Japan’s Clean Development Mechanism and the Fight Against Global Warming

by Yasutaka Nakai

The Japan Times recently ran an interesting story about global warming. European scientists are analyzing the effects of global warming in Europe, it claimed, and their interim report shows that the following things are expected to occur soon:

- In Greece, the temperature in summer will become unbearable and people will no longer be able to enjoy the beach.
- In the Alps, rain will fall more often than snow, and floods will increase.
- In Southern Europe, desertification will progress, forest fires will increase, and the water supply will decrease.
- On the other hand, the report suggested that in Northern Europe the temperature would become more moderate, would decrease energy consumption, and conditions for farming and fishing would improve.

The effects of global warming are pointed out regularly these days, not only in Europe but everywhere. Even with experts predicting that rising sea levels will make small island countries disappear, however, many people in Japan and elsewhere seem not to take these warnings seriously. Perhaps a suggestion that Hawaii had become too hot to be a vacation resort might be more effective in bringing the effects of global warming home to the Japanese. Some may be thinking, “If it gets too hot in the south, we can go to the north,” but they may well be forgetting that we have a world population of six billion people who cannot all live in the same limited space.

A complete stop to global warming will not be easy. To ease or postpone its effects, however, if only slightly, is possible, but this will depend on how the international community deals with the global warming issue at the beginning of this new century.

With this in mind, representatives from hundreds of nations met at the sixth Conference of the Parties to the United Nations
Framework Convention on Climate Change (COP6) in The Hague, Holland, in November 2000. This conference aimed at discussing the rules for dealing with cuts in greenhouse gas emissions so that the protocol adopted by COP3, which was held in Kyoto in 1997, could be put into effect quickly. The participating countries, however, unfortunately reached no agreement, and the unresolved issues have been carried over for discussion at the next scheduled conference, COP6-Part 2, which will be held in May or June 2001. Whatever agreement emerges from this, it will have a strong influence on Japan’s energy policies. Japan is now standing at an important turning point. At COP3, Japan made a commitment to reduce greenhouse gas emissions by an average of 6 percent from their 1990 levels in the five years from 2008 to 2012. But CO₂ emissions actually increased 9 percent, from 287 million tons in 1990 to 314 million tons (carbon equivalent) in 1996. In response, the government published guidelines in 1998 for returning energy-related CO₂ emissions to their 1990 levels by, among other things, proposing to build 20 nuclear power plants by 2010. The construction of nuclear power plants, however, has run into snags and this government plan is being revised.

Here at NIRA we performed a trial calculation of CO₂ emissions, assuming that nine nuclear power plants could be constructed by 2010. Our results confirmed that emissions would still increase from 5.9 to 7.6 percent compared with 1990 levels and suggested that unless the construction of nuclear power plants progresses, a reduction of CO₂ emissions will be extremely difficult even if natural gas, a cleaner energy source than oil and coal, is widely used. The research also demonstrated that to achieve the stated goal of a 6 percent cut in greenhouse gas emissions, Japan would need to acquire a large amount of greenhouse gas emission credits through what is called the Kyoto Protocol. Introduced at COP3, the Kyoto Protocol refers to a number of mechanisms aimed at reducing emissions: (1) emissions trading (ET), in which the amount of emissions reduction (emission rights) is traded among industrialized nations; (2) joint implementation (JI), in which joint reduction projects are conducted among industrialized countries and the reduced amount (reduction emission credits) is distributed among them; and (3) clean development mechanisms (CDM), in which reduction projects are conducted between industrialized and developing countries and part of the reduced amount is given to the industrialized countries. (A fourth element, called “bubbles,” is being adopted by the EU).

Among these three, CDM is especially significant because it allows for industrialized and developing countries, where the cost of reducing greenhouse gas emissions is cheaper, to conduct projects jointly. Although it may be inappropriate to place developing countries under an obligation to reduce CO₂ emissions, efforts to reduce emissions, prevent global warming, and achieve sustainable development, must be made in countries where energy consumption will rapidly increase, and CDM is the only means to achieve that goal. It should be noted that CDM projects are also effective in helping to combat the SO₂ problem (sulfur dioxide, the primary cause, together with nitrogen oxides (NOx), of acid rain), a serious problem in many developing countries. Moreover, CDM projects are to be used by small island countries to offset the costs of adapting to global warming. In this sense, CDM is completely different from JI and ET, which are appropriate only in industrialized countries. At the COP6 conference, the EU and some developing countries placed top priority on perhaps a suggestion that Hawaii had become too hot to be a vacation resort might be more effective in bringing the effects of global warming home to the Japanese.
efforts in industrialized countries and set out to restrict the use of ET, JI, and CDM. Given its significance, however, CDM should continue to be important. Japan supported a proposal by the United States and Canada that widely accepted the CO$_2$ absorption effect of forests, so-called sinks, because if it is sanctioned Japan can largely reduce its commitments to the Kyoto Mechanism. Although this proposal might well fulfill the national interest of helping Japan achieve its reduction goal, its global effectiveness is doubtful and the EU strongly objected to it. Environmental NGOs also reacted sharply against it, and Japan earned the shameful moniker of “fossil of the day” for two consecutive days at the COP6 conference. This confrontation between the EU and the U.S. was the main factor that brought on a suspension of the conference. The importance of managing forests properly and improving CO$_2$ absorption is well recognized, but Japan, a technological superpower which hosted the historic COP3, is expected to contribute to not only its own narrow national interests, but also to the global effort to reduce global warming.

Japan’s primary energy consumption per GDP (measured in U.S. dollars) in 1997 was 95.6 toe$, remarkably small compared to the United States (278 toe), Germany (139 toe), and the OECD average (204 toe). The gap between Japan and the developing countries is far larger. Although these figures, which are affected by the size and climate of each country, are not a perfectly accurate indication of consumption, they leave no room for doubt that Japan has the highest level of energy efficiency in the world. If Japanese advanced technologies were introduced into developing countries, where the marginal cost for measures to deal with environmental issues is low, more greenhouse gases and air pollutants could be reduced. Japan should therefore change the way it thinks about current policies so that its technologies can be used through the Clean Development Mechanism. If this mechanism enables Japan to achieve its target for cuts in greenhouse gas emissions while helping to improve the environment in developing countries, Japan’s national and global interests will be served. Projects jointly conducted with developing countries can be risky. They face institutional barriers and defects in developing nations that take special efforts to overcome. Developing countries make demands on the financial resources and technologies of their industrialized partners as conditions for the implementation of CDM projects. It’s no wonder, therefore, that developed countries find it easier to deal with the issue of global warming through emissions trading in the market instead of the more difficult CDM. Nevertheless, given the factors outlined above, activation of the CDM is surely the most desirable option. As an incentive, I give the following example of the kind of win-win situation that is quite likely to become more common after CDM comes into force.

The partial liberalization of the electricity industry has just begun in Japan, and electric power companies are fighting desperately to strengthen their competitiveness by reducing costs. As a result, most construction plans for new electric power plants include the use of coal because of its low cost and other advantages. A U.S. energy company called Enron Corp. recently announced a plan to construct its own electric power plant in western Japan, which will be coal fired. Japan’s policy of liberalization has already achieved results in lowering electricity prices, but it is

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$A$ symbol for tonne of oil equivalent, a unit of energy used in the international energy industry. One toe represents the energy available from burning one tonne (metric ton) of oil; this is considered equivalent to approximately 7.4 barrels of oil, 1,270 cubic meters of natural gas, or 1.4 tonnes of coal. 1 metric tonne = 1.102 short tons.
very likely that these policies are increasing the consumption of coal and, possibly, future emissions of CO$_2$.

On the other hand, China, the world’s largest coal-producing and coal-consuming country, is trying to minimize the use of coal as one of its measures against air pollution, and coal consumption there has decreased after peaking in 1996. (Editor’s note: see the essay by Zhou Fengqi in this issue). For the government, however, the protection of the coal industry is also an important policy, and the country plans to continue maintaining a certain level of coal-producing power.

Thus China wants to export more coal to Japan, where clean coal technologies, including desulfurization, are among the best in the world. And Japan wants to increase its imports and consumption of coal, but its concern about an increase in CO$_2$ emissions is a hindrance. Now the Clean Development Mechanism will help to remove this hindrance by allowing projects set up in China to receive greenhouse gas emission reduction credits. These credits are given not only to guest countries (industrialized countries), but also to host countries (developing countries). Because China is under no obligation to reduce greenhouse gas emissions, it does not need to hold these credits and can use them to its own advantage. If China adopts the idea that it will give its credits (free or at a price cheaper than for international emissions rights) to countries that buy its coal, Japan and other industrialized countries will show more interest in it.

Since China will be given credits as compensation for providing industrialized countries with CDM opportunities, it will need almost no investment to earn these credits. Even if industrialized coal exporting countries such as Australia contemplate the same thing, the price competitiveness of China’s coal (plus credits) will remain high. China could then export coal smoothly, and Japan could use it to generate electric power, economically and efficiently. Moreover, with China’s need for more credits, the number of CDM projects will grow. As a result, the reduction in greenhouse gas emissions will progress, and the air pollution problem in China will improve.

Some industrialized countries are in pursuit of new rules that favor them, fearful that strict regulations set by COP6 may dampen their economies. Some, for example, have raised the question of how to evaluate the amount of CO$_2$ emissions absorbed by forests. These efforts may help to avoid damage to individual economies, but will do nothing to prevent global warming. The priority is not the potential short-term stagnation of national economies, and the industrialized countries need to be fully aware of this. After first recognizing the importance of the issue, they should then seek measures to eliminate the effect of prevention measures on their economies under the condition that they don’t worsen the global warming problem. Since the Clean Development Mechanism is one measure that will help us to achieve the goal of emissions reduction, it is important for Japan and other industrialized countries to thoroughly discuss what measures should be taken to implement it efficiently with developing countries. It is important in the adoption of CDM that a framework for cooperation between industrialized and developing countries be designed that will allow all participating countries to benefit.

I hope the new century will become a century of genuine globalism in which priority is placed on global instead of national interests.

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