

# The Government's Role for A Better Environment

By Shinji Fukukawa

Just as Japan was enjoying an unprecedented period of rapid economic growth in the 1960s, people were seeing the unpleasant and sometimes dangerous side effects of prosperity. This led to a rethinking of economic growth unfettered by consideration for the environment, and raised cries of "The heck with GNP."

The government responded by enacting in 1967 a group of basic laws that would later grow into the foundations of the current regime of environmental laws. In 1971, laws and regulations were strengthened, while the Environment Agency was established to coordinate and enforce them.

## Domestic efforts

The government began attacking air pollution in 1963 by controlling the emission of smoke and soot. In 1971, the government established emission standards for sulfur oxides (SO<sub>x</sub>) and nitrogen oxides (NO<sub>x</sub>) emissions from immobile emission sources under the Air Pollution Control Law, and went on to steadily tighten them. The government made sure of the effectiveness of these measures through monitoring systems, as well as more stringent standards and regulations in heavily polluted areas. Strict automobile emission standards were also introduced in 1974, against strong opposition from the auto industry. These measures added up to permissible emissions of SO<sub>x</sub> and NO<sub>x</sub> about one-third lower than those in the U.S. and Germany.

Water quality control was already being addressed by the Water Pollution Prevention Law, enacted in 1958, which regulated the quality of waste water from factories. Regulation was strengthened, as well as expanded to cover the discharge of mercury, cadmium and other toxic substances. A system was established in 1964, including a special fund financed by charges levied on factories discharging pollutants to compensate for medical expenses incurred by peo-

ple affected by pollution. The special fund was given further power in 1977 to use the operating profits for research and development.

The Waste Disposal Law enacted in 1970 established standards for waste treatment facilities and procedures. More recent efforts concerning the environment at home include the Law for the Promotion of Utilization of Recycled Resources, enacted in 1991, which goes to the root of the problem by reducing waste from production and consumption.

But regulation alone will not solve the problem; without the technological means and the private and public investment to put them into place, we face an unpleasant choice between economic stagnation and environmental degradation. So the government also worked closely with the private sector, promoting the development and spread of new anti-pollution technology, directly through basic R&D, and fiscal, tax and financial incentives for private R&D and investments in these new technologies.

The mutual efforts in the late 1960s and 1970s to develop desulfurization and denitrification technologies for industrial and electricity plants led to major technological advances. The auto industry's efforts since the 1970s have also resulted in numerous technologies, such as anti-knocking technology for unleaded gasoline and catalytic converters to eliminate hydrocarbons, carbon monoxides and NO<sub>x</sub> from exhaust gas, enabling them to meet seemingly impossible standards. Since the 1980s, industry has also been cooperating with the government in developing methanol and electric cars.

These technologies were used in anti-pollution facilities and incorporated in production processes. Private investment in anti-pollution plant and equipment reached a peak in 1975 at 17.7% of total capital investment, amounting to ¥1 trillion. Private and public investment in anti-pollution measures comprised 1.24% of GDP in the 1980s. Two-thirds of flue

gas desulfurization and denitrification equipment worldwide was installed in Japan as of 1989.

Through these efforts, SO<sub>x</sub> emissions per unit of electricity from fossil fuel power plants dropped 83.2% between 1970 and 1985, to a level around one-eighth of the OECD average. NO<sub>x</sub> emissions decreased by 29.9%, to one-third of the average.

Energy conservation and alternative sources of energy reduce SO<sub>x</sub> and NO<sub>x</sub> emissions. This also has the very important effect of reducing emissions of CO<sub>2</sub>, the major greenhouse gas. Here again, the government has been acting together with the private sector through the Sunshine and Moonlight projects, as well as through various incentives to promote investments for these purposes.

Environmental standards for mercury, cadmium and other toxic substances have also been met in almost all monitoring spots. The annual discharge rates of general waste and industrial waste since 1979 have been 1.75% and 1.4% respectively, well below the annual 4% GDP growth rate. Recycling rates for newspapers, bottles and aluminum cans are also at an internationally high level.

## Funds and actions

The government must continue to be vigilant regarding further threats to the environment, as the economy expands to meet the demands of Japanese consumers, and indeed, of the world, as economies grow more and more interdependent, and the well-being of the global community relies more and more on the health of the Japanese economy. This expectation for a leading role for Japan in protecting the global environment while ensuring a more prosperous future for the world is the greatest challenge for the Japanese government.

What then, is the Japanese government doing to protect the global environment, while helping the developing

countries and the economies in transition to find their way out of the double squeeze of environmental degradation and economic deprivation?

At the Earth Summit held in Rio de Janeiro this June, the Japanese government signed conventions on climate change and biodiversity, as well as an agreement to protect forests, not to mention the Earth Charter and Agenda 21. It also announced there that it would provide ¥900 billion to ¥1 trillion (\$6.9 billion to \$7.7 billion at the rate of ¥130/\$) of official development assistance for matters relating to the environment between fiscal 1993 and 1997.

Take climate change, for example. The reporting system, which Japan played an instrumental role in developing, is a most appropriate mechanism to review the concrete measures that governments will take. The Japanese government has its own plan to combat global warming, a five-year plan subject to annual review. One of its main features is containing CO<sub>2</sub> emissions in 2000 at 1990 levels on a per capita basis and, if possible, at the overall level.

To protect the ozone layer, the global community is preparing to strengthen the Montreal Protocol to eliminate production of chlorofluorocarbons (CFCs) by 1996, instead of 2000 as is currently agreed, as well as to eliminate the production of other powerful ozone-layer depleting gases. Since these gases are powerful greenhouse gases, this also attacks global warming.

The Japanese government is addressing the plight of the developing countries, as evidenced in its commitment of ODA at Rio. The seeming dilemma between development and the environment is particularly acute for the developing countries.

Some people in developed countries that have already turned most forests into farmland may have difficulty in understanding that, for some developing countries, forestry is one of the major means to find a better life for their people. This situation requires sustainable management, that also preserves forests and biodiversity. Japan, 68% of whose land is still covered by forests, backs this concept. This is

the agenda being pursued by the International Tropical Timber Organization, to which Japan contributes 20% of the operating costs, as well as providing the site for its headquarters in Yokohama.

## Needed technologies

Demographics tells us that some 10 billion people will be on the earth by 2050, compared with 5 billion now. With current technology, this is a clearly unsustainable situation. So unless governments around the world are willing to cut back drastically on the aspirations of their citizens, technology must be the main pillar of the solution.

One of the things Japan is proposing is a "Green Aid Plan" to bring together all the elements of aid: money, people and institutions, to reduce air pollution and other forms of pollution, conserve energy and promote alternative energies, sometimes through in situ energy-environment technology centers and sometimes through domestic institutions, such as the International Center for Environmental Technology Transfer (ICETT).

Japan is also addressing the need for new, innovative technology, introducing the concept of "New Earth 21," a long-term action plan to attack global warming and restore the earth through technology development and transfer (see p.13 of the March/April 1991 issue). The government is already backing this concept by establishing the Research Institute of Innovative Technology for the Earth (RITE), where CO<sub>2</sub> fixation and reutilization, non-greenhouse gas CFC substitutes and other technologies are being pursued.

What are the main technological challenges that face us over the future years?

First, we must reform the structure of energy supply. This means that we need next-generation nuclear energy technology, such as fast-breeder reactors. This implies that we need solar, wind and geothermal energy sources, and the global means for transmission of solar-generated energy.

Second, we must improve energy consumption patterns. Solar energy for autos and homes, linear motor cars and super-

conductivity, and new materials to complement and make these technologies economically feasible, will greatly promote clean energy sources and improve energy efficiency.

Third, we need innovations in manufacturing processes. Bioreactors operating at normal temperatures and pressures, as well as low-energy smelting processes, are some of the manufacturing processes requiring urgent attention.

Fourth, we must develop technologies that are compatible with the energy and material cycle of nature. CO<sub>2</sub> fixation through efficient photosynthesis, both natural and synthetic, and a desert "aquaculture" for arid areas are some of the technologies requiring attention.

Finally, there is much room for improvement in recycling technology, both in manufacturing processes and design.

These are all areas where the government can work with industry and private citizens. But there is also one very important area where the government's role is less well-defined and, perhaps, more limited: changes in lifestyle.

We are wasting precious natural and environmental resources because of the proliferation of easily disposable goods. Many cities, here in Japan, too, are being overloaded with all sorts of waste. This is an area where citizens must take on a greater role. The government cannot dictate what and how much a person can consume, but it can play a major role in educating people, and, if necessary, introduce charges that meet the environmental costs of waste. The role of government will vary, over time, as well as the problems at hand. Our experience tells us that the government will, in cooperation with the private sector, overcome these difficulties. ■

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