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NUCLEAR POWER IN JAPAN

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ATTITUDES TOWARD NUCLEAR ENERGY IN OPINION POLLS

The Japanese movement against nuclear energy reached a climax in its upsurge in 1988, two years after the Chernobyl accident. At the outset of that year, this trend was triggered by the government acknowledgement that the Tokyo market was open to foods contaminated by the fallout from Chernobyl. Anti-nuclear activists played an agitating role and many housewives were persuaded to join them.

Among many public opinion surveys conducted at that time by newspapers and broadcasting networks, I would like to give you some figures of results from the poll carried out by NHK:

Sixty percent of respondents said that nuclear power "should be promoted," either "vigorously" (7%) or "carefully" (53%). Sixty-six percent doubted the "safety of nuclear power," describing it as either "very dangerous" (20%) or "rather dangerous" (46%). Only 27% said it was "safe." In other words, those who acknowledged the need for nuclear power were almost equal in number with those who found it dangerous.

What should these figures be taken to mean? I would take note of the fact that nearly two-thirds of valid responses were in favor of nuclear power even at the time when public opinion reacted most strongly to the impact of the Chernobyl accident. This apparently indicates that the majority of the Japanese people are of the opinion that they would "promote nuclear power though it is dangerous" or that they would "promote it, but with the understanding that it is dangerous."

But the anti-nuclear movement is continuing. It remains a headache for both the government and the electric utilities. But we can regard the anti-nuclear movement in Japan as not so serious as that faced by other industrial nations.

The Advisory Committee for Energy, of the Agency of Nuclear Resources and Energy, MITI, in June, 1990 published a final report on its "outlook for long-term supply and demand." Installed capacity for nuclear power would be increased, according to the report, from the present 30.38 thousand MW to 50.5 thousand MW by the year 2000, and to 72.5 thousand MW by 2010 – more than two-fold in twenty years; but experience shows that it will be impossible to reach this target. Nevertheless, there is no doubt that installed capacity will continue to be built up as it has been, and the share of nuclear power in the total energy supply will steadily increase from the present 9%.

So Japan can predict a rather more favorable future for nuclear energy than in most other countries. There seem to be three reasons for this.

First, Japan imports from other countries 90% of its energy requirements (almost 100% of its oil requirements). Many people feel the need to increase their dependence on "technology-intensive energy," making full use of new energy technology, with nuclear power as one of the most important options among technology-intensive energies for the time being.

Second, the rapidly growing technological capabilities of Japan have pushed it to the rank of countries with the highest level of technology in the world. So the idea has come to quite a few people that Japan can and must play a leading role in the development of advanced technologies, including nuclear energy.

Third, some figures show that Japan has already established an outstanding record in the operation of nuclear power plants. The capacity factor, for example, has been kept at not less than 70% in every year since 1982. Compared with other countries, Japan has had its nuclear power plants developing strikingly fewer faults and troubles, with a much lower average frequency of shutdown.

Apparently, conditions are favorable to allow somewhat optimistic views on public acceptance of nuclear energy.

ELEMENTS FOR PUBLIC ACCEPTANCE

However, nuclear energy may not unconditionally gain public acceptance. The public understanding of nuclear power, as indicated by the foregoing sampling of public opinion, is that it "should be promoted, but not without reservation." People will say, "Yes, but ...", and many provisions will follow the word "but."

Public acceptance of nuclear power in Japan depends largely on the following factors:

1. Building Up Records of Safe Operation

What is of essential importance is to keep operating the facilities as planned, without incident or malfunction, to set a long record of safe operation. It is also essential that the percentage of nuclear power should be steadily increased with each year. Concerning these points, as we have said, Japanese nuclear power plants have made a rather good showing.

Anything that casts a shadow on the record of these achievements will immediately cause people to have second thoughts about accepting nuclear energy. A recent case in point is the fault that was found in January, 1989 in the recirculation pump of Unit 3 of Tokyo Electric Power Co.'s Fukushima II nuclear power plant. Great care had to be taken in removing 30kg of metal that had gone to pieces scattered inside the reactor. It was not until July that investigators from the Agency of Natural Resources and Energy permitted the company to resume operation of the reactor. But no agreement has yet been reached with the local people, leaving the reactor shut down for one year and nine months.

2. No Major Accidents over the Borders

The Chernobyl nuclear power plant accident brought a new, serious phase in the problem of public acceptance. No matter how one country builds up records of careful operation, a major accident in another country will jeopardize all public confidence in nuclear safety, the more so if the accident causes an outflow of radioactivity to go abroad. The Chernobyl accident left no doubt about this fatal potentiality inherent in the technology of nuclear energy.

This means that in order to assure public acceptance, cooperation with other countries in ensuring the safe operation of nuclear reactors is essential. But it is no easy task to establish how an advanced country can offer its technical services and contribute to the safety of nuclear power plants constructed and operated in other countries.

Each nation has its sovereign rights, and its pride, too. How far can others go, with all deference, in extending appropriate and timely cooperation to other countries that need it?

How will the International Atomic Energy Agency (IAEA) and the World Association of Nuclear Operators (WANO) play their respective roles in assuring the safety of increasing numbers of nuclear power plants?

Convincing answers to these questions have not yet been given.

3. Maturing Nuclear Technology System

In the strict sense, nuclear technology remains incomplete in many of its sections, for it to be built up to a perfect state. Further research and development efforts toward its maturity will be essential for its public acceptance.

World uranium resources are estimated at 10^3 - 10^4 Q. Fossil fuels, including coal, oil and natural gas, come to an equal amount. But unless U-238 is changed into plutonium for use as an energy source, the amount of uranium is only one-hundredth or less of the above figure, equal to no more than the amount of oil resources.

That is why Japan intends to develop plutonium utilization techniques that will help establish a system of technology for the full use of uranium resources. But it will take many more years for this technique to be perfected. Back-end techniques, especially for the management and disposal of high level wastes, have yet to be perfected.

Uncertainties about the outlook for the development of this downstream of the technology system encourage anti-nuclear activists to push their movement and discourage other citizens from agreeing to accept nuclear energy. A "freeze" on the projected construction of a Japanese commercial reprocessing plant (with a capacity of 800 tons a year) at Rokkashomura, Aomori Prefecture, has been promised by the new village head elected after his predecessor was defeated toward the end of 1989. Plans for the construction of a "Storage Engineering Center" at Horonobe, Hokkaido (northern Japan), designed for research and development on the geological disposal of high level wastes are at a deadlock, being opposed by the local people.

The technical development of fast neutron and fast breeder reactors should be promoted, along with the development of back-end technologies, including reprocessing, so that fuel cycle technology can be completed. This could dissipate all the doubts of both Japanese and foreign people about the future of technology for the peaceful utilization of nuclear energy. I should think this very effort and its attainment will become a conclusive factor in public acceptance.

4. Nuclear Power in a Diverse Range of Energy Sources

Nuclear power is a "technology-intensive energy" source, deriving benefits from advanced technology, and comes within a diverse range of energy sources intended for mankind's sustainable development. In other words, when seen both medium and long term, it may be necessary to hold firm to the position that solar energy and other renewable energy technologies should be developed along with it.

To be able to use solar energy under present conditions is more difficult than for nuclear energy, but that is another important aspect in the development of "technology-intensive energy" sources. Sufficient means should also be provided and more efforts made to promote its research and development.

Quite a few engineers involved in the development of nuclear technology have pointed out the difficulty of promoting the development of solar energy technology. They argue that nuclear energy should have priority. But many Japanese interests involved are coming to the conclusion that solar energy should be developed also.

5. Nuclear Energy Limited to "Peaceful Uses"

It is essential to draw the line between the peaceful and the military uses of nuclear energy and make sure that there is no possibility of its diversion to military purposes.

Nuclear energy is strictly limited to peaceful uses in Japan under the provisions of Article 2 of the Atomic Energy Basic Law. Of course, this country is party to the Nuclear Non-Proliferation Treaty. In accordance with this treaty, all Japanese nuclear installations are under the application of IAEA safeguards.

Notwithstanding this, nuclear weapons and nuclear power plants are apt to be considered as linked, in many cases when opponents move against them in Japan and in other countries.

If we are to win public acceptance for nuclear energy, it is desirable that we offer more clarification on our commitment to non-military purposes and contribute toward further improvements and greater efficiency in the application of safeguards. We should also make greater political efforts, such as for an expanded and strengthened regime of nuclear non-proliferation.

6. Making Nuclear Administration Reliable

Nuclear energy started with military uses. That is why any government trying to make sure of its peaceful uses from both the national and international points of view must keep it under stricter control and supervision than for other energy sources.

Public acceptance depends largely on whether or not the government is convincing enough for the public to put confidence in the nuclear administration.

In fact, there have been cases where administration officials have created the impression that they should press ahead with a nuclear program that were to end in failure, no one would be held responsible for it. Fresh in our memories in particular is the "Mutsu" development project. The nuclear-powered ship developed a radiation leak during its first sea trial involving a power increase and carried out in defiance of the local people's opposition in the autumn of 1974. For all that, there were few alterations in the policy of pushing the project. This resulted in considerable lack of public confidence in the administration. Many people were led to feel that they could not accept any nuclear project if it was promoted by such administrative organizations as they had come to know.

7. Constant Self-Discipline among Electric Utilities, etc.

Electric utility companies and other private nuclear-related organizations are ready to cooperate in ways consistent with government policy. This may be quite in the nature of things because they are expected to be responsible for the electric power supply. However, the close ties between the electric utilities and the government could be taken as a form of the illicit government-bureaucrat-industry alliance that so irritates nuclear opponents. They could also be offended by the somewhat self-righteous attitude of electric utility companies, each of which acts as a local monopoly.

But we notice signs of a change having come over these relations between citizens and utilities since the Chernobyl accident. The utilities have changed their attitudes and are making approaches to the citizens. Now I feel that they have learned to stand in a closer and more sympathetic relation to the people.

8. More Freedom of Information

Sampling of Japanese public opinion on nuclear energy show that many people feel a need for more freedom of information. "The government and electric utilities have not given a convincing explanation" -- this was said by 76% of respondents to an Asahi Shimbun opinion poll in September, 1988. Many respondents pointed out, in particular, that they have not been informed sufficiently about the back-end of the nuclear power system.

9. Providing Conditions for Acceptance by Local People

Japan suffers from the limits of land space. It covers only 0.3% of world lands and is inhabited by 2.4% of the world population, but with energetic economic activities representing 12-13% of those of the world. Securing land for the construction of an electric power plant is much more difficult here than in other countries.

Three laws on electric power resources were established in the 1970s to give money to local communities in return for offering construction sites. Now the need for this seems to have arisen, to ensure additionally that electric utilities cooperate in encouraging the regional development of such communities in ways that suit their local conditions.

10. Efforts to Talk to the "Silent Majority"

Perhaps the steadiest step forward for us to take is to use our utmost efforts to get the facts across to the people at large, in the belief that the majority of people are convinced of the need for nuclear energy. In this case, we must learn to co-exist with nuclear opponents. Inevitably, we will have to stand in "strained relations" with them. We should understand that "strained relations" may even play a favorable role.

The right way to win public acceptance is to take steps to get the silent majority to come our way and to sympathize and cooperate with us.

ELECTRIC UTILITIES FAVOR NUCLEAR POWER

Japan has no problems in utility acceptance. So a brief account of electric utilities may be sufficient for present purposes. Japanese coverage of electric power service is divided into nine districts, each with an electric power company holding a monopoly on supply. Each of the nine power companies is so powerful as to rank among the largest local corporations. In addition to a central research institute under the joint management of the nine companies, each has its own research and development organization working for it and has come to build up substantial technical capabilities.

Manufacturers involved in the construction of nuclear installations are from among Japan's largest private corporations, with high technical potential.

All the nine power companies had early taken an interest in introducing nuclear power. Kansai Electric Power Co. was the first to move when it completed the construction under technology from the United States, of a pressurized water reactor in the Kansai district, so that it could be made ready in time for the World Exposition that took place there in 1970. Tokyo Electric Power Co. followed with a boiling water reactor. Hokkaido Electric Power Co. came out eighth in line when its first nuclear power plant was started up in June, 1989. The ninth and last to come is Hokuriku Electric Power Co. which is building one with start-up scheduled for the spring of 1993.

These electric utilities are cooperating in the government's nuclear policies, and this loyalty, as stated earlier, has turned out to be a stimulus to the nerves of anti-nuclear activists.

But I am looking with favor on the relation between citizens and utilities, as it has changed gradually since the Chernobyl accident, bringing about a better understanding between them.