

Japan's Energy Policy and Its Implications for the Economy*

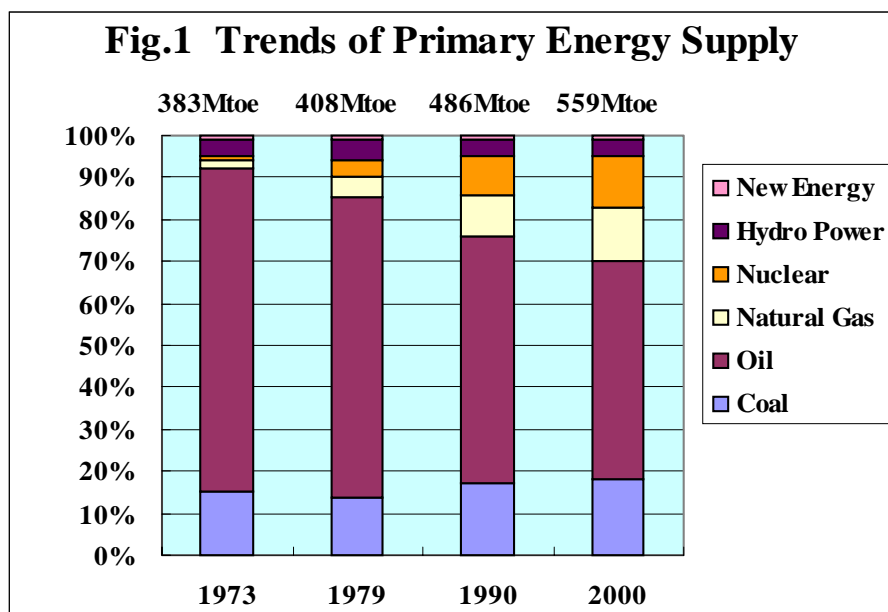
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1. Introduction

It is my great honor to be given an opportunity of making a presentation at the Japan-Saudi Business Council Joint Meeting. Today, I would like to talk about Japan's current energy policy and its major issues and what implications it carries for the Japanese economy in the future. Since Japan is poorly endowed with energy resources of its own, we suffered serious economic difficulties due to two oil crises in the 1970s. These energy crises prompted our energy policy to place top priority to securing stable energy supply – i.e., the assurance of “Energy Security.” As a result of vigorous efforts made by the government as well as by the private sector over the past three decades toward diversification of energy supply sources, coupled with energy conservation, Japan's reliance on oil in its primary energy supply has fallen drastically from 78 percent in 1973 down to 52 percent by 2000 (Figure 1). Even so, it should be emphasized that oil still remains to be the most important energy source for Japan and we rely on the Middle Eastern countries for supply of 87 percent of its oil requirements.

Let me explain here the basic philosophy which Japanese energy policy is based on. The fundamental objectives of our energy policy have been forced to undergo dramatic changes over the last decade of the 20th century as the cold war came to an end and the globalization of the economy advanced, while the global warming problems emerged. In other words, in addition to the assurance of energy security, Japan's energy policy objectives have been modified in such a manner that “3Es” goals must now be achieved simultaneously – i.e., “Economic Efficiency” aimed at reducing energy supply costs through deregulation and liberalization measures, “Environmental Protection” aimed at reducing CO₂ emissions to counter the global warming problems, on top of the

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conventional “Energy Security.” In this connection, I would like to point out that it is becoming increasingly important to look at our energy problems from a broader perspective, especially taking into account Asian region as a whole. Primary reasons above mentioned are as follows.

Firstly, the concern about oil supply disruption has been greatly reduced in and after the mid-1980s due primarily to the ending of the cold war. Stepped-up expansion of oil stockpiles and development of alternative energy sources among IEA member countries as well as increased oil production by non-OPEC countries all have served to undermine gradually OPEC’s influential power in the international oil market. As a result, the spot and futures markets have come to play a greater role in the international oil market, thereby strengthening trends of oil becoming “just a commodity”. But the terrorist assault on the US on September 11 has again reminded us that oil still has a feature of “a strategic commodity”.

Secondly, as the globalization of economy advances, it is becoming a vital issue for our economic reforms to reduce its energy supply costs which are very expensive compared with international levels. This is because the international competitiveness of our industries is receiving a serious blow from higher energy costs. Therefore it has become a major policy target to improve the “Economic Efficiency” by reducing our energy supply costs through deregulation and liberalization policy measures taken for oil, gas and electricity markets.

Thirdly, the environmental issue, especially the restriction of CO₂ emissions, has been given a higher priority in our energy policy, as the Japanese people’s concern over the global warming has been mounting in the wake of

the COP3 (The Third Convention of Parties to the United Nations Framework Convention on Climate Change), held in Kyoto in December 1997. The legally binding Kyoto Protocol adopted by COP3 is an extremely high hurdle for us to overcome, but a broad consensus has been established among the Japanese people to cutback CO2 emissions by making every effort by way of implementing proper energy policy measures. One thing I wish to point out here is that to implement energy policy measures such as promotion of energy conservation, development of nuclear energy and renewables, as well as the expanded utilization of natural gas all lead to improvement of our energy security simultaneously.

Fourthly, in the Asian region, which has achieved one of the most remarkable economic development in the world, various problems have also emerged along with sharp increases in energy consumption. These problems include, among other things, the worsening shortage and the rising vulnerability in energy supply and ever-deteriorating environmental problems. In China and India, in particular, demand for oil has been rapidly increasing to meet industrialization and urbanization, resulting in sharp increases in oil imports from the Middle Eastern countries. This, in turn, is urging Japan to review its energy policy from a wider perspective including the whole Asian region.

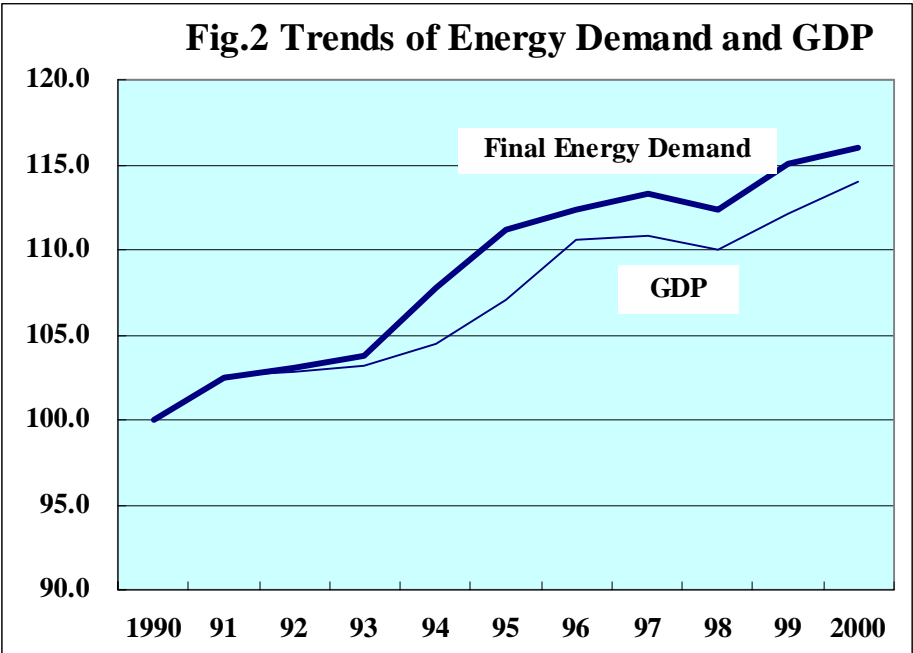
2. Current Status of Japan's Economy and Energy Supply and Demand

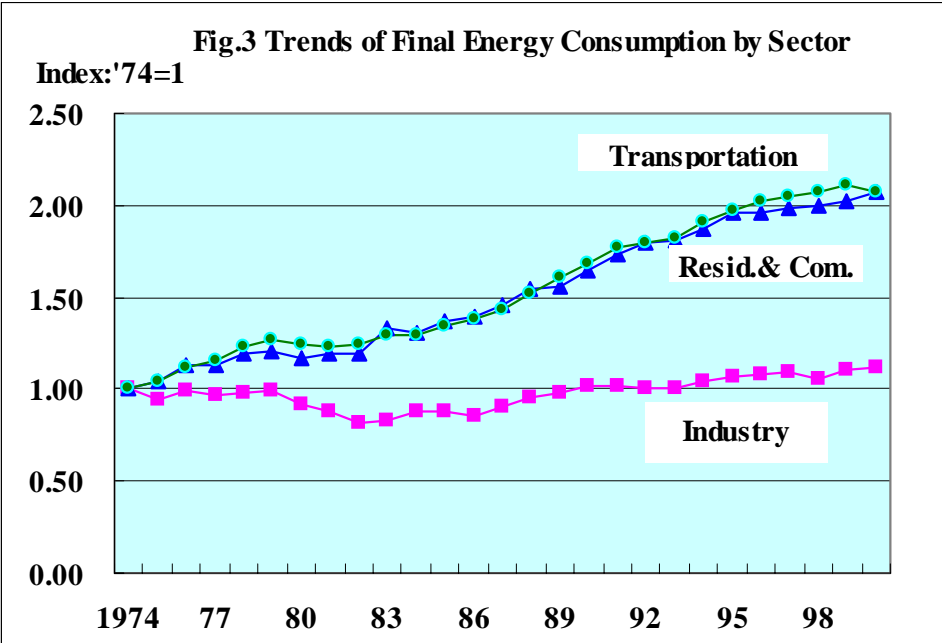
In order to achieve the "3Es" objectives above mentioned, our government published its new energy outlook last July. Before talking about this outlook, let me give you a brief outline of the current status of Japan's economy and an outlook for the future.

In the early years of the 1990s, the so-called economic bubble burst when then wildly inflated land and stock prices nose-dived and Japan's economy went into a decade-long slump. Although the economy showed a temporary recovery at one time due to the stimulating economic package including generous public spending and tax cuts, no expected results have been obtained since only to see huge deficits accumulated in the national finance. The Koizumi administration which was inaugurated last May launched an ambitious program, stressing the need for "structural reforms without sacred cows" to reconstruct our economy facing the crisis. The structural reforms include as the main pillars disposal of an enormous amount of non-performing loans held by banks at an early date, abolition and/or privatization of state-run and public corporations, and thoroughgoing review of inefficient public works spending, among others.

Japan now faces an extremely adverse economic environment in the wake of the bursting of the IT-related industrial bubble and the September 11 assault in the U.S., which once led the world economy, making it unavoidable for the Japanese economy to continue quite a difficult flight through the turbulent air for years to come. From medium- and long-term perspectives, however, I am rather optimistic about the future of our economy. My optimism is based on the following factors: Japan's holding of world's largest assets overseas, Japanese individuals' holding of massive financial assets, high educational standards, coupled with the outstanding technical capability of our people, and our society's adaptability to critical conditions as witnessed in times of emergency in the past, and so forth. However in order to realize this optimistic future, we need unprecedented political leadership and determination supported by the constituency.

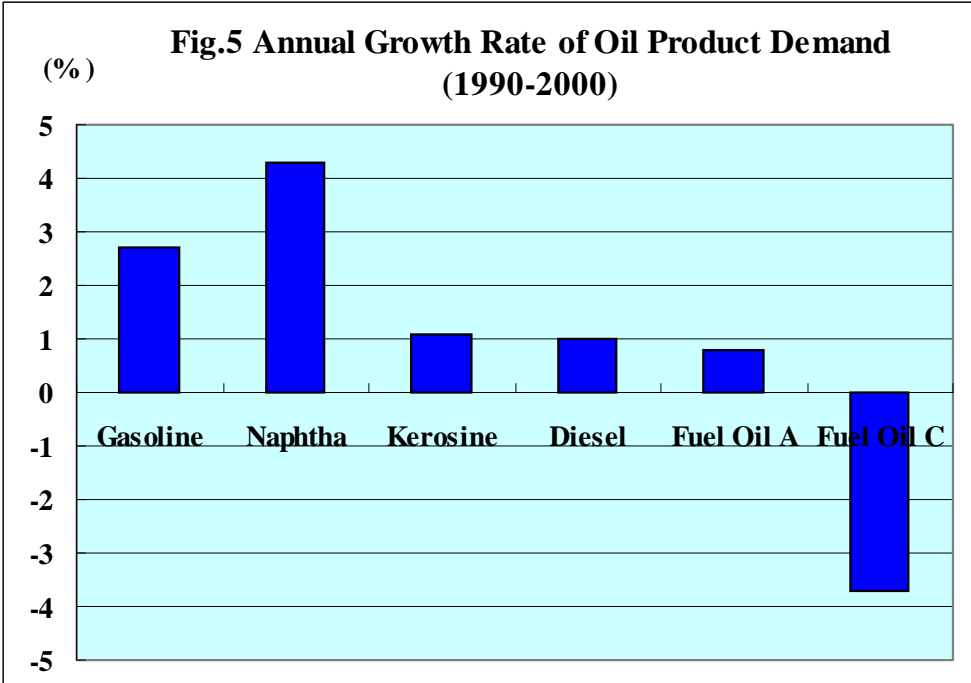
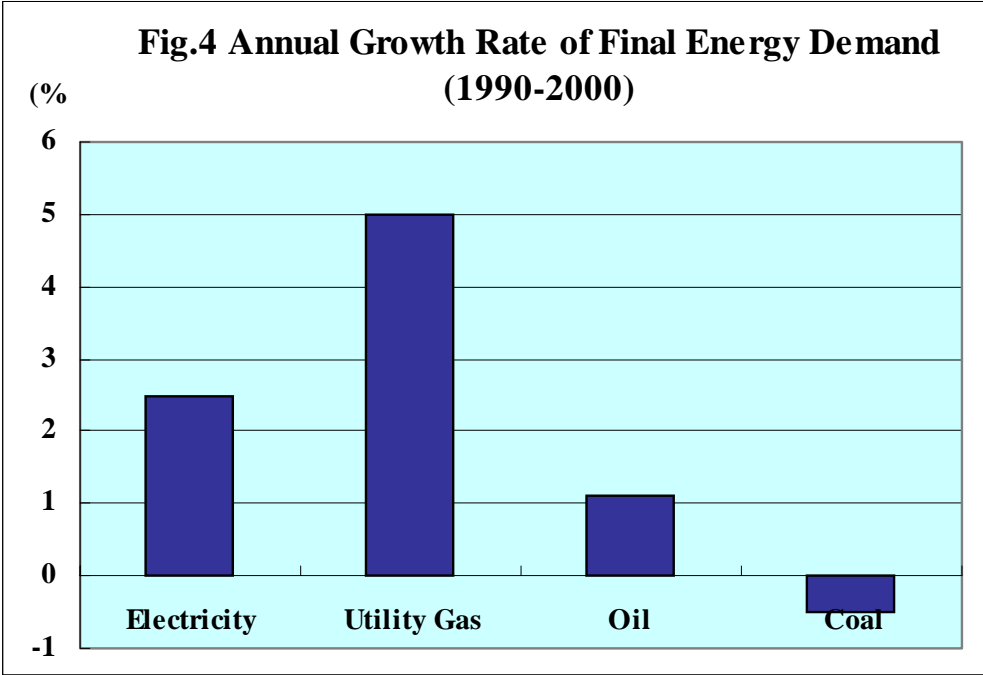
Next, I would like to briefly describe what changes have taken place in Japan's energy supply and demand during the 1990s. First, Japan's GDP grew at an average annual rate of 1.3 % during the 1990-2000 period, and its final energy demand also showed an increase at the rate of 1.5 percent per year during the same period (Figure 2). Looking at final energy demand by economic sector, an average annual rate of increase in demand in the industrial sector remained low at 0.9 percent, while demand in the residential & commercial sectors and the transportation sector showed steady increases of 2.3 percent and 2.0 percent per year, respectively (Figure 3).

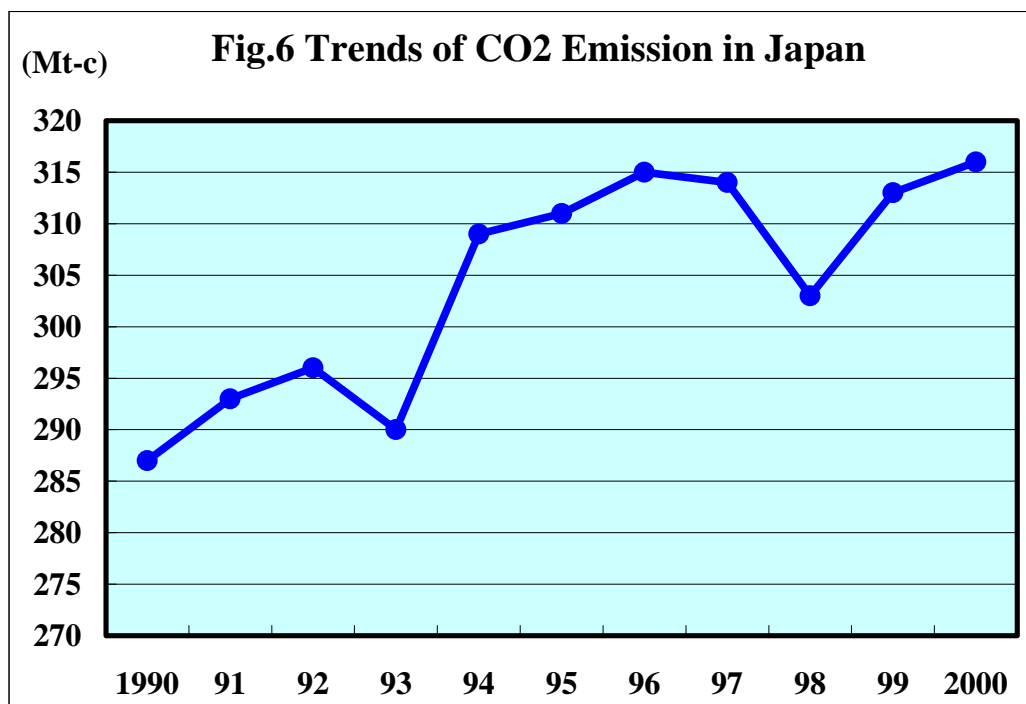




This structural change in energy consumption is producing a great effect on energy consumers' selection of energy sources. Shown below is an average annual rate of increase in final energy consumption by energy source during the 1990-2000 period: consumption of electricity increased at an average annual rate of 2.5 percent; utility gas at 5.0 percent; oil at 1.1 percent; and coal at minus 0.5 percent (Figure 4). A breakdown of oil consumption by product shows a remarkable product mix shift toward a lighter one: consumption of gasoline increased at an average annual rate of 2.7 percent; naphtha at 4.3 percent; kerosine at 1.1 percent; gas oil at 1.0 percent, fuel oil A at 0.8 percent; and fuel oil C at minus 3.7 percent (Figure 5). On the supply side, oil and renewable energy sources almost leveled off over the past decade, while supply of nuclear power, natural gas and coal increased at average annual rates of 4.3 percent, 4.1 percent and 2.2 percent, respectively. As a consequence, oil's share of the total primary energy supply declined from 58 percent in 1990 to 52 percent in 2000.

Japan's energy supply and demand structure has undergone remarkable changes over the past decade as noted above, while the economy remained sluggish. One of the major concerns is that CO₂ emission is continuing an uptrend in recent years (Figure 6). Japan's CO₂ emissions in 2000 already increased 10.2% above the 1990 base year level and it is being greatly worried that the government-set target of reducing CO₂ emissions by 2 percent below the 1990 level by 2010 will be very difficult.



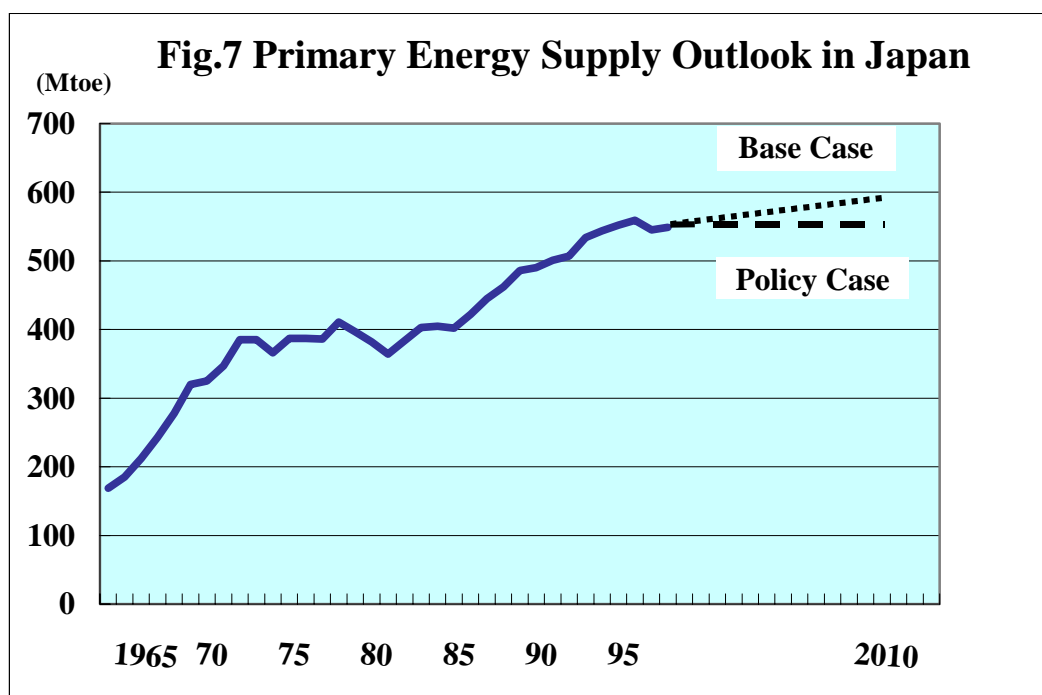


3. New Japanese Energy Outlook

In these circumstances, the Ministry of Economy, Trade and Industry (METI) has published a new “Long-term Energy Supply and Demand Outlook” last July, along with measures to be taken toward its realization. The new outlook presents energy supply and demand outlook for 2010 in two cases: Base case and Policy case (Figure7). In the Base case, it is assumed that the current policy measures will continue to be taken, while in the Policy case new policy measures will be taken to achieve the targeted reduction of CO2 emissions in accordance with the Kyoto Protocol (Table1 and Table2). I would like to emphasize major points and issues of the new energy outlook.

Firstly, it has been announced that far more strengthened energy conservation measures will be taken. Japan’s GDP is assumed to grow at an average annual rate of 1.5 percent in real terms over the 1999-2010 period, whereas primary energy demand is assumed to be restricted to an essentially nil rate of 0.1 percent per year. In order to promote energy conservation especially in the Residential & Commercial and Transportation sectors, government regulatory and financial assistance measures will be further expanded and strengthened in the future. These measures include the strengthened restriction on energy consumption on the demand side and introduction of incentives aimed at encouraging the use of energy-efficient household appliances and automobiles. To

achieve the objective, some circles insist that an economic measure such as the environment tax should be introduced, but the industrial circles are against it, insisting that imposition of a new tax would damage the Japanese industries' competitiveness in the global market. My view is that we should examine a desirable policy mix, taking into account special characteristics of each energy-consuming sector, government regulatory and financial assistance measures, the environment tax, emissions right trading, etc.



Secondly, the Policy case calls for development of new energy sources totaling 18 Mtoe annually by 2010, which will account for 3.1 percent of total primary energy supply. While renewable energy sources are very popular among the public, we have to overcome problems associated with them such as high supply costs and the lack of supply stability. In order to accomplish the target of solar energy, wind power generation, biomass energy and garbage power generation, METI has just decided to introduce the new system of RPS (Renewable Portfolio Standard) in the power sector. In this scheme electric power suppliers are obligated to introduce fixed volumes of new energy sources by generating on their power plants or purchasing renewable certificates on the market.

Table 1 Trends of Primary Energy Supply

Mtoe	1990	1999	2010	
			Base case	Policy case
Renewable	7	7	9	18
Nuclear	46	71	86	86
Hydro. & Geo.	21	20	19	19
Oil	284	285	258	251
Gas	49	70	76	77
Coal	81	95	126	105
Total	486	549	575	557
CO2 emission	287	313	307	287

Table 2 Trends of Final Energy Consumption by sector

Mtoe	1990	1999	2010	
			Base case	Policy case
Residential	43	51	55	54
Passenger	36	49	47	46
Commercial	36	46	61	58
Freight	39	43	42	42
Industry	169	182	173	171
Total	322	371	378	370

Thirdly, nuclear power development plans through 2010 have been revised downward, from constructing 16-20 new nuclear power plants to 10-13 plants in the new outlook. As a result, nuclear power generating capacity will be increased from the existing 45 GW to 62 GW by 2010. Although nuclear power generation is free of CO₂ emissions and hence is absolutely needed from the standpoint of Japan's efforts to counter the global warming problems, it is also accompanied by such problems as disposal of spent fuel and the difficulty in obtaining public acceptance to construct new nuclear power plants from local residents. Under these circumstances, there is every likelihood that construction of new nuclear power plants will slow down further in the future, depending on the pace at which demand for electric power will increase and the extent to which the liber-

alization of the electric utility industry will proceed.

Fourthly, the new energy outlook places a special emphasis on the expanded utilization of natural gas, which is more friendly to the environment and has a greater supply stability than oil. In this connection, it deserves our special attention that the new energy outlook has made known the government's positive support of a plan to import natural gas from offshore Sakhalin through a pipeline system. Today, natural gas (imported in the form of LNG) accounts for 13 percent of Japan's total primary energy supply – only one half the level of around 25 percent registered in the U.S. and European countries. To raise the market share of natural gas in Japan, it is of primary importance to improve the price competitiveness of natural gas vis-à-vis other fuels. To achieve this objective, it is essential for Japan to continue endeavoring to reduce the LNG import prices, to construct an infrastructure such as pipeline networks, to develop natural gas utilization technologies, including fuel cells, GTL (gas-to-liquid) and DME (dimethyl ether). Since GTL and DME are expected to be used as alternative fuels for diesel oil and LPG, respectively, the prospect of these new technologies will be significantly affected by the future development of crude oil prices.

Here I would like to emphasize that the government outlook has a character of being a policy objective rather than a projection. Therefore a long-term energy outlook has been repeatedly revised every two or three years as a rolling plan.

4. Japan's oil industry now at a crossroads

Lastly, I would like to express my views on the current situation and the future prospect of Japan's oil industry and in what direction the oil policy should be pursued.

Since Japan has relied on imports for almost entire volumes of oil it needs as a strategic commodity, the oil industry operations centering on refining and marketing have been placed under a variety of government controls for nearly half a century without being exposed to international competition. The liberalization of Japan's oil industry, however, has been completed both nominally and virtually with the lifting of government control over imports of oil products in 1996, followed by the abolition of the Petroleum Industry Law on January 1st of this year. As a result of the liberalization policy, gasoline prices which have long been kept at high levels from international standards have fallen rapidly.

While these heavy declines in gasoline prices brought great advantages to consumers, the oil companies' profitability deteriorated sharply by losing the largest source of profits, thereby forcing them to move toward all-out rationalization of their operations, including business tie-ups or mergers with other companies.

In Japan there used to be more than 20 oil refining and distribution companies, but now they have been reorganized into four groups during last several years. As a result, the Japan's refining capacity has declined from 5.4 million b/d in 1999 to less than 5.0 million b/d in 2001. Although all of the majors took advantage of higher crude oil prices these years, reaping all-time high profits, Japan's oil industry virtually without the upstream division suffered serious financial setbacks by its failure to fully transfer increases in crude oil costs to product prices. This is mainly due to oversupply of oil products in a market condition of stagnating demand. In order to recover a market discipline, it is indispensable to further reduce about half million b/d of a refining capacity. In this context, more stringent environmental regulations on specifications of oil products may become a driving force to remove inefficient refineries.

The change in priority objectives in Japan's energy policy led to an overall re-examination of the oil development policy, as a matter of course. For a country like Japan with almost no domestic oil resources, to develop its own crude oil overseas has been one of the most important policy goals from the energy security standpoint. In an effort to increase "Japanese-flag crude oil" to such a level that it accounts for approximately 30 percent of Japan's total crude oil imports from a long-term perspective, the government has been providing financial assistance through the government-owned Japan National Oil Corp. (JNOC) to private oil & gas exploration and development projects overseas in the form of equity capital investment, loans and guaranteeing debts. However, sharp declines in crude oil prices coupled with the yen's rapid appreciation vis-à-vis the U.S. dollar, in and after 1986 produced a considerably adverse effect on exploration and development projects, especially on large-scale national projects to such an extent that JNOC became the target of severe criticism.

Under these conditions, METI decided in August 2000 to withdraw the long-term target of increasing the Japanese-developed crude oil to account for 30 percent of Japan's total crude oil imports and worked out a new policy measure aimed at establishing a core oil development company or companies that can maintain and expand its business on its own to assure stable and efficient oil supply. In order to realize this objective, the JNOC

Law has been revised last July, under which JNOC is empowered to narrow down its financial assistance to priority projects, such as the buy-out of fields already explored and/or presently producing oil and gas, and stepped-up introduction of natural gas, including the construction of pipelines and GTL projects.

However, the inauguration of the Koizumi administration placing emphasis on reforms of state-run and public corporations has greatly changed the scenario outlined above. It has been politically decided that JNOC saddled with massive nonperforming loans should be dissolved as the model case of reforming public corporations pledged by Prime Minister Mr. Koizumi. After fierce political battles, it has come to a conclusion that JNOC should be integrated into another public corporation of Metal Mining Agency of Japan, and the JNOC's primary functions for financial assistance to oil development projects, oil stockpiling, and technological development are to be maintained in a more efficient way. It remains to be seen how the concrete scheme and more details will be decided in coming months.

With regard to the oil development policy, I think that top priority should be given to the formation of Japan's core oil development company or companies having international competitiveness, given the current world oil scene in which the super-majors were born by recent mega-mergers, the Middle Eastern oil-producing countries are opening doors to welcome foreign capital and development/utilization of natural gas is gaining momentum in recent years. For that purpose, it is urgently required for Japan to reorganize and integrate oil development companies in which JNOC holds equity interests and to build up corporate governance led by the private sector. Until these oil development companies acquire firm footing on their own, the government should continue supplying risk money to such oil development companies for some time to come. In addition to that, I wish to point out that it is very important for Japan to make more efforts for strengthening technological capabilities in exploration and development sectors.

My view above mentioned is based on the following reasons. The world's oil and gas exploration and development activities are beginning to shift the emphasis from other areas back to the Middle Eastern area again where production cost is low, with many Middle Eastern oil-producing countries stepping up development of their oil and gas resources by introducing foreign capital, while crude oil prices are repeating wild fluctuations in recent years. To maintain and strengthen Japan's presence in the Middle Eastern region will continue to be Japan's important policy objective from its energy security standpoint, since China, India and other Asian devel-

oping countries are increasing their reliance on Middle Eastern oil. To realize this objective, it is strongly required that Japanese oil companies are financially and technically capable enough to either compete with or establish joint ventures with the majors and/or other international oil companies. I believe that the most important task for the Japanese government at present is to improve conditions and create the environment to achieve this objective.

What I wish to emphasize at the end of my presentation is that interdependent relationship between the Middle Eastern oil-producing countries and the Asian oil-importing countries including Japan is expected to deepen further in the 21st century (Figure8). While Middle Eastern oil and gas resources become more necessary than ever before for the Asian countries, the Asian region, when viewed from another standpoint, is expected to be a promising growth market for the Middle Eastern oil-producing countries. The oil and gas supply security is essential for the importing countries, and likewise the Asian region becomes extremely important for the oil-producing countries in that it ensures the demand security. For this reason, I believe it is an important subject matter that the interdependent and complementary relationship is deepened further in the future between Japan and Saudi Arabia through utmost efforts by the two governments and the two countries' private sectors as well, and concurrently strengthen a dialogue and promote economic as well as technological cooperation between the Asian and the Middle Eastern countries.

