domestic upstream oil industry, which has not proven as successful as expected. This paper presents the experiences, policies, and the structure of Japan's attempts to increase the share of domestic oil needs met by development activities. While conducting this study, both internal and external constraints were encountered. In addition to the lack of domestic oil reserves, factors including the institutional design of cooperation between government and private industries, the early history of the upstream industry, the target area of overseas development, and the changing environment have created impediments toward achieving the targets. In 2006, Japan again set a new target for doubling the ratio of self-developed oil in its total imports by 2030, and will face challenges in clearing the above-mentioned hurdles.


*Keywords:* Upstream oil policy of Japan; Resource-poor country; State-owned oil company

## 1. Objectives of the research

This study shows how Japan has tackled overseas oil development as a resource-poor country. During its long history, Japan has faced several barriers in its development due to oil supply disruptions. It can be said with lesser emphasis that Japanese economy and foreign policy have always been constrained by the security issues posed by oil supply. For instance, the outbreak of the Pacific War (1941–1945) and the subsequent defeat, the first negative growth since the end of the War after high-flying growth (1974), and the ongoing territorial disputes with neighboring countries relate to the issues of oil shortage, and thus are firmly established in the mind of the government. While Japan has maintained its domestic oil production, the output has never been sufficient to meet the demands of the world's third biggest consumer (British Petroleum, 2007). Thus, Japan has had no choice but to depend on imported oil for almost 100% of its domestic demand (99.6% in 2006).

Understanding the vulnerability caused by its high dependence on foreign producers from past experience, Japan has long made efforts to increase its self-developed oil production in overseas oil fields. The 2006 committee report on oil policy, produced by the Ministry of Economy, Trade and Industry (METI), lists four advantages of pursuing exploration and development activities (Advisory Committee for Natural Resources and Energy, Ministry of Economy, Trade and Industry, 2006). First, they contribute toward the long-term stability of the oil supply because of the direct involvement in production and operation. Second, involvement in such activities helps in making timely prediction of changes in the market, since projects are executed under the energy policies of oil-producing countries. Third, it also makes it possible for investors to understand global trends of exploration and development and strengthen business partnerships with

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others. The last advantage mentioned in the report is the strengthening of a wide-ranging and interdependent relationship between Japan and oil-producing countries.

However, despite fully understanding the value of self-developed oil supplies through firsthand lessons, and having invested considerable effort in achieving various objectives, Japan has botched its previous attempts. The first national target of securing self-developed oil supplies was set 40 years ago, and was downwardly revised several times due to "changes in the external environment" by past administrations; however, none of the targets were achieved (Table 1). Even in 2005, only 0.45 MMBD or 10.5% of total oil imports of Japan were developed by Japanese companies.

It is actually disadvantageous for a resource-poor country to cultivate a strong upstream industry and to demonstrate its technologies, which are critical to the success of overseas projects. Unlike the US oil industry, which originated from the rich domestic oil reserves, countries with few feasible reserves face difficulties in developing and maintaining a competitive upstream oil industry. However, resource-poor countries have not always experienced such difficulties in overseas oil development as those faced by Japan. France and Italy, with limited domestic oil reserves, have sustained a much higher ratio of self-developed oil (98% and 55%, respectively, in 2004) in their total import quantity only through their national oil companies, Total, and ENI (METI, 2006a, b). The applicable external environment may be different from these countries; however, the first step for Japan is to learn from the past by examining what unique constraints prevented the country from achieving its national targets in securing overseas oil reserves.

This study investigates Japan's past struggles from both industrial and policy perspectives in a chronological order, with an objective of highlighting the internal and external constraints on overseas oil-development activities. These constraints are examined in the light of quantitative references. In addition, with regard to these objectives, the study focuses on the roles of the government and industry in overseas projects. Finally, the paper introduces Japan's current attempts toward increasing the proportion of self-developed oil in the total oil imports. Japan has again set a target of increasing the self-developed oil share by referring to a numerical target. It is hoped that this study will be of assistance to energy planners in the country.

## 2. History of Japan's overseas development

### 2.1. The early history of the upstream industry in Japan

Japan's overseas oil development was initiated at the end of the 1910s when declining domestic production made it difficult to meet growing domestic demand. The growth in demand was caused not only by economic development but also by military use, especially the Imperial Japanese Navy. After reaching an agreement with the Soviet Union on an oil concession for North Sakhalin, Japan founded the North Sakhalin Oil Corporation in 1926. The company subsequently exported around 18 million barrels of oil to the home country until its dissolution in 1944 (Teikoku Oil, 1992a).

In addition to the development of North Sakhalin, Japan forged ahead in South East Asia to increase its oil supplies, in response to the breakdown of negotiations with the US and Netherlands over crude oil supply from the Dutch East Indies. Teikoku (Imperial) Resource Development, which had a 98% share of the domestic oil production, played the key role in this process. Teikoku was founded in 1940 as a private corporate venture, and later (in 1941), became Teikoku Oil Corporation, which was co-funded by private companies and the state government.

Even though the oil supply from the colonies in South East Asia was at one time sufficient to meet domestic demand, this was very brief, and supply declined rapidly as the war situation aggravated and the transportation fleets were devastated by strikes (Teikoku Oil, 1992b). Subsequently, Japan was forced to change its policy for filling the gaps by increasing domestic production and advancing its artificial petroleum program, neither of which accomplished the targets due to limited domestic resources and massive air strikes against the production plants.

Table 1
Targets and result of Japan's overseas oil development

| When target was set | Target of own-developed oil | Target data | Result |
|---|---|---|---|
| 1965 | 30% of total import of 881 million barrels/year | 1985 | 10.7%, 133 million barrels/year |
| 1967 | 30% of total import | 1985 | 10.7% |
| 1978 | 1.5 MMBD | 1990 | 0.45 MMBD |
| 1983 | 1.2 MMBD | 1995 | 0.69 MMBD |
| 1993 | 1.2 MMBD | At the beginning of the 21st century | 0.58 MMBD |
| 2000 | Cancellation of numeric target | – | – |
| 2006 | 40% of total import | 2030 | ? |

MMBD, million barrels per day.
*Sources*: Hoshino (1968), Petroleum Association of Japan (1985), JNOC (1995), Japan Petroleum Development Association (2005), METI (2006a, b).

At the end of the War, with the dissolution of North Sakhalin Oil, Teikoku was able to survive but lost almost all of its overseas assets and facilities. In addition to losing the properties in South East Asia, the company was forced to abandon all properties in Taiwan, which was responsible for 2% of its total oil production and 68% of its natural gas production (Teikoku Oil, 1992a).

On September 22, 1945, the first American policy toward Japan after the surrender was announced by General Headquarters (GHQ) of the Allied Forces. It was proposed that Japan was only allowed to develop domestic fields and maintain refineries close to the fields. GHQ originally set demilitarization as the main objective of occupation policy and rejected Japan's request to import oil for maintaining its oil refineries and entire economic development. In addition, GHQ ordered Japan to cease the operation of refineries along the Pacific coast on the basis that this might yield surplus petroleum products, which could be diverted to military use. Consequently, Japanese refineries along the Pacific coast were forced to cease their operations for 3 years. Furthermore, oil import was banned, and the downstream oil companies had to depend on a small amount of domestic production for their survival.

In 1949, GHQ changed its position and allowed Japan to restart the import of crude oil and to begin using the Pacific refineries again. This change reflected the US global strategy, in which Japan was accorded greater importance after the relationship with the Soviet Union had deteriorated. At the beginning of the Cold War, the main objectives of the US policy toward Japan shifted from demilitarization to economic reconstruction and independence of the country. This policy reversal came as blessed rain after a drought in the domestic industry. Questioning the production capacity of the domestic upstream industry, Japan's downstream oil industry had long wanted to recommence the import of crude oil from abroad. Once the embargo was lifted, the Japanese downstream companies formed alliances with American oil companies to secure long-term oil supply. As seen in Table 2, all of these American companies were members of the Petroleum Advisory Group, an advisory board for GHQ's occupation policy-making.

As a consequence, the Japanese oil industry was clearly divided into two streams. The upstream industry consisted of one company exclusively involved in oil production in domestic fields, and the downstream industry consisted of several companies and depended on foreign partners for its oil supply.

Table 2
Post-war alliance between Japanese downstream oil companies and US oil companies

| | Japanese oil company | US partner |
|---|---|---|
| 1949 February | Toa Energy | Standard-Vacuum Oil Company |
| 1949 March | Nippon Oil | Caltex Oil Japan Limited |
| 1949 March | Mitsubishi Oil | Tidewater Associated Oil Company |
| 1949 June | Showa Oil | Shell Company of Japan Limited |
| 1949 July | Koa Oil | Caltex Oil Japan Limited |
| 1949 August | Maruzen Oil | Union Oil Company of California |

*Source*: Japan Petroleum Development Association (2005).

### 2.2. Overseas projects with national support

In 1965, the amendment of the oil-development law allowed Japan Petroleum Exploration (JAPEX) to explore foreign reserves. Japan's oil dependency expressed as a percentage of total energy use increased rapidly from 22.6% in 1956 to 58.2% in 1965. Most of Japan's growing oil demand was met by imports from the Middle East, which accounted for 90.4% of total imports (Hoshino, 1968). In order to reduce the dependencies on imports and the Middle East for oil resources, Japan Petroleum Development Corporation (which changed its name to Japan National Oil Corporation (JNOC) in 1978 by adding the operation of oil stockpiles to its activities) was established as the national supporting organization for private companies.

At that time, Japan secured only 14.2% of total oil imports through its own companies, Arabia Oil Company (AOC) and North Sumatra Oil Development Cooperation Co. Ltd. (NOSODECO) (Fig. 1). AOC discovered the Khafji oilfield in 1960 and Hout oilfield in 1963, in the offshore Neutral Zone between Saudi Arabia and Kuwait.

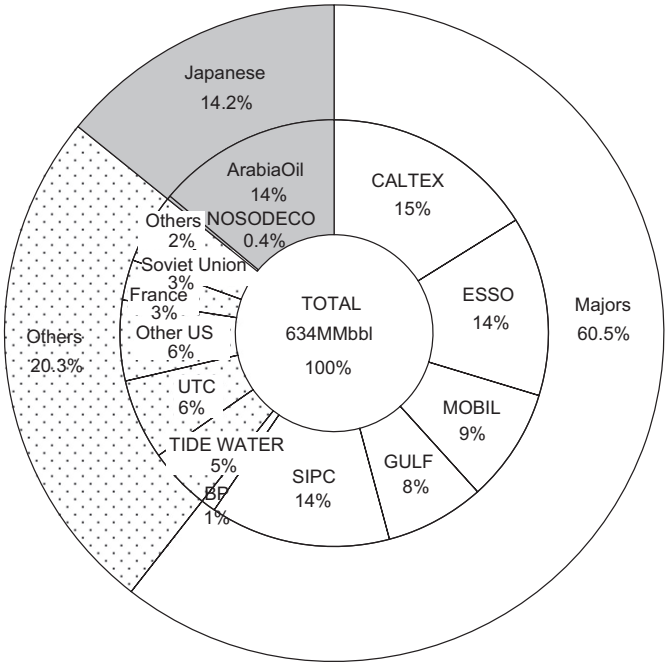


Fig. 1. Japan's crude oil import in 1966 by suppliers. *Source*: Hoshino (1968).

NOSODECO cooperated with Permina (now "Pertamina") to redevelop the Rantau oilfield in Indonesia's north Sumatra Island. The Japanese government decided to push overseas activities such as these projects by private companies, targeting 881 million barrels to be imported by domestic companies. The target was approximately one-third of the total domestic oil consumption in 1985.

JNOC's support to private companies was mainly provided in the form of equity, loans, and guarantee of liabilities. JNOC invested or loaned to private companies up to 70% of total expense for the exploration stage of their overseas projects. If the project progressed to the next development stage, JNOC also provided a guarantee of obligation for up to 60% of total loans from financial institutions for project companies. However, if the exploration failed or the fields discovered were found not to be feasible, the repayment obligation was waived and the project companies were simply liquidated. The Japanese government originally planned that JNOC should play a supportive role for the domestic downstream oil industry to arrange for the smooth delivery of oil supplies developed overseas by domestic companies for use in the domestic market. Domestic oil delivery was dominated by international oil companies due to their long-term contracts with the Japanese downstream industry, and the smooth introduction of self-developed oil supplies was predicted to be very difficult. However, this plan was taken away by the domestic downstream industry through the Petroleum Association of Japan, which was concerned about possible government-imposed pressure to accept the non-commercial self-developed oil for national security reasons. As a result, the involvement of the Japanese government in overseas oil development provided exclusive indirect support to the upstream industry. The structure of this government support by 100% state-run companies was not so common then, or even now. The state-run companies of oil-producing countries such as PEMEX (Mexico), PETROBRAS (Brazil), PERMINA (Indonesia), or NIDC (Iran) were directly involved and covered both upstream and downstream operations as were some state-run companies from oil-importing countries such as CFP (France), ENI (Italy), CPC (Taiwan), and KNOC (Korea).

These aspects of governmental support rapidly increased the volume of overseas projects. During the first 20 years, after the establishment of the Japan Petroleum Development Corporation, 119 projects were accepted by JNOC for support. Unfortunately, most of them ended up with a large amount of debt. In addition to the financial consequences, Japan's mixed effort, involving both the government and the private sector, failed to achieve any of the original targets of increasing the ratio of self-developed oil in terms of total imports and diversification of the source countries for oil imports from the Middle East (Table 3).

## 3. Reconsideration of government–industry cooperation

The past activities of the Japanese government and oil industry with respect to overseas oil development provide some clues to the cause and effect of the present situation. Three intricately combined components can be put forward, based on chronological research, and we have tried to verify these by referring to quantitative data or specific policies. First, the ineffective institutional design of government support was responsible for causing confusion related to responsibilities and moral hazards in the projects, which resulted in extremely vulnerable project management. Second, the scope of Japan's overseas oil development was restricted by its position in the international political scenario and the government's policy of

Table 3
JNOC's financial contribution and import dependence (million yen)

| | 1970 | 1980 | 1990 | 2000 | 2003 |
|---|---|---|---|---|---|
| *JNOC's financial contribution* | | | | | |
| Equity | | | | | |
| Cumulative total | 28,073 | 241,420 | 596,669 | 999,521 | 1,195,123 |
| Cumulative loss | – | 37,444 | 126,811 | 451,064 | 810,662 |
| Cumulative exchange loss | – | 65 | 116 | 117 | 117 |
| Loan | | | | | |
| Cumulative total | 4629 | 268,587 | 857,239 | 1,105,138 | 1,133,052 |
| Cumulative loss | – | – | 69,952 | 380,689 | 439,421 |
| Cumulative exchange loss | – | 565 | 4258 | 17,749 | 17,892 |
| Guarantee | | | | | |
| Cumulative total | 11,228 | 328,489 | 891,002 | 1,157,365 | 1,372,457 |
| Cumulative payment under guarantee | – | – | 11,454 | 50,165 | 63,146 |
| *Import dependence (%)* | 99.5 | 99.8 | 99.7 | 99.7 | 99.7 |
| From Middle East | 84.6 | 71.4 | 71.5 | 87.1 | 88.5 |
| *Japanese-developed oil in total import (%)* | 9.8 | 8.9 | 11.0 | 13.2 | 10.8 |

*Sources*: JNOC, Japan Petroleum Development Association, and METI.

preferentially exploring undiscovered fields, which resulted in sticking to poor-potential area with regard to the distribution of the oil reserves. Finally, Japan's government–industry collaboration ceased due to drastic changes in the international exchange market, import oil price, and the corollary public mood placing a greater emphasis on economic efficiency rather than supply security. These will be investigated in order in the subsequent parts of this section.

### 3.1. Cooperative structure

In terms of the cooperative structure between the Japanese government and private companies, there were mixed outcomes toward the target of increasing overseas projects. Based on its merits, the involvement of JNOC attracted private money for exploration projects, which had been too risky for private investment. The reason for this was not only because exploration and development are not always successful, but also because the projects do not bring any profit at least for several years until the start of production. After the establishment of JNOC, the total amount of private money invested in exploration projects rapidly increased from 5122 million yen in 1967 to 226,853 million yen in 1982 (JNOC, 1987).

On the other hand, this system of risk sharing between JNOC and private investors was detrimental to the original interior features. The system was called a "one-project, one-company structure" in which a project company was established for each project. In addition, the project companies were usually founded with the majority shares from JNOC and the rest from several, or sometimes, a few dozen private companies. As an example of risk sharing, Japan China Oil Development was established in 1980 for the purpose of an oil-development project in the Bo-hai Sea, China. It received 64.5% of the investment funds from JNOC and the rest from 47 other companies. Usually, as a major shareholder of the projects, JNOC was originally intended to play a passive and supportive role for promoting independence of private companies. Yet, private companies, enjoying a large amount of risk-free investment and loans from JNOC, eschewed taking not only exploration risks but also management responsibilities of the projects. This type of risk-sharing structure inherently involved the nature of obscuring responsibility for the projects, thus creating a moral hazard.

In addition to the involvement of a number of private companies in each project, the shareholder compositions of project companies worsened these structural problems. Table 4 shows that upstream oil projects were financially sustained by non-petroleum industries and the structure prevented the building-up of experience and cultivation of technology in Japan's upstream oil industry. As a result, in many cases, Japanese consortia relied on foreign partners for project operation and were entitled to only a proportion of any oil discovered (Surrey, 1974). In contracts for oil and gas exploration and development involving multiple participants, the company that executes and manages the actual oil work is called an operator. It is essential to expand the operator project to acquire experience in the operation site for improving the E&P technology, since upstream oil technology, which involves integration of numerical elemental technologies, requires special experience in the operation site. This is because resource

Table 4
Investment in oil exploration projects by sector

| | 1970 | | 1980 | | 1990 | |
|---|---|---|---|---|---|---|
| | Cumulative amt. in mill. Yen | In % | Cumulative amt. in mill. yen | In % | Cumulative amt. in mill. yen | In % |
| Electricity | 3705 | 6.4 | 13,022 | 2.3 | 19,072 | 1.5 |
| Gas | 505 | 0.9 | 1390 | 0.2 | 2179 | 0.2 |
| Steel | 3223 | 5.6 | 14,397 | 2.6 | 18,179 | 1.4 |
| Petroleum refining, sale | 9802 | 17.1 | 75,496 | 13.4 | 188,982 | 14.8 |
| Trading | 9068 | 15.8 | 55,742 | 9.9 | 71,016 | 5.5 |
| Banking | 823 | 1.4 | 24,838 | 4.4 | 29,626 | 2.3 |
| Nonlife insurance | 724 | 1.3 | 4894 | 0.9 | 5593 | 0.4 |
| Life insurance | 68 | 0.1 | 2128 | 0.4 | 2428 | 0.2 |
| Shipbuilding | 1790 | 3.1 | 20,447 | 3.6 | 22,564 | 1.8 |
| Chemical, fiber | 1371 | 2.4 | 19,019 | 3.4 | 20,438 | 1.6 |
| Shipping | 686 | 1.2 | 3561 | 0.6 | 3674 | 0.3 |
| Nonferrous, mining | 2658 | 4.6 | 4271 | 0.8 | 11,813 | 0.9 |
| Petroleum development | 3010 | 5.2 | 72,594 | 12.9 | 275,479 | 21.5 |
| Others | 1338 | 2.3 | 20,060 | 3.6 | 21,257 | 1.7 |
| Total private sectors | 38,771 | 67.5 | 331,859 | 58.9 | 692,300 | 54.1 |
| JNOC | 18,679 | 32.5 | 232,027 | 41.1 | 587,275 | 45.9 |
| Grand total | 57,450 | 100.0 | 563,886 | 100.0 | 1,279,575 | 100.0 |

*Sources*: JNOC (1987), Japan Petroleum Development Association (2005).

possession influences the superiority of technological development. Also inversely, "operator qualification" can be acquired by evaluating past activity records, technology, operational ability, and safety management. Lacking the experiences, technologies, and capital sizes of the project companies, Japanese companies were involved as non-operators in 359 projects of the 401 E&P projects during 1967–1997, which were supported by JNOC. In addition, among the 359 projects, Japanese companies gave up the opportunity of becoming an operator in 57 projects, even while holding the largest share of the projects. Yet, there were only four projects in which Japanese companies could become operators when they collaborated with foreign companies for the largest shareholder of the projects (JNOC, 1997). Japan could not or would not demonstrate its competitiveness with regard to experience and technology, which are crucial for project management. The "one-project, one-company" structure resulted in increasing dependence on foreign partners of the projects, contrary to the original target of securing independence for the domestic industry.

Questions still remain as to why questionable structures could survive even with disappointing performance. One of the main reasons came from the fact that the system of "one-project, one-company" was developed as a product of the mutual interest of the private and government sectors with their high incentives to secure the system. On the private side, the project companies benefited not only from lowering the risk of investment but also from separating the project accounts from the parent companies' financial statements. The oil companies were reluctant to consolidate project accounts because they were usually in the red at least for several years until the production began, irrespective of whether it succeeded. In addition, in many cases, even after the start of production, project companies remained in the red since the parent companies purchased the produced oil from project companies at the international market price while imposing large deficits on subsidiaries (Horiuchi, 1999a, b). An old Japanese accounting system supported their interests by investing little faith in the consolidated accounting, which then rendered the relationship between parent and affiliated companies unclear. It was not until the year ended March 31, 2001 that all companies were required to consolidate all significant investees, which were controlled through substantial ownership of majority voting rights or existence of certain conditions. In addition, separation of the project accounts from the parent ones was beneficial for private companies, since companies could then limit liabilities and prevent creditors from laying claim to their properties retroactively.

On the government side, the departments secured administrative control for industries and pleasant new posts for the retired officials. By the end of 1997, 15 project companies were chaired by retired or former Ministry of International Trade and Industry (MITI) officials. These ex-government officials often migrated to other project companies, and received retirement bonuses on each move. A former administrative vice minister of MITI served as the president of more than ten project companies. Although all these companies became bankrupt later, he was never accused of mismanagement (Horiuchi, 1998). These examples were the tip of the iceberg, and the organizational form of JNOC left or even increased the moral hazard of project management rather than monitoring the extravagant expenditure of tax money. The accounts of the Japanese central government consist of general and special accounts, and the JNOC was funded by the latter. Special accounts are intended for carrying out specific projects, managing specific funds, and other purposes (MOF, 2006). On this topic, many issues have been raised, including the fact that the establishment of many special accounts made monitoring difficult, or that a lot of make-work projects were carried out to meet the built-in account budget (MOF, 2007). Masajyuro Shiokawa, a former minister of finance, also expressed concern that a substantial amount of tax money was being ineffectively spent in special accounts while savings accumulated in the general account (at the Financial Committee of the House of Representatives, February 25, 2003). In the 2007 appropriation, the net budget of the special account was 175 trillion yen, while that of general accounts was 34 trillion yen. Since the special accounts were under the administration of ministries and each of them held earmarked revenue sources, the wasteful expenditure was left unchecked. This is also because a number of retired officials descended into recipient companies founded by special accounts and maintained close relationships with supervisory authorities. The case of JNOC was no exception. JNOC was under MITI's administration and maintained a close relationship through the involvement of former MITI officials (Matsumura, 2003). In addition, the management of JNOC was guaranteed by an abundant revenue from gasoline tax and tariffs on petroleum products. Moreover, as a special public corporation, JNOC enjoyed the privilege of government guarantee for fund-raising and exemption from tax liabilities such as corporate income tax or fixed asset tax (Fig. 2).

### 3.2. Limited accessible region

By the beginning of the 1960s, when Japan ventured into the overseas fields again for the first time since the end of World War II, the concessions in the major oil-producing countries, not to mention US and European territories, were already dominated by international oil majors. According to an investigation by the MITI (reorganized as METI in 2001) on who owned the concessions area of 17.8 million $km^2$ of the world oil concession area surveyed in 1968–1970, 75% of the world oil concession area was held by US or British companies, 18% by French CFP and ERAP, and 3.3% by Italian ENI. Japan held only 1.9% (MITI, 1971). The Japanese concession area consisted of

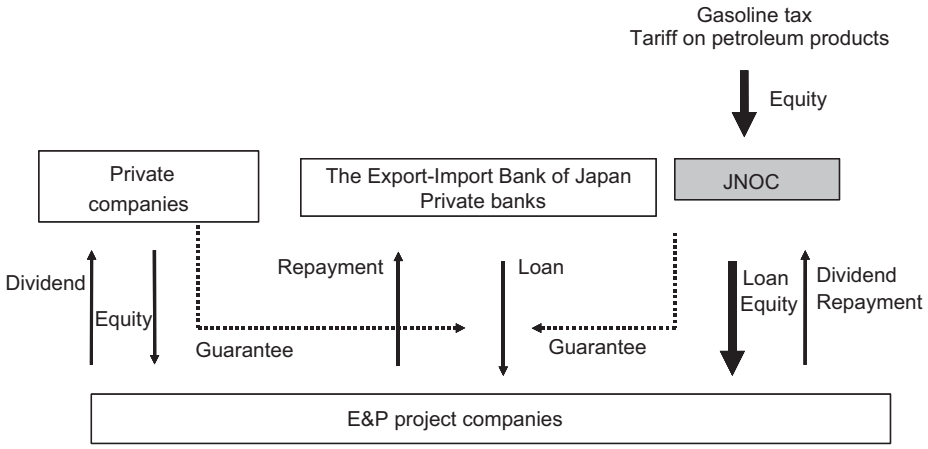


Fig. 2. Structure of JNOC's financial support for E&P project.

AOC and NOSODECO. The area of AOC's concession in the Middle East including Khafji Field was small (3400 $km^2$) but exceptionally profitable either before or after in the history of Japan's oil industry, producing almost all of Japan's self-developed oil production at that time. AOC won the Khafji contract by breaking the international standard of 50–50 basis profit sharing with oil-producing countries. The ratios of profit sharing for AOC's Khafji contract are 44–56 between AOC and Saudi Arabia and 43–57 between AOC and Kuwait (Suzuki, 1981a, b). It was a desperate measure of an undeveloped Japanese oil company and AOC was exposed to harsh international criticism.

Later, resource control intensified in the Middle East, starting with oil reserve nationalization by Iran in 1951. The field condemnation of Iraq occurred in 1960, followed by the formation of OPEC by the major oil-producing countries in the same year. Thus, global exploration and production (E&P) companies were forced to shift their target fields from the oil-rich regions and areas in which operations were straightforward from a geological viewpoint to untapped regions and environmentally severe areas. The undeveloped Japanese E&P industry lagged far behind in the face of intensifying global competition.

In addition to the external environment at that time, there were some other political or economic constraints on Japan, which narrowed the scope to advance into the global E&P competition. In terms of transportation cost, import from Africa and Latin America was not feasible because of the long distance to Japan and the limited passage capacity of Panama Canal preventing the scale merit. In addition, during the Cold War, along with other members of the Free World, Japan had little access to Communist but resource-rich countries such as the Soviet Union and Central Asian countries. As a result, relatively open but not so favorable areas in the Asia-Pacific region remained accessible to Japanese oil companies. The Asia-Pacific region remained low and even gradually declined in the share of the world's total oil discovery (sum of cumulative production and proven reserves) from 3.5% in 1960 to 3.2% in 2000 (calculated by Oil & Gas Journal and World Oil). Figs. 3 and 4 show the contrast between the US and Japanese companies with regard to the areas they focused on during their oil exploration activities.

Why did the Japanese stick to unexplored areas? Would it have been equally valuable for them to get into the existing fields by acquiring shares without running the exploration risks? The geological spread of E&P activities by Japanese companies reflects the government's rather slavish target since 1967 of increasing self-developed oil, both as reducing dependence on the international oil companies and as diversifying supply resource of oil imports. Based on the government policy, JNOC's contributions to domestic companies were defined only for the projects conducted in unexplored areas. However, it is doubtful whether the policy was based on Japan's position in the global oil market, which limited her access to overseas oil exploration. Hattori (2002), an executive director of JAPEX, specified spending most of the investment into the relatively risky exploration projects rather than acquisitions as one of the reasons as to why JAPEX was not able to build overseas properties. Surrey (1974) also expressed considerable skepticism on the effectiveness of the policy "given the large risks involved in exploring relatively unknown areas, and the fact that the international oil companies controlled many of the most favorable areas." It was not until June 2001 that the JNOC law was amended to allow a further support also for acquisition of existing oil fields. Consequently, the regional composition of Japan's overseas oil development was not as much as expected since 1967 but kept relying on a few old fields in the Middle East such as the Khafji Field, which was discovered in 1960 (Fig. 5).

### 3.3. Changing mood

The ineffective project management exposed its vulnerability when the exchange rate of the US dollar to the yen changed drastically after the mid-1980s. The companies

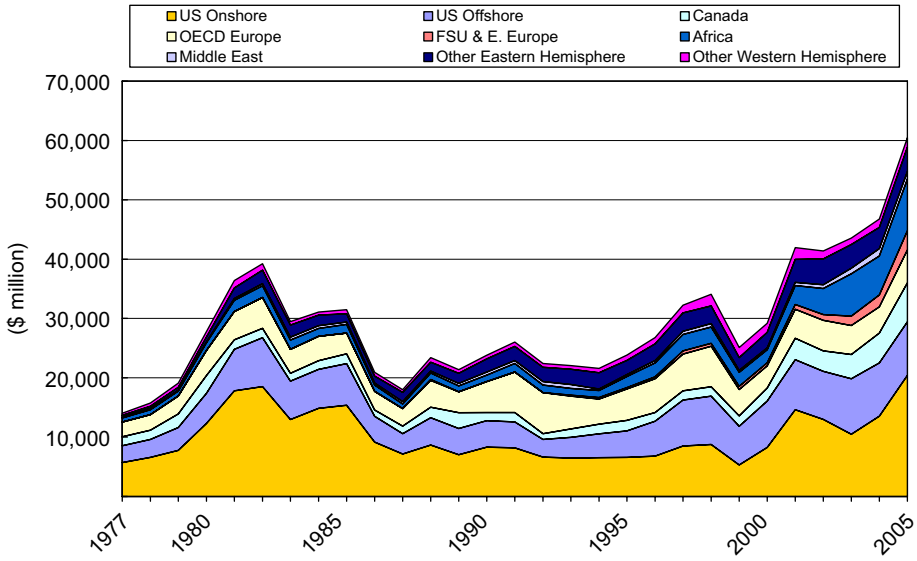


Fig. 3. E&P expenditure of major US petroleum-producing companies by region in the years 1977–2005. *Data source*: Energy Information Administration (2007).

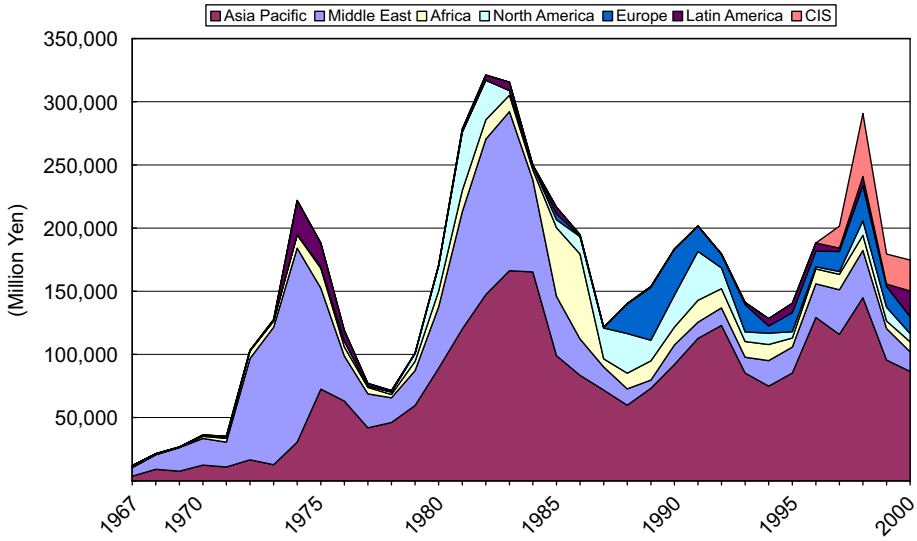


Fig. 4. Japanese companies' total investment for field exploration and development by region in the years 1967–2000. *Data sources*: JNOC (1987, 1997, 2005).

invested for project operation and obtained revenue from oil production in US dollars, without considering the exchange risks. Thus, the rapid appreciation of the yen caused by the Plaza Accord of 1985 diminished the value of cash returns and production revenue on a Japanese yen basis. The US dollar, which stood at around 240 yen just before the Plaza Accord, was being traded below 90 yen in April 1995. Most of the JNOC's exchange loss from the loan was also recorded in this period (Table 1). Unfortunately, the decline of world crude oil price started in 1985 and made things worse. Saudi Arabia's increase in oil production, despite the sluggish international demand, led to the price collapse of 1985–1986, with prices plummeting from 28 dollars per barrel to 8 dollars per barrel before stabilizing at 18 dollars per barrel in the fall of 1986 (Griffin and Neilson, 1994). This was followed by the days of plentiful and cheap oil for 13 years, interrupted only by a brief price spike at the time of the Gulf War, 1991. These solid transformations, both in the exchange rate and in the global oil prices, dealt the accounts of project companies a double hit by compounding huge deficits for the companies' accounts (Fig. 6).

The drastic movement in the global oil market also helped in changing the people's view of oil as a market commodity, rather than a strategic resource. The ample production and high liquidity of oil in the developed international oil market in those days led to oil being treated as a general commodity like wheat, which was

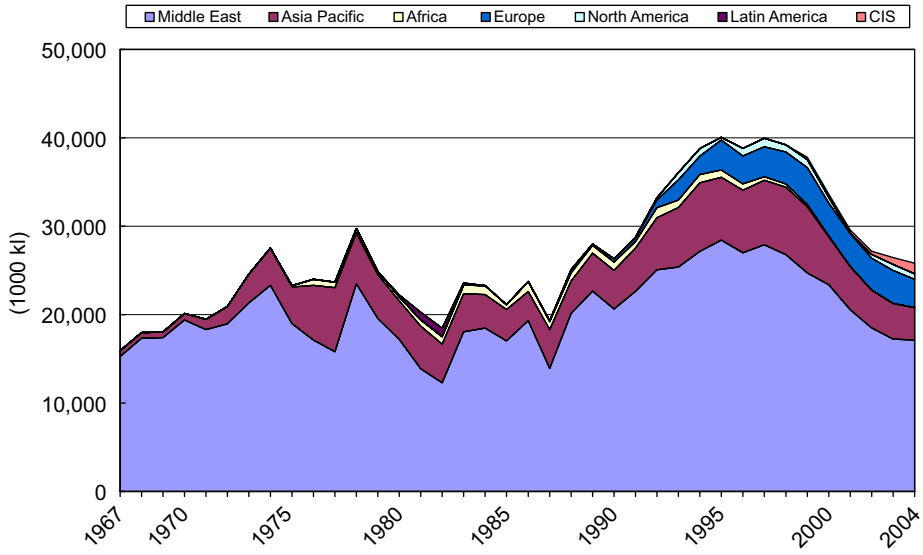


Fig. 5. Japan's self-developed oil import by region. *Data sources*: JNOC (1987, 1997, 2005).

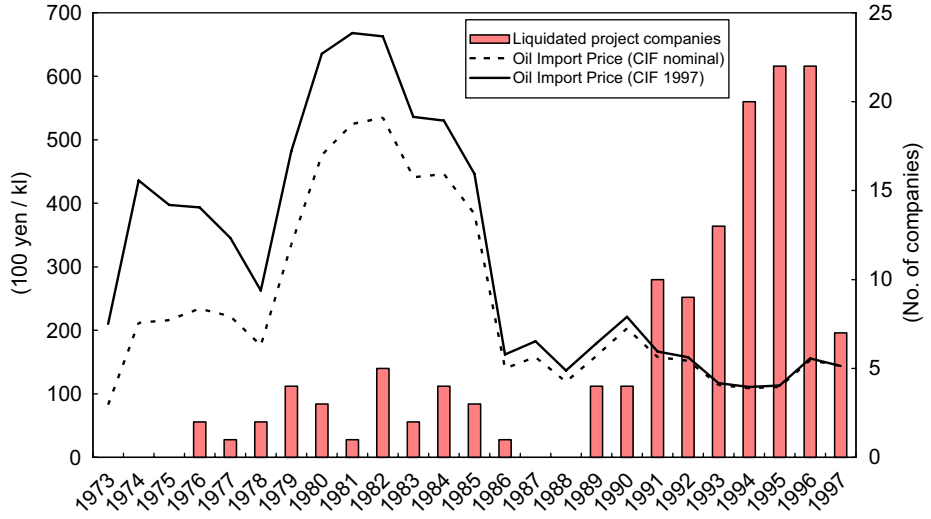


Fig. 6. Liquidation of project companies with respect to changes in crude oil import price in Japanese yen. *Data sources*: Research and Statistics Department, Bank of Japan, JNOC (1987, 1997, 2005), Ministry of Finance.

relatively easy to procure from the market. This means that public and policy leaders in Japan might not have considered the priority of oil security as a serious matter. Moreover, a serious and longstanding post-bubble stagnation in the 1990s left the public opinion keen to the extravagant use of tax money, thus prioritizing economic efficiency. In particular, debate over ineffective fiscal investment and loans to public corporations along with the vested-interest structures attracted public attention, leading to the reform or restructure of cloning systems. JNOC and the policy of promoting Japanese-developed oil supply also became subjects under reconsideration and a number of project companies were liquidated in the same period. This might be the first time that Japan faced the dilemma of a resource-poor country caught between supply security and economic efficiency (Table 5).

## 4. Recent challenges

The period after 1998 can be seen as the time in which the role of the national government was publicly reconsidered. In November 1998, a former minister of METI, Mitsuo Horiuchi, accused JNOC of the ineffective management of tax money by publishing an article in a Japanese magazine. Being an experienced politician, Horiuchi ran his own company and was familiar with business accounting. He substantiated his views about the mismanagement of both the JNOC and its subsidiaries by reviewing a number of their financial statements, and opposing government officials' explanations that the JNOC remained in surplus. Bowing to public anger, JNOC was dismantled in 2002 as part of the structural reform carried out by the administration of the prime minister at that

Table 5
JNOC's cumulative financial support and the dividend and repayment as of end of March 2004 (million yen)

| Status | Number of companies | Equity (A) | Loan (B) | (A)+(B) | Dividend | Principal repayment |
|---|---|---|---|---|---|---|
| Exploration | 15 | 47,773 | 34,312 | 82,085 | 0 | 1828 |
| Preparing for production | 5 | 22,879 | 23,984 | 46,863 | 0 | 8147 |
| Producing | 39 | 662,351 | 548,399 | 1,210,750 | 204,218 | 468,499 |
| Preparing for liquidation | 11 | 24,664 | 17,228 | 41,892 | 0 | 1042 |
| Liquidating | 3 | 3713 | 5330 | 9043 | 0 | 1270 |
| Liquidation completed | 216 | 398,609 | 458,177 | 856,786 | 0 | 58,686 |
| Support termination | 12 | 29,534 | 45,528 | 75,062 | 6317 | 9515 |
| Consolidated | 4 | 5570 | 0 | 5570 | 245 | 0 |
| Total | 305 | 1,195,093 | 1,132,958 | 2,328,051 | 210,780 | 548,987 |

Foreign currencies were exchanged by the exchange rates as of March 31, 2004 from *IMF Exchange rate archives*.
1 USD = 104.30 JPY, 1 GBP = 191.33 JPY, 1 AUD = 79.15 JPY, 1 BRL = 35.71 JPY.
*Source:* JNOC (2005).

time, Junichiro Koizumi. The roles of the JNOC were taken over by a new organization, Japan Oil, Gas and Metals National Corporation (JOGMEC). JOGMEC was established to perform three main roles in supporting private companies: financial support, research and development for technology, and oil stockpiling. This time, JOGMEC's financial support covered not only projects in unexplored areas but also acquisition of existing fields. Yet, the extent of JOGMEC financial contributions is narrowed and scaled down to investment and guarantee in relation to borrowing up to 50% of the total exploration costs. In terms of its legal form, JOGMEC did not become a special public corporation as JNOC but was established as an incorporated administrative agency that did not enjoy the privilege of government guarantee for fund-raising or exemption from tax liability. At this point, there was little voice asking for a stronger national commitment by taking more direct risks, in the debate over reviewing the role of the government in overseas oil development.

While reducing public support, integration in the private sector of the oil-development industry has been promoted. Aiming at a national flagship company, Inpex and Teikoku entered into an administrative merger in April 2006. The merger by Japan's no. 1 and no. 3 oil developers is currently scheduled for completion in 2008, which is designed to expand overseas access to desirable projects by means of large-scale corporate resources. In 2003, the Advisory Committee for Energy under METI proposed that Japan needed a central firm for securing a stable overseas supply, because creating such a firm would improve its bargaining power, strengthen the company's finances, boost fund-raising and investment capacity, and build up technology and human resources (Advisory Committee for Energy, 2003). Inpex, the majority of whose shares were owned by METI, and Teikoku Oil agreed to this proposal due to a sense of crisis in the projected harshly competitive global environment.

In terms of resource diplomacy, the Japanese oil industry and government are exploring the possibilities offered by Central Asia, Africa, Siberia, and Sakhalin. The reason for this is not only that the access became wider since the end of the Cold War but also that countries in the Asia-Pacific region began to secure domestic fields due to growing domestic demand. China and Indonesia, which used to be major oil producers in the region, became net importers in 1993 and 2004, respectively. In response to these changes, former Japanese Prime Minister Yoshiro Mori visited African countries in January 2001 to build a better relationship for the security of natural resources such as oil production in Nigeria. Following Mori's visit, former Prime Minister Koizumi visited Kazakhstan and Uzbekistan in August 2006 for the first time as an incumbent prime minister. The next Prime Minister, Shinzo Abe, visited the Middle East in the spring of 2007, which was more obviously a facet of resource diplomacy. Abe visited four oil-producing countries (Saudi Arabia, United Arab Emirates, Kuwait, and Qatar) with approximately 180 business executives, not only from the oil industry but also from several other industries such as high-tech, manufacturing, construction, and finance. These public–private partnerships for resource diplomacy have raised expectations concerning improvements in market access, not only from domestic industries but also from resource-producing countries for Japan's economic support and personnel exchanges.

Following these efforts, the Japanese government again set a new numerical target in the New National Energy Strategy of 2006, since the last target was withdrawn in 2000 as it promoted ineffective management. It reflects a major structural change in the international energy market owing to various elements concerning both supply and demand conditions. The target for Japan's self-developed oil is set as 40% of total oil import, which is an even higher target than previously set. In order to achieve this aim, the Japanese government and industry realized that it is essential to continue to reform the structure of government support and private industry involvement. They also consider that Japan should develop the expertise for

recovery improvement or development of geologically difficult fields, in order to broaden the access to global concessions. Since November 2006, a joint committee of JOGMEC and private upstream oil companies has reviewed the role of JOGMEC and how Japan could utilize the country's competence. According to the committee report, most private companies expect JOGMEC to act as a research center for fundamental technology and human resource development, which was difficult to achieve in the previous structure. Two of the largest Japanese upstream oil companies, JAPEX and INPEX Holdings, spent 3,195,000 dollars and 434,000 dollars in 2006 for R&D, while ExxonMobil, which produced petroleum liquids over ten times of these two Japanese companies, spent approximately 200 million dollars annually for upstream R&D (Cassiani et al., 2006). This policy is considered on the basis of the fact that the chances of overseas development are limited by many oil-producing countries, since they shut off foreign access to their fields. It is necessary to develop expertise for entering into projects in open but economically or geologically difficult fields, such as small ones or those with heavy oil. JAPEX's development of Canada's oil sands is one of the promising examples. These examples also raise the necessity of cooperation with domestic downstream industries for smooth delivery of the oil supplies. In addition, this is expected to be the next step in the further integration of Japan's oil industries, which were long divided.

## 5. Concluding remarks

This study first tried to clarify several constraints and their structure, which Japan encountered in trying to achieve its target of promoting overseas exploration and development. Then, it was shown that some of them were not necessarily inherent to resource-poor countries but were distinctive and sometimes conquerable by Japan's efforts. Using the terminology of Alfred D. Chander, Jr., Professor of Business Management, "structure must follow strategy," and in Japan's case of overseas development, "structure did not follow strategy" and the "strategy" itself was rather imprecise, given the conditions faced by Japan. Japan's cooperative structure between government and industries, which brought low accountability and inefficient project management, was not appropriate for the strategy of competing in the global oil market. More than 200 projects and their disappointing consequences indicate that the "one-company for one-project" structure was not suitable for accumulating the know-how and expertise necessary for successful project management. The system of sharing risk and cost of projects obscured the role and responsibly of each partner, thus causing moral hazards, which devoured a huge amount of tax money. On the other hand, when considering Japan's disadvantageous position in the early stage of her upstream oil industry, the strategy of promoting self-development in unexplored areas was much harder than expected. Unlike France, Japan had to abandon all of its overseas interests when World War II ended and had to restart a ground-up effort. In addition, contrary to Italy's case of discovering a giant gas field along Po River in 1948, Japan was unable to discover any large petroleum reserves within its territory to revitalize its own upstream industry, which would enable it to demonstrate its expertise in the global oil market.

Japan has been dependent on imports for its oil supply and will continue to be so. In addition, as long as the current vulnerable global oil market remains a reality, where Japan can never be freed from its traumatic experiences, she will continue its attempt to secure the oil supply through exploration and development efforts. The energy planners in the country now need to reconsider the role of government and private companies and where and how they will secure oil supplies. Otherwise, Japan will again face difficulties in the harshly competitive global environment, and the situation will become even more difficult with the advent of new economic powers.

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