

**II. "Questionnaire on Environmental  
Problems and the Survival of Humankind"  
15-Year Summary**



# Questionnaire on Environmental Problems and the Survival of Humankind 15-Year Summary



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## Introduction

The realization of sustainable development has never been more necessary than today for humankind to continue to prosper and develop. It requires us to resolve global environmental problems, in particular global warming, and calls for a collective effort on the part of human beings to gather their deepest wisdom. Since the Earth Summit, which was held in Rio de Janeiro in 1992, the Asahi Glass Foundation has conducted an annual survey—"Questionnaire on Environmental Problems and the Survival of Humankind"—comprised of questions to experts worldwide knowledgeable on the subject. The questionnaire solicits their knowledge and diverse opinions and publishes the results in a report. The questions cover topics such as "the Environmental Doomsday Clock" and "Progress Toward Agenda 21," both of which have been surveyed continuously to date, as well as those that focus on specific issues for a given year.

Following is a compilation of the results obtained from our survey. It shows a shift in "awareness of the crisis in the survival of humankind" over the past 15 years, drawn from the questionnaire items "the Environmental Doomsday Clock" and "Progress Toward Agenda 21." It also illustrates a change in awareness toward "lifestyle alterations" and questions on "global environmental problems requiring prioritization," first asked in 2005. These show a new approach to addressing overall global environmental problems.

The Asahi Glass Foundation  
September 2007

## Overview of the Survey Conducted

The survey questionnaire is aimed at experts around the world who are knowledgeable and are involved in environmental issues, including government officials and those in nongovernmental organizations, universities and research institutions, and within industry. Figure 1 shows the breakdown of respondents according to affiliation, which includes, in descending numbers, government offices, universities and research institutions, corporations, and nongovernmental organizations. Questionnaires are sent out to approximately 4,000 respondents every April and then collected by June. After the responses are compiled, compared and analyzed, the survey results are announced in September. As shown in Table 1, the questionnaire has been sent out to 199 countries (including Japan) since 1992 with responses returned from 156 countries.

**Table 1:** Number of Countries Surveyed/Number of Countries that Responded

	Number of countries surveyed	Number of countries responded
Asia	25	23
Africa	53	43
Oceania	15	9
Western Europe	24	19
Eastern Europe & former Soviet Union	27	20
Middle East	16	11
U.S.A. & Canada	2	2
Central America	24	16
South America	12	12
Total	198	155

**Figure 1:** Affiliation of Respondents

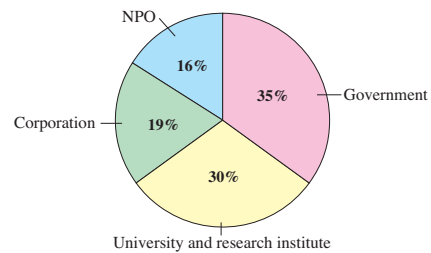


Table 2 shows a shift in the number of questionnaire respondents over the past 15 years. Overall, it shows there are more respondents from Asia, Western Europe, the United States and Canada, and Africa, than from the Middle East, Eastern Europe and the former Soviet Union, and Oceania. The number of respondents over the 15 years totals approximately 10,000 people, with an average response rate of 19%. Of the respondents, approximately 80% are men and approximately 15% are women.

**Table 2:** Shift in the Number of Respondents Over 15 Years

	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Japan	877	61	189	248	282	306	279	293	311	292	303	315	324	312	307
U.S.A. & Canada	49	22	23	25	51	38	62	59	93	58	55	76	68	65	49
Western Europe	39	38	62	79	77	65	60	79	88	84	79	98	90	91	70
Asia (outside Japan)	30	43	92	62	63	63	54	60	81	83	68	88	139	92	90
Latin America	11	37	36	48	35	41	33	27	26	35	27	37	40	32	23
Africa	9*	40	53	62	32	52	51	39	53	55	41	55	44	39	37
Oceania	9	22	22	22	21	18	21	13	17	30	24	39	32	26	22
Eastern Europe & former Soviet Union	13	13	17	14	16	15	18	14	19	22	29	66	57	42	36
Middle East	9*	6	4	16	11	14	15	12	11	22	12	30	9	10	21
No response	17	0	6	0	1	1	2	1	3	3	1	2	0	0	0
Overseas Total	168	221	315	328	307	307	316	304	391	392	336	491	479	397	348
Total	1054	282	504	576	589	613	595	597	702	684	639	806	803	709	655
Response Rate	28.3%	11.0%	20.8%	21.7%	18.4%	19.1%	17.9%	18.5%	20.5%	17.3%	16.0%	18.0%	22.2%	19.5%	16.4%

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

	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Male	995	195	390	444	470	470	475	486	552	540	530	658	680	592	549
Female	44	61	110	119	108	132	109	95	126	119	89	119	107	91	94
No response	15	26	4	13	11	11	11	16	24	25	20	29	16	26	12
Total	1054	282	504	576	589	613	595	597	702	684	639	806	803	709	655

Note: Regions in the report are categorized as follows:

Developed regions: The United States and Canada, Western Europe, Japan, Asian Four (South Korea, Hong Kong, Taiwan, and Singapore)

Developing regions: Rest of Asia, Latin America, Africa

Others: Oceania, Eastern Europe and the former Soviet Union, the Middle East

# Questionnaire Summary

## 1. Awareness of the Crisis of Survival of Humankind

### 1.1 The Environmental Doomsday Clock (Surveyed from 1992–2006)

#### 1.1.1 The Environmental Doomsday Clock

What is the perception of the severity of the threat to survival of humankind caused by environmental degradation? In order to examine the respondents' awareness of this crisis, this questionnaire has, since its inception, asked people each year to indicate the severity of the crisis using the needle of a clock.

Figures 2 and 3 show the average time on the environmental doomsday clock for each year. In the first questionnaire, conducted in 1992, the average time for all respondents was 7:49, which fell into the “fairly concerned” quadrant. Since then, the needle on the clock advanced each year until 1996, when the average time first fell into the “extremely concerned” quadrant at 9:13, an advancement of one hour and thirty minutes in four years. Since then, the time has hovered in the early phases of the “extremely concerned” quadrant, with the exception of the year 2000. In 2006, the needle advanced to 9:17, representing the highest sense of crisis since the survey began. When comparing responses from Japan and abroad, overseas respondents reported more advanced times on the doomsday clock until 1997; however, the differences have leveled since 1998 with respondents reporting similar times, with the exception of 2002 and 2003 when the average time for Japan moved further than the time from overseas respondents. Throughout the 15 years of the questionnaire, the needle on the environmental doomsday clock has never fallen into the “barely concerned” or “slightly concerned” quadrants.

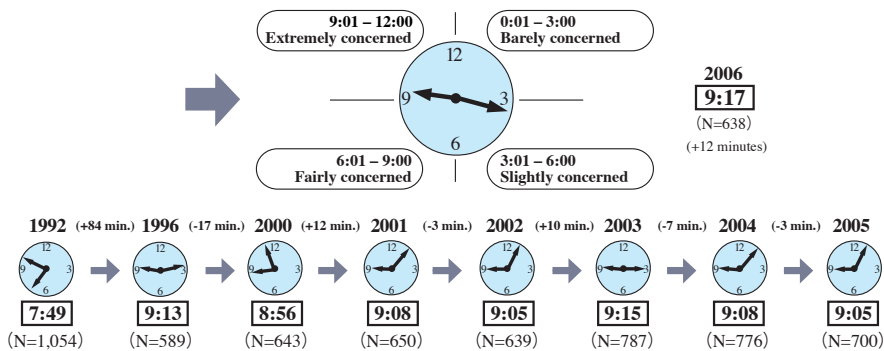


Figure 2: Changes in the Average Time on the Environmental Doomsday Clock (1992–2006)

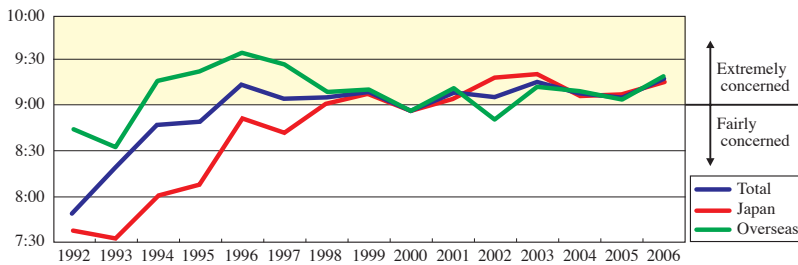


Figure 3: Changes for Japan and Overseas (1992–2006)

### 1.1.2 Main Environmental Issues of Concern in Determining the Doomsday Clock Time (Surveyed from 2004 – 2006)

Table 3 indicates the results of the question, asked for three years from 2004 to 2006, on the main environmental condition of concern when determining the time on the environmental doomsday clock. Throughout the years, “global warming” was the most frequently cited environmental issue of concern, followed by “deforestation, desertification, and loss of biodiversity.” As the foremost environmental issue, respondents from developed regions and other regions cited “global warming,” whereas respondents from developing regions cited “deforestation, desertification, loss of biodiversity.”

**Table 3:** Main Environmental Issues of Concern in Determining the Doomsday Clock Time

	2004				2005				2006				(%)
	Developed Regions [N=547]	Developing Regions [158]	Others [98]	Total [803]	Developed Regions [498]	Developing Regions [133]	Others [78]	Total [709]	Developed Regions [463]	Developing Regions [113]	Others [79]	Total [655]	
General environmental problems	27	21	28	26	27	22	29	26	27	23	24	26	
Global warming	63	33	45	55	69	44	41	61	73	49	54	66	
Air pollution, water contamination, river/ocean pollution	29	44	40	33	27	48	37	32	26	49	47	32	
Water shortage, food problems	37	37	36	37	43	35	33	40	40	47	35	41	
Deforestation, desertification, loss of biodiversity	47	65	45	50	40	60	40	44	52	51	46	51	
Peoples' lifestyles, waste related problems	33	28	41	33	25	29	33	26	23	28	30	25	
Environmental problems and economic/trade related activities	16	15	19	16	16	12	31	17	19	14	18	18	
Population, poverty, status of women	23	39	23	26	23	34	33	26	20	35	23	23	
Other	8	2	8	7	8	2	8	6	7	3	3	6	
No response	1	4	3	2	2	3	3	2	1	0	0	1	

Note: Figures enclosed by a double circle represent the answer with the highest number of replies.

A single circle is used for the answer with the second highest number of replies.

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 less than three items, causing the aggregate total to be less than 300%.



By comparison, global warming was not cited as the paramount issue in the questionnaire results for the survey conducted in the year 2000. Table 4 shows the results of the question on the “causes of environmental degradation” from the year 2000. Respondents from most of the regions selected “explosive population growth” and “economic development without consideration for the environment” as main environmental issues and “global warming” was not included in the three most often cited responses. This result suggests that it was after 2001 that the sense of crisis surrounding global warming heightened among respondents.

**Table 4:** Causes of Global Environmental Degradation (2000)

		Japan [N=311]	U.S.A. & Canada [93]	Western Europe [88]	Asia [81]	Latin America [26]	Africa [53]	Oceania [17]	Eastern Europe & former Soviet Union [19]	Middle East [11]	Overseas Total [391]	(%)
Human Activities	Explosive population growth	43	59	49	57	42	34	77	37	55	51	
	Economic development that disregards the environment	46	47	51	54	54	66	71	68	55	55	
	Nuclear threats	11	3	5	11	4	4	12	0	18	6	
	Epidemics	0	7	1	3	0	9	12	11	0	3	
	Water and food shortages	18	23	18	21	27	26	6	5	9	20	
Atmospheric	Global warming	41	20	36	28	12	30	18	32	18	27	
	Abnormal climate	5	10	5	12	12	6	12	11	0	9	
	Air pollution and acid rain	4	3	1	21	4	6	6	5	9	7	
	Destruction of the ozone layer	8	3	2	19	4	11	12	16	0	8	
Ecological	Destruction of forests and desertification	24	13	19	52	50	55	29	32	46	33	
	Reduction of genetic diversity	9	5	10	16	8	11	6	11	9	10	
	Pollution of oceans and rivers	9	12	6	19	27	9	29	5	18	13	

Note: Figures enclosed by a double circle represent the answer with the highest number of replies.

A single circle is used for the answer with the second highest number of replies.

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 less than two items, causing the aggregate total to be less than 200%.

## 1.2 Agenda 21 (Surveyed from 1993 – 2006)

“Agenda 21” was adopted in 1992 at the Earth Summit held in Rio de Janeiro as the “action plan for the environment and development.” “Agenda 21,” which often serves as a barometer when considering environmental issues, was incorporated as a survey item from 1993, one year after it was announced. The item has since been surveyed continuously each year, examining how respondents evaluate the progress or lack thereof in their countries in the past year. Since 1998, the questions have been focused on 10 categories of Agenda 21.

Figure 4 shows the survey results for the year 2006. The categories in which more than 50% of respondents indicated progress had been made (combined total of “significant progress” and “some progress”) included “promotion of environmental education,” “activities by local governments and citizens’ groups,” “environmental measures by industry,” “scientific and technological contributions,” and “formation of recycling systems.” On the other hand, in the five categories of “conservation of forest resources,” “greenhouse gas prevention measures,” “conservation of biodiversity,” “population and poverty problems,” and “lifestyle alteration,” the percentage of respondents who indicated there had been no progress (combined total of “almost no progress” and “no progress”) surpassed those who stated progress had been made.

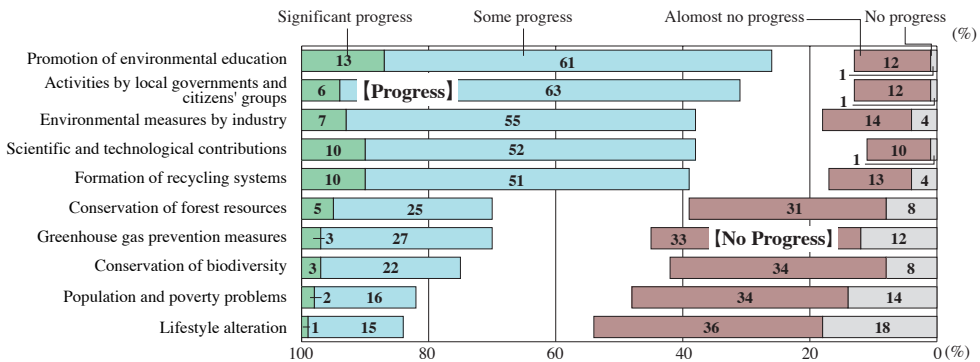


Figure 4: Progress Toward Agenda 21 (2006)

Figure 5 and Table 5 show the state of progress from 1993 to 2006. Throughout the 14 years, the five top-ranked items have consistently remained at the top, with respondents reporting the highest degree of progress in the “promotion of environmental education” each time, followed by “activities by local governments and citizens’ groups.” In contrast, the five bottom-ranked items have also consistently remained at the bottom throughout the 14 years. With the exception of 1993, “lifestyle alteration” has consistently been seen as having made the least progress, followed by “population and poverty problems.”

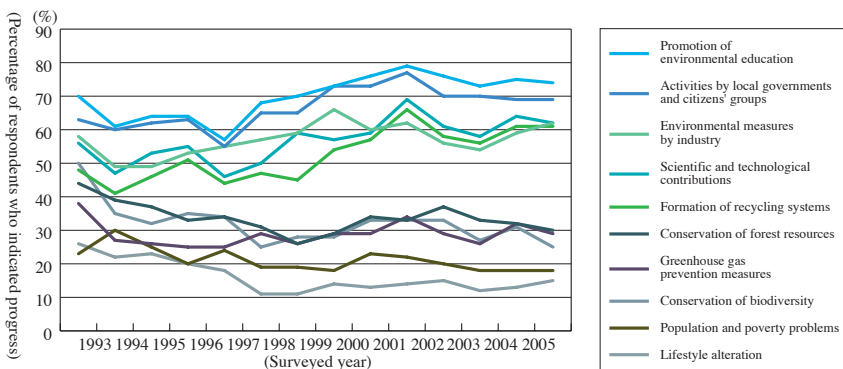


Figure 5: The State of Progress in the 10 Categories of Agenda 21 Action Plan (1993-2006)

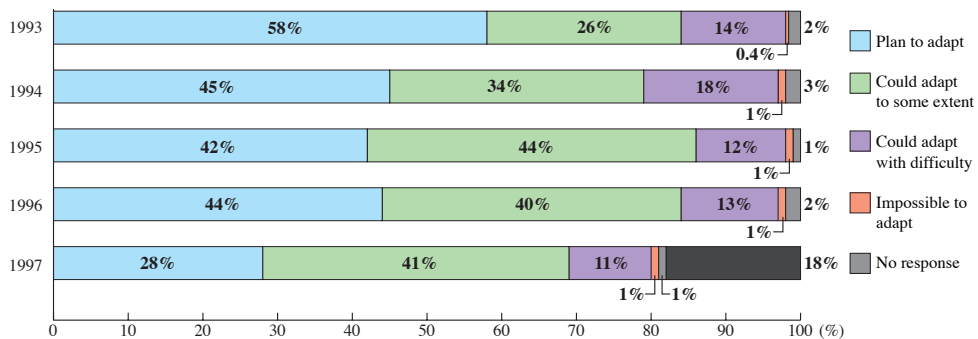
**Table 5:** The State of Progress in the 10 Categories of Agenda 21 Action Plan (1993-2006)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	(%)
Promotion of environmental education	70	61	64	64	57	68	70	73	76	79	76	73	75	74	
Activities by local governments and citizens' groups	63	60	62	63	55	65	65	73	73	77	70	70	69	69	
Environmental measures by industry	58	49	49	53	55	57	59	66	60	62	56	54	59	62	
Scientific and technological contributions	56	47	53	55	46	50	59	57	59	69	61	58	64	62	
Formation of recycling systems	48	41	46	51	44	47	45	54	57	66	58	56	61	61	
Conservation of forest resources	44	39	37	33	34	31	26	29	34	33	37	33	32	30	
Greenhouse gas prevention measures	38	27	26	25	25	29	26	29	29	34	29	26	32	29	
Conservation of biodiversity	50	35	32	35	34	25	28	28	33	33	33	27	31	25	
Population and poverty problems	23	30	25	20	24	19	19	18	23	22	20	18	18	18	
Lifestyle alteration	26	22	23	20	18	11	11	14	13	14	15	12	13	15	

### 1.3 Lifestyle Alteration (Surveyed from 1992 – 2003)

A review of lifestyle by each individual person and realizing a way of life that leaves as small an environmental footprint as possible are indispensable to building a sustainable and recycling-oriented society. This questionnaire probed respondents about their perceptions of lifestyle alteration continuously from 1992 to 2003.

Figure 6 shows the results of the question on the respondent's own lifestyle: "whether or not it would be possible to alter your current lifestyle based on disposable and excessive consumption and sustain that altered way of living." Respondents selecting "it would be possible to try but with difficulty" and "it would not be possible" remained around 10% throughout the five years. On the other hand, the combined total of "it would be possible" and "it would be possible to some degree" hovered around 80%, indicating that an overwhelming majority considered lifestyle alteration possible. However, 14 years of combined results of the Agenda 21 answers showed the greatest criticism to be toward the lack of progress in "lifestyle alteration." Given such conflicting results, it can be surmised that although respondents considered lifestyle alteration possible, implementation in real life was highly problematic.



**Figure 6:** Whether or Not it Would be Possible to Alter Lifestyle (1993-1997)

Table 6 shows the results of the question regarding whether or not it would be possible for them to curb their consumption in six areas including energy and food, and if so, how much of a reduction was possible from current levels. Responses stating, “reduction is possible” exceeded those stating, “reduction is not possible” in every category among respondents from developed regions, indicating awareness of excessive consumption. In contrast, the difference was small among respondents from developing regions. In particular, more respondents from Africa stated, “reduction is not possible” in food and water consumption, revealing the existence of a significant issue in the fundamentals of life — food and water.

**Table 6:** Whether or Not it Would be Possible to Curb Consumption (2002)

	Electric power	Gas/fuel oil	Gasoline	Water for daily life (drinking water included)	Food	Paper	Average value
Japan	+86	+79	+75	+74	+75	+88	+80
U.S.A. & Canada	+78	+82	+71	+69	+40	+64	+67
Western Europe	+71	+62	+62	+61	+49	+66	+62
Asia	+24	+38	+41	+22	+13	+49	+31
Latin America	+22	+19	+48	+67	-37	+59	+30
Africa	+7	+20	+20	-17	-51	+15	-1
Oceania	+88	+71	+79	+71	+58	+92	+77
Eastern Europe & former Soviet Union	+83	+55	+45	+69	+28	+41	+54
Middle East	+42	+42	+42	+42	+50	+75	+49
Overseas Total	+51	+51	+52	+46	+20	+55	+46
Developed Regions	+83	+76	+72	+71	+65	+81	+75
Developing Regions	+18	+29	+36	+19	-16	+41	+21

Note: consumption reduction indicator = “Can reduce” response rate (%) - “Can’t reduce” response rate (%)

### *Comments from Respondents*

#### **The following is a sampling of comments from respondents about lifestyle alteration.**

The great challenge we face is not technical or financial, but that of reforming the structure of our societies to value the environment and people, and stop sacrificing them both to greed and vested interests. Unfortunately, Australia has a long way to go. We have won the struggle to change public attitudes so that they think and say that the environment is important, but now we face the much harder task of getting individuals, companies and governments to act as though it is. We say the right words, but the lifestyles and methods have not changed to match them.

*David Wanless, The Wilderness Society, AUSTRALIA 189 (2002)*

Ecological wisdom does not consist in understanding how to live in accord with nature; it consists in understanding how to get humans to agree on how to live in accord with nature. (Ken Wilber) Tell me how “global sustainable development” for the developed world can mean anything other than to learn to shrink sustainably whilst enabling the rest of the world to grow sustainably?

*Nadia McLaren, Union of International Associations, BELGIUM 246 (2002)*

The importance of nature and environmental conservation is taught through compulsory education. So must the adults be taught to behave and value the importance of the earth as an accepted part of society. To this end, I think that more space and time in media, such as newspapers, TV and magazines, should be used for education. It would be ideal if society would develop so that environmental topics are always topics in the community, households and schools.

*Minoru Yoneda, Earther Co., Ltd., Japan 016J (2002)*

Although general awareness of environmental problems continues to rise in Japan, the link between scientific understanding and concrete action is still lacking. There is a need to reform systems, promote environmental education and get citizens and NGOs to participate in securing understanding and action that is at least on par with the concern and concrete efforts undertaken with respect to economic and social problems. As far as business is concerned, environmental management, environmental audits, environmental accounting, and environmental reporting are some means by which environmental considerations can be reflected in economic decision making. Even if we do not go so far as to suddenly impose carbon taxes, there is a need to make greater use of environmental conservation methods linked to economic logic.

*Koya Ishino, Automobile Environmental Countermeasures Section, Ministry of the Environment, Japan 015J (2002)*

As Gandhi had said, “Earth has enough for everybody’s needs, but not for anybody’s greed.” Therefore, limiting human needs by changing our lifestyles is the only real way to preserve our deteriorating environment. All other effort is peripheral to this central remedy.

*Rajesh Bhat, Ahmedabad Study Action Group, INDIA 402 (2004)*

The root of all environmental problems lies in the question of whether or not people would be able to accept a decline in their standards of living.

*Nobuyuki Sekino, Senior Officer, Recycling-Oriented Society Promotion Division,  
Gifu Prefectural Government, Japan 085J (2005)*

## 2. Environmental Problems and Their Priority

In 2005, the questionnaire asked respondents about “Global Environmental Problems and Their Priority” and “Local Environmental Problems and Their Priority” in the region where the respondents resided.

As Table 7 indicates, the global environmental problems requiring prioritization were (in descending order) “climate change including global warming,” “energy problems,” “poverty,” and “population problems.”

**Table 7:** Global Environmental Problems to be Undertaken Globally and Their Priority (2005)

Region	1st priority	%	2nd priority	%	3rd priority	%
Total	Global warming	66	Energy	31	Poverty	26
Overseas Total	Global warming	53	Poverty	32	Ecosystem	30
Japan	Global warming	83	Energy	40	Population	28
Region	1st priority	%	2nd priority	%	3rd priority	%
Japan	Global warming	83	Energy	40	Population	28
U.S.A. & Canada	Global warming	62	Population	37	Ocean & fresh water	31
					Energy	
Western Europe	Global warming	69	Ocean & fresh water	37	Poverty	34
Rest of Asia	Global warming	42	Ecosystem	34	Ocean & fresh water	29
Latin America	Global warming	50	Poverty	44	Desertification	34
Africa	Global warming	51	Poverty	44	Waste management	26
Oceania	Global warming	62	Ecosystem	42	Ocean & fresh water	35
Middle East	Global warming	80	Population	40	Poverty	40
Asian Four	Energy	53	Acid rain & air pollution	40	Ozone layer	40
Eastern Europe & former Soviet Union	Poverty	43	Global warming	41	Energy	29
					Ecosystem	

On the other hand, as Table 8 shows, there were marked differences between developed and developing regions in local environmental problems requiring prioritization. “Waste materials/recycling” and “urbanization/transportation problems” were cited as issues of high priority in parts of the world other than developing regions, revealing a focus on the various difficulties that accompany urbanization and development as a local problem. In contrast, “poverty” and “deforestation” were most frequently cited in developing regions.

**Table 8:** Environmental Problems Critical in the Region or Local Area Where You Reside (2005)

Region	1st priority	%	2nd priority	%	3rd priority	%
Japan	Waste management	78	Urbanization	49	Energy	35
Asian Four	Waste management	80	Urbanization	70	Acid rain & air pollution	40
Eastern Europe & former Soviet Union	Waste management	62	Urbanization	43	Ecosystem	36
Middle East	Waste management	60	Urbanization	40	Poverty	30
					Desertification	
					Ecosystem	
Western Europe	Urbanization	63	Waste management	42	Ecosystem	41
U.S.A. & Canada	Urbanization	57	Global warming	34	Energy	31
Africa	Poverty	51	Waste management	31	Desertification	28
Rest of Asia	Poverty	32	Waste management	31	Population	29
Latin America	Deforestation	50	Poverty	44	Ecosystem	31
Oceania	Global warming	50	Ecosystem	46	Ocean & fresh water	31

Given these survey results, the following is a summary of results for the questions on “global warming,” “energy problems,” “population and food” from global priorities and “waste materials” “poverty” and “urbanization/transportation” from local priority areas.

## 2.1 Environmental Problems and Their Priority—Global Environmental Problems

### 2.1.1 Global Warming (Surveyed from 1995–2006)

This survey has posited questions about “global warming” each year since 1996, the year after the first Conference of Parties (COP1) was held in Berlin. The questionnaire solicited opinions of respondents on the issue from various perspectives, including the COP and the Kyoto Protocol.

Figure 7 shows the results of the question on global warming. More than 70% of respondents from both Japan and overseas selected “global warming is a serious and urgent environmental problem requiring an immediate response.”

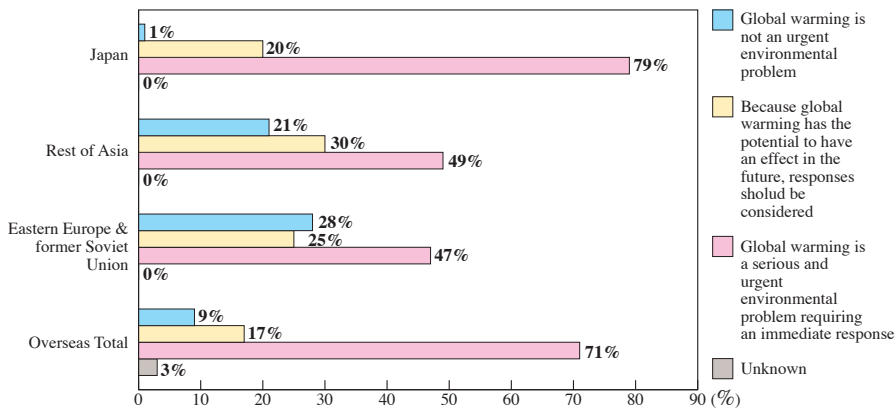


Figure 7: Opinions about the Seriousness of Global Warming (2006)

The Kyoto Protocol took effect in February 2005. Figure 8 shows how respondents evaluated the implementation of the Kyoto Protocol. While an overwhelming majority of Japanese respondents indicated they evaluated the implementation of the treaty “favorably,” there was a small discrepancy, of 11 percentage points, between overseas respondents who evaluated the implementation of the treaty “favorably” and those who evaluated it “unfavorably.” Regional differences existed in the responses, with more respondents from Oceania, Eastern Europe and former Soviet Union, and the United States and Canada, evaluating the implementation “unfavorably” than those who evaluated it “favorably.”

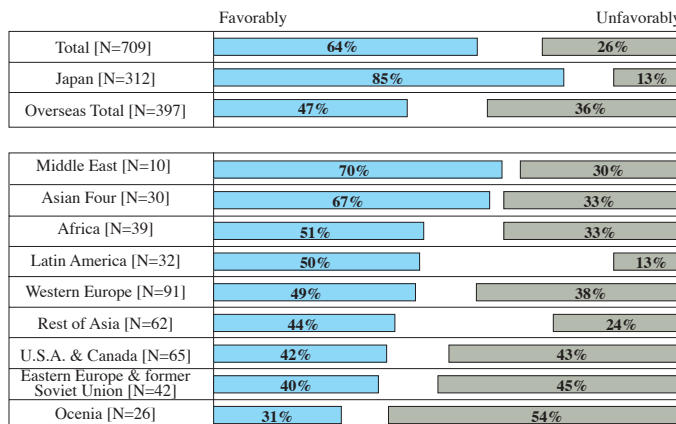
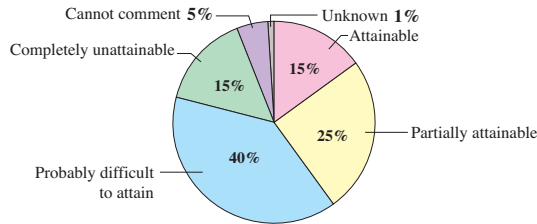


Figure 8: Evaluation of Implementation of Kyoto Protocol (2005)



With the Kyoto Protocol going into effect, signatory countries are obligated to curb their emission of greenhouse gases. However, the road to meeting the objectives of the Protocol is an extremely difficult one; it is projected that the objectives will not be met with the implementation of emissions reduction measures and the expansion of absorption quantities, and that it will be necessary to activate the Kyoto Mechanisms. In 1996, the questionnaire asked the question, “Will developed countries be able to stabilize carbon emissions at 1990 levels by the year 2000?” As shown in Figure 9, a total of 55% of respondents selected either “Probably difficult to attain” or “Completely unattainable” then, indicating scepticism about meeting the objectives even in 1996.



**Figure 9:** Developed Countries Achieving Carbon Emissions Target by 2000 (1996)

Table 9 shows the results of the question about an international framework to reduce greenhouse gases after 2013, when the first commitment period of the Kyoto Protocol comes to an end. Responses were divided between “there should be an extension of the fundamental measures of the Kyoto Protocol,” and “a substantial revision of the Kyoto Protocol is needed to address its numerous problems,” with many respondents from developed regions and other regions selecting the former, and many from developing regions selecting the latter.

**Table 9:** International Framework Beyond the Kyoto Protocol (2005)

	Developed Regions				Developing Regions			Others			Over-seas Total	Developed Regions	Developing Regions	Others	Total	(%)
	Japan	U.S.A. & Canada	Western Europe	Asian Four	Rest of Asia	Latin America	Africa	Oceania	Eastern Europe & former Soviet Union	Middle East						
	[N=312]	[65]	[91]	[30]	[62]	[32]	[39]	[26]	[42]	[10]	[397]	[498]	[133]	[78]	[709]	
There should be an extension of the fundamental measures established in the Kyoto Protocol.	(43)	(29)	(41)	(43)	23	(34)	(23)	23	(40)	(50)	(33)	(41)	(26)	(36)	(37)	
A substantial revision of the Kyoto Protocol is needed to address its numerous problems.	(37)	(38)	(33)	(30)	(29)	(38)	(44)	(31)	(24)	(20)	(33)	(36)	(35)	(26)	(35)	
A new framework that is completely separate from the Kyoto Protocol should be developed.	12	23	14	17	6	6	10	(27)	12	0	14	14	8	15	13	
No new framework should be established until a technological solution is developed.	3	3	9	10	(29)	13	18	4	14	10	13	4	22	10	8	
Other	4	3	3	0	0	6	3	4	0	0	2	3	2	1	3	
Unknown	2	3	0	0	13	3	3	12	10	20	5	2	8	12	4	

Notes: Figures enclosed by a double circle represent the answer with the highest number of replies. A single circle is used for the answer with the second highest number of replies.

### *Comments from Respondents*

#### **The following is a sampling of comments from respondents about global warming.**

The US position regarding the Kyoto Protocol is a cause for concern and one hopes that allies of the US will be able to persuade her to adopt a more positive, constructive and cooperative approach for the good of humanity. The need for closer cooperation between developed and developing countries and increased tangible financial and technical support to developing countries to build capacity and tackle the difficult problems we will all face is also a pressing concern.

*Milton O. Houghton, Caribbean Regional Fisheries Mechanism, BELIZE 268 (2003)*

Forests in the tropics are carbon sinks. Developing countries should be assisted to establish more by developed countries to combat global warming threatening humankind's existence, now and in future.

*Mr. Michael E. Sizomu-Kagolo, National Forestry Authority, UGANDA 300 (2005)*

Climate change is a disease that has hit mother EARTH—like HIV-AIDS has humans. We don't know the disease is worsening, we refuse to believe it, we have yet to find a cure, we don't agree to a united change, and we rely on hope for our common good. Entropy prevails unless we fight our very own environmental problems, which are ours domestically.

*Mr. Peuianina Learai, Ministry Natural Resources, Env-Meteorology, SAMOA 222 (2006)*

I constantly feel that the recent aberrations in weather and natural disasters are manifestations of the effects of global warming. But I think that such recognition and a sense of crisis is lacking in society, which I question. It begs for more aggressive publicity efforts and educational activities on the part of public institutions, educational institutions, and the media.

*Tutomu Mizutani, Japan 195J (2006)*

What efforts have the national and local government and citizens made in order to meet the greenhouse gas reduction goals since Japan ratified the Kyoto Protocol? There were many people who welcomed the ratification of the protocol, but it seems extremely difficult to meet the objectives. I surmise many people don't even recognize what needs to be done in order to meet those goals. We don't even hear about specific recommendations to meet the goals from environmental experts who advocated loudly the ratification of the protocol. What does each individual citizen need to do in order to meet the goals, and perhaps, we need to make some sacrifices and be ready to accept some inconveniences. Little time is left. Relying on emissions trading is not a true answer.

*Hiroshi Nasu, Japan 089J (2006)*

### 2.1.2 Energy Problems (Surveyed in 1998, 2000, 2003, and 2006)

Energy problems have an inextricable relationship to environmental problems, such as the intensifying of global warming and the depletion of fossil fuels. Thus, the development and utilization of alternate sources of energy to replace fossil fuels is essential to environmental protection.

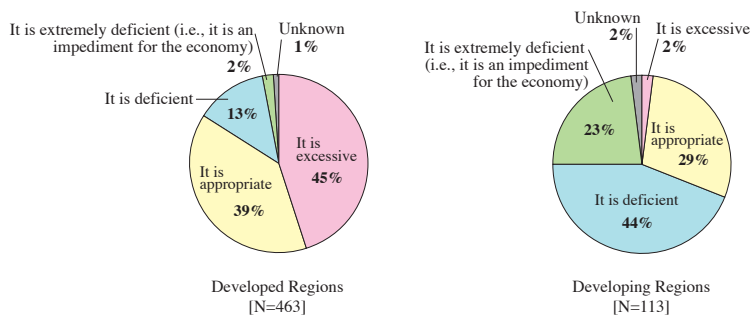
Table 10 shows the results of the question on the most effective source of alternate energy to replace fossil fuels in the country where the respondent resides. Results were tied among respondents from developed regions, with 33% selecting “solar power” and 32% selecting “nuclear energy.” In contrast, whereas 42% of respondents from developing regions selected “solar power,” only 7% of respondents selected “nuclear power,” which placed fourth after “hydraulic power” and “biomass,” reflecting recognition that nuclear power is not a very likely source of energy to replace fossil fuels there.

**Table 10:** Effective Energy Source to Replace Fossil Fuels (2006)

	Developed Regions				Developing Regions			Others			Over-seas Total	Developed Regions	Developing Regions	Others	Total	
	Japan [N=307]	U.S.A. & Canada [49]	Western Europe [70]	Asian Four [37]	Rest of Asia [53]	Latin America [23]	Africa [37]	Oceania [22]	Eastern Europe & former Soviet Union [36]	Middle East [21]						
Nuclear energy	34	22	27	30	9	0	8	18	39	10	20	32	7	25	27	(%)
Wind energy	6	8	9	8	8	9	5	14	3	14	8	6	7	9	7	
Solar power	32	33	27	51	42	35	46	45	22	48	37	33	42	35	35	
Biomass	13	8	11	0	15	13	14	0	14	10	10	11	14	9	12	
Hydraulic power	7	8	11	5	17	22	14	5	3	0	10	7	17	3	8	
Other	1	14	10	5	6	9	3	14	6	0	8	4	5	6	5	
Unknown	7	6	4	0	4	13	11	5	14	19	7	6	8	13	7	

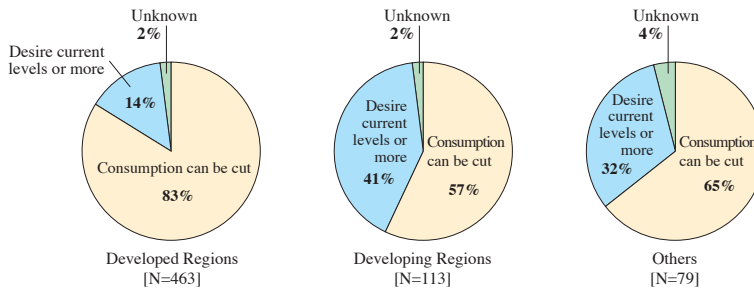
Notes: Figures enclosed by a double circle represent the answer with the highest number of replies.  
A single circle is used for the answer with the second highest number of replies.

Figure 10 shows the results of the question on the supply of energy in respondents’ home countries. Forty five percent of respondents from developed regions stated the supply was “Excessive,” which, combined with those who stated the supply was “appropriate,” totaled 84%. In contrast, 44% of respondents from developing countries stated their energy supply was “deficient,” which, combined with an additional 23% who stated supply was “extremely deficient,” totaled two-thirds of the responses, revealing a contrast between the two regions.



**Figure 10:** Energy Supply (2006)

Figure 11 shows the results of what changes the respondents are prepared to make in their personal energy consumption. Responses showed a strong determination to cut personal energy consumption levels. Those stating they were prepared to reduce their personal energy consumption “to 20% less” or “to less than half” of their current levels combined totaled more than 50% of respondents from all regions, including developed, developing, and all others. Respondents stating they would like an amount of energy comparable to current levels or more, by selecting “I would like a comparable amount,” “I would like to have two times more energy,” or “I would like to have 10 times more energy,” remained at 14% for developed regions. In contrast, the percentage of respondents from developing regions was nearly three times higher, at 41%.



**Figure 11:** Appetites for Personal Energy Consumption (2006)

### *Comments from Respondents*

**The following is a sampling of comments from respondents about energy.**

For the purposes of conserving the global environment and securing sources of energy, I believe the world needs to proceed at the earliest opportunity to replace fossil fuels with renewable sources of energy. Immediate utilization of existing human knowledge and sense of responsibility is necessary to prevent the simultaneous occurrence of an environmental disaster and energy shortage, a situation wherein human suffering cannot be overcome.

*M. Kochi Prefecture, Japan 061J (2004)*

Forms of energy that are gentler to the environment, such as solar power, wind power, temperature difference, and biomass should be more aggressively developed at an international level. We also need to rethink how we educate our children in that direction. The same can be said for food.

*Minoru Yoneda, Executive Advisory Engineer, Earther Co., Ltd., Japan 024J (2005)*

### 2.1.3 Population and Food Problems (Population Problems Surveyed from 1993 – 1995, Food Problems Surveyed in 2005)

The world's population, which was at 2.5 billion only half a century ago, more than doubled to 5.2 billion in 37 years, and has now reached 6.5 billion. If growth were to continue at this rate, the world's population would reach 9 billion by the year 2050, and significant effects to the global environment could be expected.

Table 11 shows the results of the questions on the effects of population growth. Respondents from all regions except Japan selected "escalation of poverty" and "destruction of the natural environment" as the most concerning consequences of population growth. In contrast, respondents from Japan selected "food shortage" as the most concerning effect, followed by "escalation of poverty." On top of "escalation of poverty" and "destruction of the natural environment," "proliferation of slums in urban areas" was cited comparatively frequently by respondents from developing regions.

**Table 11: Consequences of Greatest Concern (2006)**

	Japan	U.S.A. & Canada	Western Europe	Asian Four	Rest of Asia	Latin America	Africa	Oceania	Eastern Europe & former Soviet Union	Middle East	Overseas Total	Total	Developed Regions	Developing Regions	Others
Escalation of poverty	59	52	50	59	65	77	71	68	68	67	62	60	57	69	70
Proliferation of slums in urban areas	12	9	25	0	35	36	15	9	18	28	21	16	13	29	18
Food shortage	63	20	13	5	10	9	24	23	18	17	15	39	48	14	20
Destruction of the natural environment	38	57	65	27	53	41	44	41	25	28	48	43	43	48	32
Air and water contamination	7	13	7	5	10	0	6	18	14	17	10	8	7	7	17
Water shortage	12	20	17	0	4	9	0	14	18	17	11	11	13	4	17
Spreading of epidemics	3	9	3	0	2	0	6	5	4	0	4	3	3	3	3
Decline in economic power	3	4	3	0	4	18	18	5	18	11	8	6	3	11	12
Other	2	7	3	0	6	0	3	0	4	0	3	3	2	4	2
Unknown	1	2	5	5	2	5	3	0	7	0	3	2	2	3	3

Note: Figures enclosed by a double circle represent the answer with the highest number of replies.

A single circle is used for the answer with the second highest number of replies.

Please note that the totals for the various regions should add up to 200% since respondents were asked to select 2 items. However, some respondents marked less than two items, causing the aggregate total to be less than 200%.

Figure 12 compares responses from developed and developing regions on the progress of measures to counter population growth. Responses showed opposite results. Four times as many respondents from developed regions stated no progress as those who reported progress, whereas twice as many respondents from developing regions indicated progress had been made as those who reported no progress.

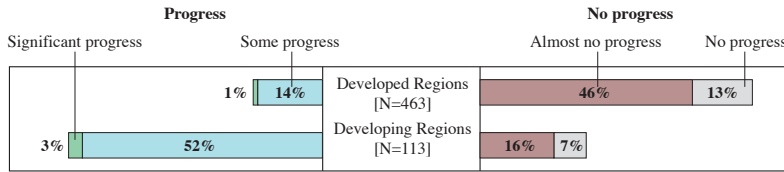


Figure 12: Progress of Measures to Counter to Population Growth

Population problems lead directly to food supply problems, and in order to solve food problems, approaches that incorporate both political strategies and scientific technology are essential.

Figures 13 and 14 show results of the questions examining political strategies and approaches based on scientific technology, with regard to the solution of food shortage problems. As for opinions about political strategies, a comparable percentage of respondents chose “the problem lies in over-consumption in developed countries, and a goal should be established to curb consumption,” and “priority should be placed on population control,” at 35% and 34% respectively.

Opinions on approaches based on scientific technology were divided. Nonetheless, the most frequently cited response was “an international organization should be established to maximize effective land utilization, and developed countries should provide funds and technology,” followed by “biotechnology should be aggressively pursued to increase food production.”

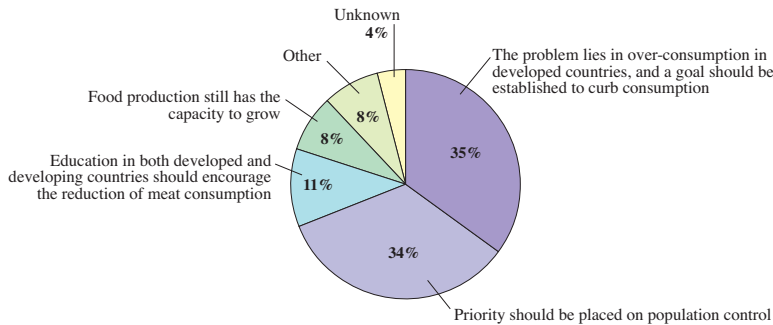


Figure 13: Political Strategies to Solve Food Problems (2005)

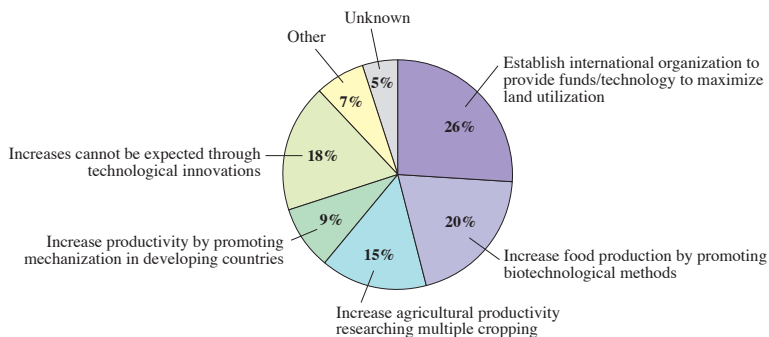


Figure 14: Technological Developments to Solve Food Problems (2005)

### *Comments from Respondents*

#### **The following is a sampling of comments from respondents about population problems.**

The population pressure caused by the increasing populations in many countries (e.g., in Africa and in the Middle East, but also in other countries) is a fundamental problem that causes most of the existing global environmental problems. By taking wise and humane measures to stabilize the size of the population, at the national level, many environmental problems may be solved, and for sure will be easier to tackle. However, a huge problem that I see with any attempt to stabilize the population of countries with increasing populations, is that it may require a drastically new approach and commitment to this issue by the Christian, Muslim and Jewish religions (and perhaps other religions too). Success to stabilize the national population could also address the opposite problem that has recently started to arise in some countries, which also could have serious environmental implications, namely, the decline of the national population. The solution in both cases is a change in life style. It goes without saying that such a change is extremely difficult to achieve, and in any case very slow.

*Dr. Michael Graber, Retiree, United Nations, ISRAEL 080 (2005)*

As the world's population exceeds 6.5 billion and disparities emerge at a global scale, some say there would have to be two more planet Earths, for a total of three, if all human beings are to equally have the same living standards as those prevailing in developed countries. Keeping this in mind, how we answer the question before all of us —“Can we be responsible for the state of the Earth in 100 years?”— is the essence of today's environmental problems.

*Hisashi Nitta, Japan 040J (2006)*

The developed countries should help developing countries to control their population growth and provide them with enough funds to alleviate poverty, otherwise a severe crisis and unrest could happen that would destroy everything on this planet including the ordinary and normal life of the rich people. Unfortunately, the leaders of the rich people of the world are blind to this threat.

*Mr. Hamid, Managing Director, Management, Taravat Bahar Toos NGO, IRAN 265 (2005)*

## 2.2 Environmental Problems and Their Priority—Local Environmental Problems

### 2.2.1 Waste Materials/Recycling (Surveyed in 2006)

When the 2005 questionnaire asked about local environmental problems requiring prioritization, respondents from Japan, Asia, Africa, Eastern Europe and the former Soviet Union, and the Middle East selected “waste management and recycling” as the issue of highest priority.

Figure 15 shows the level of recycling activities in the countries surveyed. Respondents from most regions indicated that recycling has begun. Respondents from Western Europe had the highest rate of responses for “recycling efforts are active,” at 34%, followed by Japan, at 21%. When combining the number of respondents who stated “recycling efforts are active,” and “some efforts to recycle materials are in progress,” the total was close to 80% in Western Europe and Japan. Africa offered a different view, with 0% stating “recycling efforts are active,” while “some efforts to recycle materials are in progress” also a mere 24%.

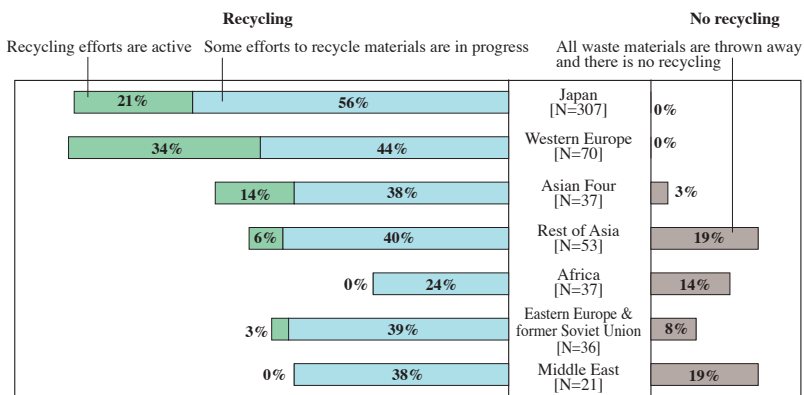


Figure 15: Levels of Recycling Activities (2006)

Figure 16 shows the results of the questions on the progress of measures to counter waste problems. In most regions, there were more respondents who reported progress than those who stated progress had not been made. An exception came from respondents in Africa, where respondents who stated progress had not been made far exceeded those who reported progress.

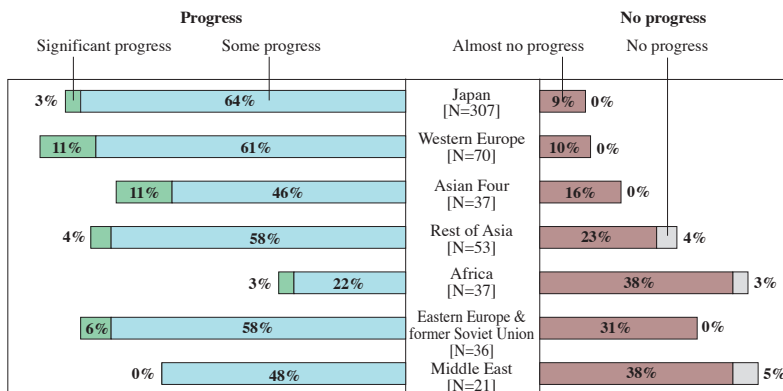


Figure 16: Progress of Measures to Counter Waste Problems (2006)



### Comments from Respondents

#### The following is a sampling of comments from respondents about waste materials/recycling.

In most African countries, the use of nonbiodegradable materials and pesticides without proper handling of the toxic substances is very high. There is a pressing need to let the societies be aware of the outcomes of these activities.

*Mr. Leonard Jones Chauka, Institute of Marine Sciences, TANZANIA 043 (2006)*

Oceania suffers from the global environmental impacts of industrialized countries, which pollute the air and the sea with their chemicals. Climate change has caused massive sea-level rises, which has eroded small island countries, and when the tide is low it is so low that the coral and water life is exposed to the sun.

*Ms. Maria Kerslake, Dean, Faculty of Arts, Academic-Higher Institute, SAMOA 307 (2006)*

#### 2.2.2 Poverty (Surveyed in 2006)

Respondents from Africa and the “Rest of Asia” cited poverty as the most pressing local environmental problem requiring prioritization. It was also cited as the second highest priority among respondents from Latin America, making poverty a local environmental problem across the developing region. Figure 17 shows the results of the question on the effects of poverty. Respondents from the Rest of Asia and Latin America cited “poor living environments” at 49% and 45% respectively as the most detrimental effect of poverty, whereas the most frequently cited effect in Africa was “famine and malnutrition,” at 41%, indicating a greater severity of the problem there.

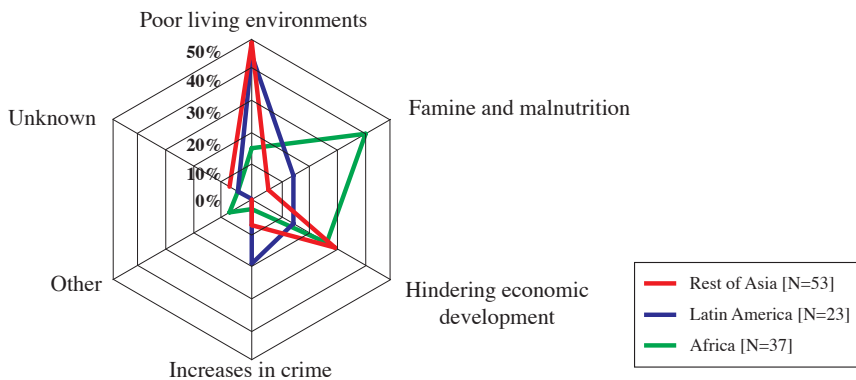
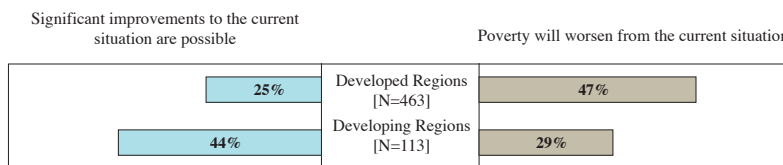


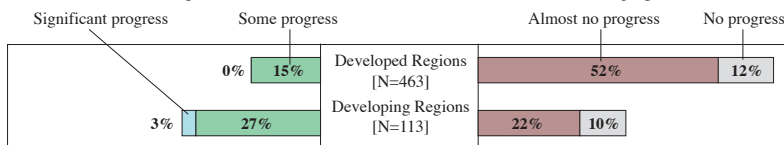
Figure 17: Detrimental Outcome of Poverty (2006)

The problem of poverty was also surveyed from a global perspective with respondents across all regions. The following are the results comparing the responses from developed and developing regions. Figure 18 shows the results of the question on the future prospects of poverty. In developed regions, 47% of respondents stated “poverty will worsen from the current situation,” surpassing the 25% who selected “significant improvements to the current situation are possible.” In contrast, 44% of respondents from developing regions selected “significant improvements to the current situation are possible,” which exceeded the 29% who stated “poverty will worsen from the current situation, revealing a more optimistic perspective prevailing in developing regions than in developed regions.



**Figure 18:** Future Prospects of Poverty (2006)

Further, Figure 19 shows the results of the questions about the measures to counter poverty. Four times as many respondents from developed regions indicated there had been no progress compared to those who reported progress. In contrast, responses were tied in developing regions, with respondents reporting progress and the lack thereof each at 30%. Responses from the regions were divided as on the question of future prospects of poverty shown in Figure 18.



**Figure 19:** Progress of Measures to Counter Poverty (2006)

**Comments from Respondents**

**The following is a sampling of comments from respondents about poverty.**

Without imaginative and effective programs to alleviate poverty, we cannot move forward in solving environmental problems in developing countries.

*David P. S. Wasawo, University of Nairobi, KENYA 222 (2003)*

In many African countries, forests provide basic needs including building materials, wood energy and employment avenues for households/community income. Political leaders should understand that “poverty is the cause and effect of deforestation”; hence, environmental education/awareness programs should be accompanied by opportunities for income generating activities so that people stop looking at forests as the only viable source of livelihoods.

*M. E. Sizomu-Kagolo, Forestry Department, UGANDA 409 (2003)*

Environmental problems give rise to poverty. In Africa, particularly Ghana, there are many people living in poverty. They have not been empowered to confront their poor status and they continue to degrade the environment. This is because the environment is their source of life; it is the wealth of the poor. The rich also degrade the environment but they are rich and can find other sources for their livelihood. Empower the poor to confront their status and to use environmental resources sustainably.

*Mr. Redeemer Kowu, Director, Environmental Protection Agency, GHANA 236 (2006)*

Although global environmental problems are an issue faced by all of mankind, I believe it will be difficult to resolve them unless the poverty in developing countries, particularly in Africa, is first alleviated. The problems of urban waste management and transportation, characteristic of developed countries, can be resolved by developed countries themselves where financial resources abound and environmental awareness is high. On the other hand, although the problems within impoverished countries often spring from internal political causes, countries around the world need to aggressively support nation-building efforts to allow these countries to sustain themselves economically. I believe it is important to build the basis upon which developing countries will be able to pay heed to global environmental problems.

*M., United Nations Environment Programme International Environmental Technology Centre, Japan 021J (2006)*

### 2.2.3 Urbanization/Transportation Problems (Surveyed in 2006)

Respondents from Western Europe, and the United States and Canada, cited “urbanization/transportation problems” as the most pressing local environmental problem requiring prioritization. The problem was also cited as having the second highest priority by respondents from Japan, Asian Four, Eastern Europe and the former Soviet Union, and the Middle East.

Table 12 shows the results of the question on transportation problems requiring prioritization. Respondents from all regions most frequently cited “congestion and other transportation obstacles created by excessive concentration of automobiles” as the issue requiring prioritization, followed by “pollution caused by transit vehicles,” cited by respondents from the Asian Four, Western Europe, and Japan. Whereas respondents from the United States and Canada, the Middle East, Eastern Europe and the former Soviet Union often identified “insufficient/poor quality of public transportation and distribution infrastructure,” as the issue requiring prioritization.

**Table 12:** Transportation Problems Requiring Prioritization (2006)

	Japan	U.S.A. & Canada	Western Europe	Asian Four	Eastern Europe & former Soviet Union	Middle East	(%)
Congestion and other obstacles to transportation created by an excessive concentration of automobiles	75	57	66	59	53	43	
Insufficient/poor quality of public transportation and distribution infrastructure, e.g. networks of roads and railways	33	78	46	24	64	71	
Decline in convenience and comfort of public transportation due to overcrowded conditions	17	10	10	11	8	14	
Environmental destruction, e.g. air and noise pollution caused by transit vehicles	46	31	57	78	36	24	
Frequent incidence of accidents and disasters caused by excessive numbers of transportation vehicles	13	2	6	14	25	14	
No transportation problems in particular	1	0	0	0	0	0	
Other	6	10	4	0	6	5	
Unknown	1	2	4	0	0	5	

Note: Figures enclosed by a double circle represent the answer with the highest number of replies.

A single circle is used for the answer with the second highest number of replies.

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 less than three items, causing the aggregate total to be less than 200%.

Table 13 shows the results of the question on the most pressing urban environmental problems requiring prioritization. Each region has selected a different problem, revealing large differences with respect to the issues the regions face.

**Table 13:** Most Pressing Urban Environmental Problems (2006)

	Japan	U.S.A. & Canada	Western Europe	Asian Four	Eastern Europe & former Soviet Union	Middle East	(%)
Increase in waste	64	35	29	11	42	38	
Air and noise pollution	26	22	40	65	44	24	
Declining convenience and comfort caused by congestion and overcrowded conditions	32	10	19	38	17	29	
Disappearance of greenery and natural environments	51	24	31	32	47	24	
Urban sprawl, and the deterioration of urban environments with the spread of metropolitan areas into suburbs	15	80	51	49	31	24	
Maintenance of water supply, sewerage, and sanitation systems	3	16	14	0	17	29	
Other	2	4	3	0	3	0	
Unknown	1	0	4	0	0	14	

## **In Closing**

The Asahi Glass Foundation first conducted its survey “Questionnaire on Environmental Problems and the Survival of Humankind” in 1992 and has continued to do so for the last fifteen years. It has attracted interest in Japan and overseas from the media, as well as newspapers and magazines specializing in environmental issues.

The survey’s questions on humanity in crisis, highlighted by its “Doomsday Clock,” have been prominently featured in the media. The press also cites the survey’s findings on issues concerning individuals, such as life-style changes, and issues concerning nations, such as the Agenda 21 action plan. It appears the questionnaire has come to be regarded as a reliable index of opinions on environmental topics.

The survey would not have been possible without the cooperation of the many respondents who have taken the time to fill out the questionnaire, and to them we would like to express our sincere gratitude. Our gratitude also goes to Professor Akio Morishima, who supervised the questionnaire’s formulation and administration for over 15 years and for his part in bringing it notability. In addition, we would like to thank the members of the media who have helped the questionnaire 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 those working to solve environmental problems around the world.

