



QA9700003

The Future of Middle East Gas In Japan

Mr. Yuzuru Aoki

Representative Managing Director

Tohoku Electric Power Co., Inc., Japan

ABSTRACT

1. Current state and outlook for LNG supply and demand in Japan

Supplies of LNG received in fiscal 1995 totaled approximately 44 million tons, a volume representing an increase of 3.1% from the previous year. Further increases in LNG imports are expected in the future as well owing to the importing of LNG from Qatar beginning in January this year.

According to "The Long-Term Outlook of Energy Supply and Demand in Japan," demand for natural gas is projected to expand from approximately 40 million tons in fiscal 1992 to 53-53 million tons in 2000, and then to 58-60 million tons in fiscal 2010.

2. Environment surrounding Japan's energy industries

With the global trend towards deregulation, it is inevitable that the electric power and gas industries will face a fiercely competitive environment and that larger economies than ever will be required for the procurement of fuel and materials. Unless LNG prices can be maintained at levels that permit it to compete with other fuels such as coal, LNG will lose its market competitiveness with respect to the electric power industry.

3. Outlook for Middle East gas in Japan

Middle East LNG will be a strong candidate to serve as a source of supply to Japan in the long term. The decisive factor in ensuring that LNG trade with Japan is brought about, however, will be the terms the sellers can offer with regard to three key points : economic efficiency, supply security, and supply/ demand matching.

In the future, it will be essential to ensure mutual understanding between the LNG sellers and buyers as well as to continue to step up mutual efforts to reduce costs.

The Future of Middle East Gas In Japan

Mr. Yuzuru Aoki, Representative Managing Director

Tohoku Electric Power Co., Inc., Japan

1. Current state of energy supply and demand in Japan

(1) State of Japan economy

The Japanese economy is said to have bottomed out and entered a recovery phase in October 1993.

Looking at recent economic trends described in the December 1996 monthly economic report of the Economic Planning Agency, we find that private demand is becoming firmer, backed by recovery trends in consumer spending and capital investment, and that the economic recovery is being sustained, albeit at a modest pace.

Japan's official discount rate has remained at an historical low of 0.5% since it was lowered in September 1995. In tandem with this relaxed credit climate, the Japanese government has been fostering deregulation and so forth with the aim of strengthening the economy's capacity for recovery and ensuring its sustainability, so as to achieve stable medium and long-term growth.

As regards forecasts for the economy in 1997, the Japanese government is projecting growth in real GDP of 1.9%, and the general view is that it will take some time before the economy achieves a full-scale recovery.

(2) Energy supply and demand

Final energy demand in Japan in the 1995 fiscal year rose by 3.2% from the previous year, boosted by factors such as the modest recovery trend by the economy, and colder weather than in the year before, which raised demand for heating and hot-water supplies.

As regards the supply of energy, total supplies of primary energy in fiscal 1995 was approximately 588 million kiloliters on a crude-oil-equivalent base, up by 1.9% from the previous fiscal year (Table 1). (The year-on-year rate of increase was 1.2% in fiscal 1993, and 5.4% in fiscal 1994.)

Broken down by energy source, supplies of oil fell by 0.4% from the previous fiscal year, as in spite of a rise in imports of petroleum products such as naphtha and kerosene, there was a substantial decline in supplies of crude oil for burning and C-grade heavy crude for use in power generation.

The supply of coal rose by 2.8%, owing to factors such as an increase in the supply of steaming coal for use in power generation.

Meanwhile the supply of nuclear power was up by 8.2%, as capacity utilization was at a high level, and new plant began operations (Tohoku Electric Power's Onagawa Nuclear Unit No. 2). This raised the proportion of total supplies provided by nuclear power to 12.0%, up from 11.3% in the previous fiscal year.

The supply of natural gas rose by 2.5% year-on-year, owing to an increase in imports of LNG. These imports come from the U.S. (Alaska), Brunei, the U.A.E. (Abu Dhabi), Indonesia, Malaysia, and Australia (Table 2).

Chubu Electric Power began imports from Qatar in January this year, and other Japanese buyers will also be receiving supplies from next year. The eight utilities (five power and three gas) plan to import an annual total of approximately 6 million tons from 1999.

(Supplies of LNG received in fiscal 1995 totaled 43.69 million tons, representing an increase of 3.1%, from 42.37 million tons in fiscal 1994.)

2. Environment surrounding Japan's energy industries

(1) Stimulating the principle of competition through deregulation

Amid the global trend towards deregulation, the energy industry is seeking to make thorough improvements in efficiency to a greater extent than ever before, while at the same time assuring the stability of supplies. There is a major trend in that direction, accompanied by developments such as the amendment of legislation.

With regard to the oil industry, to ensure more efficient energy supplies, last year the Provisional Measures Law on the Importation of Specific Petroleum Refined Products was repealed, and new oil-related legislation came into force in April.

As a result of the repeal of this law, anyone is now permitted to import products such as gasoline, on condition that they fulfill certain obligations with regard to storage and quality management. This is generating increasingly fierce competition, and oil companies are endeavoring to reduce costs by such means as exhaustive rationalization.

Turning now to the electric power industry, the Electricity Utilities Industry Law was substantially amended for the first time in 31 years, and the revised law came into effect in December 1995. The objective of this was to introduce competition into the

electric power industry and enhance its efficiency, premised upon the assurance of stable supplies of electric power.

Through the use of a tender system, it has also given independent power producers the opportunity of participating in the electric power market.

The results of the tenders held in fiscal 1996 were all made known in October last year, when it was revealed that decisions had been made on successful bids for power sources in a total of 20 cases with an aggregate capacity of approximately 3 million kilowatts, and that there had been fierce competition, with around four times as many bidders as contracts on offer.

In addition, a system of special electricity suppliers has been established, systematizing the supply of electric power within specified regions by such means as cogeneration.

Also, to stimulate competition, a new system of charges has been introduced in the form of a yardstick formula under which appraisals are made of the relative degree of efficiency, and then these are graded.

With respect to gas utilities, the Gas Utility Industry Law was partially revised and brought into effect in March 1995. The revisions to the law included the easing of regulations governing participation in the supply of gas to large-scale users, and regulations on gas charges. As in the case of the electric power

industry, the yardstick formula has also been introduced in the gas industry as a new charging system.

It is considered inevitable that electric power and gas utilities will face a fierce competitive environment, and as greater-than-ever economies will be demanded in the procurement of fuel and materials, the importance of the price competitiveness of fuel and materials is rising.

(2) Circumstances surrounding the LNG of electric power utilities

The basis of the makeup of power sources in the electric power industry is what is termed the best mix of power sources—determined by giving overall consideration to ensuring the stable supply of electric power and its economic efficiency, and using an appropriate combination of energy sources, without bias towards any particular sources. I believe that this policy will be maintained in the future.

Among the fuels used for power generation, it was formerly argued that LNG should be recognized as being a premium product with regard to the environment, on the grounds that it is environmentally superior to fuels such as coal.

Today, however, technical innovation has enabled coal-fired thermal power generation to be made considerably more

environmentally friendly, and it now seems impossible to acknowledge the superiority of LNG.

As a result, in the selection of fuel in the future, economic efficiency will be the most important prerequisite. Thus, as I mentioned earlier, the electric power utilities will find themselves in an extremely competitive environment, and unless LNG prices can be maintained at levels that enable LNG to compete with other fuels such as coal, which is now recognized as being economically efficient, LNG will lose its competitiveness in the market.

3. Outlook for LNG supply and demand in Japan

(1) Outlook for energy supply and demand in Japan

In June 1994 "The Long-Term Outlook of Energy Supply and Demand in Japan" was drawn up as the government's policy goal relating to energy supply and demand in Japan (Table 3).

Demand for natural gas for use in electric power generation and for town gas is projected to expand, rising from approximately 40 million tons in fiscal 1992, to 53-54 million tons in fiscal 2000, and then to 58-60 million tons in fiscal 2010.

The proportion accounted for natural gas is projected to rise steadily until fiscal 2000, but then to remain relatively static until fiscal 2010.

(2) Outlook for LNG supply and demand in the power business

According to the fiscal 1996 electric power supply plans filed by the electric power companies last year, the volume of demand for electric power in the 10 years to fiscal 2005 is projected to rise steadily at an annual average rate of 2%, buoyed by stable economic growth and by rising living standards.

As for the various categories of power-generation plant, over the 10-year period the capacity of plant for coal-fired thermal power is projected to double, and the quantity of power produced is set to rise at almost the same rate (tables 4 and 5).

As for oil-fired thermal power, although plant capacity will remain relatively static, the quantity of power produced is declining.

Plant capacity for LNG-fired thermal power is increasing, though the quantity of power produced is not expected to keep pace with capacity from fiscal 2000 to fiscal 2005, but to remain relatively unchanged.

The fact that there are such variations in these three categories of thermal power generation reflects the evaluation of

factors such as the economic efficiency of the fuel consumed by the different types.

With regard to LNG-fired thermal power, although plant capacity will increase, the capacity utilization ratio is projected to decline, owing to a change in the form of thermal power operation from conventional middle-load facilities to middle-peak facilities.

In addition, operations are expected to be highly efficient as a result of the replacement of LNG-fired thermal power and the bringing into practical use of new processes such as advanced combined-cycle power generation.

In view of these factors, it is thought unlikely that there will be an increase in the volume of LNG commensurate with the growth in demand for electric power, particularly from fiscal 2000 onwards.

(3) Outlook for LNG supply and demand in the gas business

According to supply-demand plans of town-gas companies, the number of users of town gas is estimated to increase at an average annual rate of 1.8% from fiscal 1996 to fiscal 2000.

In contrast, the volume of gas supplied is projected to increase at an average annual rate of 3.8% from fiscal 1996 to fiscal 2000, as there is expected to be an increase in demand for industrial use, where the basic units are large.

LNG used for the supply of gas totaled 11.67 million tons in fiscal 1995, and is projected to rise to 14.26 million tons in fiscal 2000, representing an average annual increase of 4.1%.

4. Outlook for Middle East gas in Japan

With regard to LNG produced in the Middle East, Japan has decided to take an annual total of 6 million tons on a plateau base from Qatar, in addition to LNG taken from Abu Dhabi.

I understand that other Middle East countries are planning LNG projects, though there are also LNG projects in various parts of the world outside the Middle East, for example the United States, Indonesia, Malaysia, Australia, and Russia, that are described as promising.

Corporate gas purchasers in Japan conduct comprehensive appraisals of each individual project, studying which project should become the LNG source for the company. These are the three most important points on which these appraisals focus.

The first is economic efficiency. That is, the securing of delivered prices in Japan that are competitive not only with LNG from other sources, but also with other fuels such as oil and gas.

Second, assuring security of supply over a long period.

It is essential not only to ensure the security of delivery by each tanker but to establish a long-term stable supply system. If a prospective place rich in LNG can meet these conditions, it will be highly appraised.

Third, the supply-demand matching of sellers and buyers during the startup period.

In future Japan-oriented projects it may be that the average procurement volume of LNG per purchaser will decline, while the number of parties involved increases. However, in that case it will be essential to act flexibly when coordinating the supply-demand timing during the startup period.

When Middle East LNG projects conduct their planning for sales to Japan, I believe that it is inevitable that they will compete with projects in Asia-Pacific countries and in other regions.

Aspects that could place the Middle East at a disadvantage are not only the region's long distance from Japan, but also the fact that one of the objectives of Japan's policy to move away from reliance on oil has been to endeavor to avoid the country's excessive dependence on the Middle East. In consequence, the basic policy of diversifying fuel supplies will be maintained, and it is possible that there will continue to be an attitude inclined towards curbing the proportion of supplies accounted for by the Middle East.

Middle East LNG will be a strong candidate for acting as a source of supply to Japan in the long term. However, to ensure that LNG trade with Japan is brought about, the decisive factor will be what terms the sellers can offer with regard to those three points that I have just referred to, namely economic efficiency, security of supply, and supply-demand matching.

As I have said, as the operating environment on the side of the buyers grows increasingly harsh, they are seeking even greater economic efficiency. In view of that, in future it will be essential to ensure mutual understanding of the standpoints of LNG sellers and buyers, and to continue to step up mutual efforts to reduce costs.

###

Table 1. Composition of supply of primary energy (Fiscal 1995)

	Volume : Crude-oil equivalent () : % share	Year-on -year change (%)
Total primary-energy supply	5 8 8	1. 9
Shares : Oil	(55. 8)	△1. 0
Coal	(16. 5)	2. 8
Natural Gas	(10. 8)	2. 5
Hydroelectric power	(3. 5)	22. 8
Nuclear power	(12. 0)	8. 2
Geothermal power	(0. 2)	56. 5
New energy, etc.	(1. 1)	4. 2

Table 2. Volume of LNG imports by Japan (Fiscal 1995)

Country	U.S. (Alaska)	Brunei	U.A.E. (Abu Dhabi)	Indonesia	Malaysia	Australia	Total
Volume (Thousand tons)	1,221	5,507	4,098	17,476	8,559	6,828	43,689

Table 3. Outlook for supplies of primary energy

	Fiscal 1992 [Actual]	Fiscal 2000 [Plan]	Fiscal 2010 [Plan]	Ave. year-on-year change (%)	
	() : % share			1992~ 2000	2000~ 2010
Total primary-energy supply [Million kl]	541	582~591	635~662	0.9 ~ 1.1	0.9 ~ 1.1
Oil [Million kl]	315 (58.2)	308~316 (52.9~53.4)	303~331 (47.7~50.1)	Δ0.3 ~0	Δ0.2 ~0.5
Coal [Million tons]	116.3 (16.1)	130~134 (16.4~16.6)	134~140 (15.4~15.3)	1.4 ~1.8	0.3 ~0.4
Natural gas [Million tons]	40.7 (10.6)	53~54 (12.9~12.8)	58~60 (12.8~12.7)	3.4 ~3.6	0.9 ~1.1
Nuclear Power [Billion kwh]	223 (10.0)	310 (12.3~12.1)	480 (16.9~16.2)	4.2	4.5
Hydroelectric power [Billion kwh]	79 (3.8)	86 (3.4~3.3)	105 (3.7~3.5)	1.1	2.0
Geothermal power [Million kl]	0.55 (0.1)	1.0 (0.2)	3.8 (0.6)	7.8	14.3
New Energy, etc. [Million kl]	6.7 (1.2)	12.1~9.4 (2.0~1.6)	19.1~11.5 (3.0~1.7)	7.7 ~4.3	4.7 ~2.0

Table 4. Plant Capacity [Unit : Million KW, () : % share of total]

	Fiscal 1995 [Actual]	Fiscal 2000 [Plan]	Fiscal 2005 [Plan]
Thermal power	118.16 (59)	140.13 (60)	165.51 (60)
LNG	43.54 (22)	58.19 (25)	69.08 (25)
Coal	20.14 (10)	28.69 (12)	42.24 (15)
Oil	49.53 (25)	48.19 (21)	48.05 (17)
Hydroelectric	41.99 (21)	45.04 (19)	52.09 (19)
Nuclear	41.19 (20)	45.08 (19)	55.79 (20)
Total	201.34	231.72	276.20

Table 5. Power output by type of plant [Unit : Billion kwh, () : % share of total]

	Fiscal 1995 [Actual]	Fiscal 2000 [Plan]	Fiscal 2005 [Plan]	Ave. year-on-year change (%)	
				1995 ~2000	2000 ~2005
Thermal power	478.0 (56)	524.7 (56)	570.5 (55)	1.9	1.7
LNG	191.0 (22)	241.4 (26)	243.9 (23)	4.8	0.2
Coal	117.2 (14)	147.7 (16)	207.0 (20)	4.7	7.0
Oil	150.9 (18)	113.3 (12)	97.5 (9)	△ 5.6	△ 3.0
Hydroelectric	85.4 (10)	96.5 (10)	101.3 (10)	2.5	1.0
Nuclear	291.1 (34)	313.0 (33)	361.1 (35)	1.5	2.9
Total	855.7	940.7	1,045.6	1.9	2.1