

COP3 and Nuclear Energy

It has become customary every autumn for successive international conferences to be held concerning the topic of nuclear energy. The current season opened with the annual conference of the Uranium Institute at the beginning of September, and will be followed by the general conference of the IAEA (at which the new director general Dr. ElBaradei will be selected), along with other events of various scales. For people in nuclear industry, perhaps, the most anticipated event — with both special and complicated feelings — will be held near the end of the year on December 1-10 at Kyoto in Japan: the third Conference of the Parties to the United Nations Framework Convention on Climate Change, known as COP3. The conference is not putting nuclear energy on the agenda per se, naturally, but will instead focus on those activities that produce CO₂ emissions, which are the major culprit in global warming. The conference is expected to result in some international agreement on quantified emission limitation and reduction objectives.

COP has already met twice before, and participating nations have come to concur that the level CO₂ emissions into the atmosphere is increasing ever faster — up more than 60% in the last century alone. However, when it comes to how to stop that increase, there are differences of opinion between each country (and each industrial sector) owing to conflicting interests, particularly between the industrialized and developing nations. The attitude of Japan, the host country of the conference this time, is coming under scrutiny as well.

There are mainly two things that can be done to clamp down on increases of CO₂ emissions: prevent energy consumption from growing further, and increase the usage of fuels that emit relatively less CO₂ per unit of consumption. Since the former choice involves major national policy decisions — such as curbs on economic growth and wholesale changes in a country's industrial makeup — as well as all sorts of conservation measures, it can be described broadly as "energy conservation." On the other hand, the latter is a choice from many sources such as coal, petroleum, and natural gas (whose relative levels of CO₂ emissions roughly fall in a ratio of 10:8:6). Using the same ratio, however, the relative amount of CO₂ emitted by nuclear power — even including the amount of fossil fuels used in the manufacture and

construction of related facilities as well as in the disposal of wastes, as nuclear opponents like to remind us — would only be 1 or 2. Thus, an enormous amount of CO₂ emission is being reduced thanks to current nuclear power plants. Nonetheless, it is one of the great mysteries of the world why no one mentions nuclear energy in the debate about CO₂, which may hold the fate of the world in its hands. It is imperative for people in the nuclear industry to press the issue.

Japanese Government Moving Slowly

Although curbing CO₂ emissions is one of the top issues on the international negotiation table, the Japanese government is adopting its usual meticulous circumspectness. Each governmental ministry with something to say about the issue — including the Ministry of Foreign Affairs (MOF), the Environment Agency, and the Ministry of International Trade and Industry (MITI) — has set up a special council to deliberate on the matter. At long last, however, a joint meeting of the councils was held on August 27 concerning domestic measures against global warming, with representatives from nine different ministerial councils, including the Central Council for Environment and Building Council. Led by Prof. Jiro Kondo, the joint meeting has been charged with the task of devising specific energy conservation measures by mid-November. Prof. Kondo, who currently serves as one of the vice-chairmen of the Japan Atomic Industrial Forum (JAIF), is an expert on environmental problems and formerly chaired the Science Council of Japan.

At the first meeting, MITI representatives submitted certain materials related to CO₂ emissions, upon which further deliberations will be based. According to MITI's data, total energy consumption levels in Japan must be reduced a sizable 50 million kl (oil-equivalents) from current estimates in order to hold the country's per-capita CO₂ emissions down to 1990 levels by 2030. By way of contrast, Japan's energy consumption climbed some 11.1% from 1990 to 1995, mainly stemming from increased household and transportation use (see Fig. 1). How will the various conservation measures — stepping up conservation in households, making electrical appliances more efficient, using fuel-efficient cars more broadly, heightening the efficiency of factories, and importantly, shift-

ing to new fuel sources — be carried out? They will involve a radical reformation of the national consciousness, legal restrictions, and governmental budgetary measures. At COP3 in Kyoto, Japan will be able to take the moral upper hand only if it demonstrates the courage to go through with such painful conservation measures itself. A look at Fig. 2, which portrays the current comparison of CO₂ emissions among major nations, shows that Japan already has the lowest levels of CO₂ emission, be it per GDP or per capita. Coming up with some sort of international agreement on numerical goals at the upcoming conference in Kyoto will be extremely important for the future of humanity, and Japan's unstinting efforts are indispensable as the host country.

Energy Conservation and Nuclear Energy

Moving next to the question of fuel conversion, the only feasible choice by 2010 is said to be increasing the use of natural gas, which produces relatively low levels of CO₂ emissions. Though there seems to be enough natural gas reserves to cover the need, an enormous sum of money will be required to secure the necessary supply to replace 10 million

tons' equivalent of crude oil. Moreover, the associated risks are hardly small. Related industries are struggling to figure out what to do.

A consideration of nuclear energy, which hardly produces any CO₂ emissions, is now limited to power generation. Still, replacing a 1000MW thermal plant with a nuclear one would result in saving more than 1 million kl of crude oil. As an extreme example, if Japan were to accomplish the above-stated numerical goal entirely through nuclear power, it would have to construct 50 LWRs. Logistically it would not be a simple task to complete the construction of so many reactors in the short time remaining before 2010, but it would not altogether be impossible if a national consensus were achieved.

Debate Levels Stepping Up

It goes without saying that the purpose of the Kyoto Conference is to gain international agreement of goals to reduce CO₂ levels, and is not a forum for each country to discuss how it plans to achieve those goals. However, we ought to take the opportunity afforded by this major conference to demonstrate to the public the extent of the contribution already being made by nuclear energy in reducing CO₂ emissions, and to remind them of the usefulness of nuclear energy as a means by which to reduce them in the future. Some symposiums to that end are being planned by some organizations, including the Japanese Federation of Economic Organizations (Keidanren), various energy-related organizations, and the Japan Atomic Industrial Forum (JAIF) with the cooperation of the Uranium Institute and several nuclear forums. Meanwhile, anti-nuclear groups — fearing that nuclear energy might receive a boost on account of the CO₂ issue — have developed their own way of thinking that says that nuclear energy will hardly reduce CO₂ levels at all, and are organizing symposiums to push that message. It is clear that pro-nuclear groups have the upper hand in this debate, but we must carefully consider not to let it get out of hand.

The most important thing for nuclear interests — and something that has nothing to do with the upcoming conference in Kyoto — is to ascertain exactly where the winds blowing against nuclear power are coming from, and to remove the root causes of the antagonism. That will require prudent, patient, and long-sustained efforts. ■

Editor in Chief

Fig.1 Increase in Japan's Energy Consumption

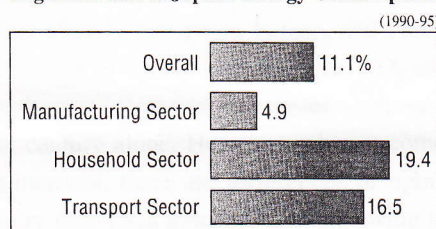


Fig.2 Global CO₂ Emissions

