

**III. “Questionnaire on Environmental
Problems and the Survival of Humankind”
A 21-Year Summary**



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Introduction

Twenty years ago in June 1992, the United Nations Conference on Environmental and Development was held in Rio de Janeiro and the “Rio Declaration on Environment and Development” was adopted giving people a significant sense of hope for the future of the global environment. Unfortunately, however, after 20 years, despite the participation of 98 heads of states and cabinet members, the Rio+20 closed its doors without notable achievement. We fear that these conditions will lead to a sense of resignation and diminished interest among the wider public towards solving environmental problems.

Since 1992, The Asahi Glass Foundation has conducted an annual survey—“Questionnaire on Environmental Problems and the Survival of Humankind”—with experts around the world. To date, we have surveyed nearly 15,000 respondents in 175 countries worldwide on their opinions about the problems faced by the global environment. 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 towards Agenda 21,” which have been surveyed continuously since the inception of the survey as well as those that focus on specific environmental problems for a given year such as global warming, energy, population, water, poverty, food, waste, biodiversity, environmental education, and lifestyle. Recently, we introduced a new set of categories of key environmental conditions, in the hope of achieving a clearer depiction of experts’ concerns about the environment along with a more comprehensive analysis of “The Environmental Doomsday Clock” results.

Following is an excerpt from the results obtained from our survey. It shows a shift in “awareness of the crisis in the survival of humankind” over the past 21 years, drawn from the questionnaire items “The Environmental Doomsday Clock” and “Progress towards Agenda 21.” It also illustrates why environmental problems show no signs of moving towards a solution 20 years after the Rio Summit, specifically, respondents’ views on impediments to addressing environmental problems as well as their opinions on nuclear power after the Fukushima Nuclear Accident in March, 2011.

We are grateful to be able to finally publish this summary report on our 21-year survey. We are also truly obliged for the consistent support we have received from environmental experts around the world. Without that support, the valuable portrayals of the Earth’s environment through the eyes of experts could not have been put together.

1. Overview of the Survey Conducted

The survey questionnaire is distributed to environmental experts around the world including members of government organizations, NGOs, academic and research institutions, corporations and mass media. It is published in Japanese, English, Chinese, Korean, and Spanish, and sent out to approximately 7,000 respondents every April and collected by June. After the responses are compiled, compared, and analyzed, the survey results are announced in September. The report is available in Japanese, English, Chinese, and Spanish.

As shown in Table 1.1, the questionnaire has been sent out to 204 countries (including Japan) since 1992 with responses returned from 175 countries. (As for countries responding, please refer to the Attachment-1 on P315.)

Table 1.1 Number of Countries Surveyed /Responding (1992-2012)

Regions		Number of Countries Surveyed	Number of Countries Responding
Overseas	Asia	25	23
	Africa	53	50
	Oceania	15	8
	Western Europe	25	22
	Eastern Europe & former Soviet Union	28	24
	Middle East	16	12
	USA & Canada	2	2
	Central America	27	21
	South America	12	12
	Overseas Total	203	174
Japan	1	1	
Total	204	175	

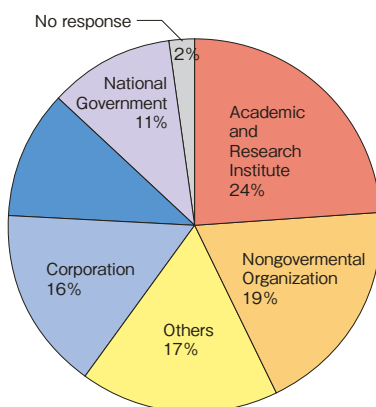


Figure 1.1 Affiliation of Respondents

Table 1.2 shows a shift in the number of questionnaire respondents over the past 21 years. Overall, it shows that there are more respondents from Asia, Western Europe, the United States and Canada than from Africa, the Middle East, Eastern Europe and the former Soviet Union, and Oceania. Specifically, respondents from Asia (except Japan) prominently increased from 2007 due to the increase in Chinese respondents. The number of respondents over the 21 years totals approximately 14,800 people, with an average response rate of 18.3%. Of the respondents, approximately 80% are men and 20% are women.

Table 1.2 Shift in the Number of Respondents Over 21 Years (1992-2012)

	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 (except 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
Region of respondents unknown	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%

	11th	12th	13th	14th	15th	16th	17th	18th	19th	20th	21st
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Japan	303	315	324	312	307	322	314	324	292	468	357
United States & Canada	55	76	68	65	49	47	32	42	28	129	105
Western Europe	79	98	90	91	70	70	67	60	55	80	119
Asia (except Japan)	68	88	139	92	90	140	187	192	212	223	387
Latin America	27	37	40	32	23	36	50	46	27	26	42
Africa	41	55	44	39	37	35	24	28	20	24	33
Oceania	24	39	32	26	22	18	14	23	13	17	17
Eastern Europe & former Soviet Union	29	66	57	42	36	30	28	35	21	27	26
Middle East	12	30	9	10	21	17	15	7	6	5	9
Region of respondents unknown	1	2	0	0	0	0	1	0	1	1	6
Overseas Total	336	491	479	397	348	393	418	433	383	532	739
Total	639	806	803	709	655	715	732	757	675	1000	1096
Response Rate	16.0%	18.0%	22.2%	19.5%	16.4%	18.3%	16.8%	17.8%	15.7%	14%	15.4%

* Figure includes the total for Africa and Middle East

	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th	19th	20th	21st
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Male	995	195	390	444	470	470	475	486	552	540	530	658	680	592	549	571	565	618	538	770	823
Female	44	61	110	119	108	132	109	95	126	119	89	119	107	91	94	100	115	124	122	216	262
No response	15	26	4	13	11	11	11	16	24	25	20	29	16	26	12	44	52	15	15	14	11
Total	1054	282	504	576	589	613	595	597	702	684	639	806	803	709	655	715	732	757	675	1000	1096

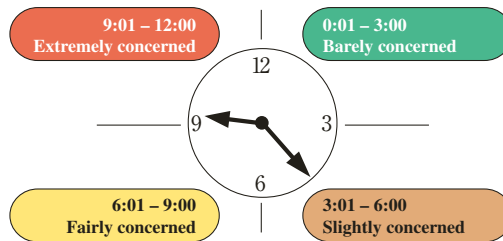
This questionnaire contains a section inviting respondents to comment freely about the realities of environmental problems around the world along with their opinions on the subject, as well as strategies and ideas to improve the global environment. In the 14 years from 1998 to 2012, we received 1,748 comments from Japan and 1,936 from abroad for a total of 3,684 comments. We included a number of these comments in the final report each year starting in 1998 through 2010, and in 2011, began publishing all comments.

Note: In this report, "Asia" is all of Asia except Japan. Further, Hong Kong, South Korea, Taiwan, and Singapore are classified as the "Asia Four." Other Asian countries are classified as the "Rest of Asia." The United States and Canada, Western Europe, Japan, Asian Four are classified as "A region," while the remainder of the Rest of Asia, Latin America, and Africa are classified as "B region," and Oceania, Eastern Europe and the former Soviet Union, Middle East are classified as "C region."

2. Questionnaire Summary

2.1 Awareness of the Crisis Facing Human Survival

“The Environmental Doomsday Clock” is a survey item indicating the sense of crisis respondents feel about the continued survival of humankind given the deterioration of the environment. The degree of crisis is expressed by selecting a time on the clock, a device that the Foundation created independently.



2.1.1 The Environmental Doomsday Clock

The Average Global Time over the 21 Years of the Survey

The following diagram shows the average global time over the 21 years of the questionnaire. It responds to the question, “To what extent do you feel that the current deterioration of the global environment has created a crisis that will affect the survival of the human race? Write a time within the range 0:01 to 12:00 corresponding to the extent of your concern.”

The time on “The Environmental Doomsday Clock” has moved forward gradually since the inception of the survey in 1992. In 1996, the time entered the quadrant, “Extremely Concerned,” and with the exception of the year 2000, has consistently ranged in the nine o’clock hour. The needle advanced by 22 minutes in 2012 from the previous year, when time was 9:01, which had represented the third consecutive year that the average time had retreated.

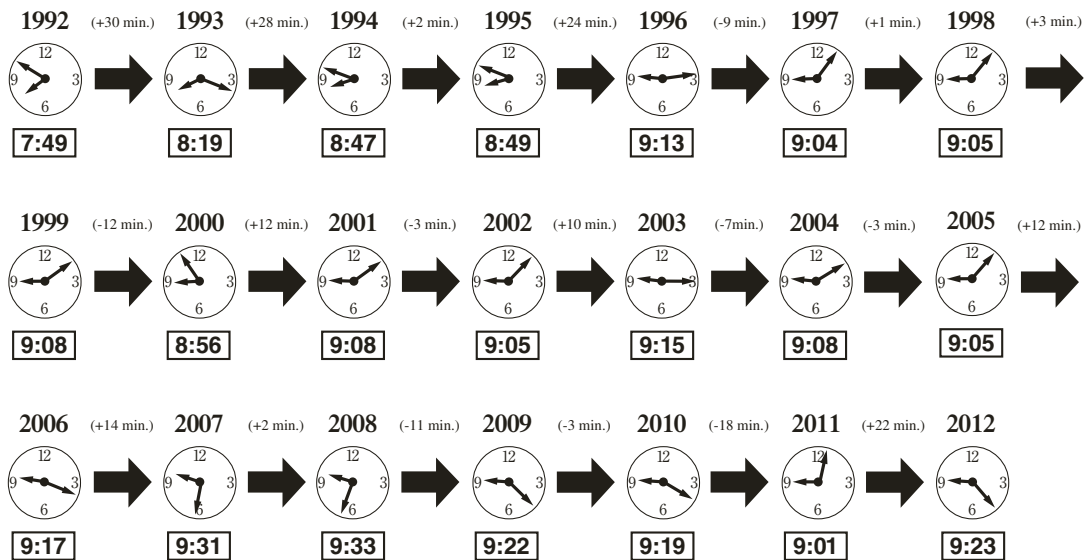


Figure 2.1.1 Changes in Time from Year to Year

The Average Time by Region

The following chart and graph indicates the time on “The Environmental Doomsday Clock” from 1992 to 2012 by region. The lowest sense of crisis in the 21 years of the survey came in 1993 from respondents in Eastern Europe and former Soviet Union, who gave an average time of 7:02. In contrast, the highest sense of crisis came from Middle East in 2010, at 10:47. Two regions have never entered the 10 o’clock hour: Asia including Japan and Western Europe.

Regions in the report are categorized as follows: A regions: The United States and Canada, Western Europe, Japan, Asian Four (South Korea, Hong Kong, Taiwan, and Singapore). B regions: Rest of Asia, Latin America, Africa, C regions : Oceania, Eastern Europe and former Soviet Union, Middle East

Table 2.1.1 Changes in “The Environmental Doomsday Clock” (1992-2012)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Japan	7:38	7:33	8:01	8:08	8:51	8:42	9:01	9:07	8:56	9:04	9:18	9:20	9:06	9:07	9:15	9:34	9:42	9:08	9:09	8:46	9:14
United States & Canada	8:35	8:58	9:07	8:52	9:30	9:09	8:40	9:03	8:49	9:54	8:23	9:03	9:14	8:54	9:18	9:40	10:13	10:01	10:13	9:35	9:54
Western Europe	8:54	9:02	9:35	9:02	9:46	9:53	9:37	8:46	8:46	8:58	8:44	8:52	8:56	8:43	9:08	9:23	9:44	9:55	9:45	9:28	9:55
Asia (except Japan)	8:10	8:19	9:16	9:41	9:41	9:25	8:59	9:47	9:16	9:04	8:36	9:41	9:32	9:41	9:17	9:10	8:52	9:04	9:01	8:51	9:03
Latin America	8:57	8:37	9:37	9:23	9:28	9:26	9:04	9:14	8:52	9:00	9:22	9:19	9:12	9:08	9:31	9:38	9:49	9:28	9:48	9:18	10:00
Africa	8:10	8:43	9:14	9:33	9:25	9:15	9:08	9:13	9:17	9:37	9:29	9:22	9:04	9:03	9:32	10:02	10:31	10:15	10:24	9:09	10:04
Oceania	9:58	8:23	8:53	9:44	9:43	8:52	9:34	8:52	8:31	8:58	9:22	9:37	9:08	9:18	9:18	10:27	10:34	10:10	10:29	10:06	10:14
Eastern Europe & former Soviet Union	9:27	7:02	8:10	9:29	9:12	9:37	9:44	9:21	8:21	8:17	9:28	9:02	8:30	8:26	9:07	9:20	9:37	10:00	9:47	9:13	9:12
Middle East	8:10	8:12	—	9:09	8:30	9:33	8:47	9:32	9:38	9:01	8:02	8:52	8:41	9:18	10:05	9:41	9:24	9:42	10:47	10:24	9:38
Total	7:49	8:19	8:47	8:49	9:13	9:04	9:05	9:08	8:56	9:08	9:05	9:15	9:08	9:05	9:17	9:31	9:33	9:22	9:19	9:01	9:23

(The time marked in blue represents the lowest sense of crisis since the inception of the survey in 1992; the red marks the highest.)

The graph below shows the time over 21 years across all regions. In all regions, the time moved from the 8 o’clock hour to the 9 o’clock hour in the 12 years from 1994 to 2005. As of 2006, Middle East, Africa, Oceania, and the United States and Canada moved from the 9 o’clock hour to the 10 o’clock hour, indicating a heightened sense of crisis in these four regions. However, the average overall time has been showing a gradual reversal since 2008.

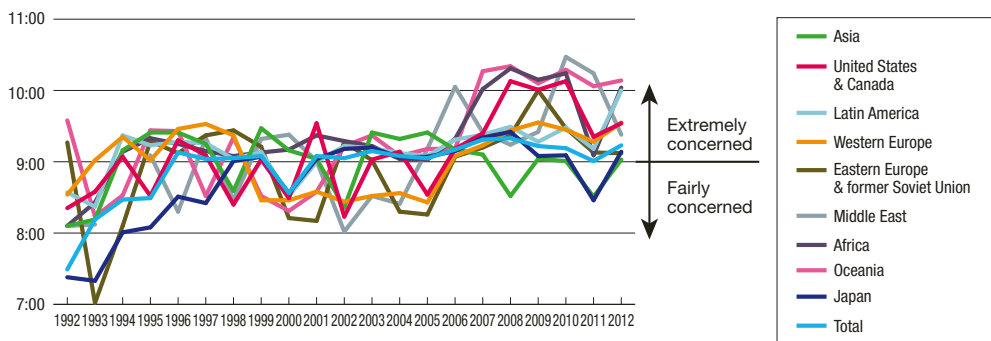


Figure 2.1.2 Changes in “The Environmental Doomsday Clock” (1992-2012)

The following diagram shows the movement of time on “The Environmental Doomsday Clock” in 11-year increments, by region, on a world map. Of 9 regions, the time has consistently moved forward in 7 regions with no reversal, which are Western Europe (8:54 to 8:58 to 9:55), Middle East (8:10 to 9:01 to 9:38), Africa (8:10 to 9:37 to 10:04), Japan (7:38 to 9:04 to 9:14), United States & Canada (8:35 to 9:54 to 9:54), and Latin America (8:57 to 9:00 to 10:00).

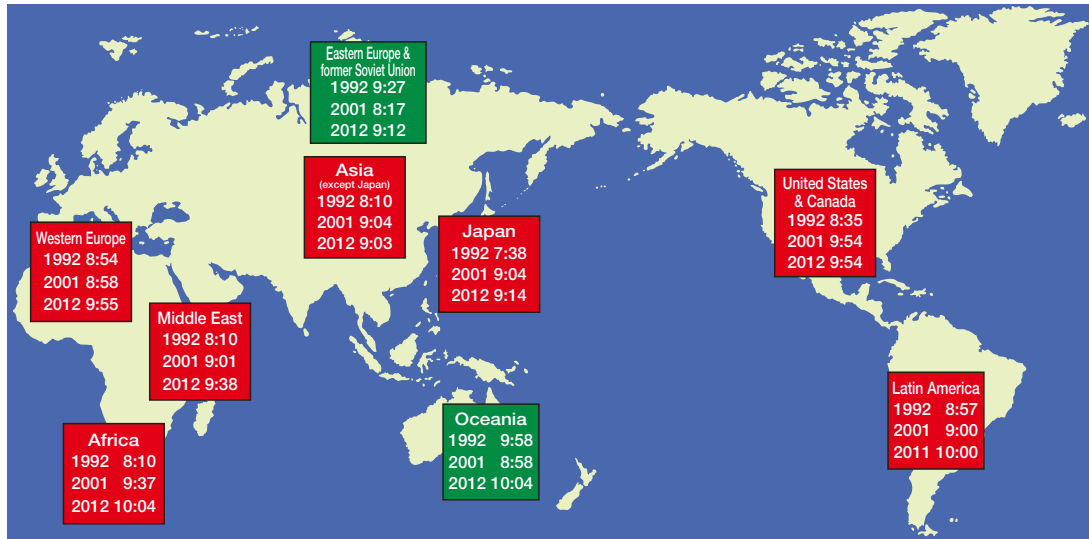


Figure 2.1.3 Regional Times (1992, 2001, 2012)

2.1.2 The Environmental Conditions of Concern

Since 2003, the questionnaire has probed respondents about the environmental conditions of concern that influenced their selection of the time on “The Environmental Doomsday Clock.” The following chart shows the results from 2005, when respondents from all regions except Asia and Eastern Europe & former Soviet Union cited global warming either as the highest or the second highest environmental conditions of great concern.

Table 2.1.2 Environmental Conditions of Concern in Determining “The Environmental Doomsday Clock” Time (2005)

	A region										B region			C region			Overseas Total	A Regions	B Regions	C Regions	Total (%)
	Japan	United States & Canada	Western Europe	Asian Four	Rest of Asia	Latin America	Africa	Oceania	Eastern Europe & former Soviet Union	Middle East											
General environmental problems	30	18	16	37	31	13	15	31	29	30	23	27	22	29	26						
Global warming	73	55	69	60	40	44	51	54	29	60	52	69	44	41	61						
Air pollution, water contamination, river/ocean pollution	21	32	31	67	52	44	46	27	45	30	41	27	48	37	32						
Water shortage, food problems	42	43	48	33	32	34	41	38	26	50	39	43	35	33	40						
Deforestation, desertification, loss of biodiversity	41	35	36	47	53	69	64	50	33	40	46	40	60	40	44						
People’s lifestyles, waste-related problems	25	22	24	27	29	41	18	15	50	10	27	25	29	33	26						
Environmental problems and economics/trade-related activities	16	15	16	7	8	16	15	23	43	0	17	16	12	31	17						
Population, poverty, status of women	16	51	33	0	37	25	36	35	29	50	34	23	34	33	26						
Others	6	11	10	10	2	0	3	12	7	0	7	8	2	8	6						
No response	2	3	2	0	5	3	0	4	0	10	3	2	3	3	2						

■ :Answer with the highest number of replies ■ :Answer with the second highest number of replies

Notes: The % refers to the total number of valid responses while excluding any unknowns. The total is to be 100%.

However, in 2000, respondents from all regions except Latin America and Africa indicated that the greatest causes of environmental degradation were “1. Explosive population growth” and “2. Economic development that disregards the environment.” As a result the sense of crisis caused by global warming was low in all regions except in Japan.

Table 2.1.3 Causes of Global Environmental Degradation (2000)

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

■ :Answer with the highest number of replies ■ :Answer with the second highest number of replies

2.1.3 The Environmental Doomsday Clock – New Approach

1) Determination Method of The Environmental Doomsday Clock

Starting from 2012, the determination method of “The Environmental Doomsday Clock” has been revised and a calculation system has been introduced to shed further light on the intention behind the respondents’ decisions. The time was determined by first ranking the top three environmental conditions of concern in order of importance. Respondents were then asked to provide a time for each issue, and finally, “The Environmental Doomsday Clock” was calculated by taking the weighted average of the data. The issue ranked in first place was weighted at 50%, second place at 30%, and third place at 20%.

The following two graphs show the results of the Environmental conditions of concern based on the new approach.

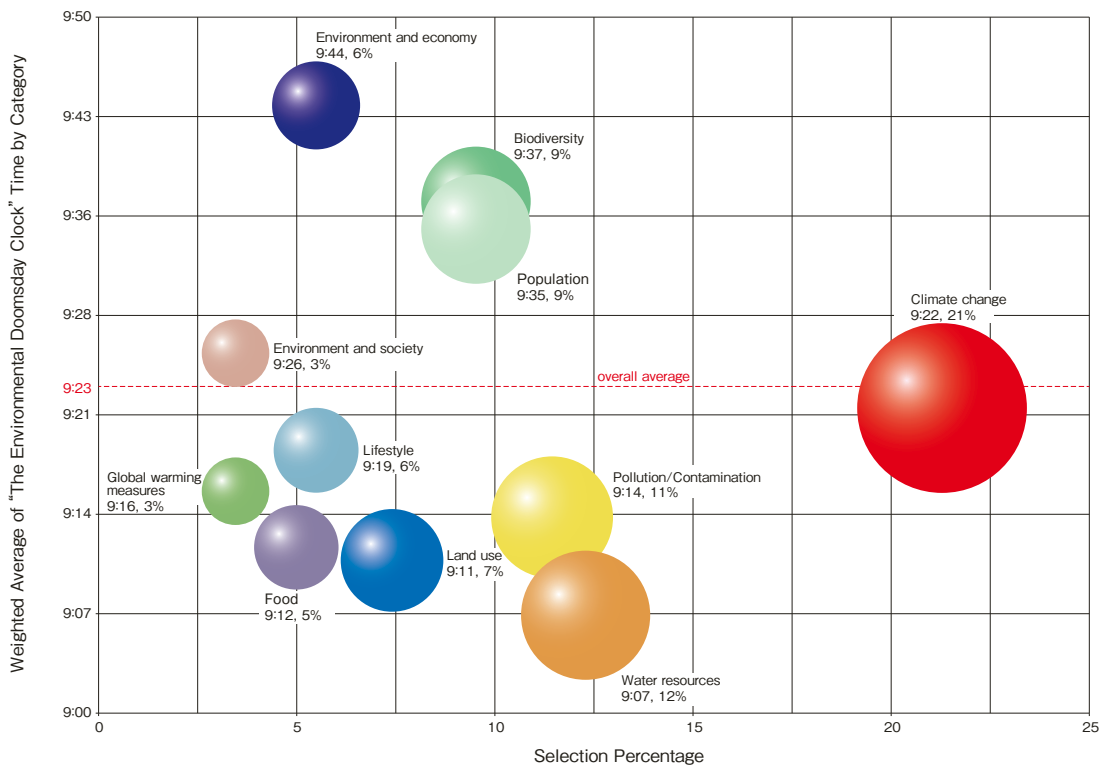


Figure 2.1.4 Overall Analysis of the Environmental Conditions of Concern (Categories Ranked 1 -3)

- Overall, “climate change” (21%) was the most often cited environmental condition of concern when classifying the items ranked 1 through 3 by how frequently they were selected. This was followed by “water resources” (12%), “pollution/contamination” (11%), and “biodiversity” as well as “population” (9%).
- Likewise, when listing the weighted averages of “The Environmental Doomsday Clock” of each category concerned starting with the most advanced time, respondents expressed the greatest sense of crisis with “environment and economy” (9:44). This was followed by “biodiversity” (9:37), “population” (9:35), “environment and society” (9:26), and “climate change” (9:22).

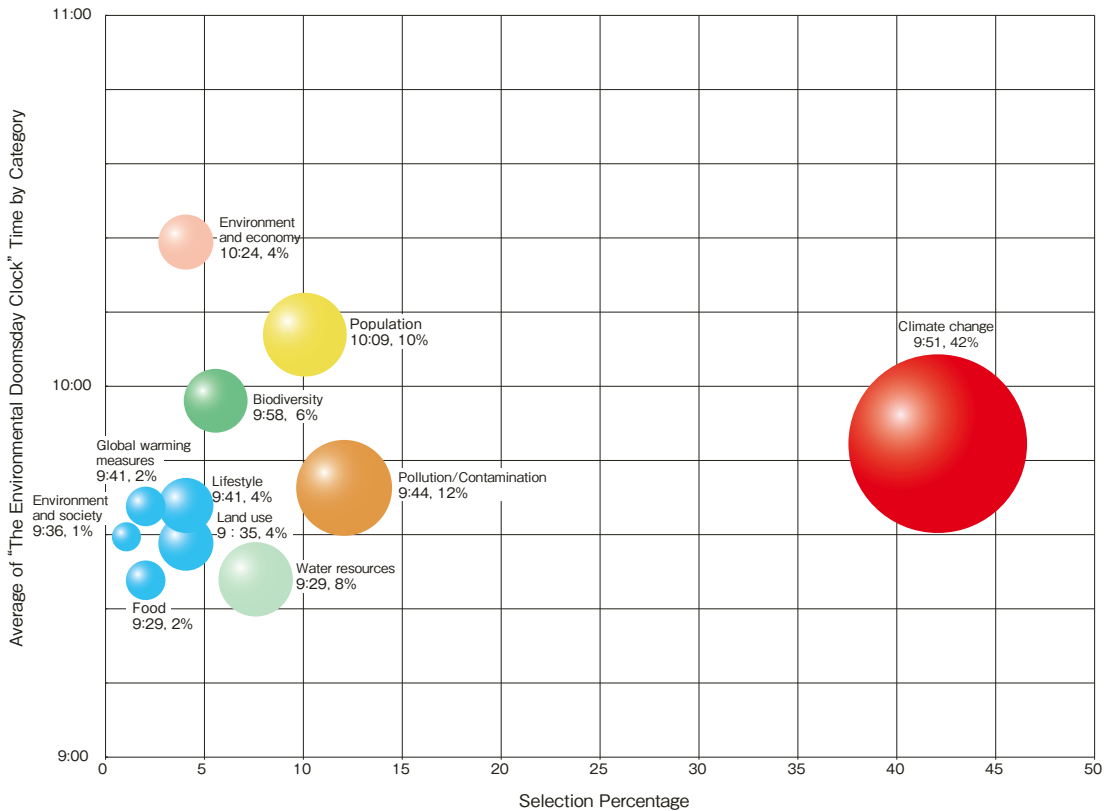


Figure 2.1.5 Distribution of the Environmental Conditions of Concern (Categories Ranked 1)

- The environmental issue that respondents overall most frequently selected as being the greatest concern (rank 1) in choosing the time on “The Environmental Doomsday Clock” was “climate change,” at 42%. This was followed by “pollution/contamination” at 12%, “population” at 10%, “water resources” at 8%, and “biodiversity” at 6%.
- Likewise, when listing the categories by their times on “The Environmental Doomsday Clock” of each category concerned in descending order, respondents indicated the greatest sense of crisis with “environment and economy,” at 10:24. This was followed by “population” at 10:09, “biodiversity” at 9:58, “climate change” at 9:51, and “pollution/contamination” at 9:44.

2) Categories of Environmental Conditions of Concern in Selecting the Time

Starting from 2011, in order to observe the changing global environment from the clearest possible perspective, we have reorganized and rebuilt the “environmental conditions of concern,” using a new basis as described below. This new basis, which includes additional societal considerations, was created by referencing the paper “*Planetary Boundaries: Exploring the Safe Operating Space for Humanity*” by Carl Folke, Johan Rockstrom, Jonathan Foley, James Hansen, and others: 2009 Ecology and Society, 14(2):32.

Table 2.1.4 New Basis for Environmental Conditions of Concern

Item	Main Elements
1. Climate Change	Atmospheric concentration of CO₂ ; global warming ; ocean acidification ; climatic aberrations (droughts, torrential rains and flooding, severe storms, heavy snow, abnormal temperatures, drying of rivers and lakes, desertification, etc.)
2. Biodiversity	Acceleration of species extinction ; effects of contamination, climate change, land use
3. Land Use	Expansion of cultivated land mass; destruction of forests due to erratic development; desertification caused by overgrazing; agriculture and land use without regard for the environment; urbanization
4. Pollution / Contamination	River and ocean pollution: eutrophication caused by excessive nitrogen and phosphorus and contamination by chemical substances; atmospheric pollution : particulates suspended in the atmosphere, soot and chemical substances
5. Water Resources	Diminution of usable fresh water resources (depletion, contamination)
6. Population	Population growth beyond what the Earth can support; aging of the population
7. Food	Diminution of food supply from land and oceans
8. Lifestyles	Transformation of lifestyles away from excessive consumption of resources like energy
9. Global Warming Measures	Progress of measures for mitigation and adaption
10. Environment and Economy	Progress towards implementing an economic system to reflect environmental costs, the bearing of social costs : imposition of taxes for fossil fuels that emit CO ₂ , which cause global warming-related damages; TEEB (The Economics of Ecosystems and Biodiversity), etc. The operation of an environmentally conscious economy: the realization of a green economy, sustainable economic development, etc.
11. Environment and Society	Environmental awareness at the individual and societal levels, progress of environmental education ; poverty ; the status of women
12. Other	()

Table 2.1.5 shows the result of environmental conditions of concern in determining “The Environmental Doomsday Clock” in 2011 based on the new categories of Environmental Conditions of Concern.

Table 2.1.5 Environmental Conditions of Concern in Determining “The Environmental Doomsday Clock” Time for 2011

	Total [2812]	area										Overseas Total [1505]	Developed Regions [2168]	Developing Regions [515]	Others [126]	Asian Four [279]	Rest of Asia [374]	China [258]	Korea [177]	India [41]
		Japan [1307]	United States & Canada [360]	Western Europe [222]	Asia [653]	Latin America [78]	Africa [63]	Oceania [44]	Eastern Europe & former Soviet Union [72]	Middle East [10]										
Climate Change	23	23	25	21	25	23	30	23	14	30	24	24	23	18	29	22	20	29	17	
Biodiversity	10	8	13	15	9	14	14	14	14	0	11	10	10	13	9	9	8	10	15	
Land Use	7	6	6	9	7	13	11	14	15	0	8	6	10	13	4	9	8	2	12	
Pollution/Contamination	12	11	8	9	19	5	2	5	13	20	13	11	18	10	14	23	27	12	15	
Water Resources	9	7	12	11	10	10	14	7	11	10	11	8	13	10	5	13	13	2	10	
Population	12	15	15	14	6	10	5	16	4	10	10	14	7	9	6	6	5	6	10	
Food	7	9	4	6	5	3	10	2	1	10	5	8	4	2	7	3	3	7	0	
Lifestyle	7	8	4	5	6	5	2	9	6	0	5	7	5	6	8	5	5	9	12	
Global Warming Measures	3	3	1	2	6	1	2	2	6	10	4	3	2	5	10	3	2	15	2	
Environment and Economy	4	4	6	4	4	8	3	9	8	0	5	4	5	8	4	4	5	2	0	
Environment and Society	3	3	4	4	3	5	5	0	7	10	3	3	3	5	2	3	3	2	7	
Other	2	3	2	1	1	3	3	0	1	0	1	3	1	1	2	0	0	3	0	

■ : Answer with the highest number of replies ■ : Answer with the second highest number of replies

Notes: The % refers to the total number of valid responses while excluding any unknowns. The total is to be 100%.

- In determining the time on “The Environmental Doomsday Clock”, “climate change” was most frequently cited as the main environmental condition of concern by respondents overall. “Climate change” was the most common selection among respondents from both developed and developing regions.
- This was followed by “pollution/contamination” and “population.” “Population” was the second most frequently cited condition of concern among respondents in developed regions, whereas respondents in developing regions cited “pollution/contamination.”
- “Biodiversity” was the third most frequently cited condition of concern.

2.2 Progress towards Agenda 21

2.2.1 Progress in 20 Categories of Agenda 21

For 19 years since 1992, the questionnaire has probed respondents about the progress of Agenda 21 in their respective countries, asking them to evaluate the status of the action plans countries and international organizations must implement to realize sustainable development. The following chart shows 1996 results combining “significant progress” and “some progress.” In each region, respondents favorably evaluated the progress in “NGO activities” and “environmental education,” whereas “Poverty and overpopulation” and “Lifestyles and consumption patterns” were seen as having made little progress.

Table 2.2.1 Progress towards Agenda 21 (1996)

(%)

	Japan [N=282]	U.S.A. & Canada [51]	Western Europe [77]	Asia [63]	Latin America [35]	Africa [32]	Oceania [21]	Eastern Europe & former Soviet Union [16]	Middle East [11]
1. International cooperative efforts	43	55	40	57	46	63	62	50	46
2. Poverty and overpopulation	14	22	8	43	37	44	19	13	18
3. Lifestyles and consumption patterns	16	29	26	21	20	13	43	19	27
4. Local government and citizens' group activities	52	77	79	65	74	75	86	69	55
5. NGO activities	67	86	82	83	83	88	86	81	73
6. Industrial sector policies	53	57	55	48	43	47	71	44	64
7. Global warming	19	31	26	32	23	47	38	25	18
8. Ozone layer protection	52	65	69	41	34	53	43	38	36
9. Acid rain reduction	22	51	46	18	26	13	19	38	27
10. Forest conservation	14	35	38	56	51	81	86	44	36
11. Desertification	4	12	8	33	23	88	33	0	46
12. Agricultural and rural development	8	37	21	57	43	69	62	25	55
13. Biodiversity	16	49	42	46	51	75	67	56	64
14. Protection of oceans	13	43	26	30	40	44	48	31	55
15. Protection of fresh water	12	43	34	33	37	66	52	63	73
16. Hazardous waste disposal	38	45	49	38	31	34	48	50	36
17. Recycling systems	48	94	70	37	23	34	57	31	46
18. Scientific and technological advancement	50	71	61	52	46	50	71	50	82
19. Environmental education	49	88	66	71	77	88	91	94	91
20. Environment assessment system	21	43	39	48	37	63	62	75	64
21. Integration of economic and environmental policies	11	14	22	25	29	38	33	44	9

■ :Answer with the highest number of replies ■ :Answer with the second highest number of replies

2.2.2 Progress in 10 Categories of Agenda 21

After 2001, the questionnaire probed respondents about the progress made in their countries in the 10 categories of Agenda 21 considered particularly important. The following graph shows the results from 2006. Respondents who reported progress (combined total of “significant progress” and “some progress”) surpassed 50% in the categories of “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, respondents reporting no progress (combined total of “almost no progress” and “no progress”) exceeded those who stated progress had been made in the five categories of “conservation of forest resources,” “greenhouse gas prevention measures,” “conservation of biodiversity,” “population and poverty problems,” and “lifestyle alteration.”

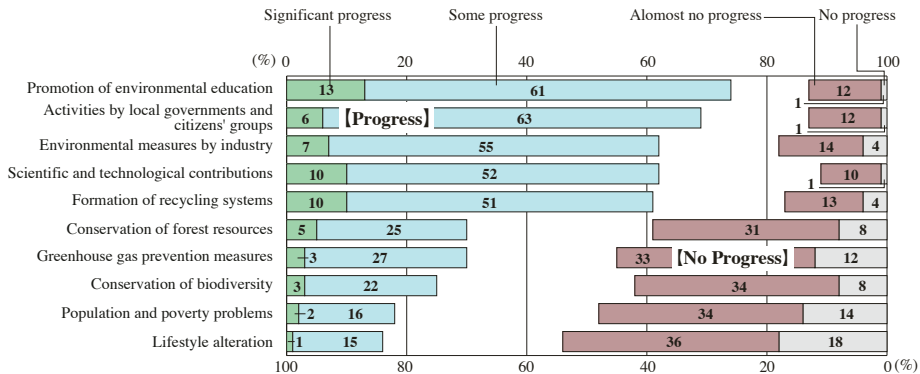


Figure 2.2.1 Progress towards Agenda 21(2006)

The graph below shows the results on the progress made in the respondents’ countries in the 10 categories of Agenda 21 over 18 years from 1993 to 2010. The top five categories, in which more than 50% of respondents indicated progress, have always remained in the top five, whereas the bottom five have also consistently remained in the bottom five. Further, the discrepancy between the top five categories where progress has been seen and the bottom five categories where progress is lacking has continued to grow since the late 1990s.

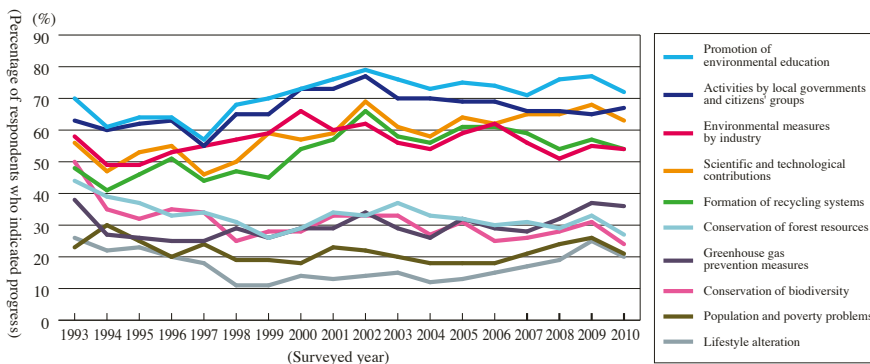


Figure 2.2.2 Progress towards Agenda 21(1993-2010)

2.3 Impediments to Addressing Environmental Problems

In 2012, on the 20th anniversary of the 1992 Rio Summit, the questionnaire was designed to probe the reasons why solutions and responses to address environmental problems have shown little signs of progress, and to shed as much light as possible onto the reasons behind the stagnation.

2.3.1 Impediments to Addressing Environmental Problems

What do you think are the impediments to addressing environmental problems? Please circle three items from the list below that you think represent the most significant impediments. Please proceed to additional questions only for the three you have selected.

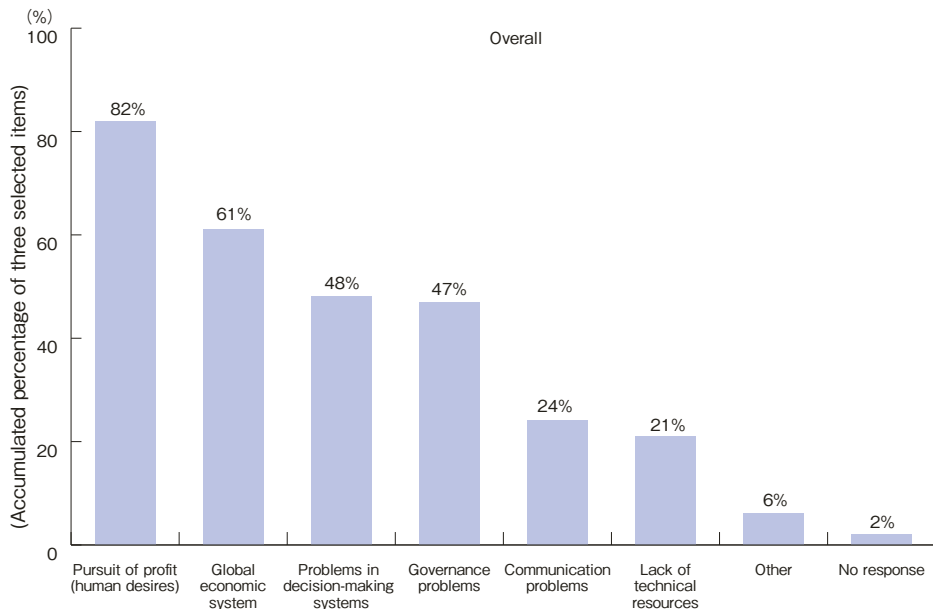


Figure 2.3.1 Impediments to Addressing Environmental Problems

- Overall, respondents most frequently selected “pursuit of profit (human desires)” as the impediment to addressing environmental problems.

2.3.2 “Pursuit of Profit” as Impediment to Addressing Environmental Problems

We asked those respondents who selected the “pursuit of profit (human desires)” as an impediment to addressing environmental problems whether they agreed or disagreed with the following six items.

1) National interests are necessarily prioritized.

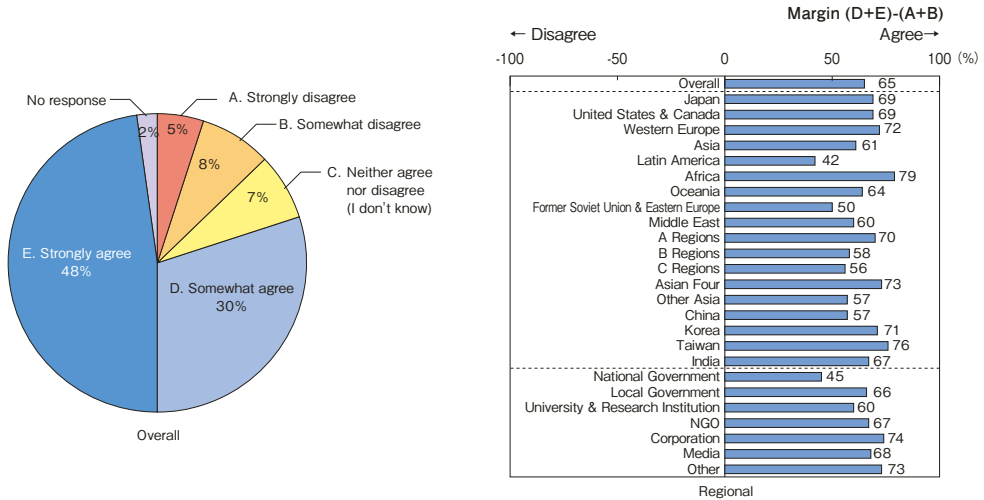


Figure 2.3.2

- Overall, the combined number of respondents who selected “somewhat agree” and “strongly agree” (D+E) comprised a large majority at 78%. Of those, respondents selecting “strongly agree” nearly reached the majority at 48%. On the other hand, respondents who disagreed (A+B) were limited, at 13%. Respondents who are affiliated with national governments had the lowest margin between those who agreed and those who disagreed, at 45%.

2) Individuals make decisions based on short-term cost-benefit analyses.

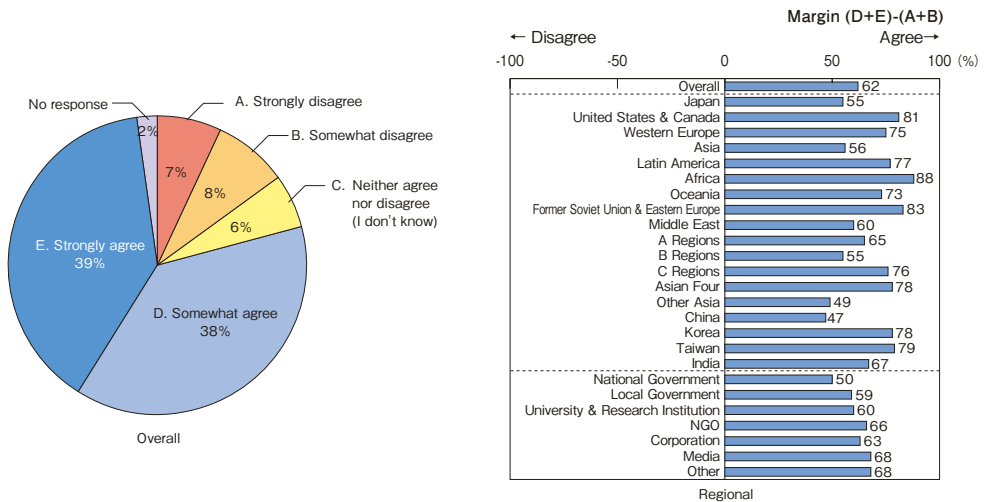


Figure 2.3.3

- Overall, respondents who agreed comprised a large majority at 77%, while those who disagreed comprised 15%.

3) The economic profits of a corporation, organization, or a region are prioritized so much that environmental considerations are not taken into account.

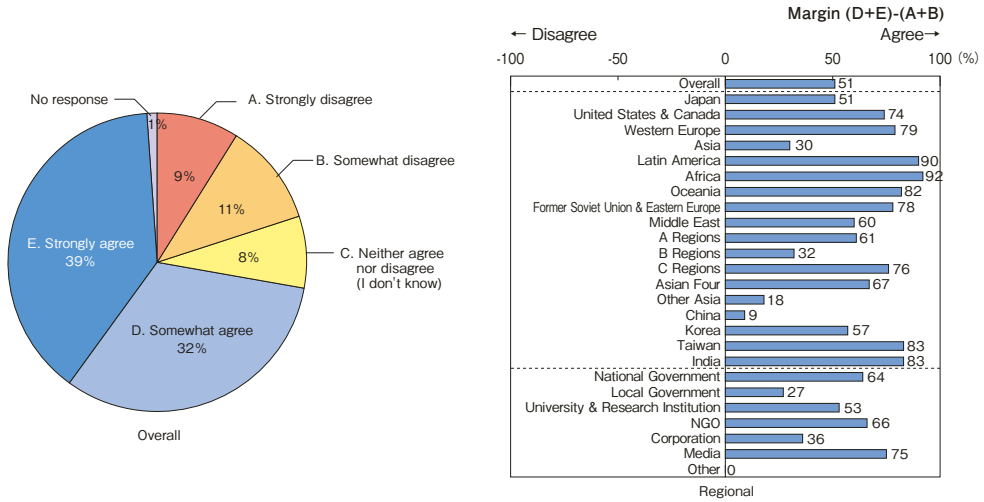


Figure 2.3.4

- Overall, respondents who agreed (D+E) comprised a large majority at 71%, whereas those who disagreed (A+B) comprised 20%.

4) The world economy has not been able to depart from its adherence to the GDP as a measurement, and the exclusive devotion to growth is not directed towards a sustainable and stable recycling economy.

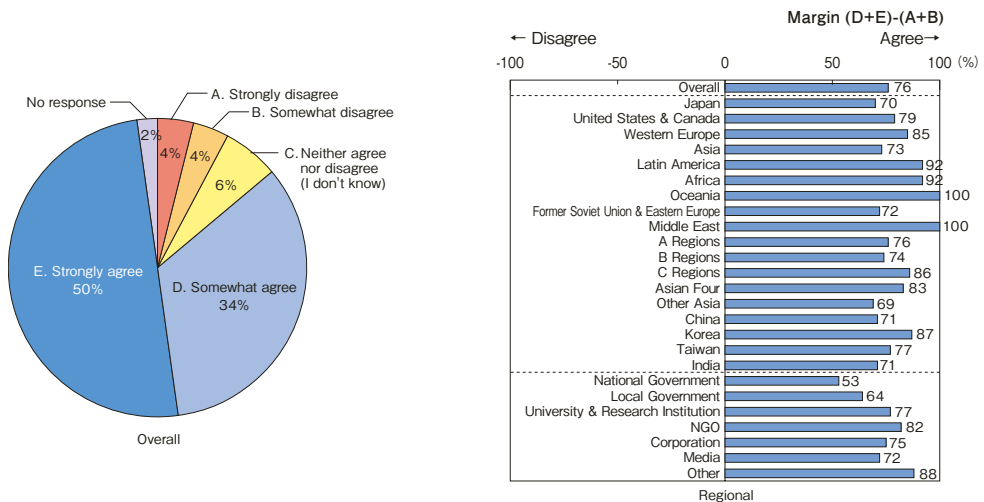


Figure 2.3.5

- Overall, respondents who agreed (D+E) comprised an overwhelming majority at 84%, of which those selecting “strongly agree” reached 50%. On the other hand, those who disagreed (A+B) comprised 8%.

5) Economic systems like The Economics of Ecosystems and Biodiversity (TEEB), which reflect societal costs, have not been pursued.

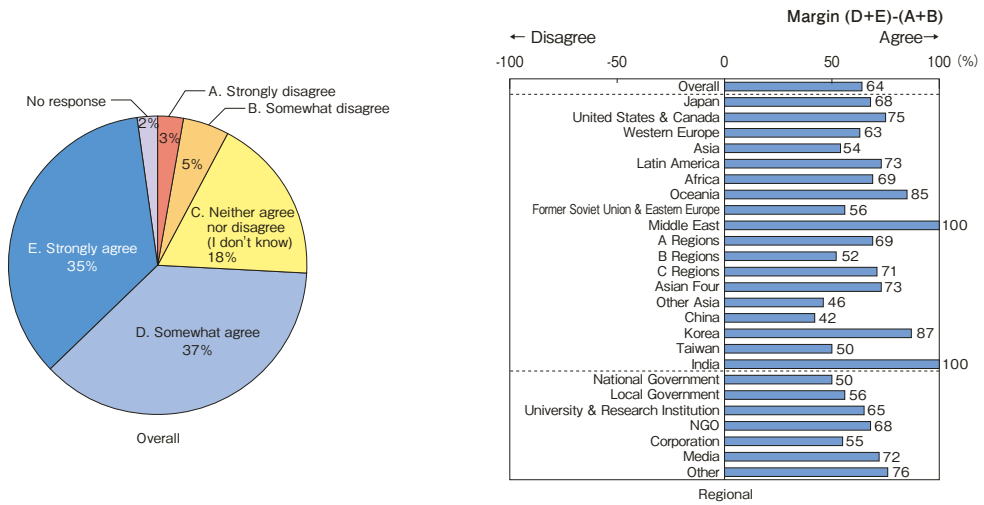


Figure 2.3.6

- Overall, respondents who agreed (D+E) comprised the majority at 72%, while those who disagreed comprised 8%. Those who selected “Neither Agree Nor Disagree” reached 18%, representing the possibility that economic systems like The Economics of Ecosystems and Biodiversity (TEEB) are not necessarily widely known or understood.

6) Current lifestyles based on large consumption of energy cannot be abandoned.

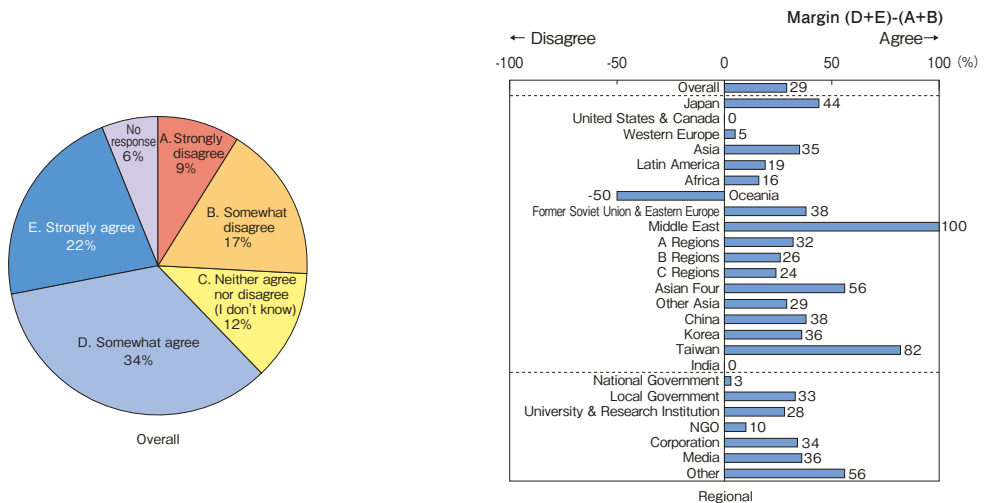


Figure 2.3.7

- Overall, respondents who agreed (D+E) comprised the majority at 56%. However, those who disagreed (A+B) also reached 26%, while “Neither Agree Nor Disagree” comprised 12%. A large number of respondents in Asia, including Japan, stated they agreed, but in North America, Western Europe, and India, the number of respondents who agreed was comparable to those who disagreed.

2.4 About Nuclear Energy and the Environment

In 2012, the questionnaire probed how the accident at the Fukushima Dai-ichi Nuclear Power Plant in Japan has affected the opinions of environmental experts on nuclear power.

2.4.1 Public Sentiment towards Nuclear Power after the Fukushima Nuclear Accident

Have there been any changes in public sentiment towards nuclear power in your country as a result of the Fukushima nuclear accident?

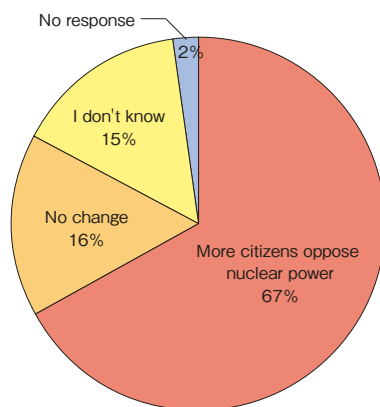


Figure 2.4.1 Public Sentiment towards Nuclear Power after Fukushima Accident (Overall)

Table 2.4.1 Public Sentiment towards Nuclear Power after Fukushima Accident (Regional) (%)

	More citizens oppose nuclear power	No change	I don't know	No response
Overall	67	16	15	2
Japan	97	1	2	1
United States & Canada	58	25	14	3
Western Europe	68	20	11	1
Asia ¹	50	18	28	4
Asian Four	78	15	8	0
Other Asia ¹	42	19	34	5
Latin America	40	48	12	0
Africa	30	48	18	3
Oceania	35	35	24	6
Eastern Europe & Former Soviet Union	42	38	15	4
Middle East	67	22	11	0
Overseas Total	52	23	21	3
United States & Canada, Western Europe, the Asian Four and Japan	83	10	6	1
Latin America, Africa and Rest of Asia	41	25	30	5
Oceania, Eastern Europe & former Soviet Union, and Middle East	44	35	17	4
China	39	16	38	6
Korea	78	16	6	0
Taiwan	76	14	11	0
India	58	37	0	5

- A large number of respondents across the world selected “More citizens oppose nuclear power” at 67%. This selection reached 97% among respondents in Japan, whereas 52% of overseas respondents chose this item.

On the other hand, the survey results from 1998 and 2008 show that respondents felt more favorably towards nuclear power compared to today.

1998 Survey Results

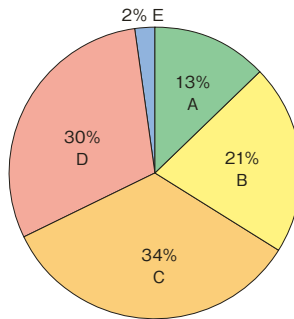


Figure 2.4.2 Opinions about Nuclear Power (Overall)

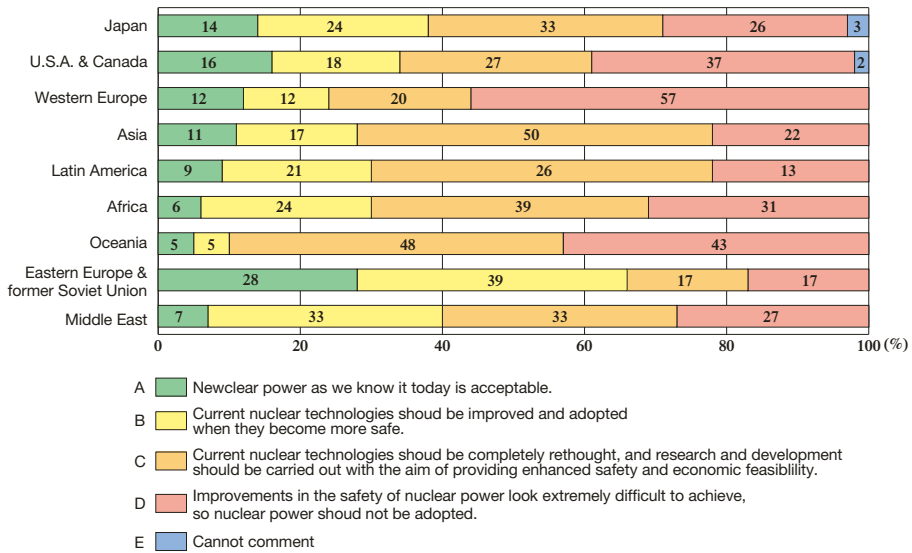


Figure 2.4.3 Opinions about Nuclear Power (Regional)

The pie chart above shows the overall results to a question in the 1998 survey about nuclear power generation as an alternative form of energy to replace fossil fuels. Nearly 70% (A+B+C) of respondents felt positively about nuclear power generation as long as technological development advanced and safety could be secured, whereas only 30% (D) stated that nuclear power should not be implemented. By region, respondents from Western Europe were most negative about the implementation of nuclear power (57%), followed by Oceania (43%), and USA & Canada (37%). In contrast, respondents from Latin America, Eastern Europe & former Soviet Union, and Asia were most positive about nuclear power.

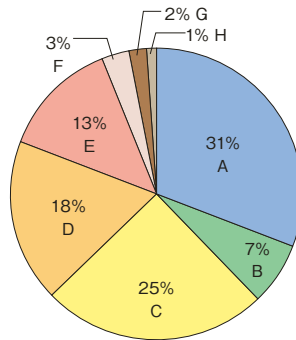


Figure 2.4.4 Opinions about Nuclear Power (Overall)

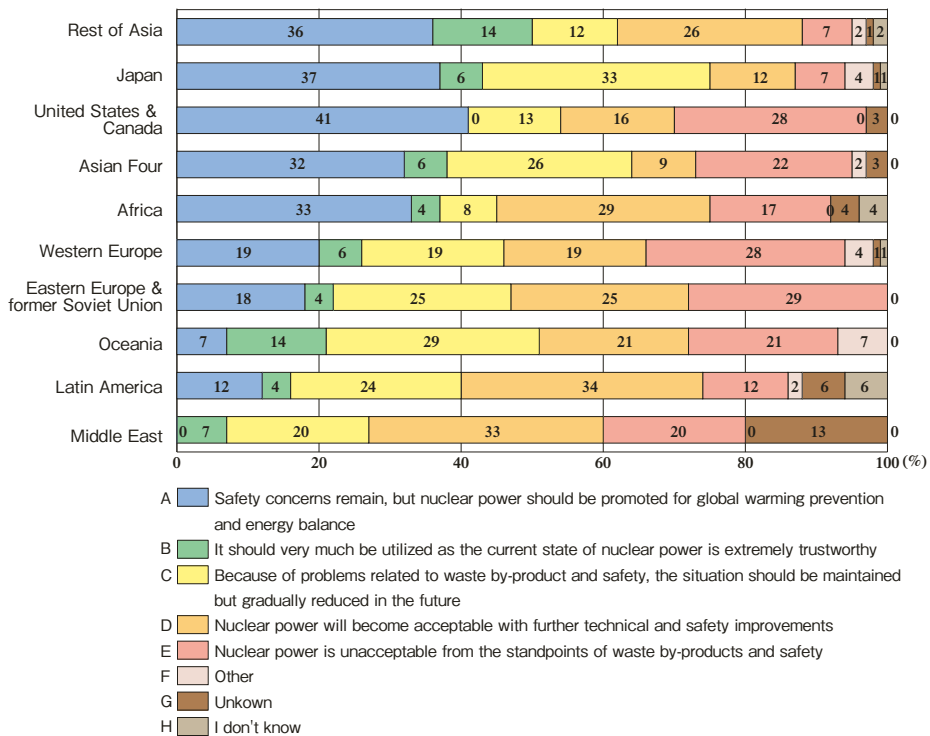


Figure 2.4.5 Opinions about Nuclear Power (Regional)

The graph above shows the results to a question in the 2008 survey asking respondents about their opinions on nuclear power. Overall, respondents who selected “Safety concerns remain, but nuclear power should be promoted for global warming prevention and energy balance” (A, 31%), and “It should very much be utilized as the current state of nuclear power is extremely trustworthy” (B, 7%) totaled 38%; in other words, approximately one-third of the respondents supported or accepted the dependence on nuclear power generation.

By region, respondents from the Rest of Asia had the highest percentage (50%) of those who actively supported the use of nuclear power by stating that “it should be utilized” (“nuclear power should be promoted” + “nuclear power is extremely trustworthy”). This was followed by Japan (43%), and USA & Canada (41%). Moreover, adding those respondents who selected “the situation should be maintained” and “nuclear power will become acceptable with

further technical and safety improvements” to the active supporters resulted in a 88% rate in Japan and the Rest of Asia of respondents who thought that nuclear power generation was necessary for the prevention of global warming.

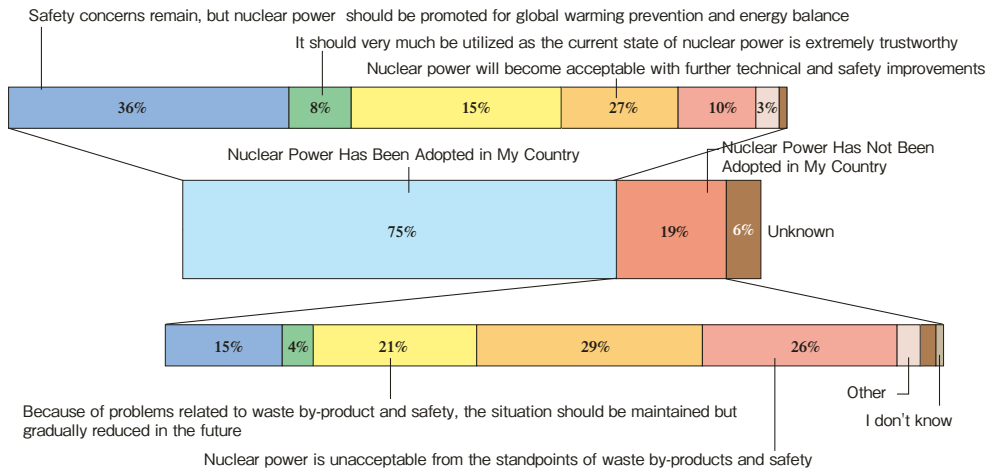


Figure 2.4.6 Opinions about Nuclear Power – Comparison between Countries With/Without Nuclear Power

The graph above shows the results of a question soliciting respondents’ opinions on nuclear power organized by regions where nuclear power had already been implemented and those who hadn’t yet adopted it. In regions where nuclear power had already been adopted, 44% of respondents state that “nuclear power is extremely trustworthy” and “nuclear power should be promoted.” This figure represents more than twice the 19% who made the same selections in regions that had yet to adopt nuclear power. There, 26% of respondents stated “nuclear power is unacceptable from the standpoints of waste by-products and safety,” representing more than double the number of those who made this selection in regions that had adopted nuclear power.

2.4.2 Nuclear Energy Policy in Respondents’ Countries

How do you feel about the nuclear energy policy in your country after the Fukushima accident?

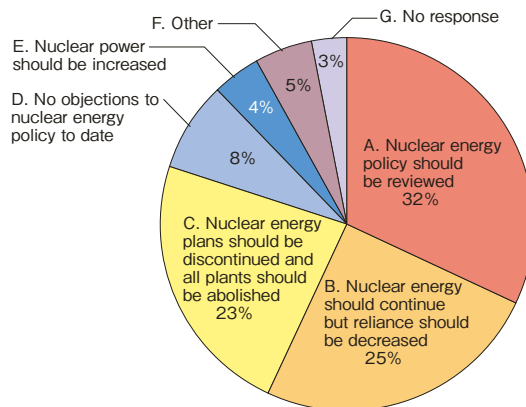


Figure 2.4.7 Nuclear Power Policy in Respondents’ Countries (Overall)

- Overall, 80% (A+B+C) of respondents indicated a preference for some sort of review of nuclear energy policy. Specifically, 32% of respondents selected “Nuclear energy policy should be reviewed,” while 25% selected “Nuclear energy should continue but reliance on this form of power should be decreased” and 23% selected “Nuclear energy plans should be discontinued and all plants should be abolished.” On the other hand, respondents who selected “No objections to nuclear energy policy to date” and “nuclear power generation should be increased” were limited to 8% and 4% respectively.

2.4.2.1 You have selected “No objections to the nuclear energy policy to date.” Please circle two items from the following list that best reflects your rationale.

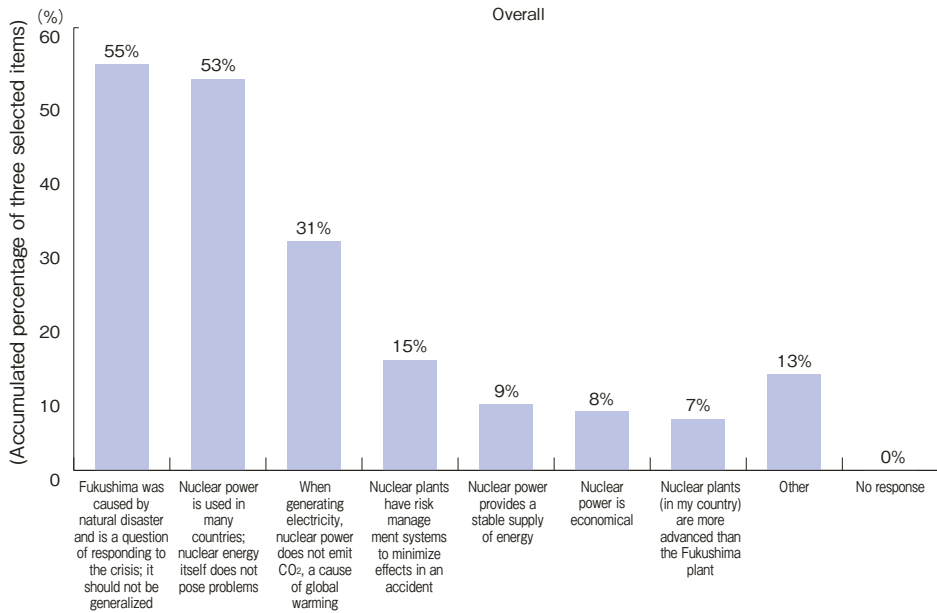


Figure 2.4.8 Reasons for Not Opposing Nuclear Energy Policy to Date

- Respondents who chose “No objections to the nuclear energy policy to date” most frequently selected as their reasons “Fukushima was caused by a natural disaster and is a question of managing and responding to the crisis,” and “Nuclear power is in use in many countries and nuclear energy itself does not pose problems.”

2.4.2.2 Please circle one item from the following list that you think is the most important factor in reviewing nuclear energy policy.

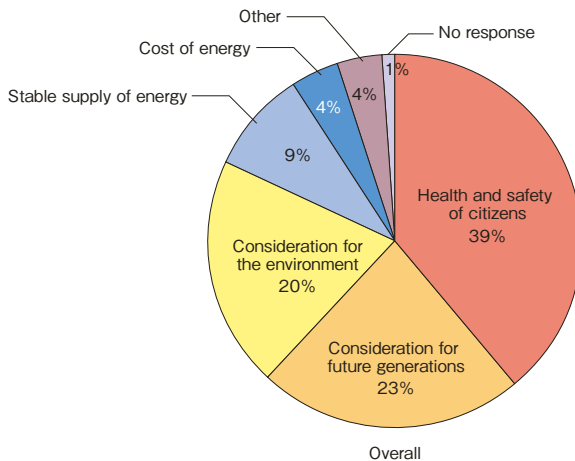


Figure 2.4.9 Important Factors in Reviewing Nuclear Energy Policy

- Respondents who selected “Health and safety of citizens”(39%), “Consideration for future generations”(23%), “Consideration for the environment”(20%), comprised a large majority, for a combined total of 82%. Opinions that placed an emphasis on “Stable supply of energy”(9%) and “Cost of energy”(4%) comprised a minority, at 13%.

2.4.2.3 You have selected “Nuclear energy plans should be discontinued and all plants should be abolished.” Please circle two items from below that you think are the most important reasons for discontinuing and abolishing nuclear power.

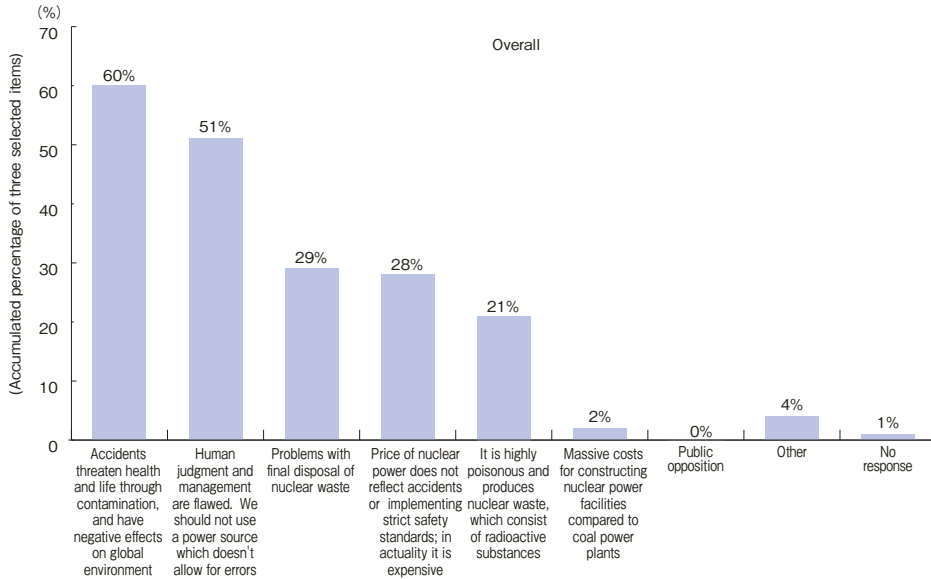


Figure 2.4.10 Reasons for Discontinuing and Abolishing Nuclear Energy Plans

- The majority of respondents who chose “Nuclear energy plans should be discontinued and all plants should be abolished” resoundingly gave as their reason, “Major accidents threaten health and life through radioactive contamination, and have negative effects on the environment on a global scale.”

2.4.3 Information Dissemination in Respondents’ Countries

What do you think is the level of dissemination of nuclear information conducted by your national or local government?

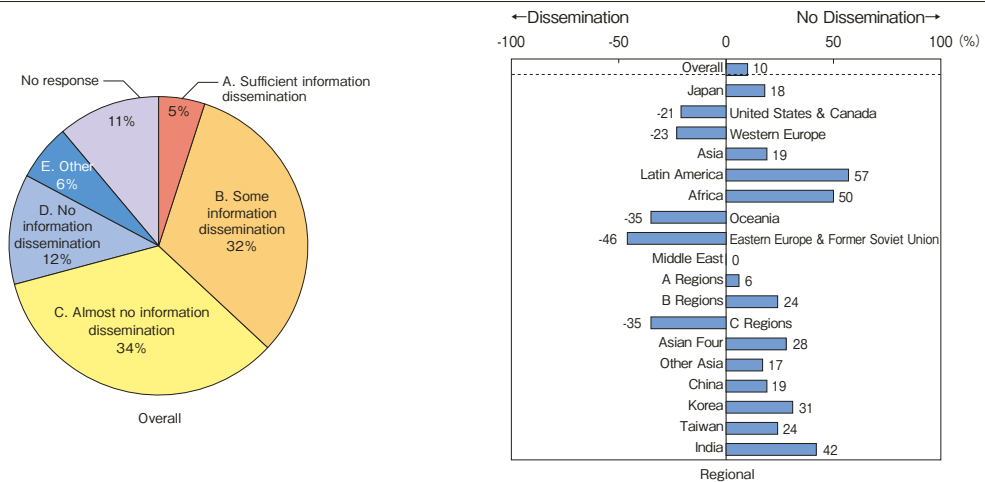


Figure 2.4.11 Information Dissemination in Respondents’ Countries

- The majority of respondents in the United States & Canada, Western Europe, Oceania and Eastern Europe & former Soviet Union indicated that there was either “sufficient” or “some level of” information dissemination about nuclear power in their countries. In contrast, a large number of respondents from Asia including Japan, Latin America and Africa stated that either there was “almost no” or “no” information dissemination in their countries.

3. Collaboration Activities Overseas

The Environmental Doomsday Clock Invites Activities from the World

Regular distributions of the Annual Survey report “Questionnaire on Environmental Problems and the Survival of Humankind” to people who are concerned about the future of planet Earth have enhanced awareness of the environmental situation that we all face and also sparked several collaborative actions from our readers.

Montenegro

In April 2010 the Economic Development Minister Branimir Gvozdenovic presented the “Excellence prize” of the 16th Ecology Fair in Budva to Montenegro Climate Change AGF, an environmental NPO in Montenegro. Mr. Miroslav Raicevic, representing the NPO, participated in the Fair, and gave a splendid presentation of their activities in connection with “The Environmental Doomsday Clock.”

Excellence prize certificate



Mr. Raicevic



Environmental Minister Gvozdenovic in the fair

Taiwan

Another example of collaboration was The Good Neighbor Foundation Taiwan, supported by Taiwan 7-eleven. The foundation created “The Environmental Doomsday Clock” composed of flowers and grass in the small Swiss Garden of Cingjing Farm (Natou County, Taiwan). A notice board was installed next to the clock to alert the Taiwanese people to the importance of environmental issues.



4. In Closing

The fact that we have been able to conduct this survey so successfully over two decades is owed to the firm dedication of our respondents, environmental experts from around the world, who have given us helpful and informed responses every year. We would also like to express our gratitude to Professor Akio Morishima, Special Research Advisor of the Institute for Global Environmental Strategies, for providing us with his invaluable advice.

As we seek to create a more informative and contemporary environmental survey, the categories of environmental concerns have changed from the agenda 21 set to the current set, as defined by the concept of Planetary Boundaries by Dr. Johan Rockström et al. of the Stockholm Environmental Institute. Accompanying this change in the categories, is a revision in the method of calculating “The Environmental Doomsday Clock” time, showing a clearer connection between the environmental issues the respondents found most pressing and the time that they chose. We hope these changes help make the survey more meaningful for its readers.

Our aspiration is to continue to publish this survey in the hope that it will help maintain and perhaps even increase interest in environmental issues. We therefore renew our pledge to join with our respondents and contribute to the resolution of the world’s environmental concerns.



This Clock Must Not Strike Midnight – It's time to reverse the clock.

The Earth might be running out of time.
Your answers to our questionnaire could help turn back the clock
and preserve our planet.

Questionnaire Respondents Wanted

The **Environmental Doomsday Clock** displays the level of anxiety felt by respondents about the ultimate fate of the Earth, with 12:00 representing the highest level of concern—in effect—that time has run out.



This survey is open to all who are concerned about maintaining a healthy and sustainable diversity of life on Earth. Your answers to the questionnaire will help raise environmental awareness around the world, and we are grateful to you for taking the time to give a considered response.

Register to receive the questionnaire at : www.af-info.or.jp

Attachment-1 List of 175 Countries Responded to the Survey since 1992

Japan

Asian Four (4)

HONG KONG
KOREA
SINGAPORE
TAIWAN

Other Asia (Exceptt Japan & Asian Four 19)

AFGHANISTAN
BANGLADESH
BHUTAN
BRUNEI
CAMBODIA
CHINA
INDIA
INDONESIA
LAOS
MALAYSIA
MALDIVES
MONGOLIA
MYANMAR
NEPAL
PAKISTAN
PHILIPPINES
SRI LANKA
THAILAND
VIETNAM

Western Europe (22)

AUSTRIA
BELGIUM
DENMARK
FINLAND
FRANCE
GERMANY
GIBRALTAR
GREECE
ICELAND
IRELAND
ITALY
LIECHTENSTEIN
LUXEMBOURG
MALTA
MONACO
NETHERLAND
NORWAY
PORTUGAL
SPAIN
SWEDEN
SWITZERLAND
UK

Oceania (8)

AUSTRALIA
FIJI
KIRIBATI
NEW CALEDONIA
NEW ZEALAND
PAPUA NEW GUINEA
SAMOA
TUVALU

Central America (21)

ANTIGUA AND BARBUDA

BAHAMAS
BARBADOS
BELIZE
BERMUDA
COMMONWEALTH OF DOMINICA
COSTA RICA
CUBA
CURACAO
DOMINICAN REPUBLIC
EL SALVADOR
GRENADA
GUATEMALA
HONDURAS
JAMAICA
MEXICO
NICARAGUA
PANAMA
PUERTO RICO
SAINT LUCIA
TRINIDAD AND TOBAGO

South America (12)

ARGENTINA
BOLIVIA
BRAZIL
CHILE
COLOMBIA
ECUADOR
GUYANA
PARAGUAY
PERU
SURINAME
URUGUAY
VENEZUELA

Middle East (12)

BAHRAIN
CYPRUS
IRAN
ISRAEL
KUWAIT
LEBANON
OMAN
QATAR
SAUDI ARABIA
SYRIA
TURKEY
YEMEN

Eastern Europe & former Soviet Union (24)

ALBANIA
AZERBAIDJAN
BELARUS
BULGARIA
CROATIA
CZECH
ESTONIA
GEORGIA
HUNGARY
KAZAKHSTAN
KYRGYZ
LATVIA
LITHUANIA
MACEDONIA
MOLDOVA

POLAND
ROMANIA
RUSSIA
(SERVIA and MONTENEGRO)
SLOVAKIA
SLOVENIA
TURKMENISTAN
UKRAINE
UZBEKISTAN

United States & Canada (2)

CANADA
USA

Africa (50)

ALGERIA
ANGOLA
BENIN
BOTSWANA
BURKINA FASO
BURUNDI
CAMEROON
CAPE VERDE
CENTRAL AFRICA
CHAD
COMOROS
COTE D'IVOIRE
EGYPT
EQUATORIAL GUINEA
ERITREA
ETHIOPIA
GABON
GAMBIA
GHANA
GUINEA
GUINEA-BISSAU
KENYA
LESOTHO
LIBERIA
LIBYA
MADAGASCAR
MALAWI
MALI
MAURITANIA
MAURITIUS
MOROCCO
MOZAMBIQUE
NAMIBIA
NIGER
NIGERIA
REPUBLIC OF CONGO
RWANDA
SAO TOME AND PRINCIPE
SENEGAL
SEYCHELLE
SIERRA LEONE
SOUTH AFRICA
SUDAN
SWAZILAND
TANZANIA
TOGO
TUNISIA
UGANDA
ZAMBIA
ZIMBABWE

