Energy Policy of Japan – Basic Targets and Subjects

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Introduction

It may be all right to say that the fundamental framework for Japan's energy policy was constructed only after the first oil crisis in 1973. Of course, the government had hammered out specific energy policies, like coal policy, oil policy, or nuclear power policy, in response to changing situations such as postwar rehabilitation, energy revolution, and peaceful use of nuclear power.

And yet, it seems what's counted as a total energy policy came to be discussed systematically only after the first oil crisis, the biggest postwar incident of worldwide class. Of course, even during the prewar days, there had been fuel policy-like ones, each naturally having an importance of its own.

The "Advisory Committee for Energy" was born in 1965 as an advisory body to the Minister of International Trade and Industry, and the first "long-term energy supply and demand outlook" was published in February 1967. Nonetheless, it is hard to say that a total energy policy was produced together with these moves.

It was in 1973 when the Agency for Natural Resources and Energy was formed within the Ministry of International Trade and Industry. Then, in 1974, under the U.S.-led efforts, the International Energy Agency (IEA) was created as an international forum for policy cooperation and coordination.

1. Basic Target of Energy Policy – Energy Security

After the world experienced the first oil crisis (1973) and the second one (1979-80), what used to be taken as a stable supply of energy was newly worded with an American-style concept, or energy security, which came to run in the forefront.

Security is a term that inherently means to be safe. National security means safety of a nation, as well as safety of individual peoples of the nation. Energy security means security of energy, particularly security of energy supply. Perhaps the term of security was put because this term has a meaning that safety is secured, and because of the need to distinguish from safety.

At any rate, security is a concept, or a word, in the Anglo-Saxon style. It represents a concept at the level of nations. By the IEA, it is interpreted as working together for the cause of collective (international) security.

Stock buildups should be cited first, if how to deal with emergencies (ex. oil shock) is highlighted most. Emergencies are not limited to those of oil-shock type with an oil disruption from the Middle East involved, but include a cutoff of transportation route (of not merely oil but all sources of energy) and a confusion of distribution channels. While emergency preparedness calls for consumption control, its effectiveness has been doubted these days.

The long-range response measures under consideration are the efforts to reduce oil dependence and lower the Middle East reliance.

(1) Reduction in oil dependence

The “long-term energy supply and demand outlooks” (released 11 times with the latest 1998 June version included) have been designed to specify the principal targets of the government’s energy policy and expressly put that oil share in primary energy

supply should be lowered below 50% by the final target year.

After hitting a peak of 77.4% in FY1973 shaken by the first oil crisis, oil dependence fell by around 20% to 56.3% in FY1985 when the two oil crises have gone. But, partly because the oil prices were stabilized at low levels after the crude oil price collapse in 1986, the falling oil dependence came to pose over a decade or so and remained at 55.2% in FY1996. It stood at 52.4% as of FY1998.

Among oil alternatives, nuclear power and natural gas have increased their combined share from 2.1% in FY1973 to 18.3% in FY1985, and further to 26.0% in FY1998, up sharply by 23.9%.

Coal share rose from 15.5% in FY1973 to 19.4% in FY1985, but remained at 16.4% as of FY1998.

(2) Decline in the Middle East reliance

In stricter terms, raised here is a decline in the reliance on the Middle East crude oil for crude oil imports. This concept has a background that crude oil supplies from the Middle East (particularly from the Gulf) have disrupted a few times in the past.

As cheap crude oil kept flowing out from the Middle East in large quantities, the Mideast reliance reached a high 91.2% in FY1967. Later, in reflection to rising crude oil imports from Indonesia and China, the Mideast reliance plunged to 77.5% in FY1973 and 67.9% in FY1987, which, however, resumed climbing to 86.2% by FY1998.

If the concept of the Middle East reliance is defined as the reliance on the Middle East crude oil for primary energy supply, it declined once from 53.7% in FY1973 to 27.9% in FY1987, but picked up again to 37.2% by FY1998.

(3) Nuclear power promotion & expansion

Nuclear power generation started electricity supply in FY1966, with full-scale commercial operation commenced in FY1969.

During the initial stage, the peaceful use of nuclear power had been under way with bipartisan unanimous backing of the Diet. Nuclear power features a modest fuel cost, or around 20% of total generating cost, which is much smaller than in fossil-fired power. Also, once charged into the reactor, the fuel can keep burning for a few years. For these reasons, nuclear power is positioned as a quasi-indigenous energy, which can contribute to increasing the rate of self-sufficiency in energy, an indicator of energy safety.

Shown below are the changing shares of nuclear power generation every ten years.

Table 1 Shares of Nuclear Power Generation

	FY1966	FY1976	FY1986	FY1996	FY1998
Share in primary energy supply (%)	0.1	2.0	9.4	12.3	13.7
Share in total generated output (%)	0.3	7.6	27.8	34.6	36.0

(4) Natural gas use & expansion

Natural gas traditionally accounted for 1% of primary energy supply, though fully attributable to domestically produced gas. Then, as Japan started the Alaskan LNG (liquefied natural gas) imports from the U.S. in 1969, the share of natural gas jumped from 1.5% in FY1973 to 7.5% in FY1983 and to 12.3% in FY1998. LNG is positioned as a clean energy, which also features a more stable supply than oil does. Of LNG, some 70% are used in fueling the fossil-fired power plants near the metropolitan areas, and the remaining about 30% as the feedstock of town gas

production. Today, gas-fired power is responsible for one fourth of total generated output, and LNG accounts for 80% of town gas feedstock.

Of LNG imports, 18.5% come from the Middle East, but the rest from the Asia Pacific region (FY1998).

(5) Steaming coal imports and growth

Steaming coal imports for power generation, etc., virtually nil in around FY1973, exceeded 10 million tons in FY1981, 20 million tons in 1985, 40 million tons in 1992, and 60 million tons in FY1998. Imports of steaming coal outrun those of coking coal in FY1998.

Domestic coal production, limited to steaming coal alone by 1990, fell below 4 million tons by FY1998, compared with over 50 million tons during the heyday. Some advocate that domestic coal production should be continued for energy security reasons, despite the high cost (domestic coals priced nearly triple their imported counterparts). But the dominant view is that imported coals are satisfactory in terms of both inexpensiveness and supply stability.

(6) Augmentation of new energy supply

New energies, including geothermal, are all indigenous.

FY1998 records show that new energies remained as humble as 7.72 million kl crude oil equivalent, or held a mere 1.3% of primary energy supply. Moreover, 60% of the records represented in-plant reuse of black liquids, wasted materials and the like generating from paper/pulp manufacturing processes. The so-called natural energies, such as photovoltaic, solar, wind, and tidal power generation, totalled a scant 1.093 million kl oil equivalent (0.3%).

2. Basic Target of Energy Policy – Global Warming Abatement

In the second half of the 1980s, energy conservation has lagged partly due to the crude oil and other energy prices were stabilized at low levels. By around the time the post-second-oil-crisis adjustment period was over, the issue of global warming abatement came on the stage of international opinions. In 1990 the Japanese government announced the Action Program to Arrest Global Warming. In 1992 the Earth Summit in Rio de Janeiro, Brazil, produced an agreement, followed by the Kyoto Protocol resolved in December 1997. While time has lapsed this way, Japan's energy policy got wearing a complexion of environmental policy.

A 6% cut in six greenhouse gas emissions from 1990 records, specified in the Kyoto Protocol, became the basic premise for Japan when setting forth a target of energy policy. The direction to cut carbon dioxide (CO_2) emissions by 0 – 2.5% from 1990 levels by 2010 (on average in 2008 – 2012) became definite when the "long-term energy supply and demand outlook" released June 1998 by the Advisory Committee for Energy was officially approved. The latest "long-term outlook" consists of simultaneous equations, which requires a condition to be met under which energy-related CO_2 emissions in 2010 would be at least flat at 1990 records. This "outlook," naturally not a forecast, unveils a fact that the top priority among policy targets is global warming abatement. Fortunately, global warming abatement is not contradictory to energy security, the preceding top priority for years. To raise self-sufficiency in energy leads to the expansion of nuclear power and new energy supplies, and also results in CO_2 reductions. Energy conservation and natural gas shifts, both helpful in CO_2 reductions, contribute to energy security. Natural gas imports from the Asia Pacific region, if encouraged in an effort to lower the Middle East reliance on a primary energy supply basis, could slash CO_2 emissions as well. The

greater coal supply alone, you might think, slips off from a simultaneous attainment of the two principal targets. This, however, can be counted as a matter that should be solved with clean coal technology.

Energy security needs to be reconfirmed from the standpoint of global warming abatement.

Thanks to successful responses (energy conservation, oil substitution, etc.) to the two oil crisis, CO_2 emissions rather shrank a little from 250 million tons carbon equivalent to 240 million T-C over the 13 years of FY1973 – 1986. Namely, it would become possible to curb CO_2 emissions if the past efforts were reproduced.

(1) Enhancement of energy conservation

Energy conservation after the two oil crises was strongly oriented toward conservation, or saving, of fossil energy sources that deplete by nature. From now on, on top of conventional orientation, conservation efforts are likely to stress global warming abatement as well. Energy conservation for the cause of global environment is winning a growing sympathy among the public. Probably it will be a focal point of policy.

The “long-term outlook” announced in June 1998 puts that final energy consumption should be flat (up 0.1% a year) in FY1996 – 2010 when GDP (gross domestic product) is assumed to grow 2% yearly in real terms. That is, the outlook is designed to reproduce what Japan experienced in FY1973 – 85, or decoupling of the economic growth and energy consumption, without an oil shock this time. Aside from its feasibility, energy conservation certainly provides the principal pillar of energy policy in the 21st century. Particularly the outlook strongly calls for conservation efforts in the transportation, commercial and residential sectors, where progress has

been made little so far, by boldly stepping into possible changes in the manner of living (lifestyle) among the public.

(2) Reduction in oil dependence

Breaking down Japan's CO_2 emissions by energy source puts the ratios among oil, coal and gas at 59:29:12, thus unveiling oil is by far responsible for the emissions. It means to lower oil dependence is synonymous with CO_2 reductions. Yet, it inevitably sounds like reasoning for justifying a policy, because CO_2 reductions are not the only criterion of energy selection.

(3) Expansion of non-fossil energies

Expansion of nuclear power and new energies, effectively CO_2-free and indigenous, is most desirable in policy terms. However, nuclear power has siting restraints and renewable energies face thick barriers of economics. In the capacity of policy targets the "long-term outlook" places excessive expectations. For example, few believe 70 GW of nuclear power and 19.10 million kl of new energies can be realized by FY2010.

(4) Solution by flexible actions (Kyoto Mechanism)

This is designed to supplement the energy policy. Japan hopes to attain, out of the 6% GHG cut from 1990 records, 1.8% with emissions trading, joint implementation and clean development mechanism. Namely, this mechanism enables a country to attain a given reduction target by supplementing its reduction efforts at home with a global warming abatement effect gained abroad. Thus, it offers a policy framework across the globe and, for that reason, some argue an easygoing use of this mechanism is

prohibitive.

3. Japan's Energy Policy and Subjects

The Japanese economy is facing unprecedented and difficult questions after the burst of the bubble, which are unrolling under the banner of globalization (openness to the rest of the world, liberalization). Deregulation has considerably undermined profitability of the energy industries, including oil, electricity and gas, all thrown into a fierce survival competition that overrides conventional borders of industries.

Deregulation has an incompatible aspect to energy security and global environmental conservation, the two principal targets of energy policy. Also, excessive competition that squeezes profitability of energy industries & firms is making their management basis vulnerable ever. It is the private firms that bolster the policy and, therefore, they have to head for sound management first of all.

Amid these realities, Japan is now confronted with a spate of knotty questions and subjects to be solved before achieving the principal targets of energy policy. Is resources-poor Japan able to increase self-sufficiency in energy? The rate of self-sufficiency, 10.6% as of FY1973, rose to 19.4% by FY1998 chiefly thanks to the promotion and expansion of nuclear power. The "long-term outlook" puts that it would increase further to 24.9% by FY2010, which, if attained, could curb and slash CO_2 emissions as well. But the IEEJ, from a sterner standpoint, predicts in its "long-term forecast" (released December 1998) that Japan's self-sufficiency would rise only to around 20%. According to the IEEJ, Japan's CO_2 emissions would also be 20% more than in 1990.

How to fill the gaps between the "policy targets" and "realities" gives homework to not only the government but also the public at large.

(Reference)

Major Countries' Self-sufficiency of Energy

USA 79.3%, UK 117.0%, France 51.5%, Germany 42.3%