

# Japan's New Initiative for

### **Global Environment**

October 2001

The 21th Policy Recommendations of the JFIR Policy Council

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### Introduction

The 10th anniversary of the Earth Summit held in Rio de Janeiro, Brazil, is on the horizon. Despite a variety of steps taken in line with the Agenda 21 adopted in Rio and other frameworks, however, the international community on the whole has been unable to bring the deterioration of the global environment under control; indeed, this deterioration has only accelerated. No progress has been made either in securing international resources for global environmental conservation.

Japan is renowned internationally for its ability to produce greater added economic value with less resource, i.e., for its resource productivity, but it is nonetheless true that the country consumes enormous amounts of resources and energy and places a huge burden on the global Looking from this environment. perspective at current environmental resource issues, it is clear that Japan has an obligation to make all-out efforts to find fundamental solutions to these issues - as its contribution to the international community - in the spirit of "helping others by helping oneself." Concerns are rising over a deterioration of the global ecosystem and the emergence internationally of a large number of environmental refugees in the first half of the 21st century, and we believe that environmental diplomacy must be made a standard part of Japanese foreign policy. Just how urgent, though, are these global environmental issues?

Global temperatures have risen sharply, creating the potential for crisis in every part of the world. The Organization for Economic Cooperation and Development (OECD) has released its environmental outlook up to 2020, which in a word declares that the entire planet will be afflicted with problems. The huge 200m-thick Antarctic ice shelves spread over the sea are disintegrating at a quickening pace, while 34000 square kilometers of Arctic sea ice disappears each year. The ice and snow

accumulation on the Himalayan Mountains is receding by 20 meters annually, prompting fears of water shortages and tremendously adverse effects on food production in India, China, and Bangladesh. Severe and unusual weather has resulted in serious flooding, water shortages, and drought damage, particularly in developing countries. As water resources dry up, conflicts between countries and tribes could very well intensify, and there are already more than 100 million people suffering from hunger due to drought. Desertification in China claims another 78 square meters every second, and one desert is drawing close to the capital of Beijing.

Japan itself is seeing increasing "tropicalization;" Tokyo had 67 midsummer days in 2000, the highest number on record, and growing numbers of people have fallen victim to the heat. Heavy rains have increased since the latter half of the 1990s, with intense storms characterized by a rainfall of more than 100-mm in a single hour occurring on no less than ten occasions in 1999. Heat waves in the US claim as many as 1500 lives annually, and World Meteorological Organization (WMO) forecasts hold that, at this rate, in 20 years 3000 to 4000 people will die in heat waves in the US alone. Although the relationship between unusual weather and global warming has not yet been adequately established scientifically, there is no doubt, as was acknowledged clearly in the Third Report from the Intergovernmental Panel on Climate Change (IPCC), that recent global warming can be attributed to emissions of greenhouse gases generated by human activities.

The greater part of this global crisis can be attributed to the economic activities in Japan, the US, Europe, and other developed countries that consume large quantities of resources and energy. In fact, the crisis could be said to be the result of incessantly using energy resources, continuing to consume vast quantities of materials and resources, and releasing as emissions large volumes of waste, in other words, a 'runaway consumption economy.' This desire for material wealth was supported and accelerated through competition in development that itself might be

termed 'runaway science and technology.' Add to this the pressures of the population explosion in developing countries and of rapid economic growth, and one sees, as many studies have shown, that the burdens mankind places on the environment as a whole are testing the very limits of our planet.

It is particularly regrettable from this perspective that the US, which is responsible for one-fourth of the entire world's greenhouse gas emissions (and one-third of those from developed countries), has now taken a negative stance towards the Kyoto Protocol and the emissions reduction targets set out therein. American dissatisfaction over the complete absence in the Protocol of provisions obliging developing countries to reduce their emissions as well is certainly understandable, but unless the US, one of the biggest industrialized countries that have since the Industrial Revolution generated part of the carbon dioxide (CO2) emissions that have brought about today's worsening global environment, bears with this aspect of the Protocol for the time being and sets an example for other nations, it will be utterly impossible to get developing countries to accept any obligation to reduce their own emissions in future. As the host country for the Third Conference of the Parties to the UN Framework Convention on Climate Change in Kyoto (COP3) at which the Kyoto Protocol was adopted, Japan must continue to implore the US to change its stance and it must make its best efforts to bring the Protocol into effect as soon as possible. It would behoove Japan to realize that its environmental diplomacy will be assessed in light of what it does in this regard.

Dynamic approaches in the context of an 'environmental revolution' will be needed to bring about a radical solution to these problems. The first step in an environmental revolution will be to incorporate 'environmental management,' 'green management,' 'green technology,' and 'sustainable consumption' together in the social system in order to link economic development and environmental protection. Japan must make a transition from a disposable society/economy to a recycling

society/economy. It is important to support this transition by pursuing a worldwide 'environmental awareness revolution' through the relevant international organizations, educational institutions in all countries, and the mass media.

The key to achieving such a recycling society/economy will be reducing the volume of resource and energy inputs and that of environmental pollutant emissions throughout the society. In other words, we need to move away from the profligate use of resources and energy that we have thus far put into the production, sale, consumption, and disposal of goods as well as the underlying social framework, provide services with a minimal impact on the environment, and transform our society into one that creates high added economic value with great environmental efficiency. To that end, it will be essential to improve a variety of public goods, make much greater use of durable consumer goods, establish communities that co-exist with the environment, adopt appropriate energy policies, carry out an ecology-based reform of tax and finance administration, and launch eco-commerce using information technology (IT).

Numerous technologies have been presented for making the transition to a sustainable society, and the principal stumbling block is that dramatic reform of the systems and framework that socially back these technologies and the approaches using them, as well as reform of administrative and fiscal systems, is making little progress domestically or internationally. The crux of the problem is the absence of a 'social consensus' and the 'political will' needed to make the transition to a sustainable society. A 'social consensus' requires broad support from companies, non-governmental organizations (NGOs), communities, and the general public, while 'political will' must be accompanied by effective action. At the UN World Summit on Sustainable Development ("Rio+10"), high-level political decisions must be made to eradicate poverty, to develop a plan of action for socially and environmentally sustainable and

equitable societies, to reach agreements on these matters, and to implement them internationally.

Based on the viewpoints given above, we offer the 16 specific policy recommendations classified into three categories: 'Systems and Policies,' 'Technology,' and 'Projects.'

[Systems and Policies] 1, 2, 3, 4, 5 [Technology] 6, 7, 8, 9, 10 [Projects] 11, 12, 13, 14, 15, 16

Let us also add that this English version of the 21st Policy Recommendations of the Policy Council is a reproduction in English of the "Summary" part of the same Policy Recommendations in Japanese. The full text of the Policy Recommendations in Japanese, which include not only the "Introduction" and the "Summary" but the "Body" as well, is printed and published separately, and can be viewed on the web site of The Japan Forum on International Relations at http://www.jfir.or.jp/.

The Policy Council of The Japan Forum on International Relations first met to consider these proposals on 24 July 2000, and adopted them in its final form at its fourth meeting on 25 June 2001. During this time the Task Force headed by Prof. Yamamoto Ryoichi, Professor of the University of Tokyo, and staffed by Mr. Kiuchi Takashi, Chairman of the Future 500 in the US & Japan, Mr. Matsushita Kazuo, Acting Vice-President of Institute for Global Environmental Strategies, and Mr. Asaba Masaharu, the Yomiuri Shimbun Senior Editor., assisted the Policy Council in preparing the final draft of the recommendations.

Once this final draft was completed, it was sent to all members of the Policy Council, and the following 89 members of the Council indicated their approval of its contents. Their names appear below as signers of these recommendations.

On this occasion, we would like to thank Mr. Takasu Yukio, Director-General, Multilateral Cooperation Department, Ministry of Foreign Affairs, for his valuable opinions expressed at the second meeting of the Policy Council. We would also like to mention the helpful insights we have received from senior officials of our government, who willingly granted us their precious time to attend our meetings as individuals in their advisory capacity of Policy Council Counselors.

Let us also add that views expressed in these recommendations do not represent those of Mr. Takasu Yukio or the ministries and agencies represented by the Policy Council Counselors and that sole responsibility for the contents of the recommendations lies with those members of the Policy Council who signed them.

October 2001

Signed by

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### **The Policy Recommendations**

### [Systems and Policies]

1. Japan Taking the Lead in the Environmental Revolution and Environmental Diplomacy with an Eye on Rio+10

Environmental diplomacy requires a high degree of brainwork, and in the 21st century will be in significance and importance on par with security diplomacy. On the issue of global warming, for example, Japan should join up with other countries to encourage the US to reconsider its withdrawal from the Kyoto Protocol in seeking to bring the Kyoto Protocol into effect as soon as possible, and it should set an example by ratifying the Protocol and promptly begin implementing specific measures. The most straightforward method by which Japan could take a leading role in environmental diplomacy towards the 2002 Rio+10 summit would be to quickly make its own economy and society sustainable and recycling-oriented, take the initiative in the environmental revolution, and improve and steadily implement specific support measures for developing countries. Having started a social revolution towards a recycling society/economy, Japan has now arrived at the moment when it must offer a comprehensive global environmental policy based on a long-term worldwide strategy. As Japan's environmental diplomacy will be founded on the thoughts, behavior, and actions of individual citizens, we believe that every opportunity should be taken to convey repeatedly and continually its importance to the public through the various media used to disseminate global environmental information.

# 2. Establishing a World Environmental Development Organization (WEDO)

Many organizations within the UN system are currently charged with responsibilities related to the environment, but their activities are inadequately coordinated and there are no high-level decision-making mechanisms overseeing sustainable development for the international community as a whole. Furthermore, the Framework Convention on Climate Change, the Biodiversity Treaty, and other environment-related international treaties have their own individual treaty secretariats, scattered in different locations and lacking mutual coordination and cooperation. In light of these circumstances, a World Environment and Development Organization (WEDO) and a Human and Environmental Security Council should be established, or alternatively new duties vested in the Trusteeship Council, to reinforce the foundations of the approaches taken by the international community to address global environmental issues and to ensure proper management of the global commons and global environmental security, all the while seeking to reconfigure existing organizations to improve their efficiency. We recommend greater cooperation and centralization of the action programs of international treaty secretariats connected with the global environment - FCCC, the Convention for the Protection of the Ozone Layer, the Biodiversity Treaty, etc. - and integration of these secretariats by stages.

# 3. Developing a 'Greener' Tax System and a Variety of Other Measures

To address issues of waste disposal, chemical substances, and other global environmental problems presently confronting us, an appropriate combination of measures is needed to supplement conventional methods such as enacting direct regulation, introducing economic measures, and establishing the conditions required to encourage voluntary approaches by companies. This in turn will require the promotion of environmental education that reexamines lifestyles in general, and our own energy consumption, from an environmental perspective. Of the economic

measures thus far proposed, the use of an environmental tax is enjoying rising support even in OECD countries against a backdrop of environment-oriented tax system reform. Combining environment-oriented tax systems will help make the overall tax system 'greener.' We have already moved from preliminary discussions on whether or not it is possible to introduce an environmental tax system to the stage now of drawing up more specific proposals on a 'green' tax system and of studying an overall policy package that incorporates other policies. In order to take the lead as the chair country for COP3 in achieving the objectives of the Kyoto Protocol and building a new type of economy in which development can be realized while still preventing global warming, Japan should introduce a carbon tax, review the existing tax system from an environmental perspective, and immediately work towards a 'greener' tax system. It should also utilize the emissions trading (ET), joint implementation (JI), and clean development mechanism (CDM) set forth in the Kyoto Protocol to help combat global warming through measures whose economic impact has been carefully considered.

### 4. Providing 'Greener' ODA

Japan is the one of the world's largest donors of Official Development Assistance (ODA), and its environmental ODA, which has improved both qualitatively and quantitatively in recent years, has become a major component of the nation's ODA. Nevertheless, we propose that measures be pursued in the areas of 'support for environmental conservation in developing regions' and 'attention to environmental concerns in international cooperation through ODA, etc.,' and that ODA be made that much 'greener, in order to contribute to greater global environmental conservation and sustainable development. Placing environmental conservation at the heart of all of its ODA, Japan should (1) shift from request-based assistance to collaboration-based assistance, (2) support developing countries in improving their ability to cope with environmental issues (capacity building), (3) build a cooperation framework at the regional and global levels, (4) cooperate further with such entities as local government bodies, private companies, and NGOs, and (5) include environmental considerations in its international cooperation through ODA and

### 5. Aiming for Close Partnerships with Environmental NGOs

NGOs and NPOs (non-profit organizations) are constructive private groups made up of members sharing the same values that enjoy considerable liberty and flexibility in resolving complex international relations and social issues. Environmental NGOs carry out specific projects that transcend the framework of states and private companies and they have played a role in such hands on tasks as policy recommendations, personnel training, and international network building. Europe and the US have a long tradition of NGO activities as well as a social back-up system featuring support from the government, major corporations, and private citizens, and Japan should follow their examples. By contrast, NGOs have a low social status in Japan, and they are far inferior in financial strength and manpower to their European and American counterparts. In addition to learning from the unique information that Japanese NGOs have acquired through their international networks, the government should actively invite these NGOs to international negotiations and council meetings, and establish the social infrastructure need to assist them through tax breaks and similar measures. We also believe that companies should consider having NGOs present at board meetings involving issues such as environmental accounting and environmental monitoring, and that they should build partnerships that will allow them to receive objective evaluations and advice on their environmental measures. We recommend that vigorous support be given to the activities of environmental NGOs working for the good of the entire planet.

### [Technology]

6. Setting up an Environmental Database and Actively Disseminating Abroad Environmental Information and Japan's Best Practices

The world is eager for reliable environmental information provided regularly and systematically. We recommend that information on key items of interest including population, climate, the atmosphere, soil, forests, seas, foodstuffs, water, energy, waste, chemical pollution, disease, and species (flora and fauna) - be systematized on a global scale, with changes over time noted, and this information published periodically in both Japanese and English. Dissemination of such information by Japan will serve as the basis for Japan's "environmental diplomacy" and will likely move the rest of the world to see Japan in a new light.

If Japan can convey its vast experience and accumulated data to the countries of Asia, it can contribute in a significant way to resolving global environmental problems. Japan is also one of the leading countries worldwide in the development of products ('eco-products') that raise eco-efficiency throughout the lifecycle of products. It is crucial that Japan keep others overseas informed on its efforts in 'greening' industry and products in Japan, and disseminating such information to Asia, Japan's largest trading partner region, must be one of the basic facets in our country's foreign policy. For example, Japan's best practices should be disseminated through all means available, including buttressing the various projects for improving green productivity being advanced by the Asian Productivity Organization (APO) and dramatically strengthening the projects for disseminating environmental information being carried out by the APEC Virtual Center for Environmental Technology Exchange (Osaka Chamber of Commerce).

# 7. Putting Information Technology (IT) to Use in a Resource-Conserving Global Recycling-centered Economy and Society

The accelerating march of information technology (IT) is expected to bring about a technological revolution rivaling those produced by the steam engine, electric power, and the automobile. It is important that the achievements of IT be used not simply to expand communications or to boost the economy, but also utilized as a powerful 'new engine' to drive resource-conserving and global recycling-centered economic and social activities. IT by its nature advances the post-materialism process, though in fact it has two contrasting facets: that of an "energy conserver" allowing the exchange of information without the actual movement of people and goods, and that of an "energy consumer" using machinery and equipment. It is the wise and proper use of this technology that makes it friend rather than foe. 'Intelligent uses' should be devised in accordance with an optimal model employing computers, IT's strong suit, and measures adopted that will help protect the environment through the conservation of energy resources and the reduction of office floor space. It is also important to support the development of a new environmental approach to promote economic growth without waste and the effective use of resources by transferring technology from this optimal model to developing countries in Asia and elsewhere.

### 8. Introducing an Indicator of Sustainable Development

To correct the bias in our culture and in public sentiment towards the widely used Gross Domestic Product (GDP), we propose that Japan be the first in the world to introduce a new indicator - for example, the Genuine Progress Indicator (GPI) advocated since 1994 by the US non-profit organization Redefining Progress - for use in combination with GDP. While GDP deems as economic benefits the costs of pollution of the global environment (the atmosphere, soil, forests, seas, water, etc.) to which we should pay attention in seeking a recycling-centered and sustainable society. GDP also calculates negative elements such as crime, accidents, lawsuits,

and destruction as positive factors; many elements directly connected with our true standard of living - housework, childrearing, service, education, safety, beautification, and social contributions - are all excluded from the calculations. The GPI is an indicator that takes these elements into consideration; the GDP of industrialized developed countries is often much higher than actual circumstances would dictate, and the GPI provides a more accurate picture of the harsh reality.

### 9. Vigorously Promoting the Introduction of New Energies

Japan must actively promote the diversification of energy sources and pursue policies toward greater self-sufficiency/independence to hold down as far as possible its dependency on oil. The introduction of solar power, wind power, biomass power, fuel cells, and other new energies should be vigorously promoted on par with the developed Western countries. Japan has world-class technological capabilities in new energies, which continues to grow as an export industry oriented towards Europe and the US. To maintain the high technical level and the industrial capability of the new energy industry, the Japanese government needs to set higher objectives for the introduction of new energies over the intermediate and long term. These new energies have become the focus of attention as a suitable source of electric power in developing countries without adequate electrical power infrastructure. Support for this new energy will also help reduce greenhouse gas emissions in developing countries, and thus should prove useful as a new 'green' form of international contribution. Solar energy power generation devices have already been installed in the roofs of about 50000 average households in Japan, and once members of the general public come to possess the means of generating their own electrical power, they will likely begin to have a greater interest in energy issues, just one of the benefits of the new energies emerging.

### 10. Promptly Determining the Future Place of Nuclear Power

It hardly need be pointed out that discussions on the effectiveness of nuclear power generation in preventing global warming are underway both internationally and domestically, and the pros and cons need to be carefully examined. In the case of Japan, a country with scarce energy resources, nuclear power generation is undeniably essential as one source of electric power for the foreseeable future. As we confront this fact head-on, one immediate and urgent task is to devise a full range of measures to restore public trust, which has been shaken by a series of accidents, and to maintain safe and efficient nuclear power generation with the understanding and support of the general public. To that end, it is of utmost importance that a national "Basic Law on Energy Policy" be enacted as early as possible and, while giving sufficient consideration therein to measures for preventing global warming and ensuring energy security, the future place of nuclear power generation be clarified and the foundations established for long-term and stable continuation of such power generation. We at the Japan Forum on International Affairs would like to continue our research and studies in this direction and to present a separate set of appropriate policy recommendations in this regard.

### [Projects]

# 11. Promoting the Concept of East Asian Environmental Cooperation

In dealing with the critical state of the natural environment, the governments of individual nations face certain limitations in the approaches they are able to take. International environmental governance is still in its infancy, however, and existing treaties and organizations for protecting the global environment are rather weak. We recommend that satellite monitoring of the global commons be started, and that environmental cooperation be promoted with the 17 countries and territories of East Asia taken as a single region with a shared destiny. East Asia is home to more than one-third of the world's population, and we propose satellite monitoring of the distribution and activities of people in East Asia, the expansion of urban residential land, the state of land use, the condition of forests and other plant life, changes in water quality and water sources, transformations in shorelines, and information on the atmosphere and the seas; this data with appropriate commentary should be

published on a regular basis. By making this data available to East Asia through educational institutions, the mass media, etc., it will be possible to raise public awareness and to construct sustainable societies throughout the region. We believe that China's environmental issues will have a major impact on the rest of the world, and thus "environmental diplomacy" towards China must be thought of as one of the most important aspects of Japan's foreign policy for the 21st century.

### 12. Pursuing Forestry Management that Encourages Sustainable Afforestation

Forests today cover only around half of the area worldwide that they once did. We must recognize anew the value of forests as a natural resource in terms of habitats for living things, soil conservation, the cultivation of water sources, CO2 absorption/stabilization, lumber supply, and raw materials for pharmaceutical products, and once again promote a "forestry culture" with the objective of conserving, expanding, and effectively using forests. We understand that, of the many environmental protection measures that mankind is pursuing now, afforestation is the most effective in scale and benefit, and we recommend that a forestry industry version of the 'green revolution' be implemented that seeks to substantially expand forestry farms. As one afforestation measure, we recommend improving/expanding forests on a worldwide scale by placing the highest priority on those deforested areas in which reforestation is still possible. Many factors must be taken into account during afforestation, such as their ultimate use (industrial or non-industrial), their utility in preventing flooding, their effectiveness in absorbing carbon, and their speed of growth. Japan needs as the chair country of the 1997 COP3 to demonstrate leadership in expanding afforestation globally.

### 13. Utilizing Clean Development Mechanism (CDM) to Help Prevent Global Warming and to Support Developing Countries

We recommend pursuing specific projects utilizing the CDM advocated by the

Kyoto Protocol in a broad range of fields as a means of preventing global warming and as a new mechanism for transferring capital and technology that contributes to sustainable development in developing countries. In cases such as converting power plants from coal to natural gas use to improve power generation efficiency, Japan can help improve the regional environment through reduced air pollution in those countries accepting projects and can contribute to the transfer of new technology/capital and to sustainable development in developing countries. Greenhouse gases can also be more cost-effectively reduced from the standpoint of the developed investor countries. Japan should work to bring the Kyoto Protocol into effect as early as possible and promptly begin promoting related measures domestically, as well as actively engaging in CDM as part of its cooperation with other countries. To accomplish these aims, Japan needs to make the most of the potential of CDM, contribute to the design of a suitable system able to meet the needs of developing project recipient countries, select specific projects, conduct preliminary research, and develop approaches to implementation. A broad range of options for specific projects, including nuclear power, that give due consideration to improved energy efficiency, energy conservation, reusable energy, afforestation, and safety should be examined.

### 14. Actively Addressing Water Resource Issues

Worsening shortages of fresh water, deteriorating water quality, and flood damage around the world point to a growing crisis on the 'watery planet.' The sharp rise in the use of water for the day-to-day needs of a swelling population, global warming and unusual weather phenomena have also had a serious impact, adding to the world's troubles. This has given rise to concerns that increasingly serious shortages of water resources might lead to international conflicts, and such shortages are also seen as a barrier to economic and social progress in developing countries. These aspects have not gone unnoticed by the international community. In 1996 the World Bank, the International Water Resources Association, and other organizations established a think tank - the World Water Council (WWC) - to develop international policy recommendations on water issues and to arouse public

attention to water issues, but there does not yet exist an international organization responsible for the implementation of these recommendations. The 3rd World Water Forum will be held in Kyoto and other nearby locations in March 2003, and Japan should take advantage of this timing to propose the establishment of a new international organization for water resource conservation and mediation in disputes over water resources. Domestically, water resource administration involves five ministries: the Ministry of Land, Infrastructure, and Transport, the Ministry of Agriculture, Forestry and Fisheries, the Ministry of Health, Labor, and Welfare, the Ministry of the Environment, and the Ministry of Economy, Trade and Industry. In line with other developments on this issue, we recommend that a General Council on Water Resources be set up within the Cabinet to examine a broad range of measures for dealing with future water resource issues, and to coordinate more effective, flexible, and uniform water administration nationwide.

# 15. Constructing a Pipeline Network in order to Promote the Use of Natural Gas

Natural gas as a fuel produces lower emissions of CO2 and the toxic sulfur oxides (SOx) and nitrogen oxides (NOx) than do coal and petroleum, and the use of natural gas in future is expected to expand considerably from the standpoint of achieving a balance between energy use and environmental protection. Motivated by the oil crises of the 1970s, Europe and the US have enthusiastically advanced the construction of an expansive pipeline network. Raising the ratio of natural gas use is an important means of reducing Japan's rate of dependency on Middle Eastern oil (currently 86%), of diversifying its energy options and supply sources, and of enhancing its energy security. We therefore recommend that natural gas trunk pipelines be laid the full length of Japan. Another needed step is that of promoting the construction of an international trunk pipeline network in Northeast Asia that connects the huge gas fields in Sakhalin as well as Yakutsk and Irkutsk in Siberia with the region's major consumers: Japan, South Korea, China, and Taiwan. This would be part of an overall plan to stabilize future energy supply in Northeast Asia, and Japan is expected to become a central figure in promoting these efforts, in terms

of both capital and technology.

### 16. Aspiring to a Reform in Lifestyles

One issue that cannot be ignored when we Japanese discuss environmental diplomacy is the relationship between different lifestyles and their impact on the global environment. Although its population accounts for no more than 2.3% of the world's total number of people, Japan has a heavy responsibility for the global environment in that the resources it imports make up as much as 20% of the world's total maritime transport volume. The Japanese demand for an affluent lifestyle generates environmental destruction in the countries producing raw materials, and any worsening of this situation must be avoided. It has been pointed out recently that Asia, the principal production area for agricultural and fishery products for Japan, has suffered from the destruction of its forests, damage caused by agricultural chemicals, antibiotic contamination, and soil depletion from repeated cultivation of the same land year after year. Measures must be designed to ensure food self-sufficiency in the face of a population explosion and the frequent occurrence of unusual weather phenomena. These will require not only changes in agricultural technology and systems, but also an alteration of public views towards lifestyles. Consciously endeavoring to eliminate leftover food, holding down excess intake of meat and fat/oils, and reconsidering the disproportionate use of imported food products would be necessary elements in this new lifestyle. Improved school and social education to deepen understanding of 'food and global environmental issues' would also be needed.



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