

# II. “Questionnaire on Environmental Problems and the Survival of Humankind”

## 10-Year Summary

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A 10-Year Perspective by Professor Akio Morishima

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## Introduction

The resolution of environmental problems is one of the most important issues facing all people today, so that our shared home, the planet Earth, may sustain future generations. In 1992, the year of the Earth Summit in Rio de Janeiro, the Asahi Glass Foundation began conducting a survey to find out how people in different countries felt about the current state of the environment and what measures they deemed necessary to counter environmental problems. From our neutral standpoint as a charitable organization working in the public interest, we administer the survey to representative individuals and organizations involved in environmental issues and publish the results. Although the survey results may be weighted toward environmental protectionism, since the opinions expressed are those of people involved in these issues and not simply members of the general public, by publishing the results we anticipate being able to heighten interest in the restoration and preservation of the environment and to add to the numbers of people willing to participate in environmental solutions.

In 2001, the Foundation conducted its 10th annual "*Questionnaire on Environmental Problems and the Survival of Humankind*." The following is a compilation of the results of these first 10 years of the questionnaire.

## Questionnaire Overview

In accord with the objectives noted above, a questionnaire is sent at the end of March each year to anywhere between 2,400 and 3,900 environmental experts worldwide working for national and local governments, NGOs, universities, research institutes and private corporations. Returned questionnaires are collected until June, then the responses from around the world are compiled and compared, and the results are announced in September.

Table 1 shows the changes in responses for the 10 years of questionnaires sent to date. The first and second questionnaires were used in the symposia held in conjunction with the commemorative lectures by the Blue Planet Prize recipients. From the third questionnaire onward, Akio Morishima, Chairman, Institute for Global Environmental Strategies (a Nagoya University professor at the time) was requested to supervise the process. Since the fourth questionnaire, the number of responses from Japan have been relatively stable at around 300, whereas overseas responses totaled approximately 300 from the fourth to eighth questionnaires and increased to approximately 400 for the ninth and tenth questionnaires.

On a regional basis, there are generally 50 or more responses from Western Europe, North America, Asia and Africa. There have been fewer responses from the Middle East, Eastern Europe & the former Soviet Union, and Oceania, and we are attempting to increase these numbers. Approximately 80% of respondents are male.

**Table 1.** Changes in questionnaire response numbers

	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Japan	877	61	189	248	282	306	279	293	311	292
United States & Canada	49	22	23	25	51	38	62	59	93	58
Western Europe	39	38	62	79	77	65	60	79	88	84
Asia (outside Japan)	30	43	92	62	63	63	54	60	81	83
Latin America	11	37	36	48	35	41	33	27	26	35
Africa	9*	40	53	62	32	52	51	39	53	55
Oceania	9	22	22	22	21	18	21	13	17	30
Eastern Europe & former Soviet Union	13	13	17	14	16	15	18	14	19	22
Middle East	9*	6	4	16	11	14	15	12	11	22
No response	17	0	6	0	1	1	2	1	3	3
Overseas Total	168	221	315	328	307	307	316	304	391	392
Total	1054	282	504	576	589	613	595	597	702	684
Response Rate	28.3%	11.0%	20.8%	21.7%	18.4%	19.1%	17.9%	18.5%	20.5%	17.3%

\* Figure includes the total for Africa and the Middle East

	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Male	995	195	390	444	470	470	475	486	552	540
Female	44	61	110	119	108	132	109	95	126	119
No response	15	26	4	13	11	11	11	16	24	25
Total	1054	282	504	576	589	613	595	597	702	684

# 1. When Will Humankind's Crisis of Survival Come?

## 1.1 Environmental Doomsday Clock

“Indicate with a time your concern about the survival prospects of humankind in light of the deterioration of the environment, taking into consideration the times and associated concern levels shown on the clock below.”

In order to gauge the respondents' perceptions of the global environmental crisis, the Environmental Doomsday Clock has been included in every survey since the first questionnaire in 1992. The clock hands are used to express the extent to which respondents perceive a crisis to exist.

Figure 1 shows the overall averages for all respondents while Table 2 shows the averages for Japan and overseas individually for the questionnaires to date. In the overall category, the average advanced forward each year from 7:49 in 1992 in the “Fairly Concerned” (6:01-9:00) quadrant until 1996 when it reached 9:13 in the “Extremely Concerned” (9:01-12:00) quadrant. Although it later eased to the range of 9:04 to 9:08 in that quadrant for three years, the clock hands receded to 8:56 in the “Fairly Concerned” quadrant in 2000 and advanced again in 2001 to 9:08 in the “Extremely Concerned” quadrant.

As Table 2 demonstrates, the overseas averages were approximately 40 minutes faster than the Japanese averages from 1992 to 1997. In 1998 and thereafter, that difference closed to 10 minutes or less, a much smaller gap, indicating a convergence in the level of concern.

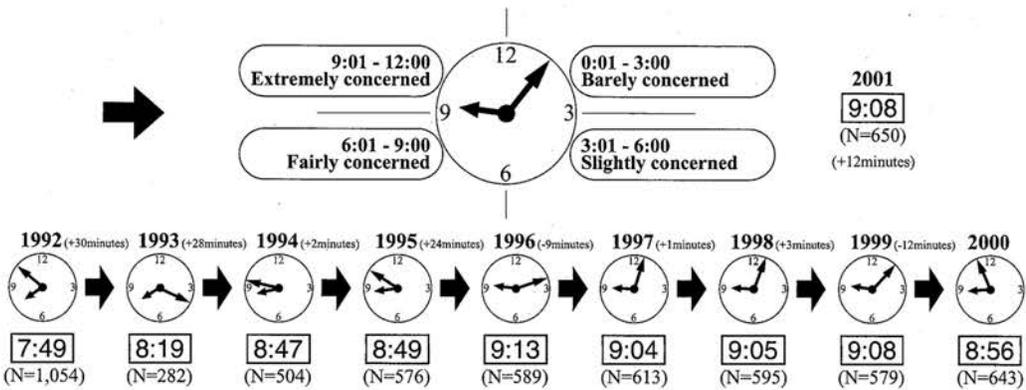


Figure 1. Concern about Human Survival Prospects

Table 2. Changes in the Environmental Doomsday Clock averages in Japan and overseas

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Overseas	8:44	8:33	9:16	9:22	9:34	9:27	9:09	9:10	8:56	9:11
Japan	7:38	7:33	8:01	8:08	8:51	8:42	9:01	9:07	8:56	9:04

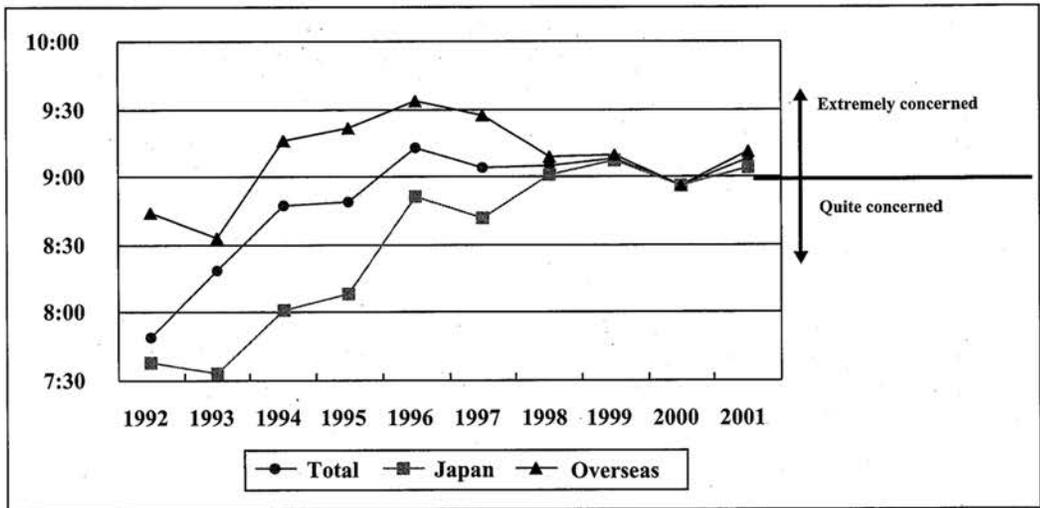


Figure 2. Changes in the Environmental Doodsday Clock averages for 10 years, 1992 to 2001.

## 1.2 Causes of the Crisis

“Select two options you think will cause the most harm to the environment and impact significantly upon human survival.”

The first and second responses overall, as shown in Figure 3, were “Economic development that disregards the environment” and “Explosive population growth.” The third choice was “Global warming,” which illustrated the high level of anxiety and concern about this issue (2000 Questionnaire).

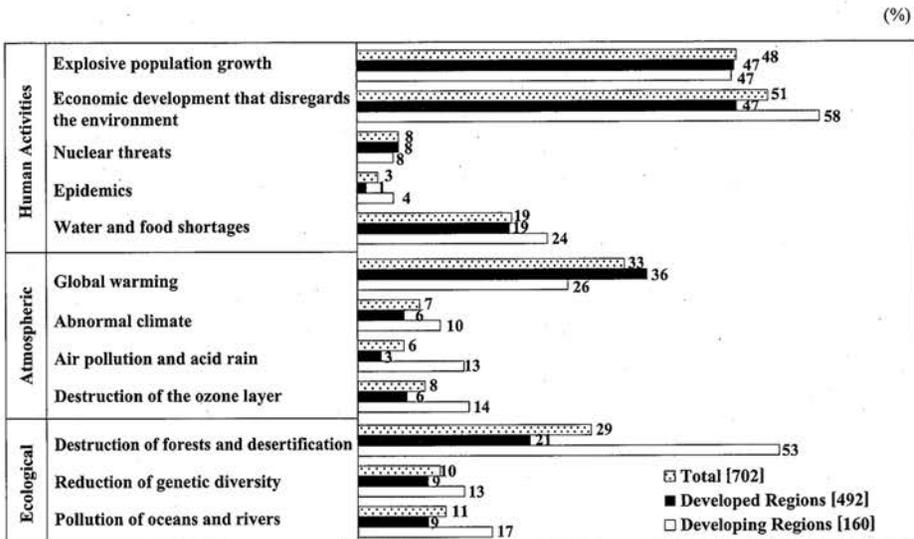


Figure 3. Perceived causes of significant impacts on human survival prospects.

### 1.3 Generation on the Brink of Crisis

“In which generation do you think humanity will become unable to maintain its existence based on the mass-production and mass-consumption standards of present-day civilization?”

The question of exactly which generation will face a crisis in human survival is a pressing issue. The responses to the above question in the 1996 and 1997 questionnaires are shown in Figure 4. In both years, the most responses were received for “Your grandchildren’s generation (2031-2065),” which was followed by “Your great-grandchildren’s generation (2066-2100).” This indicates that the respondents felt that a crisis would be experienced before we entered the 22nd century.

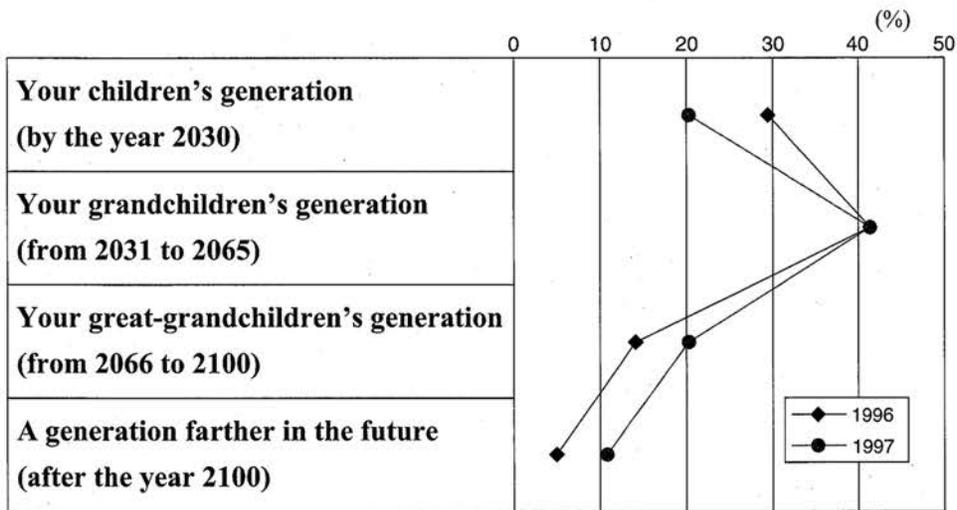


Figure 4. Generation on the brink of crisis.

#### Comments from Respondents

Respondents were also asked to comment about what sort of crisis they see occurring in the future. A selection of their answers, in their own words, is given below.

- There have been two crises of annihilation in the history of humankind. They are the atomic bomb and the environment (primarily global warming, but endocrine disruptors may become the dark horse). An elite in some of the major countries holds the atomic button and we have managed to escape destruction so far. However, the key to the environment is held in the hand of each human. The egos of nationalists and corporations are the ones at the front, but it is the egos of individuals that lie behind them. (Japan, 2001)
- It is getting nearly too late. If we don’t start addressing the “environmental deficit” soon,

we will go bankrupt. People must stop feeding like political animals at Nature's trough. Economic growth needs to be seen for what it really is: cancer! Economic expansion is not sustainable. Neither is population growth. We need to seek maturity, rather than a continued adolescence. (Canada, 1998)

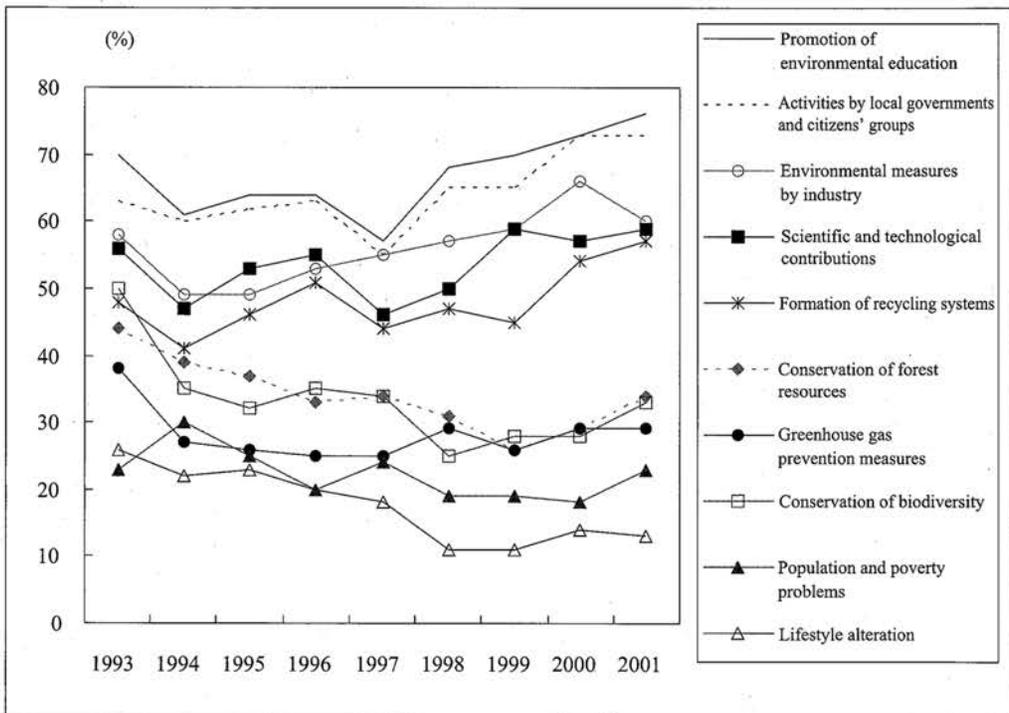
- I do not think that humans are in danger from environmental change, but civilization is in great danger. (United Kingdom, 1998)
- We largely have the technical information and the legislative framework for the protection of bio-diversity and the environment; what we are lacking is the social, political, ethical and intellectual will to complete the work. The fight for the environment and bio-diversity is a fight for life; ours, our descendants, and that of countless other species. It is not sufficient that the environment is on the list of the factors to be taken into account in decisions, it must be pre-eminent. (Greece, 2000)
- There is a concept to be raised; it's the notion of a time scale very different between ecological process and decision process. The first one is long and the lifetime of political deciders is far shorter. Thus, decisions for the long term are not taken and opposite effects are not corrected. In the case of my country, Monaco, the political life of the Prince, actually 50 years, permits long-term decisions, to correct or adapt former decisions. The political time is more adapted to the ecological time. My reflection is: in the majority if the political system could the ecological question stay in political hands or should we go through some governance system? (Monaco, 1999)
- The last two years had showed me that people in the cities don't care about environmental problems because they think that the "environment" is the rainforest, the whales, or some abstract concepts that scientists use. On the other side, people in the highland or native communities have a better idea of what the environment is and means, and how important it is for the survival of humankind, but they have to survive right now so they have to clear the rainforest or kill the wildlife so their community can survive. Maybe this means that the wrong people are living in the wrong places? (Peru, 1999)
- It is time for a change of paradigm, i.e. to switch our negative attitude when we talk about sustainability (less of this and less of that) to treating sustainability as a challenge for mankind of achieving more with less resources with a lot of business opportunities! The capital market has already checked it; there is a Dow Jones Global Sustainability Index since September 1999. (Switzerland, 2000)

## 2. How the Current State of Crisis Is Perceived?

### 2.1 Agenda 21

“Since the Earth Summit, to what extent has progress been achieved in your own country in the following areas covered by Agenda 21?”

Agenda 21, an action plan for the environment and development, which was adopted at the 1992 Earth Summit in Rio de Janeiro, covers a broad range of issues ranging from combating pollution to dealing with overpopulation and eradicating poverty. Therefore, this plan set out how NGOs, governments and corporations were to cooperate on environmental and development issues in order to conserve the global environment as the 21st century approached. Now that 10 years have passed since its adoption, it is expected to be comprehensively reviewed at the World Summit on Sustainable Development in Johannesburg this year.



**Figure 5.** Changes over nine years in progress evaluations of the Agenda 21 action plan (Combined “Significant Progress” and “Some Progress” categories).

The questionnaire results for the nine years from 1993 to 2001 for 10 items included in the Agenda 21 plan are shown in Figure 5. In the responses about the progress achieved in the respondents’ own countries, the “Significant Progress” and “Some Progress” responses for

respondents from Japan and overseas were compiled together as combined "Progress" responses.

Over the nine-year period, the items that received relatively high progress ratings included "Promotion of environmental education," "Activities by local governments and citizen's groups," and "Environmental measures by industry." Conversely, the items that received low progress ratings included "Lifestyle alteration," "Population/poverty problems," "Conservation of biodiversity" and "Greenhouse gas prevention measures."

The items that received high progress ratings up to 1995 continue to show a trend in recent questionnaires for even higher progress ratings. Similarly, the items that received low progress ratings up to 1995 continue to show a trend in recent questionnaires for continued low ratings.

### 3. Averting the Environmental Crisis

#### 3.1 The Global Warming Problem

##### 3.1.1 Solutions to Global Warming Sought with the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP)

Global warming caused by increased concentrations of greenhouse gases released by human activities into the atmosphere has become a major problem because of its remarkably severe impact on natural ecosystems and humans. The cooperation of each nation is essential to prevent warming at the global level, and since COP1 in Berlin in 1995, COP sessions have been held every year at various locations around the world. Since the 1996 questionnaire, a question connected to COP issues has been included and has surveyed the opinions of respondents regarding efforts to build an international framework for the prevention of global warming.

#### Kyoto Protocol Ratification Conditions

“Political momentum to implement the Kyoto Protocol by 2002, 10 years after the Earth Summit, was created at COP5. Although none of the developed countries have ratified the Kyoto Protocol yet, select two conditions that you think are the most important for promoting ratification in your country.”

The responses in 2000 from overseas (aggregate) and Japan alike listed “Progress in domestic measures aimed at achieving reduction targets, including legal frameworks” in first place, followed by “Public opinion arousal through the mass media” and “Specifying the working rules for *Flexible Measures*.” U.S. respondents were more likely to select “Persuasion of opposed industrial organizations to accept ratification” than respondents from other regions, suggesting the undercurrents behind the U.S. announcement in March 2001 of its departure from the Kyoto Protocol. (2000 Questionnaire)

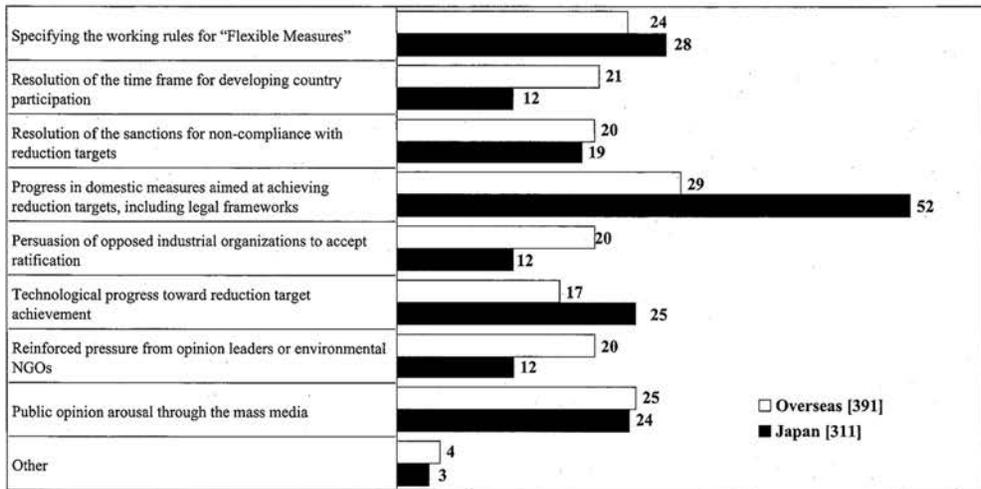
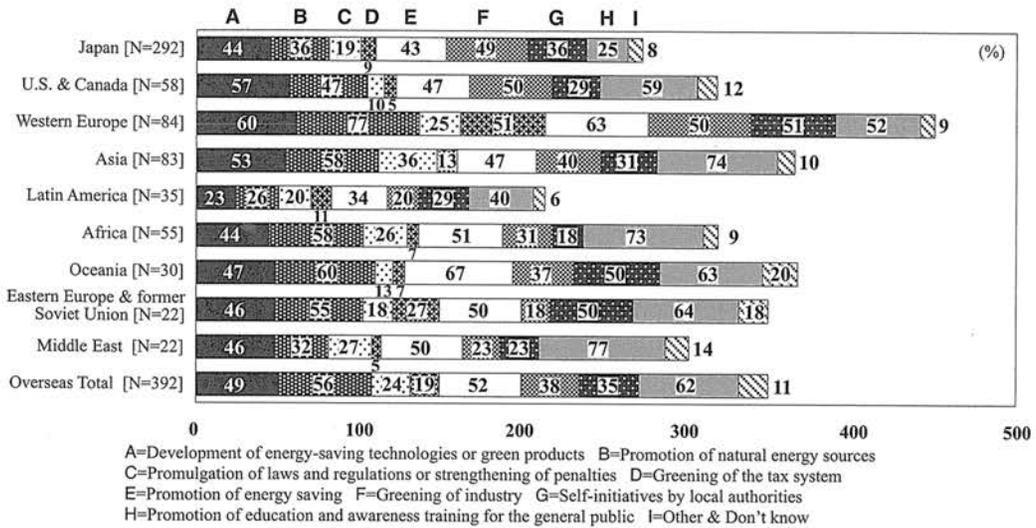


Figure 6. Conditions required for promoting ratification of the Kyoto Protocol.

## Domestic Efforts to Reduce Greenhouse Gas Emissions

"Check the items corresponding to domestic efforts in your country since COP3 (Kyoto Conference) to reduce emissions of greenhouse gases."

Although the prospects for reaching the reduction targets for 2012 appear dim, each country is devising various strategies with the aim of reducing greenhouse gas emissions. In Figure 7, which shows the result of the survey in 2001, the longer bar graphs indicate the regions with the most respondents who were able to evaluate their countries' efforts. Western Europe had the longest bar graph, indicating that these respondents were able to evaluate the most items, while Latin America had the shortest bar graph and the fewest items. For overseas respondents overall, "Promotion of education and awareness training for the general public" was the most common response, followed by "Promotion of natural energy sources" and "Promotion of energy saving." It was apparent that measures for the "Greening of the tax system, including environmental taxes" and "Promulgation of laws and regulations or strengthening of penalties aimed at reducing global warming gases" had not progressed. (2001 Questionnaire)



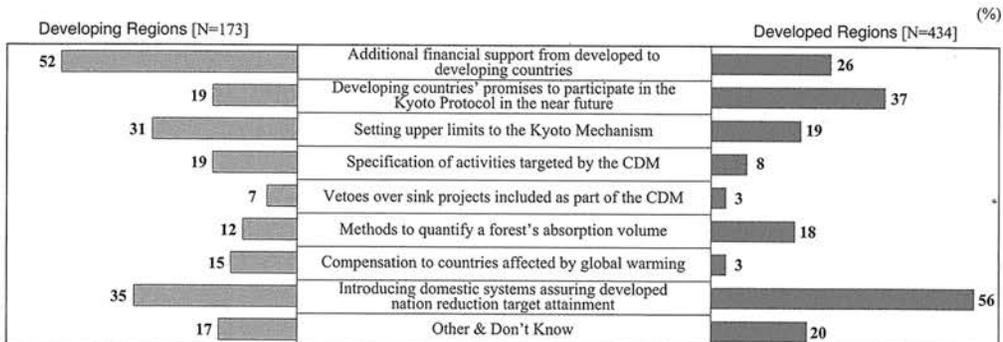
Note: The figures indicate the number of responses to each item and the percentage of the total respondents. The total percentage is higher in regions in which there were many respondents that could assess multiple items.

Figure 7. Domestic measures.

## Expectations for COP6

“What do you have the strongest expectations for COP6, which will meet at The Hague in November 2000?”

With regard to COP6, the developed regions (Western Europe, North America and Japan) had expectations for “Introducing domestic systems assuring developed nation reduction target attainment.” The developing regions (Asia, Africa and Latin America) had expectations for “Additional financial support from developed to developing countries.” (2000 Questionnaire)



Note: Please note that the totals for the various regions should add up to 200% since respondents were asked to select two items. However, some respondents marked no items or only one item, causing the aggregate total to be less than 200%.

Figure 8. Expectations for COP6.

## When Should Restrictions on Emissions Begin in Developing Countries?

“In the future, developing nations’ carbon dioxide emissions are expected to surpass those of industrialized countries. When should restrictions on emissions begin in developing countries?”

The early participation of the developing nations has become a pressing issue with respect to halting global warming. As Figure 9 shows, both the developed and developing regions selected the “2010-2014” period as the first choice by an overwhelming margin, although the percentage was smaller for developing regions than for developed regions. This indicates that a majority of respondents think that developing countries should control emissions early on. (1998 Questionnaire)

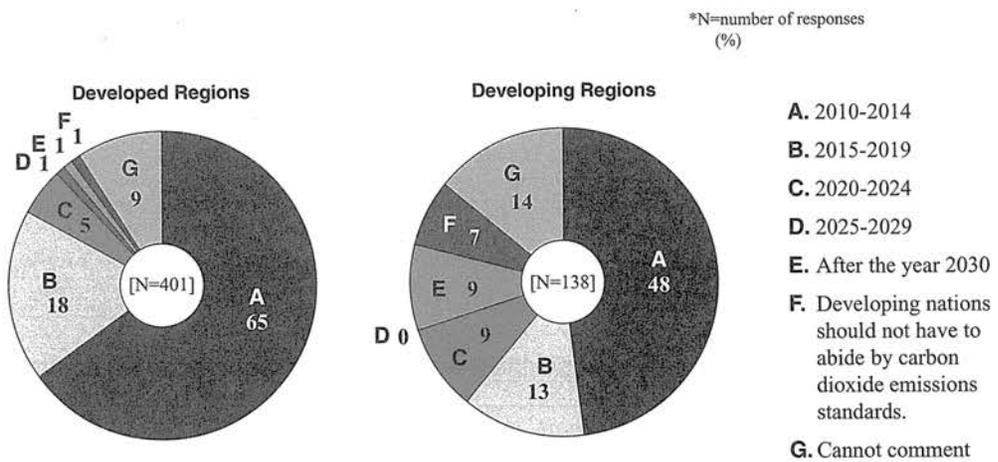


Figure 9. When should emission reductions be set in developing countries?

### Comments from Respondents

The following is a sampling of comments from respondents about COP.

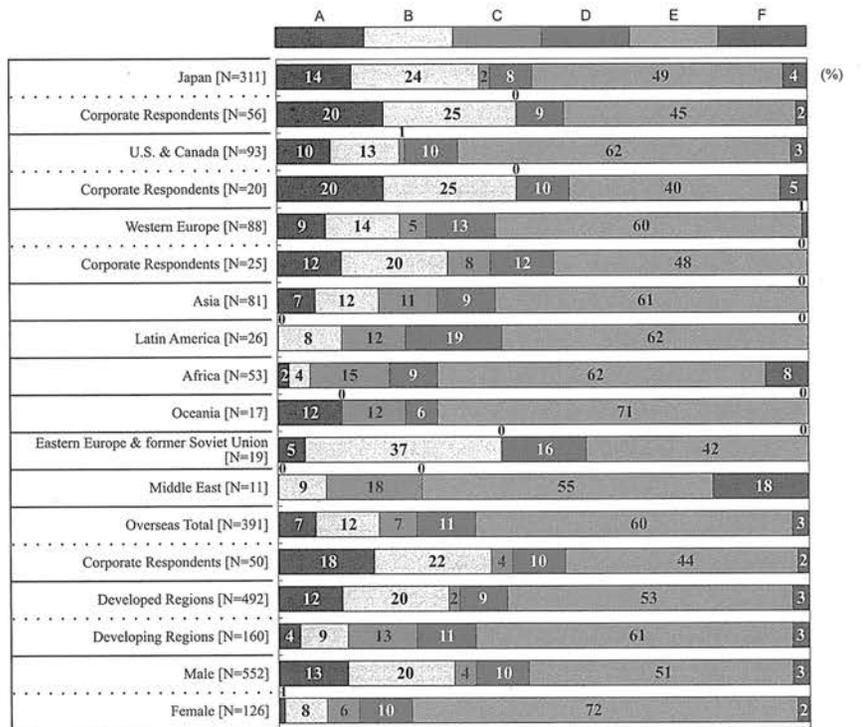
- Environmental problems like global warming are part of global development issues. Thus, bargaining among nations to redress equity concerns needs to take place at the same time that rapid population growth, political corruption and inefficient management and technology are addressed. It is imperative that developed countries provide resources—efficiently accomplished via a carbon tax—and technological transfers to less developed countries to encourage leapfrogging of technology (e.g. from coal to combined cycle gas power plants or internal combustion engines to fuel cell powered cars). The focus of post-Kyoto negotiations should be mechanisms rather than arbitrary and inconsistent targets and timetables. (United States, 1998)

- Emissions trading should be discouraged. Assistance toward the development of sustainable, environmentally friendly technologies acceptable culturally to developing countries should be given in lieu of payment for emission transfer. (United Kingdom, 1998)
- I think it will be difficult to succeed in reducing greenhouse gas rates unless we impose concepts and debate that transcend the governmental, social and economic framework that has sustained the 20th century. Even in our own independent research, we have been able to achieve significant results by reconsidering our waste treatment systems and transport systems. I believe that a country's stance toward dealing with problems determines its direction. (Japan, 2001)
- It all depends on the USA and the Bush administration what we will have in future. They create 25% of the air pollution/global warming and will increase that amount. It is very hard to comprehend the American Society's thinking, as they are responsible for future global warming and life on this earth. (Australia, 2001)
- It is poorly realized that the bulk of GHG from territories under national jurisdiction is produced by microbial decomposition. For Russia about 10% of CO<sub>2</sub> is produced by the industry and approximately 4.4GtC/yr by soil respiration. For CH<sub>4</sub> and N<sub>2</sub>O balance (it) is still more in favor of bacteria. For countries in warmer climates, decomposition sources should be much stronger. Attention should be paid to reservoirs with long carbon residence time. (Russia, 1998)
- I am appalled and alarmed at America's refusal to co-operate with its Kyoto promises. I am alarmed by the disappearance of birds (sparrows especially) and animals in England, because it means there is something badly wrong in the atmosphere, not only in agriculture. (United Kingdom, 2001)
- I am glad that you have concentrated this year on the outcome of COP3. We now have a new Ministry of the Environment and a Minister (Mrs. Nadia Makram Ebeid), as well as a new law. The Minister is strict in applying the law and makes weekly visits to factories to inspect their performance and is serious about the implementation of the law. (Egypt, 1998)
- Although it is also necessary to cooperate internationally to endeavor to persuade the new American administration, which has declared its withdrawal from the Kyoto Protocol, on the other hand, it is necessary for Japanese academics, the mass media, and non-governmental organizations at every level to work on their American counterparts and develop a movement that will bring about policy changes and get public opinion to draw the attention of the administration and congress to their mistake despite the pressure exerted by the industry lobby. (Japan, 2001)

### 3.1.2 Alternative Energy Sources to Fossil Fuels

“Some policy initiatives promote the use of nuclear power to sever reliance on fossil fuels and prevent global warming. Select one option that most closely matches your stance toward this policy.”

It will be essential to develop and use alternative energy sources to fossil fuels if we are to prevent global warming. At present, nuclear power is relied upon for much of the alternative power generation. In 2000, respondents were asked for their opinions regarding nuclear power generation. As Figure 10 reveals, 7% of the overall response for overseas respondents was for “A: current technology is reliable.” “E: rather than relying on nuclear power, we should promote the development of new energy sources” accounted for approximately 60% of responses in all of the overseas regions, indicating a strengthening in views opposed to nuclear power generation. When the responses for all respondents and just corporate respondents were compared for Japan, North America and Western Europe, it was clear that a higher percentage of corporate respondents in each region indicated support for the “current technology is reliable” option than for the general respondents in that region. (2000 Questionnaire)



Note: Responses from corporate respondents numbering greater than 10 was included.

A=current technology is reliable  
 B=okay if current technology is fundamentally revised  
 C=hydroelectric power generation  
 D=should improve the energy efficiency of thermal power generation  
 E=should promote the development of new energy sources  
 F=don't know

Figure 10. Nuclear power generation as an alternative energy source to fossil fuels.

### 3.2 Carbon Taxes/Environmental Taxes

#### Approval/Opposition to Carbon Taxes

“Which is your opinion of the imposition of carbon taxes; approval or opposition?”

To prevent global warming, it will be equally important to revise social systems as it will be to raise the environmental awareness of individuals and promote energy conservation. A carbon tax is a tax imposed on natural gas, gasoline and thermal power generation to constrain the consumption of fossil fuels. The graph below shows a comparison of the 1998 and 1999 questionnaire results regarding approval and opposition to carbon taxes.

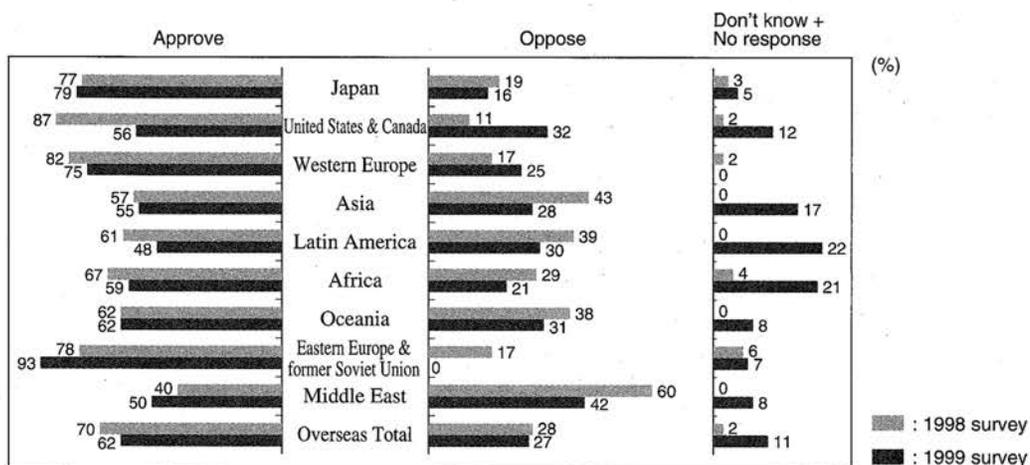


Figure 11. Comparison of 1998 and 1999 results regarding Approval/Opposition to carbon taxes.

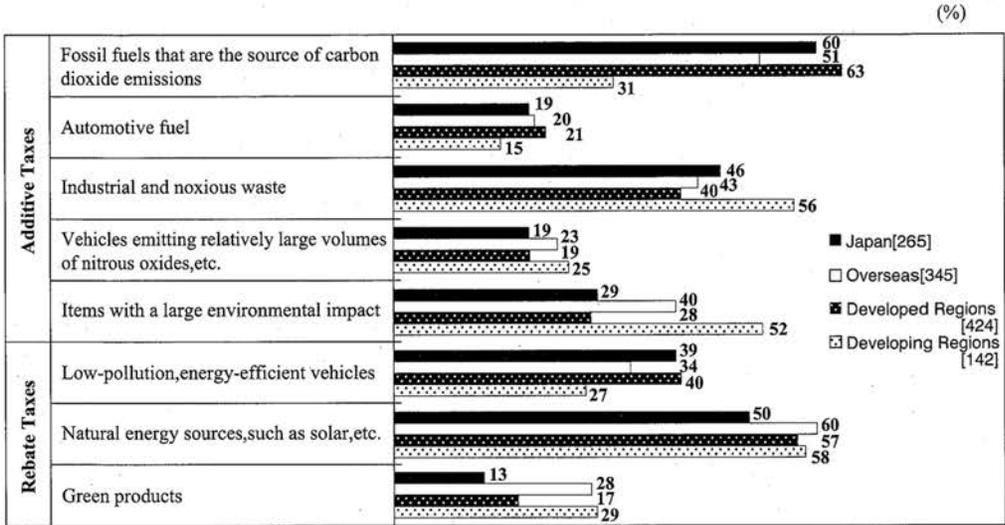
Overall, opinions in favor of the introduction of carbon taxes outweighed those opposed. Breaking this down, opinions in developed regions were more likely to be in favor than those in developing regions. In the comparison between the two years, there were no significant differences except for in North America.

#### Environmental Tax Coverage

“If you agreed with the introduction of environmental taxes, with which of the following taxes are you in agreement?”

At the time in the year 2000, environmental taxes, that were additive or subtractive according to the load placed on the environment, were used in eight countries in Europe. In the 2000 questionnaire, responses overall were overwhelmingly in favor of the introduction of environmental taxes. People in favor of these taxes were asked the above question. As Figure 12

demonstrates, the most selected response overall was “fossil fuels...,” which was followed by “Industrial and noxious waste.” For the rebate tax section, the most commonly selected item overseas (aggregate) and in Japan was “Natural energy sources, such as solar, etc.” (2000 Questionnaire)



Notes: Please note that the totals for the various regions should add up to 300% since respondents were asked to select three items. However, some respondents marked no items or only one item, causing the aggregate total to be less than 300%.

Figure 12. Additive / Rebate environmental tax coverage.

### Conditions for Introducing Environmental Taxes

“The understanding of consumers and businesses must be obtained to successfully introduce environmental taxes. Select the condition which you believe is the most important for introducing environmental taxes.”

Figure 13 shows that more than half of overseas respondents and Japanese respondents selected “Environmental taxes are clearly designated for specific uses” as the most important condition to successfully introduce environmental taxes. (2000 Questionnaire)

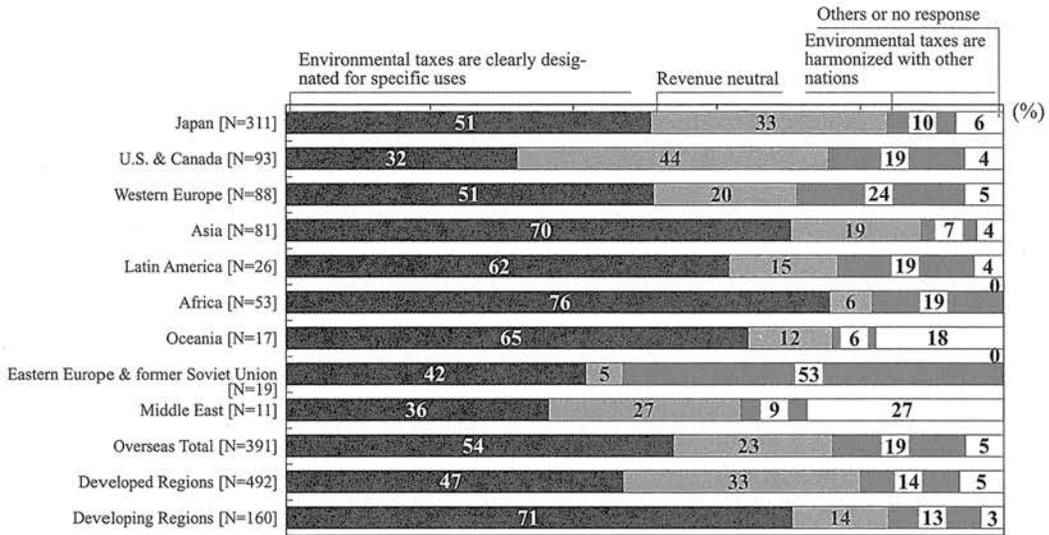


Figure 13. Conditions for introducing environmental taxes.

### Comments from Respondents

Respondents offered the following opinions concerning carbon and/or environmental taxes.

- I can't say that the average consumer is provided with consumption choices in everyday life that pose a low environmental burden. We cannot help relying on governments that apply proactive guidance, environmental taxes, tax system incentives or legal requirements to businesses, which are the primary providers of resources for daily living in modern society. Although the current trend is toward economic liberalization, it should not run counter to economic liberalization if we develop an economy that poses a low environmental burden as a system, rather than leaving it to the whims of a few corporations or the bureaucracy. (Japan, 2000)
- One of the key obstacles is the fact that environmentally damaging behavior is still economically profitable. Changes in the taxation and subsidies system should change that, then many people will switch to a more sustainable behavior out of economic self-interest. (Germany, 1997)
- The reason that it is understood intellectually but not translated into action is that there is a feeling that there will be no visible change even if the action is taken. Although environmental education will have some effect over the long term, only economic tools can be thought of as effective means of changing lifestyles over the short term. This is because no matter how unconcerned individuals are about the environment, their concern is bound to

be focused on their wallets. (Japan, 1999)

- Carbon tax is used in my country for all kinds of non-environment-related “purposes” and to a lesser extent for promoting environmental protection. (Greece, 1998)
- If on the one hand it is though necessary to impose taxes on fossil fuels (carbon tax), I have grave concerns that nuclear power generation will end up being promoted as a result. (Japan, 1999)
- The state of our environment is a reflection of the nature of our governments. A good broad based democratic governance answers our problems. The poor countries must be relieved of their taxes to build their environment. (Ghana, 2001)
- The key issue is, in my view: people want to travel, move and live comfortable lives. They have little individual power to do so in an environmentally clean way. Companies have an incentive to offer alternatives if they are taxed for unsustainable products & practices. Governments can only tax together. Hence: (1) international governance is the key. (2) once a tax is there, use it for the development of a new energy source. (Netherlands, 1999)
- The central problem is that we still have taxation and subsidy systems that provide insufficient incentives to act environmentally friendly. You still have to be an idealist. But most people need economic incentives. (Germany, 1998)
- There is no time to lose in dealing with global environmental problems, and I think that they will not be solved by relying on individual efforts alone. Therefore, economic measures must be introduced and the principle of ‘polluters pay’ must be rigidly enforced. (Japan, 1997)

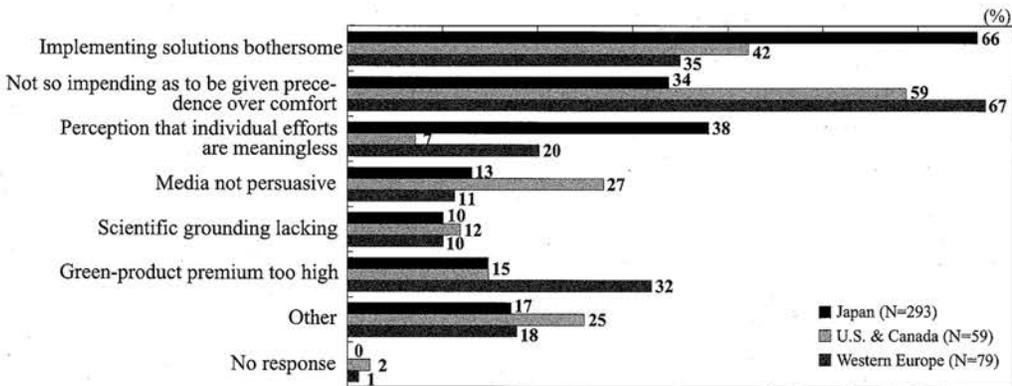
### 3.3 Lifestyle Alteration

Changing peoples' lifestyles is thought to be an extremely important means of realizing a sustainable society. Lifestyle alteration is one of the Agenda 21 action plan items, and as indicated previously in Figure 5, which shows the ratings for Agenda 21 items, respondents consistently see this item as having made the least progress over a nine-year period, excepting 1993. Since 1992, the questionnaire has included a question about "lifestyle alteration" to examine respondents' opinions about this problem from various perspectives.

#### Largest Obstacles to the Alteration of Lifestyles

"Select two items that you think are the largest obstacles to the alteration of lifestyles."

Over the six questionnaires conducted from 1993 to 1998, more than 80% of respondents—since they participate in environmental issues—have continued to state that "lifestyle alterations" are possible, but the sections on the Agenda 21 items reveal that virtually no progress has been achieved. Accordingly, in 1999, the above question was asked, and Figure 14 shows the results for the developed regions. The first choice in Western Europe and North America was "Not so impending as to be given precedence over comfort," which was followed by "Implementing solutions bothersome." Among Japanese respondents it was "Implementing solutions bothersome" first, followed by "Perception that individual efforts are meaningless" in second place.



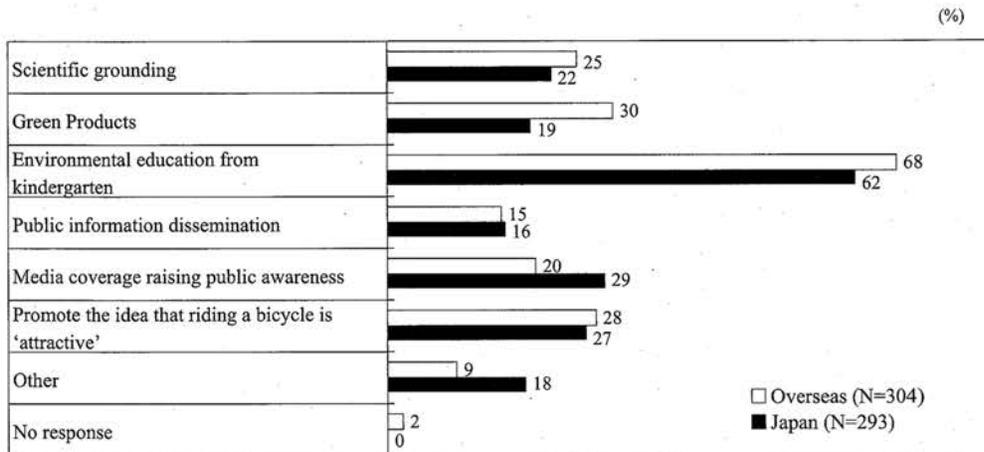
Note: Please note that the totals for the various regions should add up to 200% since respondents were asked to select two items. However, some respondents marked no items or only one item, causing the aggregate total to be less than 200%.

Figure 14. Largest obstacles to the alteration of lifestyles.

## Strategies for Changing Lifestyles

“Select the two options that you feel are the most effective strategies for improving citizen awareness.”

To facilitate the change in peoples’ awareness to promote changes in lifestyle, the most endorsements in any region, including Japan, were for “Environmental education from kindergarten.” As Figure 15 shows, the overseas respondents in aggregate selected “Green products,” and “Promote the idea that riding a bicycle is attractive” as the next most popular responses. (1999 Questionnaire)



Note: Please note that the totals for the various regions should add up to 200%.

**Figure 15.** Strategies for changing lifestyles.

### Comments from Respondents

Respondents were also asked to give their opinions about lifestyle alteration. A selection of their answers follows.

- It is my opinion that the greatest challenge we are facing as a global society is the gross overconsumption of goods and services in our lifestyles. This is more the case in developed countries. We have to learn to live within our means. This is especially the case now with the ever-increasing population. I also believe that any change in this direction is at least two generations away! But it is up to us, at present, to prepare the next generations to make, and live comfortably with, these changes. (Canada, 1998)
- Changing our current lifestyle requires rediscovering and reliving our traditional cultures and returning to sustainable agricultural production. In other words, we should find ways to apply the village community culture in today’s increasing urbanization and moderniza-

tion. We can learn a lot from the past and from the lives of rural communities. (Philippines, 1997)

- I think that a scientific and technological approach is very important. More emphasis should be put on advancing technology while also promoting changes in consumer lifestyles. I also think that it is useless to promote energy conservation by just shouting about it. We need to make people feel that energy conservation is fashionable and clearly show them the benefits of such activities. (Japan, 1998)
- Although my job entails working for environmental protection, it is difficult to sacrifice convenience to change my daily lifestyle. I think that lifestyles can only change if one has the time to make it happen. I would like to start by using fewer disposable products. While it is important to take action on an individual level, I think that corporations should also have training sessions for their employees to help raise awareness of environmental conservation issues. (Japan, 1998)
- In regions where people are undernourished, electricity, phone, water lack seriously, it is quite impossible to simplify lifestyle. (Republic of Benin, 2000)
- I suspect that the reason why lifestyles cannot be changed is that it is difficult to understand quantitatively exactly how much impact our behaviors have on the environment. Using the LCA method, etcetera, I think that we must use pictures that can be easily understood by anyone to show consumers the burden that a particular product places upon the environment. I also think that we must inform people in more easily understood terms how much energy would be saved simply by everyone making changes in their lifestyles. (Japan, 1999)
- We have made great progress in public understanding that there is a problem, but now we face the much harder challenge of dramatically changing individual and collective lifestyles to reduce consumption, population and ultimately environmental impact. (Australia, 2000)
- Environmental problems can be solved only if people all over the world are prepared to change their lifestyles from consumption-oriented to use-oriented. High moral and ethical values are needed for this. Developed nations and “successful” individuals lack these values. (India, 1998)
- I feel that the consumerist lifestyle of western/northern society is unsustainable and silly. Inner values and spiritual growth would help to overcome this and be far more healthy—yet materialism makes it more and more difficult to listen to the inner voice, to nature, to soul. (Germany, 2000)

### 3.4 Environmental Education

Many of the opinions obtained from the questionnaires point out the importance of environmental education. In the 1993 and 2000 questionnaires, we raised the issue of environmental education.

#### Institutions' Role in Promoting Environmental Education and Instructional Activities

“Which institution do you think should play the key role in promoting environmental education and instructional activities? Write the four most important options in order of importance.”

The top three responses in each region, including Japan, were the same for the question. Looking at the overseas total, the largest group of respondents selected “Schools” first, followed by “National and local governments” and “Mass media.” “Individual households” were attributed a relatively small role, which was the highest in Japan at 14%. (2000 Questionnaire)

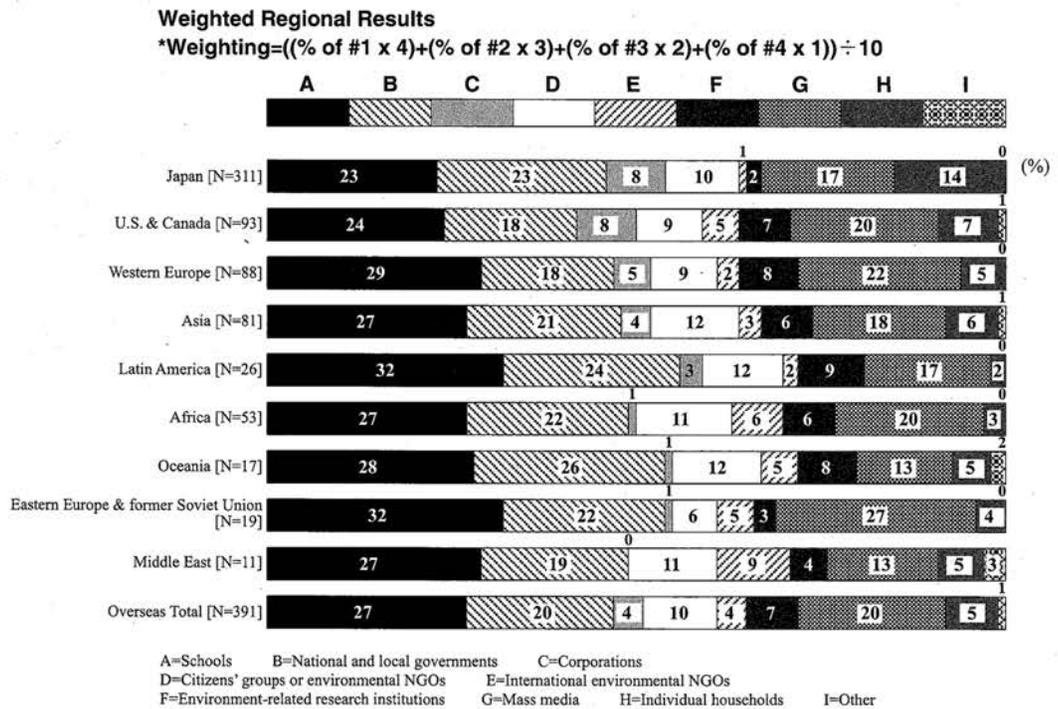


Figure 16. Which institutions should promote environmental education and instructional activities?

## Age to Start Environmental Education in the School Curriculum

“Is environmental education included in the school curriculum of your country? If so, from what age is it started?”

Although there were regional differences in the answers to the question, the 4-6 and 7-9 age ranges were each cited by approximately one-third of the overseas respondents in aggregate. In Latin America, Oceania and North America, the 4-6 age range received more than 40% of the responses, while this age range was cited noticeably less often in Japan and the Middle East. (2000 Questionnaire)

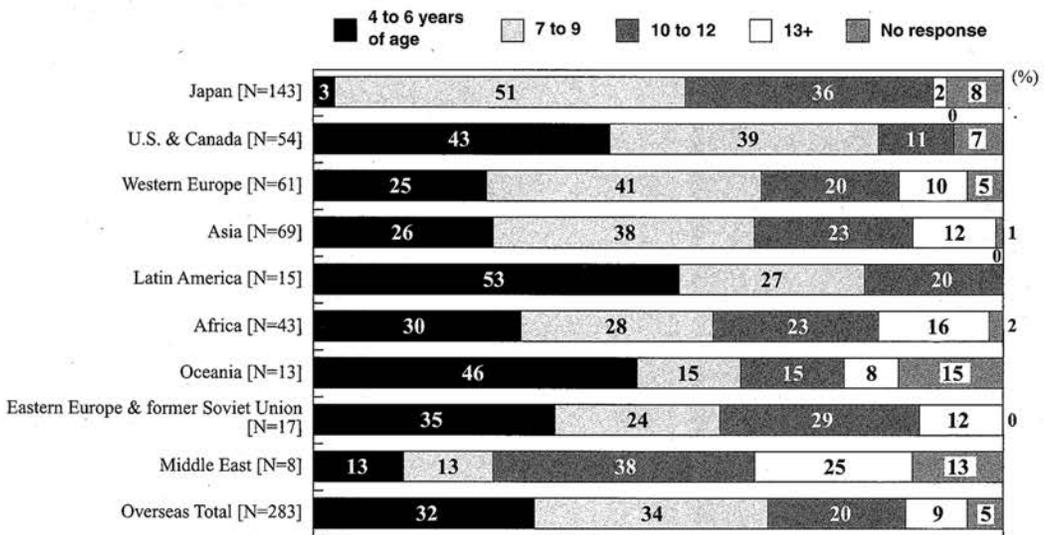


Figure 17. What age to start environmental education.

### Comments from Respondents

A sampling of comments concerning environmental education follows.

- If people knew the problem, they would be at least 50% of the way already toward the solution of the problem. (Philippines, 1997)
- There is no urgency felt by people in developing countries about the environmental crisis. Unless an environmental disaster happens, people do not care so much about how they can help save the planet. It is imperative that we come up with an effective public awareness campaign to educate people on how to take care of the environment. (Philippines, 1999)

- Improve people's quality (of life) is one of the most important things for environmental problems and it is also the basic decisive element to many confronting problems. More environmental funds are needed for education esp. in developing countries. (China, 2000)
- As soon as all people have been made to understand why they must be environmentally friendly, what they must conserve and how they can do it. This is why I think environmental education should be practiced 10 times what is being carried out now, I very much agree with this ( Environmental education from kindergarten upward.) (Botswana, 1999)
- Where environmental education is concerned, much more important issue seems to be environmental democracy/people participation in environmental decisions. (Poland, 2000)
- Public education through an informed & empowered free media is the key to public debate that will resolve these complex issues. (United Kingdom, 2000)
- When one lives in a developed nation such as Japan, the circumstances of the even greater environmental destruction in developing countries are not readily conveyed. The public should be made aware that environmental problems are also a North-South problem, and the media should report the true condition of the people harmed the most. (Japan, 2000)
- I would like children in future to be raised with a sensitivity that allows them to relate not just to humankind, but to various living entities as well. To accomplish this, I think that environmental education should be rigorously implemented. I want to bring about a time when global environmental problems can be discussed in family conversations. (Japan, 2000)

### 3.5 Current State of Water Resources

The 21st century is being called the “Water Century” because of the pressing need for solutions to water problems that have become more severe in each part of the world as a result of population increases, agricultural land use, industrialization and urbanization. Reflecting this, we surveyed the water problem from the perspectives of both quality and quantity in the 2001 questionnaire.

#### Quality of Water Used in Daily Life

“To what extent is the quality of water used in daily life, including drinking water, deteriorating in your country?”

As Figure 18 indicates, there are marked differences between the regions in the quality of the water used in daily life. In Africa, 47% of respondents cited an “Acute problem,” which was followed by 42% of respondents in Asia, 36% in the Middle East, and 29% in North America. Conversely, 31% of Western European respondents selected the “No problem...” option, a notably higher response than 10% in the other regions. (2001 Questionnaire)

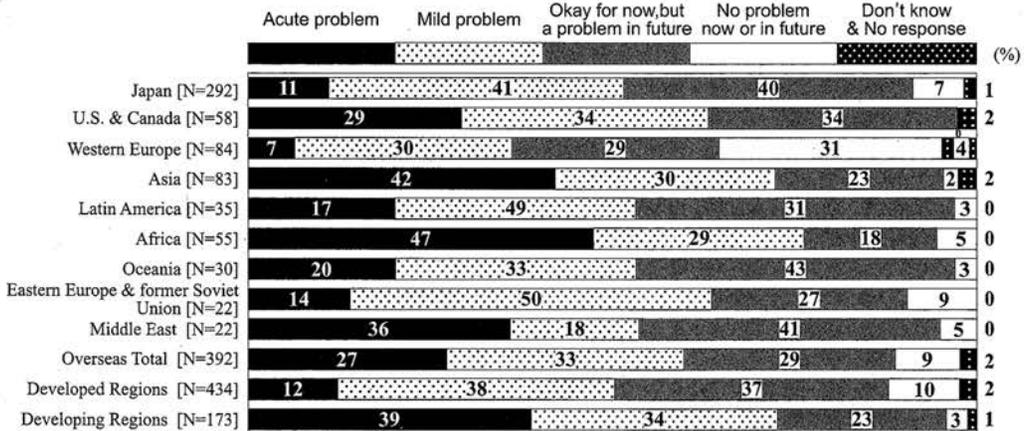


Figure 18. Quality of water used in daily life.

#### Quantity of Water Used in Daily Life

“To what extent is water quantity a problem in your country, considering the combined supply of water used in daily life, agriculture and industry?”

Figure 19 shows that there are also significant differences between regions in the reporting of the sufficiency of water quantities. Excluding Western Europe, more than 70% of respondents

in all regions selected one of the “Acute water shortage,” “Mild water shortage” and “Okay for now, but shortages in future” options. In contrast, 54% of Western Europeans selected “No problem...,” the largest response for this option, indicating a large number of respondents that are optimistic about water volume as well as water quality. (2001 Questionnaire)

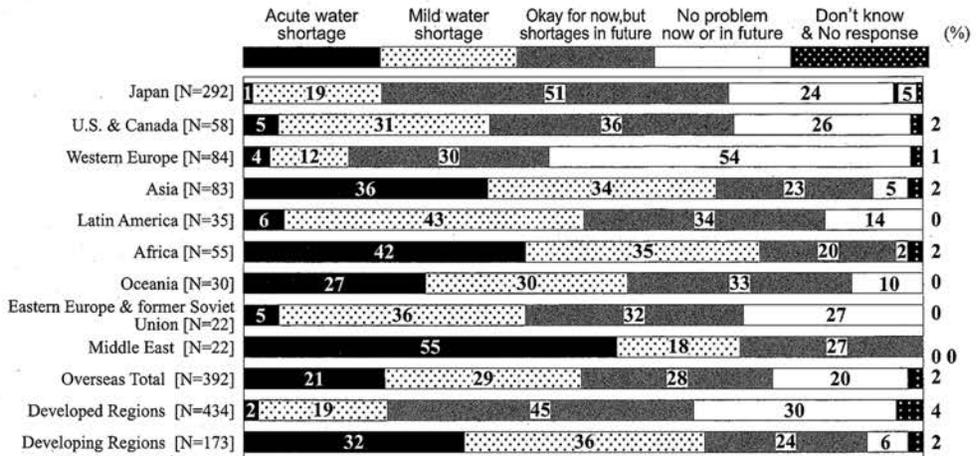


Figure 19. Quantity of water used in daily life.

### Comments from Respondents

Respondents expressed the following opinions concerning the quality and quantity of water resources.

- Drinking water/food problems have caused death every minute in developing countries and water-borne diseases and teeth decay. (Kenya, 2001)
- It is very essential to act first on local damage. Many people are killed or made ill in developing countries by dirty water, lack of sanitation, fumes from cooking with food, and dust and lead in city air. Soils impoverished by erosion or poisoned with badly used chemicals make it harder for developing countries to feed their people. Solving these environmental problems brings the biggest gains to health and wealth. (India, 1999)
- Vietnam, our country, has many environmental problems. I am especially interested in water pollution. The polluted water affects our health, soil, agriculture—so our country is implementing a lot of work to solve these problems. (Vietnam, 1998)
- Watershed management is gaining ground in India. Local governments and communities are actively involved in supporting the watershed development programmes and schemes launched by central and state governments. If watershed related policies and programmes are to be made sustainable, local rural youths ought to be equipped with necessary knowl-

edge and skills for carrying out the various activities. Introduction of a vocational course on watershed management in institutions located in rural areas is essentially needed to foster water harvesting and conservation practices and to effectively deal with much larger issues, such as sustainable development of natural resources and improvement of the livelihoods of local people. (India, 2001)

- Egypt is reformulating in 2000 her environmental strategy of 1995. Factories disposing waste water into the Nile have now stopped doing that and Nile water is cleaner, but its biodiversity is still suffering. (Egypt, 2000)
- 1. Domestic garbage should be disposed of properly because most of the developed countries are not adopting the hygienic regulations.
  2. Sewage water should be disposed of in a proper way, keeping the sea and the oceans clean.
  3. Shipping pollution should be strictly restricted. (Saudi Arabia, 1998)
- I had the occasion to investigate the problem of water pollution last year and was astonished to find the pollution of water due to nitric acid and nitrous compounds originating with agriculture was a fairly severe problem around the world. I think that problems with water quantity and quality, which also involve foodstuffs, will become an even bigger problem in future. In some ways, I think it may become apparent more rapidly than global warming. (Japan, 2001)
- In my country, there is a great need to educate people against ground and underground water pollution. (Kenya, 1999)
- Environment conservation at a global level is a reality of life and should not be taken as casual or as a fashion. In nature, 'soil' is the only commodity to change 'seed' into a fiber or plant and that soil is being degraded by injudicious use of water and chemicals, thereby inviting the problems of waterlogging and salinization. Soil erosion is causing desertification. In order to check these problems, individuals should step forward to work for the future, keeping the past as his experiences. (India, 1997)

### 3.6 Endocrine Disruptors

“What is your awareness of endocrine disruptors?”

Endocrine disruptors, the so-called environmental hormones, are external substances that enter into the bodies of humans and wildlife and have adverse effects on the workings of the naturally secreted hormones in their bodies. Figure 20 shows what extent the respondents were aware of the dangers of endocrine disruptors. In the overseas total, the most selected option was “We should establish a stricter testing system for all existing and future synthetic chemicals and publish the test results.” This was followed by “It will be too late if we wait for scientific proof, so we should act prudently with regard to all synthetic chemicals.” and “Since scientific revelations are ongoing, we should avoid using the chemicals currently thought to pose hazards.” The responses selecting “...I don’t sense any hazard” were extremely low, at less than 10% in each region, indicating that many respondents are aware of the problems associated with endocrine disruptors. (2001 Questionnaire)

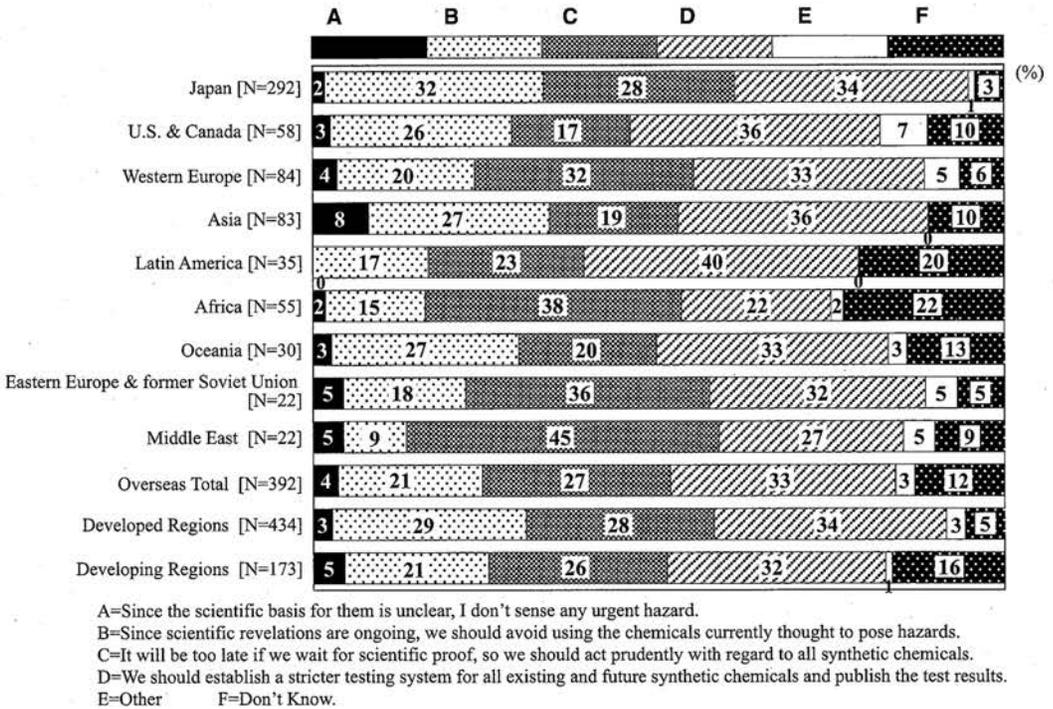


Figure 20. Awareness of endocrine disruptor problems.

## Comments from Respondents

The following comments were offered concerning endocrine disruptors.

- It is becoming more and more apparent that global environmental problems are of a broad scope. In particular, I would like to see more attention paid to environmental hormones (substances that have been internally altered), which have largely gone unnoticed and may be linked to the very existence of human beings. (Japan, 1999)
- I feel a lack of opportunity to comment on problems other than global warming and energy. My own current concern is about chemicals (estrogen-mimics) in the environment affecting the reproductive processes of all animals (including humans) everywhere. (United Kingdom, 1998)
- My specialty is endocrine disruptors. It is difficult to find the funding to prove damage, and then because it is difficult to trace exposures to chemicals whose effects may be delayed for years or decades, and it is not ethically possible to directly experiment on human subjects, it is virtually impossible to arrive at absolutely conclusive proof of damage. Yet, our large increases in the incidence rates of certain developmental, immune, and reproductive problems, cancers and other diseases in human and wildlife indicate that we and the animal food sources we depend on are threatened. And the proofs implicating certain families of chemicals in this threat are very suggestive. We should vastly lower the proof necessary to restrict chemicals, and make it necessary to prove safety before chemicals and bio-engineered products can be marketed. (United States, 2001)
- Recently, dioxins and environmental hormones have become the center of attention, and I feel that there has been a sudden rise in people's awareness of environmental problems. In a few years, around the millennium, Japan will probably shift to a social system that exists in harmony with the environment. Who will take the first step in that direction? I think that will be a time of competition for policy makers. (Japan, 1998)
- The problem of environmental hormones has cropped up, and attention has been drawn to the implications for the ecology and wild animals since "Silent Spring," but human regard for the natural earth, which is the well-spring of the human race in both material and spiritual senses is exceedingly weak. (Japan, 1999)

### 3.7 Future Predictions (After 30 Years)

“As we stand at the beginning of the 21st century, what do you predict will happen to the global environment after 30 years? Indicate the perception in your country.”

As many as 68% predicted that the overall global environment would be worse (a combination of the “Moderately worse,” “Much worse,” and “So bad as to imperil human survival” responses) 30 years hence, indicating that many hold a pessimistic view about the future of the global environment. We discerned from the responses to the other options that it would difficult to expect much improvement, but within them a relatively large number of respondents gave the “Waste treatment problems...,” “Urban/transport problems,” and “Air pollution” options optimistic predictions. (2001 Questionnaire)

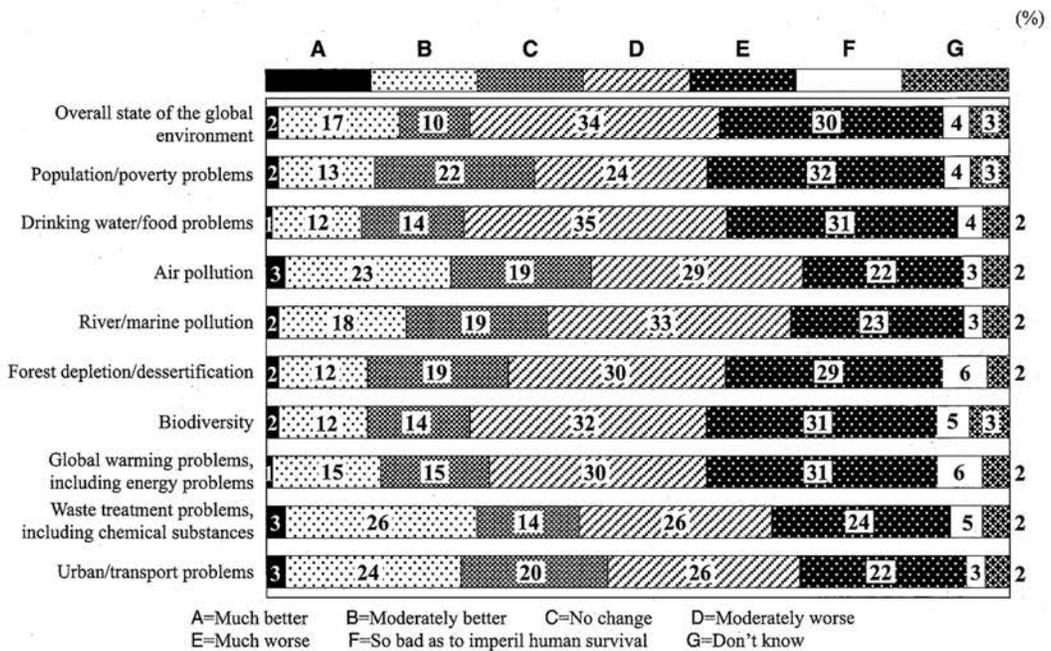


Figure 21. Prediction of the global environment after 30 years.

#### Comments from Respondents

When asked to comment on their predictions for the overall state of the global environment, respondents gave a variety of opinions. A sampling follows.

- The current deterioration of the global environment has created a crisis that will affect the continuance of our modern industrial society. The transition from a highly exploitative society into one that lives in better balance with the available resources is likely to be a

painful one, and it is conceivable that such a transition may in fact lead to the extinction of our species. But it seems more likely that some pockets of humanity will survive and again repopulate the earth, though perhaps taking a rather different approach to the available resources. It is important to keep in mind the historical perspective over the long sweep of civilizations in the past 4,000 years or so. (Switzerland, 2000)

- The timber firms are cutting trees with little interest in replanting. Mining firms are clearing forests and vegetation on the earth's surface without any serious plans for reforestation, or restoration of top soil. Dangerous gases from garbage and waste from industries are emitted daily without any scientific monitoring of the quantity. The developing and least developed countries will face serious environmental problems both in the atmosphere and on land in future. (Ghana, 1997)
- Natural hazards and risks will increase. People (poor people) from underdeveloped countries will suffer much more. (Colombia, 2001)
- Lack of awareness of environmental issues and challenges by the top decision-makers and politicians of developing countries and absence of sense of responsibility for the future generations by leaders is the main reason for me to be pessimistic with regard to the future environmental condition. (Ethiopia, 2001)
- The economic growth of developed countries is stable to some extent, but from now on developing countries will come to the forefront with respect to environmental problems. Without violating the rights of developing countries to economic growth, we must recommend increased efforts to promote environmental preservation. (Japan, 1997)
- To make the global environment "better" in 30 years time, diligence, research, a system, development and consensus are required. However, when one looks at the Bush administration's response, one becomes painfully aware of the difficulty facing anyone trying to change the thinking "it's okay if it's good for me or it's okay if it's good for the development of my country." In the 21st century, I think we will need to seek prosperity from a new perspective that is enlightened, kind and warm under a strong leader. (Japan, 2001)
- I am optimistic about future environmental conditions. I have full faith in the creativity and tremendous potential of Indian people and the world community, which I am sure will find out desired ways and means to make this planet earth more beautiful, loving and livable. (India, 2001)

## A 10-Year Perspective

Akio Morishima

Chairman, Institute for Global Environmental Strategies; Professor Emeritus, Nagoya University

The "*Questionnaire on Environmental Problems and the Survival of Humankind*" was devised by the Asahi Glass Foundation in association with the Earth Summit (United Nations Conference on Environment and Development) in Rio de Janeiro in 1992. That was the year the Foundation established the Blue Planet Prize to recognize researchers with notable achievements in environmental research and persons or institutions that have distinguished themselves in the promotion of environmental preservation. Since then, the Foundation has continued to administer the questionnaire annually, marking the survey's 10th anniversary last year. Now, in anticipation of the World Summit on Sustainable Development (Rio+10) in Johannesburg in 2002, we would like to review the questionnaire results of these past 10 years.

The questionnaire's purpose is to solicit the opinions and gauge the awareness of environmental experts around the world about present and future global environmental problems. The questionnaire is mailed out to people specializing in environmental issues in research institutions, governments, private-sector companies and NGOs. Each year approximately 3,000 environmental experts are selected from the Foundation's list, which includes experts from the United Nations Environment Program (UNEP) database. Approximately half of this number is selected from Japan and half from other countries. The response rate is usually close to 20%. Although the respondents are not necessarily the same each year, we believe that some may certainly be repeat respondents. Please note that, except for responses from Japan, Western Europe, United States & Canada and Asia (outside Japan), the absolute number of responses is small, on the order of 20 to 30 responses, for several regions (the Middle East, Eastern Europe and the former Soviet Union, for example). Furthermore, the responses are segmented into the various options set out in the questionnaire. As a result, many of the results may not be statistically significant. Nonetheless, at the very least, trends can be discerned in the compiled results at the regional or category level. Moreover, it is possible to understand how the perceptions of environmental experts have changed by examining trends in the 10 years of data.

Some questions are kept the same on the questionnaire each year to provide a fixed point of reference. The first involves the Environmental Doomsday Clock. The second addresses the Agenda 21 action plan. The idea of a doomsday clock, which asks respondents to use the hands of a clock to express their perception of the state of crisis regarding human survival, was first used to assess the risk of nuclear annihilation and is not new. However, the proposal to include a doomsday clock in the questionnaire attracted considerable interest in 1992 in the wake of the Rio Summit when humankind's survival was called into question as a result of environmental destruction. In each of the following years too, the media reported the position of the clock hands when presenting the survey results. It is safe to say that, as a fixed point of reference, the changes in the position of the clock hands have become the questionnaire's hall-

mark.

On the clock, times ranging between 3:01 and 6:00 indicate a "slightly concerned" response, while the 6:01 to 9:00 quadrant corresponds to "fairly concerned" and the 9:01 to 12:00 quadrant to "extremely concerned." Although there is, of course, no objective standard to quantify peoples' feelings of unease, the clock hands do seem to advance and retreat according to such factors as the course of negotiations over the framework convention on climate change or other environmentally related proceedings in the international community. In 1992, the year of the Rio Summit, the clock hands were set to 7:49 in the "fairly concerned" quadrant. Each year the hands advanced until they peaked at 9:13 in the "extremely concerned" quadrant in 1996. The following year, in 1997, the hands retreated to 9:04, which can be attributed to heightened expectations for the 3rd Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP3) in Kyoto. In subsequent years, the hands have crept forward (except in 2000), reaching 9:08 again in 2001, which may be ascribed to the sense of crisis produced by the breakdown of negotiations at COP6 at The Hague. This interpretation of clock hand movement is no more than speculation, but it is important to note that the world's experts are "extremely concerned" about the state of the crisis. In addition, the sense of crisis among Japanese experts, which lagged slightly behind that of foreign experts, has come to approach the world average over time. We think that this reflects deepened concern about global warming.

A question involving the Agenda 21 action plan, the second topic used as a fixed point of reference on the questionnaire, has been asked every year since 1993, the year after Agenda 21 was adopted at the Rio Summit. The question asks the experts about the progress, or lack of it, made toward the Agenda 21 items in their own country and the reasons for the results quoted. Although the responses can be expected to differ according to the respondent's country and its level of economic development, the overall results for the past nine years reveal that progress continues to be made in environmental education, activities by local governments and citizen's groups, and environmental measures by industry. However, there has been no progress in transforming the fundamental structures of industry and society. We have not seen any headway with items such as population and poverty problems or lifestyle alteration (paradigm shifts in the community). The Rio+10 Summit is expected to provide a progress report on the Agenda 21 action plan, particularly with regard to the problem of poverty. The results of this questionnaire suggest, nevertheless, that we may not be able to expect very much on this score.

The questionnaire also asks questions about a diverse range of contemporary problems. Examples include questions about global warming (the Kyoto Protocol), alternative energy sources, environmental taxes, lifestyles and water problems. The responses to these questions may differ according to the country or region, but are informative in many cases.

I have had the pleasure of participating in the formulation of this questionnaire since 1994. The Asahi Glass Foundation staff design the questions and compile the results by region, gender and occupational category (government, corporate or NGO), and then it is my task to provide advice throughout the stages of analysis. I stand in great admiration of the efforts of the staff that have steadfastly produced this questionnaire for 10 years. I believe that

researchers and the media alike hold this questionnaire, which has been conducted on the basis of a consistent policy, in the highest regard. I think there are also numerous government decision-makers that use the results as a reference in policy making. I hope that this research continues to be supported well into the future.

## Closing

Since it was first conducted in 1992, the Asahi Glass Foundation's "*Questionnaire on Environmental Problems and the Survival of Humankind*" has attracted interest in Japan and overseas from the general media as well as newspapers and magazines specializing in environmental issues. The survey, as a compilation of the opinions of international specialists concerned with global environmental problems, has also been mentioned in the annual white paper on the environment published by Japan's Ministry of the Environment.

The survey's question about humanity in crisis, which uses a Doomsday Clock, has been prominently featured in print and television media. The press also cites its findings on issues concerning individuals, such as lifestyle changes, and issues concerning nations, such as the Agenda 21 action plan. This suggests that the questionnaire has come to be regarded as a reliable index of opinion on environmental issues.

We owe a large debt of gratitude to the many respondents, who have taken the time to fill out the questionnaire, and to Prof. Akio Morishima, who supervised the questionnaire's formulation and administration over much of the last decade, for his part in bringing it to prominence. We would also like to thank the members of the media who have helped the "Questionnaire on Environmental Problems and the Survival of Humankind" to generate worldwide interest in environmental issues and their resolution.

The Asahi Glass Foundation is determined to continue conducting this survey to focus attention on the opinions of people working to solve environmental problems around the world.