

Japanese energy profile: the search for security

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by Oil and Gas Journal Editors

The Japanese government is working on several fronts to enhance energy security and reduce the country's reliance on oil from the Middle East.

But that dependency is unlikely to change much anytime soon, said analyst Hosoe Tomoko in a January report by Fesharaki Associates Consulting & Technical Services Inc. (FACTS Inc.), Honolulu.

Japan is trying to strengthen its nuclear power infrastructure and to import more LNG and has developed a petroleum stockpile system, initiated an environment tax, and is working toward importing oil from Russia and Iran as alternative sources of oil supply.

It also is making upstream investments overseas, reestablishing a relationship with Middle East oil exporters, and helping other southeastern Asian countries develop strategic stockpiling, Hosoe said.

Japan's energy policy

Japan's June 2004 Basic Energy Policy emphasizes increased use of natural gas and other alternatives to oil while retaining nuclear energy as a core energy supply.

Japan imported 59.1 million tonnes of LNG in 2003, about 75% of it from Asia-Pacific suppliers and 23% from the Middle East.

It imported 87% of the 4.28 million b/d of oil it consumed in 2003 from the Middle East, more than half of that from the UAE and Saudi Arabia.

Japan's Ministry of Economy, Trade, and Industry (METI) plans to lower oil imports to 46% of total supply from the current 50% by 2010. It plans to do so by lifting market shares of other energy sources: gas to 15% from 13%, nuclear power to 14% from 13%, and other energy to 3% from 2% while coal's share remains at 18%.

Oil supply diversity

Japan is negotiating with Russia to receive oil via the proposed Nakhodka pipeline project and with Iran for development of Azadegan oil and gas field, with Japan taking a portion of the production, Hosoe noted.

If built, the 4,130-km Russian pipeline would originate at Tayshet, north of Lake Baikal in Siberia, instead of the previously discussed Angarsk. Capacity of the pipeline will likely be 1.6 million b/d (OGJ Online, Jan. 17, 2005). It would extend to Russia's Nakhodka Pacific coast port, although China wanted the pipeline to go directly to Daqing first. A smaller branch line from the main pipeline to Daqing is still a possibility if oil supply is sufficient for both markets.

Whether pipeline construction will proceed, however, and how soon it could be built depends on how much Japan is willing to invest, who will invest in the upstream exploration and production, and whether building a branch to Daqing is a realistic option.

In addition, project costs have skyrocketed, with construction of a Tayshet-Nakhodka pipeline now estimated at \$11-16.2 billion, nearly three times the cost of Japan's originally proposed Angarsk-Nakhodka pipeline.

Development of Iran's Azadegan field -- which could produce 50,000 b/d of crude oil by July 2007, 150,000 b/d by July 2008, and a final 260,000 b/d by March 2012 -- also faces challenges (OGJ Online, Sept. 14, 2004).

Japan's overseas upstream investment policy is to participate -- through state-owned Japan National Oil Corp. (JNOC) -- in exploration and development overseas for a percentage of production.

JNOC, formed in 1967, will be dissolved by March under Prime Minister Koizumi Junichiro's major restructuring plan for 77 state-run organizations. It has been selling the assets of its group companies, including a 16% stake of Japan Petroleum Exploration Co. (Japex) in a \$295 million initial public offering (IPO) and 18% of its total 54% stakes in Inpex in a \$1.5 billion IPO.

Inpex, with a good business outlook and a large market capitalization, has been a successful JNOC-funded upstream firm, with the core of its activities in Indonesia. The company also is the project operator of Iran's Azadegan field project (OGJ Online, Sept. 14, 2004). Under a buy-back contract, Inpex holds a 75% share of Azadegan, with Iran's Naftiran Intertrade Co. (NICO) holding the remaining 25%.

Azadegan development is seen in Japan as risky for a private company, Hosoe said.

"From the beginning, the Azadegan development has been Japan's national project; thus, it was not purely a matter of economics," Hosoe said. "Japanese politicians and bureaucrats continue their hopes in seeing Japan commercially engage Iran, to diversify

energy sources for greater supply security. Meanwhile Inpex is hoping to find an international partner." Discussions are under way with several potential partners, he said.

Nuclear power policy

Although nuclear energy remains central to Japan's energy policy because of the country's obligation to reduce emissions of greenhouse gases under the Kyoto Protocol, Hosoe said, future nuclear growth may be limited.

The country has 52 nuclear reactors and 3 units under construction -- one to start up this month, another in July, and a third in March 2006. A fourth is planned for start-up by fiscal 2010. METI plans to build six more by 2030.

Earlier, Japan had planned to build 9-12 nuclear reactors by 2010. Projects have been postponed by a slowdown in electricity demand, intensifying cost competition from gas-fueled, combined-cycle units under industry deregulation, and growing public opposition to nuclear energy following a series of accidents, and controversy over plant maintenance data cover-ups, Hosoe said.

Japan's two largest electric utilities, Tokyo Electric Power Co. (Tepco) and Kansai Electric Power Co. (Kepco), have frozen or delayed construction plans.

Tepco, which owns 38% of Japan's total nuclear power generation capacity, plans to add two 1.38-Gw nuclear units to its existing 4.70 Gw Fukushima Daiichi nuclear power plant. "However, Tepco has already delayed these plans several times and is unlikely to build them anytime soon," Hosoe said.

Fukui prefecture, which contains 15 nuclear power stations, plays a key role in Japan's nuclear policy. It also is where Japan's \$6 billion experimental fast-breeder reactor, Monju, sits. Operations at Monju were

suspended because of a sodium leak in 1995 after initial start-up in April 1994.

All of Kepco's 11 nuclear power plants are among those in Fukui prefecture, where public opposition to nuclear power plants remains strong because of an accident at the Mihama plant. The company has halted indefinitely plans to begin using mixed oxide fuel in 2007.

Planned environment tax

Revision of the nuclear policy will make it difficult for Japan to meet the target set by Kyoto of a 6% cut in carbon dioxide emissions by 2012.

The Ministry of Environment in November 2004 drafted plans for an environment tax to be levied on electricity and most fossil fuels, including oil, coal, and gas beginning in 2005 to cut energy consumption and encourage a CO₂ emissions reduction of 9.5% by 2010.

The initiative would tax the consumption of most fossil fuels at 2,400 yen/tonne of carbon contained in the fuel, with the revenues used to facilitate wider use of wind power and solar energy and to promote the public's use of energy-saving equipment.

However, the proposal faces strong opposition from METI and major industry associations, which contend the tax would be ineffective because energy taxes are already too high. The opponents also warn that additional taxes could slow economic recovery and stifle industrial activity.

It is unlikely that the tax will be implemented before 2006, Hosoe said, and then only if such issues can be resolved.

"However, we do not rule out the possibility that the tax option will be completely abandoned if other effective means for reducing carbon-dioxide emissions can be

figured out," he said. "Even if implemented, it will not make much of an impact on oil demand,"

Petroleum stockpiling

Storage of LPG and strategic petroleum reserves in Japan -- private and public -- aim to protect against energy shortages or disruptions to supply from the Middle East.

The government, through JNOC offshoot Japan Oil, Gas & Metals National Corp. (JOGMEC), maintains national petroleum stockpiles at 10 national oil storage bases. JOGMEC manages the national stockpiles of oil and LPG, builds LPG stockpiling facilities, and prepares for their operation. It also releases stockpiled oil or LPG on orders of the Japanese government.

In addition, all private oil companies and importers of petroleum products are required to hold products or crude oil stocks equivalent to 70 days of refined products. This requirement, along with stringent product-specification regulations, makes Japan a difficult market to enter.

Storage requirements apply to LPG, too. The plan is to complete by 2010 Japan's storage of LPG equivalent to 80 days' imports -- 30 days, or 1.5 million tonnes, by the government, and 50 days by the private sector.

Japan also supports proposals for joint oil storage by members of the Association of South East Asian Nations.

Other security measures

Efforts to encourage downstream investments by Middle Eastern oil exporters bore fruit in August 2004, when Saudi Aramco bought 9.95% interest in Showa Shell Seikyu KK from Royal Dutch/Shell, its first investment in the Japanese refining business. Aramco will acquire a further 4.99% in 2005. Its holding in Showa

Shell eventually may reach 25%.

"Given that Japan's heavy reliance on Middle East oil will remain under any scenario for the foreseeable future, the exporters' interests in

investing in the region is seen as laudable," Hosoe said.

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