



**Results of the 27th Annual
“Questionnaire on Environmental Problems and the Survival of
Humankind”**

Report

September 2018

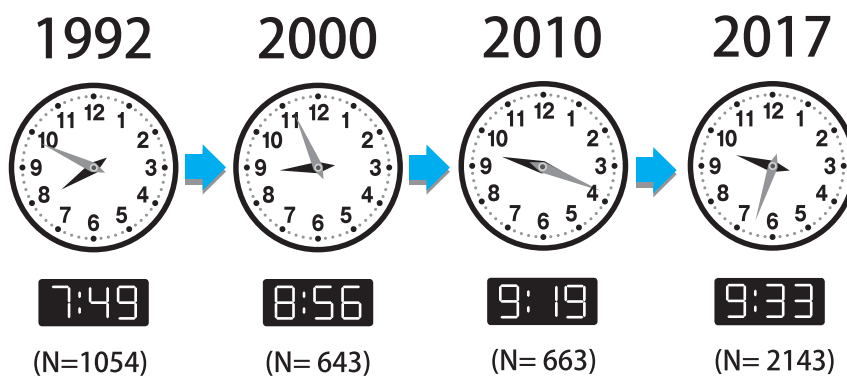
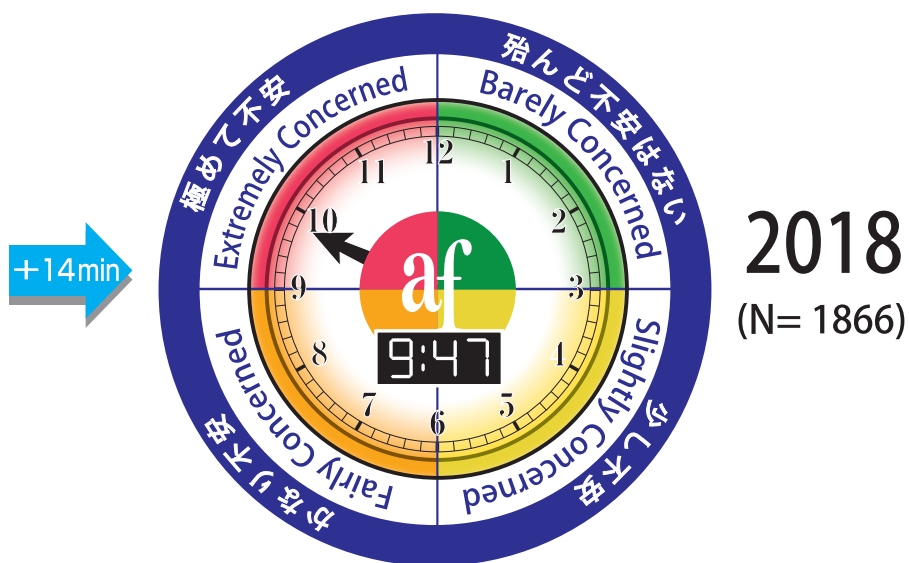
THE ASAHI GLASS FOUNDATION

Contents

Foreword	1
I. Facts about the 27th Annual “Questionnaire on Environmental Problems and the Survival of Humankind”	2
II. Summary of Questionnaire Results	3
III. Questionnaire Results	4
Awareness of the Crisis Facing Human Survival.....	4
A. The Environmental Doomsday Clock.....	4
B. Environmental Issues to be Taken Into Account.....	7
IV. Data	25
V. Questionnaire as Distributed to Respondents	29
Reference: Changes in the Environmental Doomsday Clock	31

The Environmental Doomsday Clock

the sense of crisis felt about the continuance of the human race



Foreword

This report summarizes the results of the 2018 Questionnaire on Environmental Problems and the Survival of Humankind, a survey conducted annually by the Asahi Glass Foundation since 1992. As in previous years, the Asahi Glass Foundation wishes to continue communicating the current thoughts and opinions of environmental experts around the world on the state of the global environment to as many people as possible.

Thanks to the cooperation of the participants, we received 1,866 responses to the questionnaire this year. (2,152 responses in 2017) We would like to express our gratitude for the opportunity to report once again this year on an environmental survey covering most regions of the world.

This year, the average time on the Environmental Doomsday Clock was 9:47, representing the most urgent sense of crisis since the survey began. It is noteworthy that for the first time respondents in their 20s and 30s moved the clock forward further than all age groups for the first time. Influenced perhaps by numerous respondents from China, these results show an increasing and changing awareness of the environmental crisis.

As in the previous fiscal year, we will post comments from respondents in each country on the website of the Asahi Glass Foundation (<http://www.af-info.or.jp/en/questionnaire/result.html>). Please refer to the views and opinions of environmental experts.

At the Foundation, we sincerely hope that we can contribute to the resolution of environmental problems using this questionnaire to raising environmental interest among as many people as possible, not limited to environmental experts.

Once again, we extend our deepest gratitude to the respondents for taking the time to share their valuable opinions and experience through the survey. In closing, we appeal to readers of this report for advice on how to enhance the survey in the coming years.

The Asahi Glass Foundation
September 2018

I. Facts about the 27th Annual “Questionnaire on Environmental Problems and the Survival of Humankind”

Response period: Questionnaires were sent out in April 2018 with a return deadline of June 2018.

Questionnaire respondent pool: Environmental experts selected from members of government organizations, academic institutions, NGOs, corporations, and mass media (based on the Asahi Glass Foundation database).

Questionnaires mailed: 24,472

Questionnaires returned: 1,866

Response rate: 7.6%

Table 1. Breakdown of respondents by region, gender, and occupational affiliation:

Region	Number of responses	Percent of total
Oceania	61	3.3
United States & Canada	184	9.9
Central America, Caribbean countries	38	2.0
South America	77	4.1
Western Europe	171	9.2
Africa	78	4.2
Middle East	38	2.0
Eastern Europe & former Soviet Union	60	3.2
Asia	1138	61.0
Total (Including 21 area unknown responses)	1866	100.0

Gender	Number of responses	Percent of total
Male	1237	66.3
Female	616	33.0
Others	6	0.3
No response	7	0.4
Total	1866	100.0

Occupational Affiliation	Number of responses	Percent of total
Central government, Local government	238	12.8
University or research institution	575	30.8
NGO/NPO	378	20.3
Corporation	387	20.7
Mass Media	35	1.9
Other	247	13.2
No response	6	0.3
Total	1866	100.0

*1 Unless otherwise noted, the questionnaire calculated as 100% the total number of responses received for questions where respondents were only asked to choose one item. For questions with multiple selections, the questionnaire calculated the percentages based on the number of times a valid response was given.

*2 Figures have been rounded to the first or second decimal places.

*3 Each question was calculated based on the number of responses to that question and not the number of questionnaires that were returned.

II. Summary of Questionnaire Results

1. Awareness of the Crisis Facing Human Survival —The Environmental Doomsday Clock

- The average time on the Environmental Doomsday Clock for all the world was 9:47, an advancement of 14 minutes from last year.
- This time shows the highest environmental risk awareness level since the survey began in 1992.
- Overall, “Climate change” continued from last year to be the most frequently selected Environmental issues to be taken into account in determining the time on the Environmental Doomsday Clock. This was followed by “Biosphere Integrity (Biodiversity),” “Water Resources,” “Society, Economy and Environment,” “Population,” “Biochemical flows (Pollution/Contamination),” “Land-System Change (Land Use),” and “Lifestyles (Consumption Habits).”
- Overall, when arranging the top-ranked Environmental issues to be taken into account in descending order of severity on the Environmental Doomsday Clock, “Food,” and “Population” had the most advanced time. These were followed by “Biosphere Integrity (Biodiversity),” “Climate Change,” “Biochemical flows (Pollution/Contamination),” “Lifestyles (Consumption Habits),” then “Water Resources,” and “Society, Economy and Environment.”
- In comparison with 2017, the clock time of “Food,” “Biochemical flows (Pollution/Contamination),” “Population” and “Lifestyles (Consumption Habits),” in particular has advanced significantly.

2. Shifts in the Environmental Doomsday Clock Based on Respondent Age

We analyzed the shifts in the time on the Environmental Doomsday Clock from 2011 to 2018 as marked by respondents around the world, with a particular focus on the age of the respondents.

- Until 2015 older survey respondents tended to report more advanced times on the Environmental Doomsday Clock. This year, however, younger respondents in their 20s and 30s showed the highest level of awareness, advancing the clock the furthest.

III. Questionnaire Results

1-1. Awareness of the Crisis Facing Human Survival - The Environmental Doomsday Clock

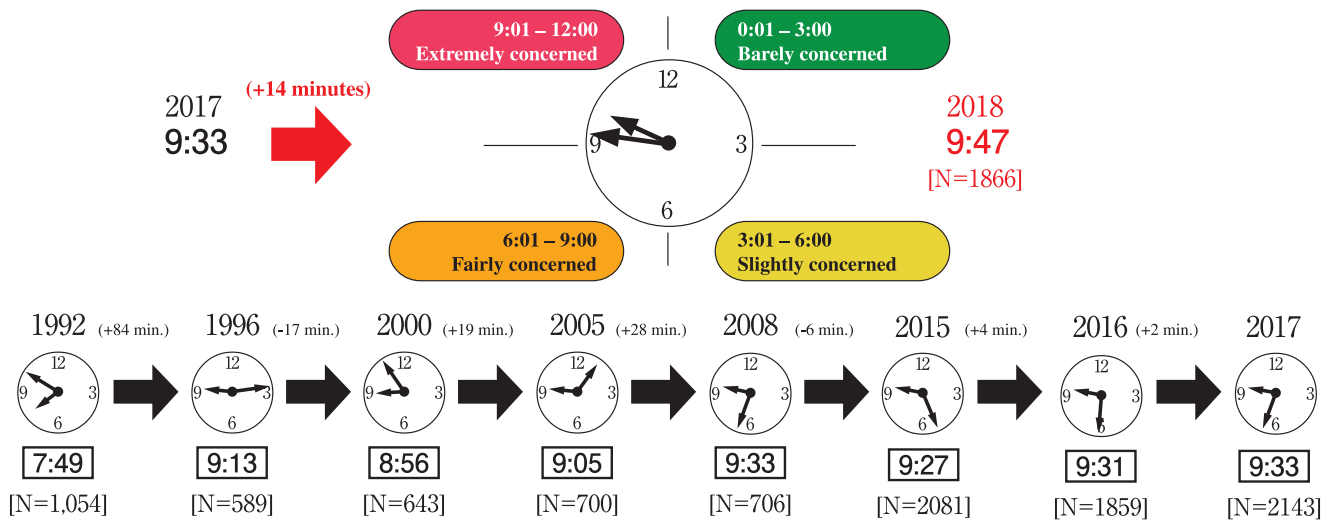
In Table 2, “Environmental issues to be taken into account” are shown. Keeping in mind the problems that the environment faces at a global level, please select the three most pressing issues for the country or the region where you reside. Then, please rank them in the order of importance. Lastly, for each item, select a time using hours and minutes between 0:10 to 12:00, to indicate the level of crisis for that issue. For the purposes of calculating results, please select your times in units of 10 minutes.

About the calculation of the time on the Environmental Doomsday Clock

The time on the Environmental Doomsday Clock will be determined by taking the weighted average of the data. The issue ranked in first place will be weighted at 50%, second place at 30%, and third place at 20%.

A-1. The Environmental Doomsday Clock

Fig.1 Concern about Human Survival Prospects



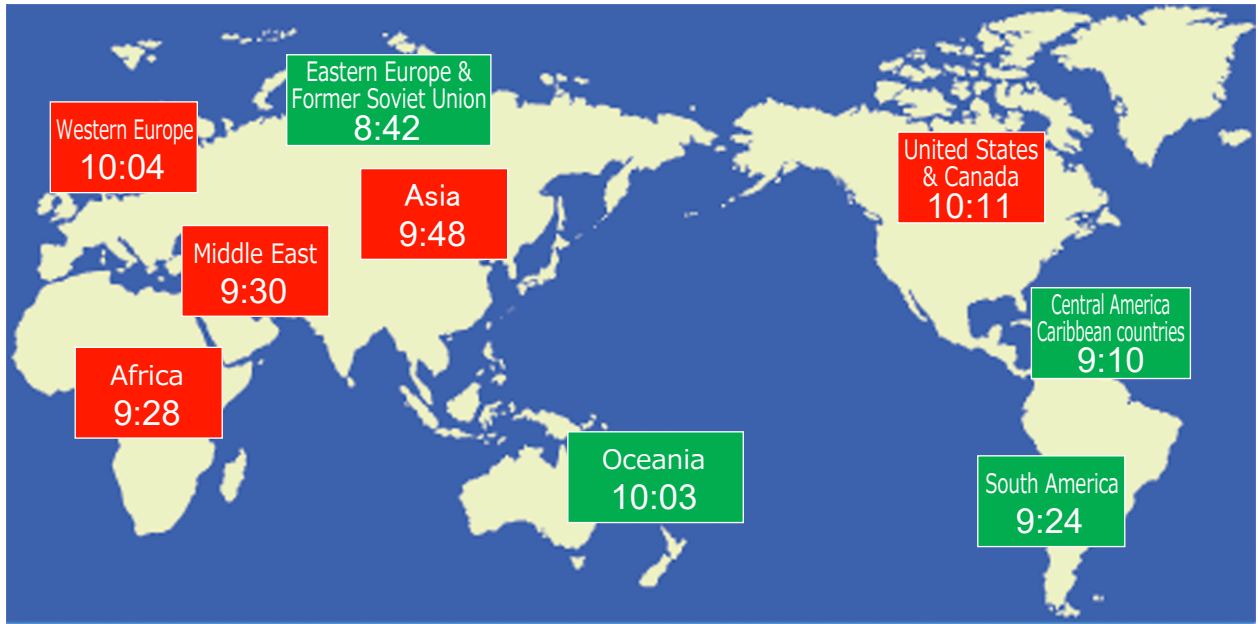
	Changes in time from year to year			Changes in average time by region (min.)	
	'07	'17	'18	'07→'18	'17→'18
Total	9:31	9:33	9:47	+16	+14
Oceania	10:27	10:13	10:03	-24	-10
United States & Canada	9:40	10:08	10:11	+31	+3
Central America, Caribbean countries	9:38	9:19	9:10	-28	-9
South America	*	9:32	9:24	-14	-8
Western Europe	9:23	9:45	10:04	+41	+19
Africa	10:02	9:12	9:28	-34	+16
Middle East	9:41	9:05	9:30	-11	+25
Eastern Europe & former Soviet Union	9:20	8:47	8:42	-38	-5
Asia	9:27	9:25	9:48	+21	+23

(Red indicates the advancement in time from last year; Green indicates a reversal)

*Central America, Caribbean countries and South America are comparisons with Latin America

- The average time on the Environmental Doomsday Clock for all respondents was 9:47, an advancement of 14 minutes from last year's time of 9:33.

Fig.2 Regional Times

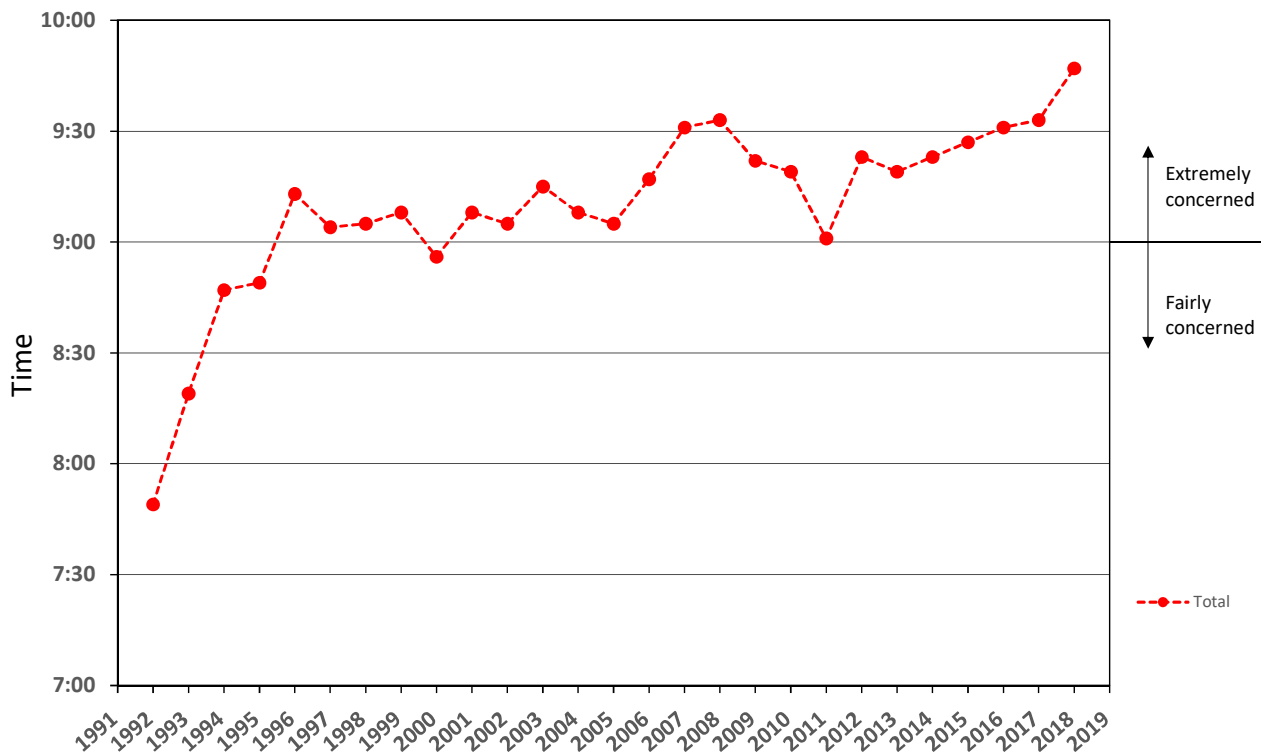


■ Represents regions/countries where the time advanced from last year
 ■ Represents regions/countries where the time retreated from last year

Fig.3 Changes in the Environmental Doomsday Clock (Overall)

1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	(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	9:19	9:23	9:27	9:31	9:33	9:47	

Since the inception of the survey, ■ represents the lowest sense of crisis, while ■ represents the highest.



A-2. Shifts in the Environmental Doomsday Clock Based on Respondent Age (2011 - 2018)

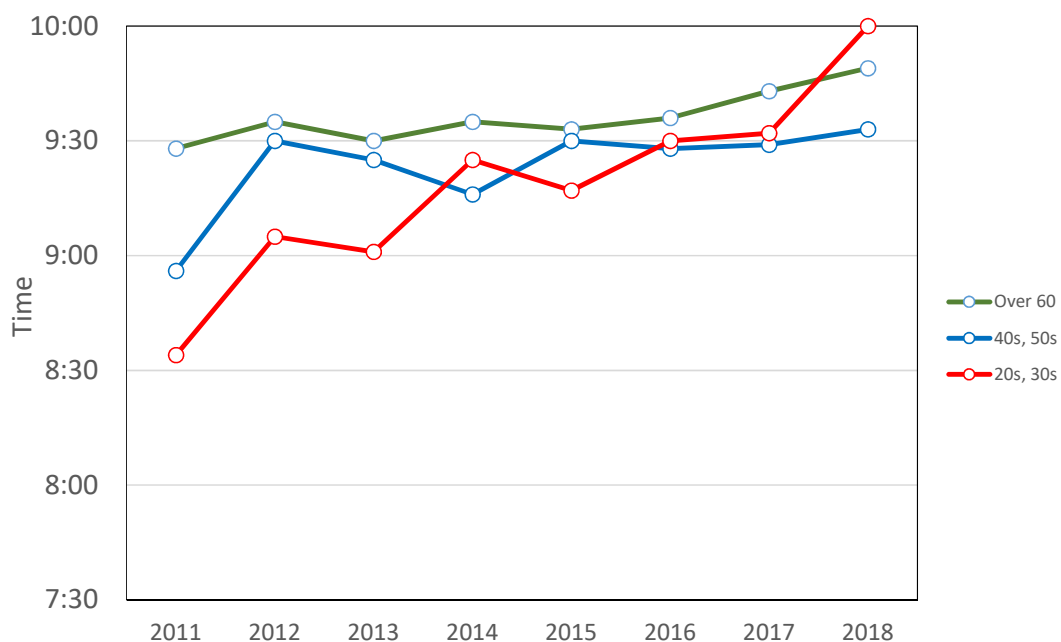
- Until 2015 older survey respondents tended to report more advanced times on the Environmental Doomsday Clock. This year, however, younger respondents in their 20s and 30s showed the highest level of awareness, advancing the clock the furthest.

A-2-1. Shifts in the Environmental Doomsday Clock by Generation

- The times reported by respondents over the age of 60, (the most advanced times of all age groups), remained stable between 9:28 and 9:36, until 2016. However, the clock has moved forward since 2017, reaching 9:49 this year.
- For respondents of the age group 40s and 50s, the Environmental Doomsday Clock advanced from 8:56 in 2011 to 9:30 one year later, but the times have remained relatively stable since then.
- The Environmental Doomsday Clock time for respondents in their 20s and 30s has advanced from 8.34 in 2011, and since 2016, has been tied with the time from respondents in their 40s and 50s. This year, however, the younger groups have advanced the clock 28 minutes to 10:00. This result was particularly influenced by highly aware respondents in their 20s from China.

Fig.4 Shifts in the Environmental Doomsday Clock by Generation

	2011	2012	2013	2014	2015	2016	2017	2018
Average Time	9:01	9:23	9:19	9:23	9:27	9:31	9:33	9:47
Over 60	9:28	9:35	9:30	9:35	9:33	9:36	9:43	9:49
40s, 50s	8:56	9:30	9:25	9:16	9:30	9:28	9:29	9:33
20s, 30s	8:34	9:05	9:01	9:25	9:17	9:30	9:32	10:00



B. Environmental issues to be taken into account

Table 2.

No.	Category	Examples of Observable Changes in the Country or the Region in which You Reside	Planetary Boundaries (PB)
1.	Climate Change	Global warming; CO₂% , ocean acidification ; climatic aberrations (droughts, torrential rains and flooding, severe storms, heavy snow, abnormal temperatures, desertification, etc.)	Climate Change Ocean Acidification Atmospheric aerosol loading Stratospheric ozone depletion
2.	Biosphere Integrity (Biodiversity)	Acceleration of species extinction rate ; effects of contamination, climate change, land use	Genetic diversity Functional diversity
3.	Land-System Change (Land Use)	Change in the amount of forest cover remaining at the tropical, temperate and boreal biomes. Change in the amount of cropland	Land-system change
4.	Biochemical flows (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	Chemical Pollution Nitrogen & Phosphorous Cycles
5.	Water Resources	Diminution of usable fresh water resources (depletion, contamination)	Freshwater Use
6.	Population	Population growth beyond what the Earth can support; aging of the population	Related with almost all the PB
7.	Food	Diminution of food supply from land and oceans	Related with almost all the PB
8.	Lifestyles (Consumption Habits)	Transformation of lifestyles away from excessive consumption of resources like energy	Related with almost all the PB
9.	Society, Economy and Environment	Establishing a Green Economy with environmental economics and accounting Environmental awareness at the individual and societal levels, progress of environmental education; poverty, governance; the status of women	Related with almost all the PB

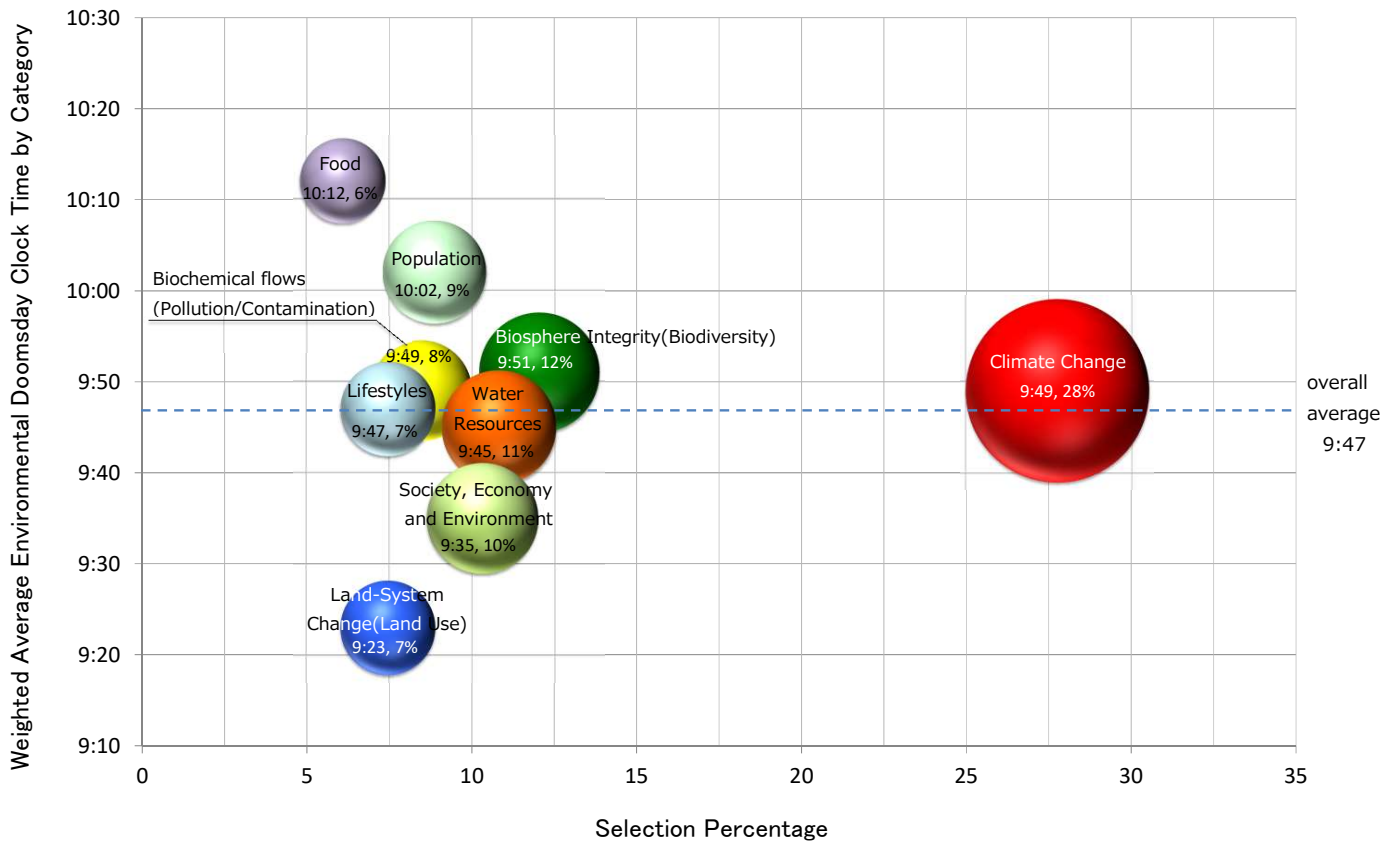
Category by **SDGs #** (Sustainable Development Goals: SDGs)

Terms in blue are categories listed in Planetary boundaries:

Will Steffen, Katherine Richardson, Johan Rockstrom et.al. Science 13 Feb 2015 vol. 347, issue 6223

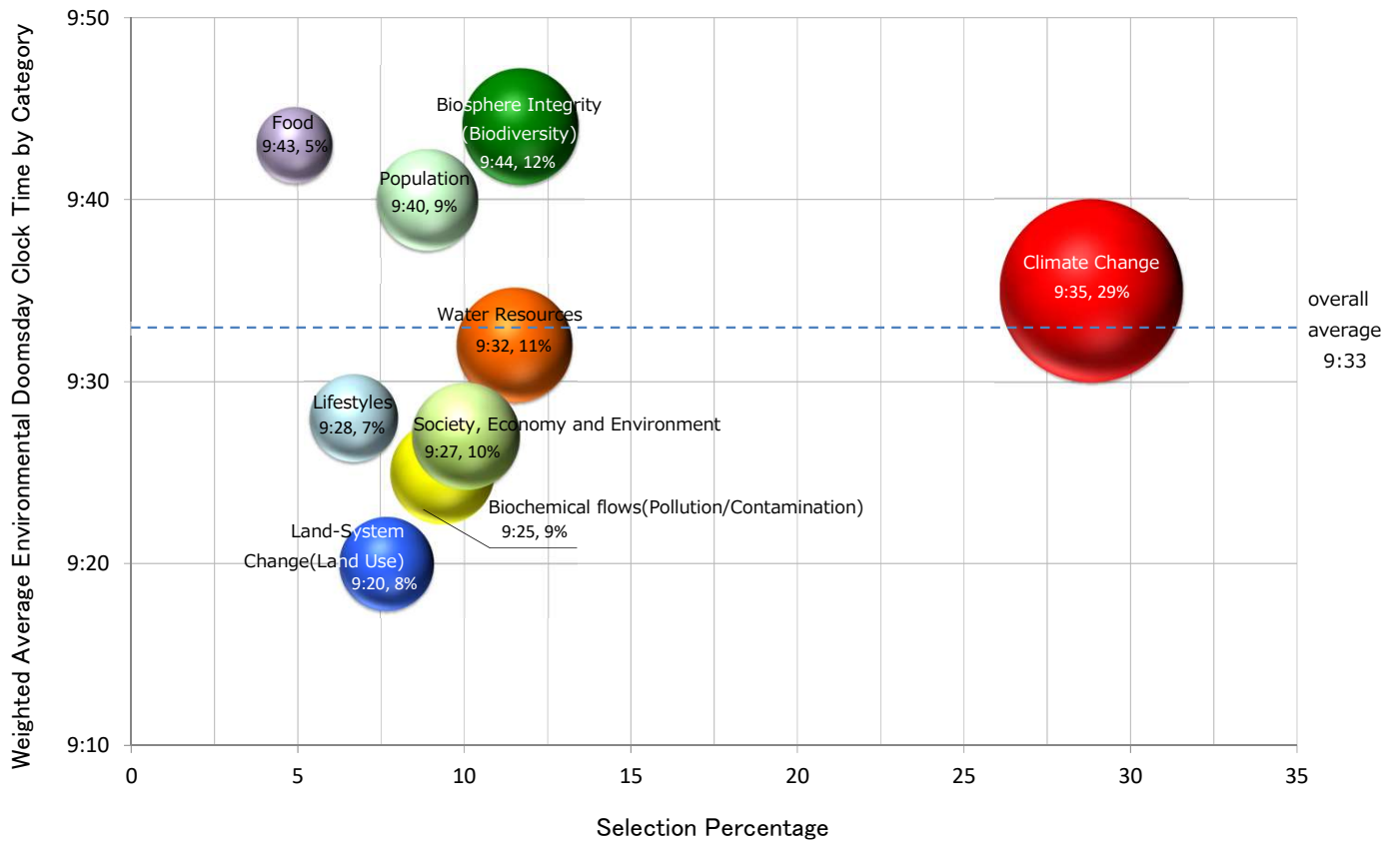
B-1. Overall Analysis of the Environmental Issues to Be Taken Into Account

Graph 1-1. Overall (2018)

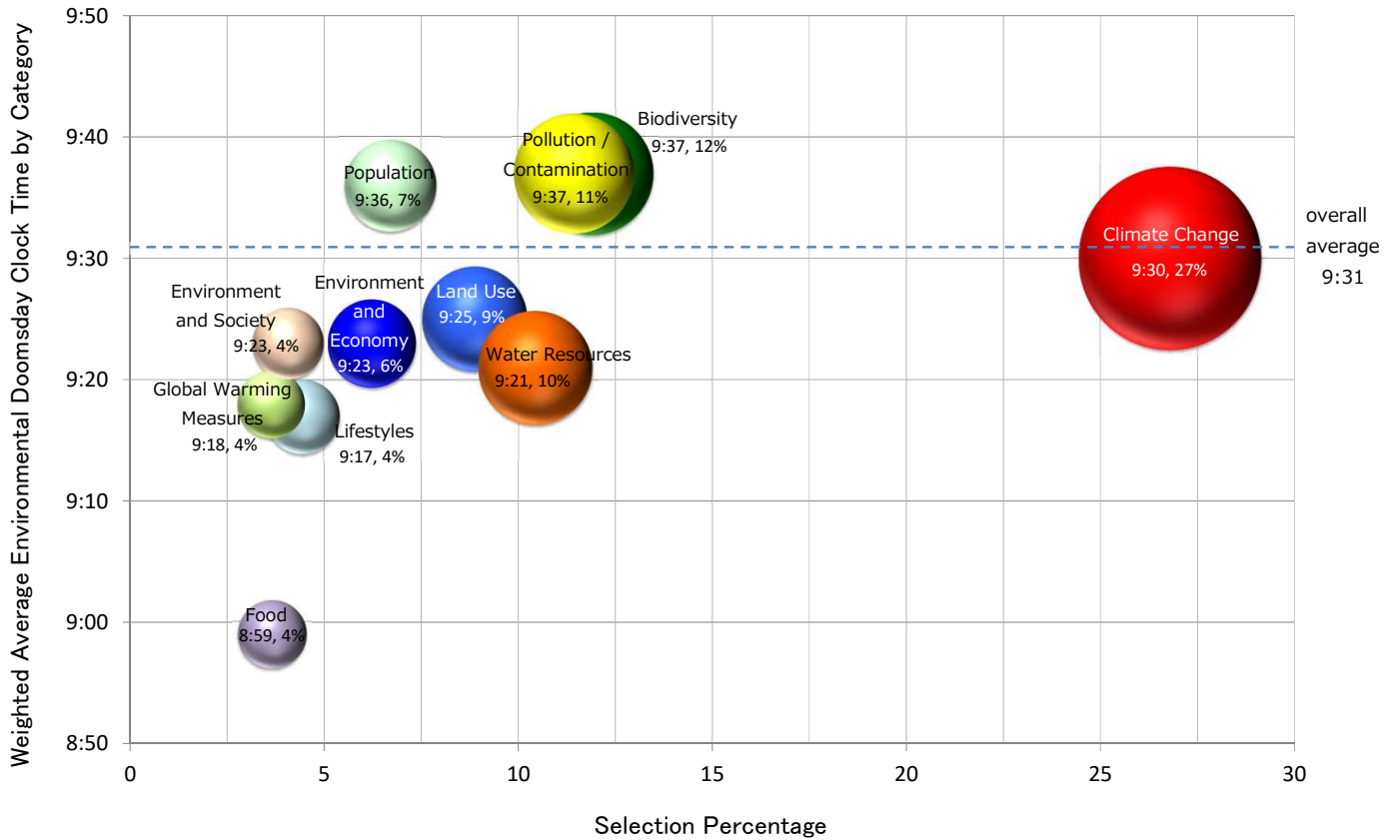


- Arranging the Environmental issues to be taken into account in order of the selection rate showed that overall, "Climate Change" continued from last year to be the most frequently selected issue, at 28%. This was followed by "Biosphere integrity (Biodiversity)" (12%), "Water resources" (11%), "Society, Economy and Environment" (10%), "Population" (9%), "Biochemical flows (Pollution/Contamination)" (8%) and "Land-System Change (Land Use)" (7%), "Lifestyles (Consumption Habits)" (7%).
- The top Environmental issues to be taken into account on the Environmental Doomsday Clock, in descending order of severity, are: "Food" (10:12), "Population" (10:02), "Biosphere integrity (Biodiversity)" (9:51), "Biochemical flows (Pollution/Contamination)" (9:49) and "Climate Change" (9:49). These all had more advanced times than average. followed by "Lifestyles" (9:47), "Water resources" (9:45) and "Society, Economy and Environment" (9:35).
- Since 2016, the time for "Food" in particular, has advanced significantly from 8:59 in 2016 to 9:43 in 2017 to 10:12 in 2018.

Graph 1-2. Reference (2017)

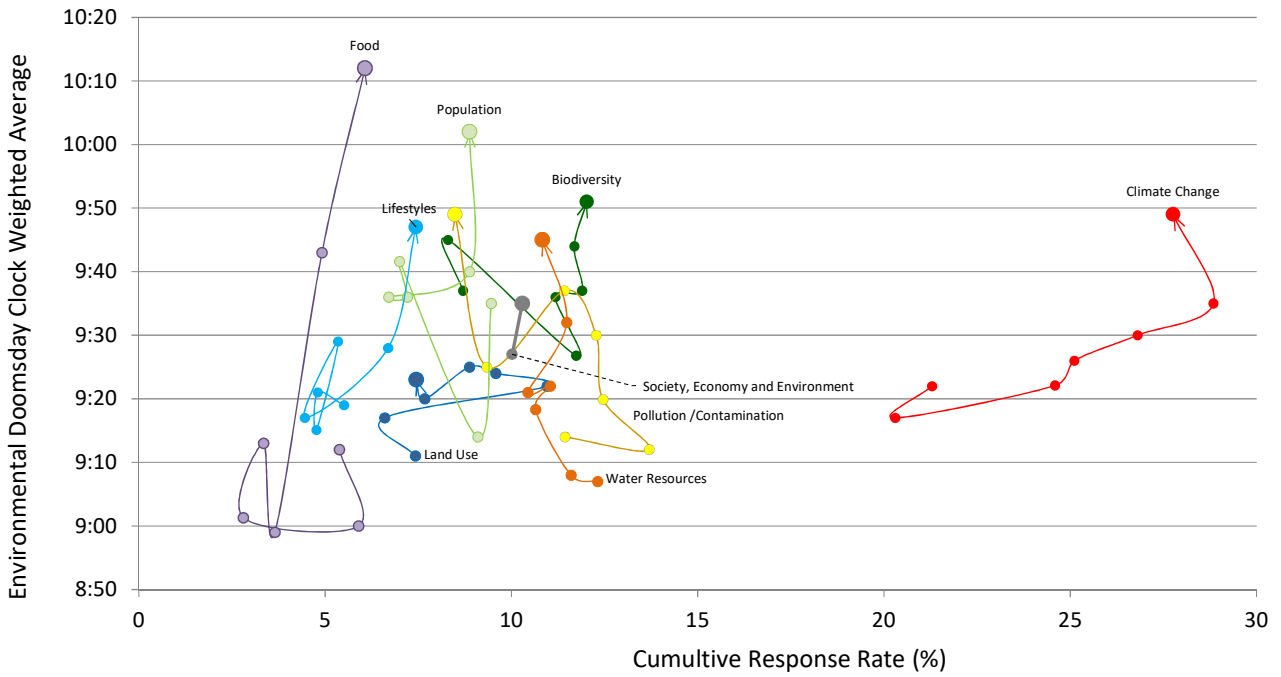


Graph 1-3. Reference (2016)

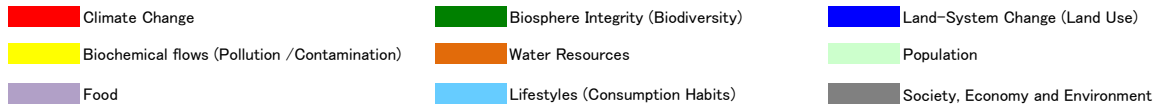


B-2. Distribution of the Environmental Conditions of Concern (2012 - 2018)

Graph 1-4.



※The “warming measures” “environment and economy” “environment and society” were deleted from 2017, and “society, economy an environment” were added newly.



B-3. Selection Patterns for Environmental Issues To Be Taken Into Account By Region

Table 3.

	1. Climate Change	2. Biosphere Integrity (Biodiversity)	3. Land-System Change (Land Use)	4. Biochemical flows (Pollution/Contamination)	5. Water Resources	6. Population	7. Food	8. Lifestyles (Consumption Habits)	9. Society, Economy and Environment
Global	27.8%	12.0%	7.4%	8.5%	10.8%	8.9%	6.1%	7.4%	10.3%
Oceania	31.0%	21.6%	13.0%	3.8%	3.9%	12.1%	0.0%	8.0%	6.6%
Oceania (Except Australia)	26.1%	25.6%	19.4%	10.0%	6.1%	3.9%	0.0%	5.0%	3.9%
Australia	33.0%	20.0%	10.2%	1.2%	3.0%	15.6%	0.0%	9.3%	7.7%
USA & Canada	34.7%	15.5%	6.4%	4.5%	7.8%	10.2%	0.9%	9.7%	10.0%
Canada	37.8%	20.5%	6.5%	3.5%	3.2%	4.6%	1.1%	13.8%	8.4%
USA	33.9%	14.3%	6.3%	4.8%	9.0%	11.6%	0.9%	8.6%	10.4%
Central America, Caribbean countries	24.7%	18.7%	11.1%	2.4%	12.9%	3.7%	0.0%	6.6%	12.1%
South America	18.4%	16.4%	22.5%	4.7%	13.5%	5.3%	1.4%	6.5%	10.0%
Western Europe	26.5%	21.5%	9.2%	6.1%	6.8%	9.3%	0.9%	11.8%	7.9%
UK	27.7%	21.8%	7.9%	6.2%	2.6%	10.3%	1.5%	14.9%	7.2%
Western Europe (Except UK)	26.1%	21.4%	9.6%	6.1%	8.0%	9.0%	0.8%	10.8%	8.1%
Africa	31.7%	13.3%	13.5%	2.6%	12.7%	8.1%	4.7%	2.1%	10.1%
Middle East	24.5%	11.8%	9.7%	3.4%	33.9%	4.7%	2.6%	2.9%	6.3%
Eastern Europe & former Soviet Union	19.7%	13.2%	13.0%	12.2%	9.7%	3.8%	0.0%	11.0%	17.5%
Asia	27.6%	8.8%	5.2%	10.6%	11.3%	9.4%	9.2%	6.8%	10.5%
Japan	36.5%	11.4%	4.1%	7.0%	6.3%	7.5%	5.8%	7.2%	13.7%
India	15.9%	15.1%	12.4%	6.5%	15.9%	21.2%	1.6%	3.7%	7.8%
China	19.0%	4.9%	3.7%	12.4%	16.0%	11.9%	16.5%	6.5%	8.1%
Taiwan	31.9%	5.9%	8.4%	21.9%	12.9%	1.7%	3.8%	3.5%	9.7%
Korea	37.8%	14.1%	0.0%	11.1%	2.0%	7.2%	1.3%	17.0%	9.5%
Asian*	26.5%	12.8%	13.1%	7.4%	12.0%	7.8%	3.5%	4.4%	11.5%

■ Represents the most frequently selected item in the region/country. ■ Represents the second most frequently selected item in the region/country

*With the exception of India, China, Taiwan, Korea, and Japan

- Overall, “Climate Change” was the most frequently selected issue at 27.8%. This was followed by “Biosphere integrity (Biodiversity)” (12.0%), “Water resources” (10.8%), “Society, Economy and Environment” (10.3%), “Population” (8.9%), “Biochemical flows (Pollution/Contamination)” (8.5%), “Land-system change (Land Use)” (7.4%) and “Lifestyle (Consumption Habits)” (7.4%).
- While “Climate Change” was the most frequently selected issue in most regions, the most frequently selected issues in the Middle East, South America and India were “Water Resources,” “Land-System Change (Land Use)” and “Population,” respectively.

B-4. Regional Distribution of the Environmental Doomsday Clock Time for Environmental Issues to be Taken Into Account

Table 4.

	Total	1. Climate Change	2. Biosphere Integrity (Biodiversity)	3. Land-System Change (Land Use)	4. Biochemical flows (Pollution/Contamination)	5. Water Resources	6. Population	7. Food	8. Lifestyles (Consumption Habits)	9. Society, Economy and Environment
Global	9:47	9:49	9:51	9:23	9:49	9:45	10:02	10:12	9:47	9:35
Oceania	10:03	10:34	10:19	8:33	10:08	10:06	10:18	-	10:13	9:31
Oceania(Except Australia)	8:49	8:52	9:15	6:22	-	-	-	-	-	-
Australia	10:35	11:09	10:55	10:14	-	-	10:26	-	11:03	9:01
USA & Canada	10:11	10:17	10:36	9:44	9:53	9:17	10:13	-	10:10	9:39
Canada	10:18	10:20	10:11	9:22	-	8:53	11:18	-	10:00	-
USA	10:10	10:17	10:46	9:48	9:48	9:19	10:07	-	10:11	9:37
Central America, Caribbean countries	9:10	9:23	8:30	9:08	-	9:47	-	-	9:28	9:34
South America	9:24	8:44	9:39	9:45	9:33	9:52	9:03	-	5:26	8:43
Western Europe	10:04	10:13	10:20	9:55	10:05	9:26	10:13	8:45	9:34	10:03
UK	10:09	10:36	10:03	9:45	10:15	-	9:54	-	10:01	10:16
Western Europe (Except UK)	10:02	10:08	10:26	9:59	10:01	9:24	10:19	8:55	9:23	10:01
Africa	9:28	9:32	9:52	9:25	9:04	9:25	9:48	8:37	10:42	10:08
Middle East	9:30	9:25	9:44	9:27	-	9:29	-	-	-	10:16
Eastern Europe & former Soviet Union	8:42	8:30	8:36	8:00	9:04	7:45	9:30	-	9:10	8:36
Asia	9:48	9:48	9:39	9:09	9:54	9:59	10:00	10:15	9:54	9:34
Japan	9:31	9:41	9:55	8:40	8:45	9:41	9:41	9:10	9:28	9:22
India	8:54	8:35	8:32	7:43	10:15	9:19	9:28	-	9:09	8:25
China	10:34	10:39	10:18	9:41	10:33	10:33	10:29	10:42	10:33	10:37
Taiwan	8:40	8:30	9:14	8:47	9:02	8:48	-	9:07	-	8:00
Korea	9:35	9:31	9:16	-	9:51	-	9:42	-	9:47	9:08
Asian*	9:12	9:09	9:09	9:30	9:43	8:32	9:49	8:34	9:31	9:16

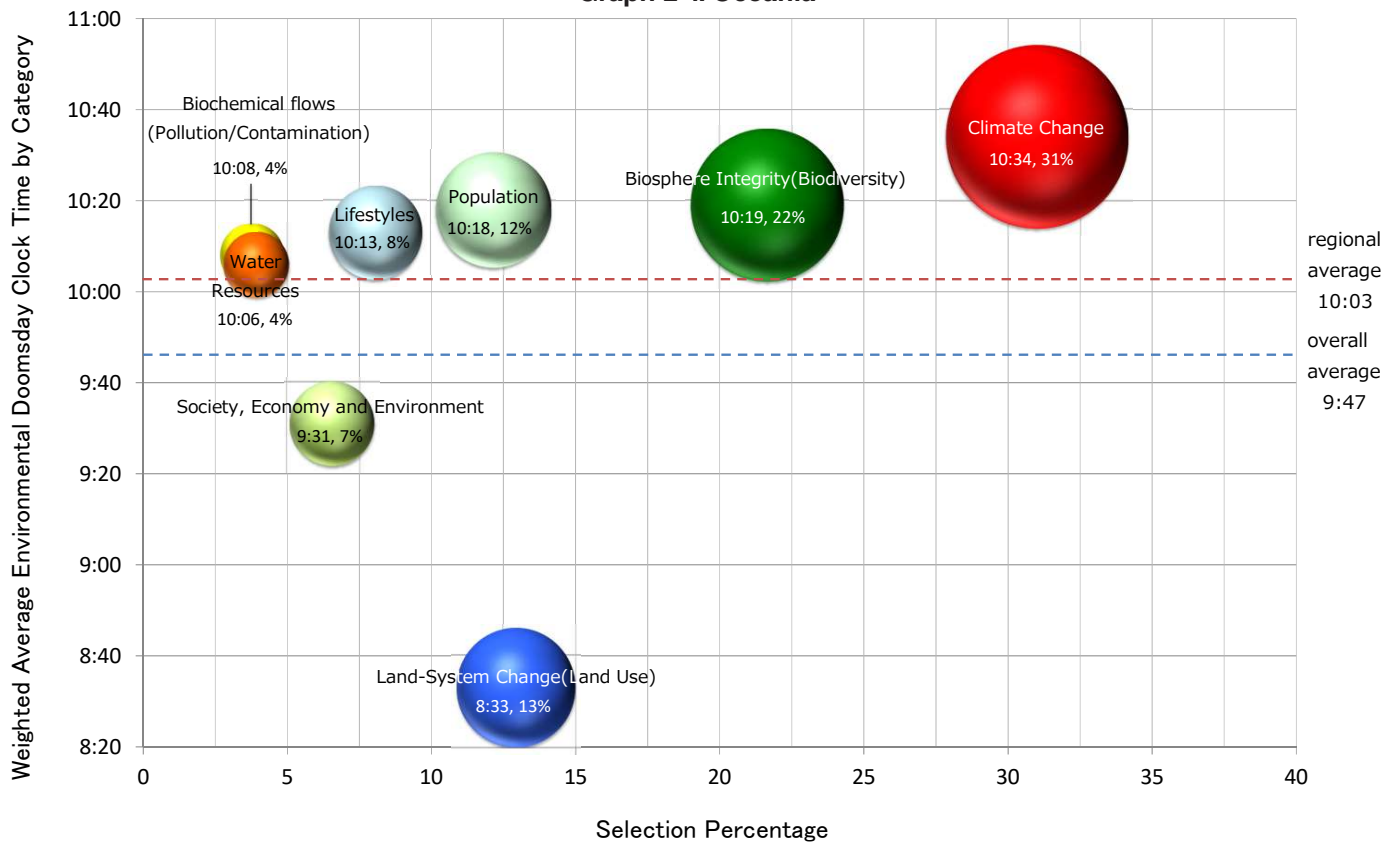
■ indicates the 11 o'clock hour, ■ indicates the 10 o'clock hour, □ Indicates the 9 o'clock hour, ■ indicates the 8 o'clock hour, and ■ the 7,6,5 o'clock hour

- Overall, "Food"10:12 and "Population"10:02 were the issues with the highest sense of crisis. These were followed by "Biosphere Integrity (Biodiversity)" 9:51", "Climate Change"9:49, "Biochemical flows (Pollution/Contamination)"9:49, "Lifestyles (Consumption Habits)" 9:47 and "Water Resources"9:45. All categories exceeded 9:20.
- While "Climate Change," was the most frequently cited condition of concern, its time on the Environmental Doomsday Clock was the fourth most advanced, at 9:49.

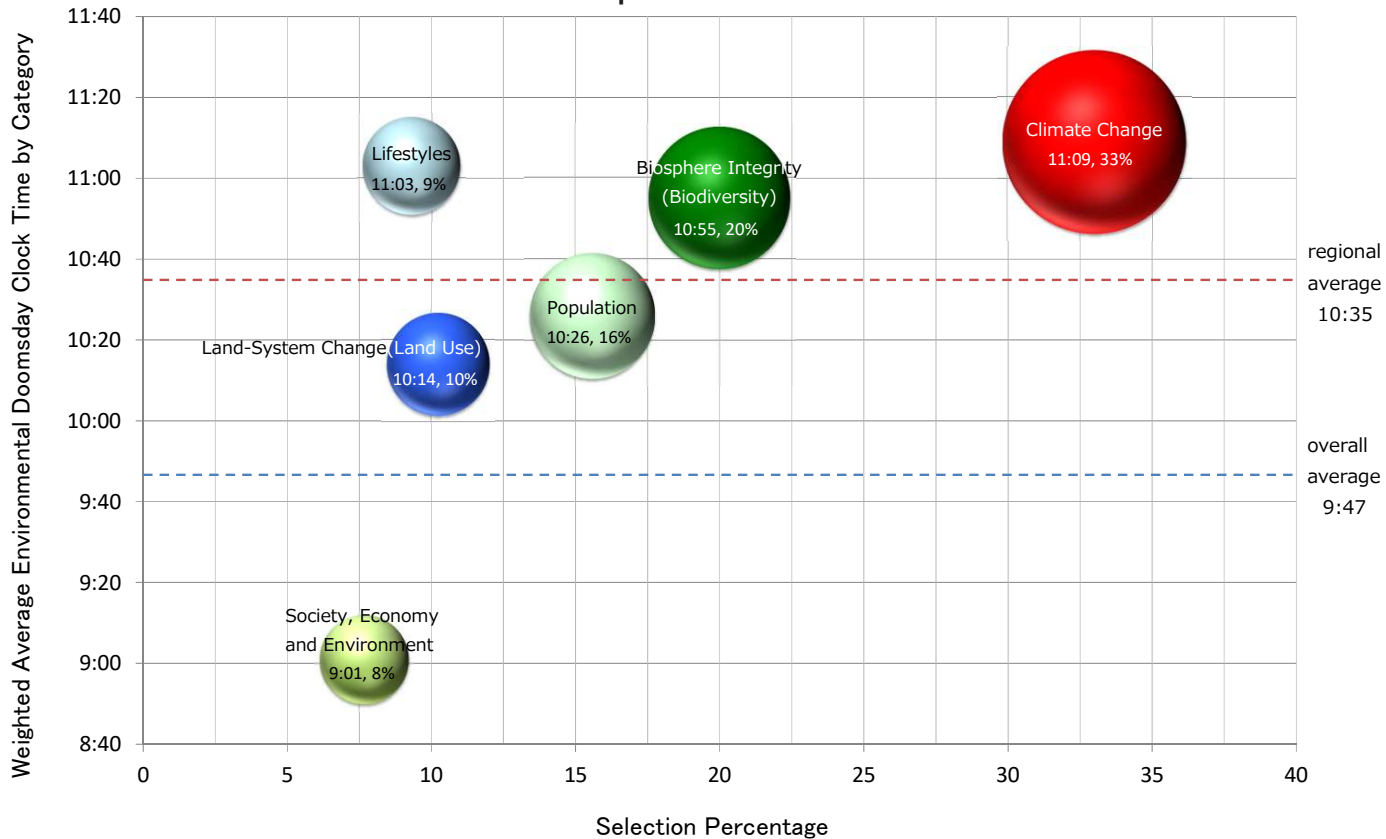
Table 5. Regions and Countries Expressing a High Degree of Crisis

Environmental issues to be taken into account	Regions Indicating an Environmental Doomsday Clock Time Past 10 O'clock
1.Climate Change	Australia, China, UK, Canada, USA, W. Europe(except UK)
2.Biosphere Integrity (Biodiversity)	Australia, USA, W. Europe(except UK), China, Canada, UK
3.Land-System Change (Land Use)	Australia
4.Biochemical flows (Pollution/Contamination)	China, India, UK, Oceania, W. Europe(except UK)
5.Water Resources	China, Oceania
6.Population	Canada, China. Australia, W. Europe(except UK), USA
7.Food	China
8.Lifestyles (Consumption Habits)	Australia, Africa, China, USA, UK, Canada
9.Society, Economy and Environment	China, UK, Middle East, Africa, W. Europe(except UK)

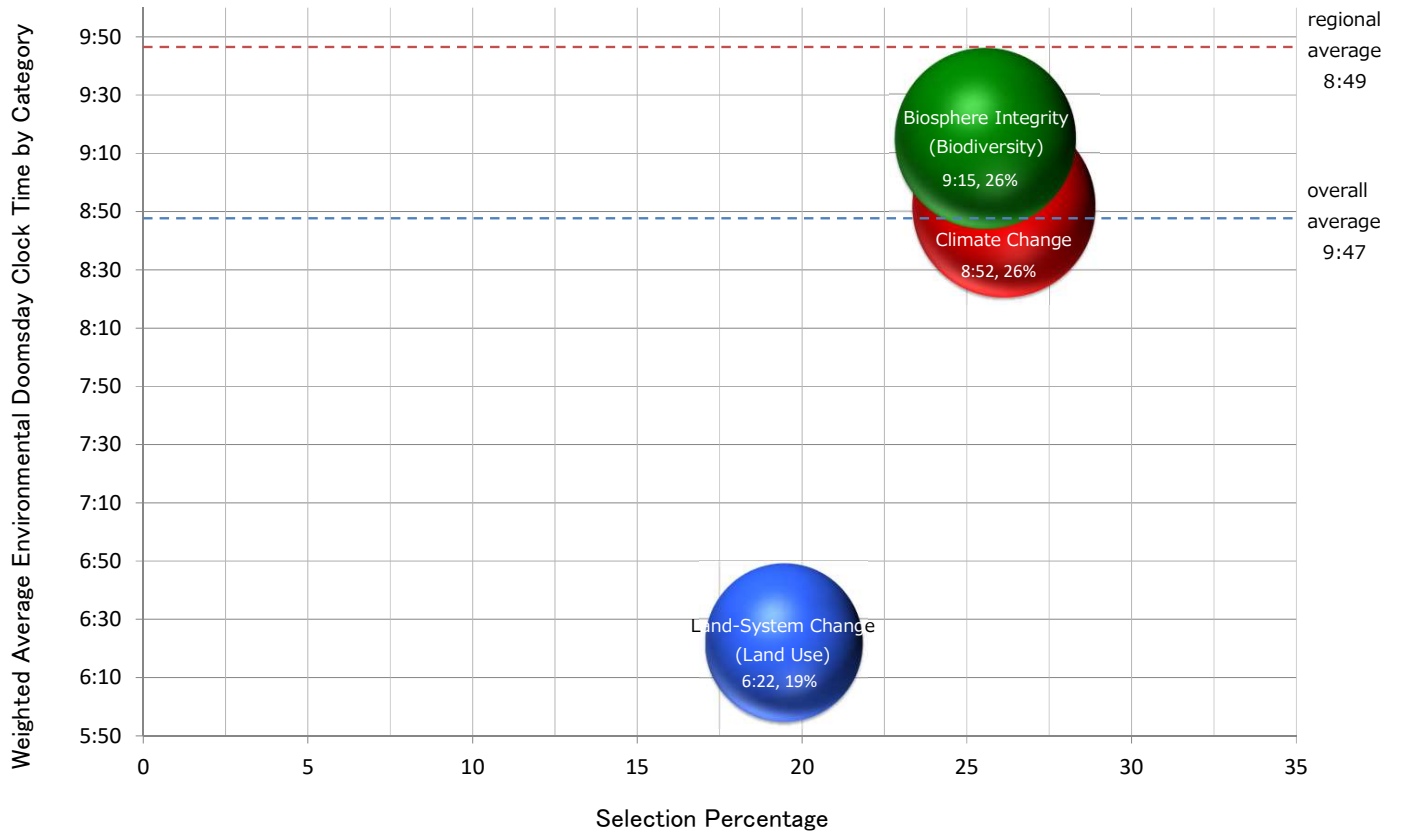
Graph 2-1. Oceania



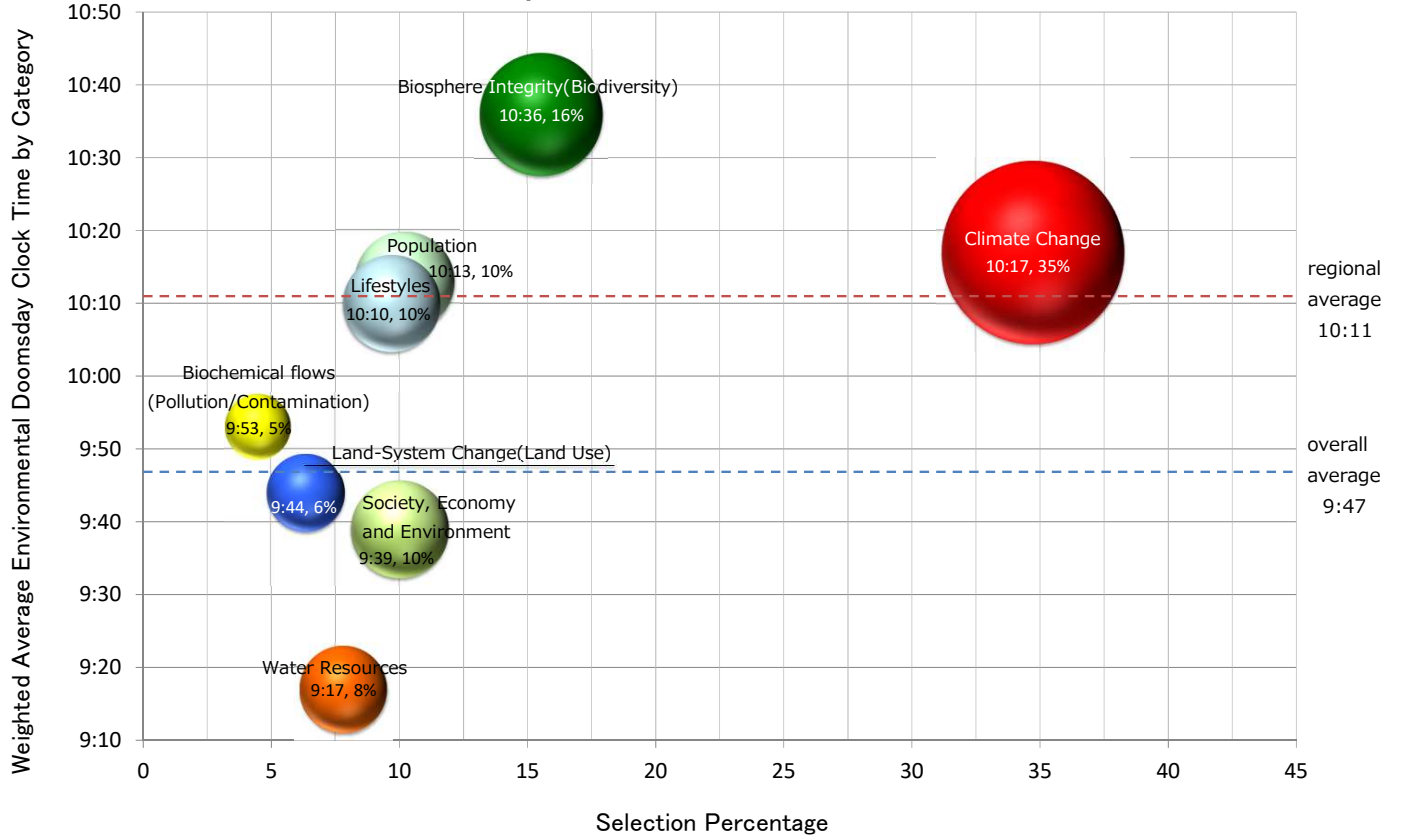
Graph 2-2. Australia



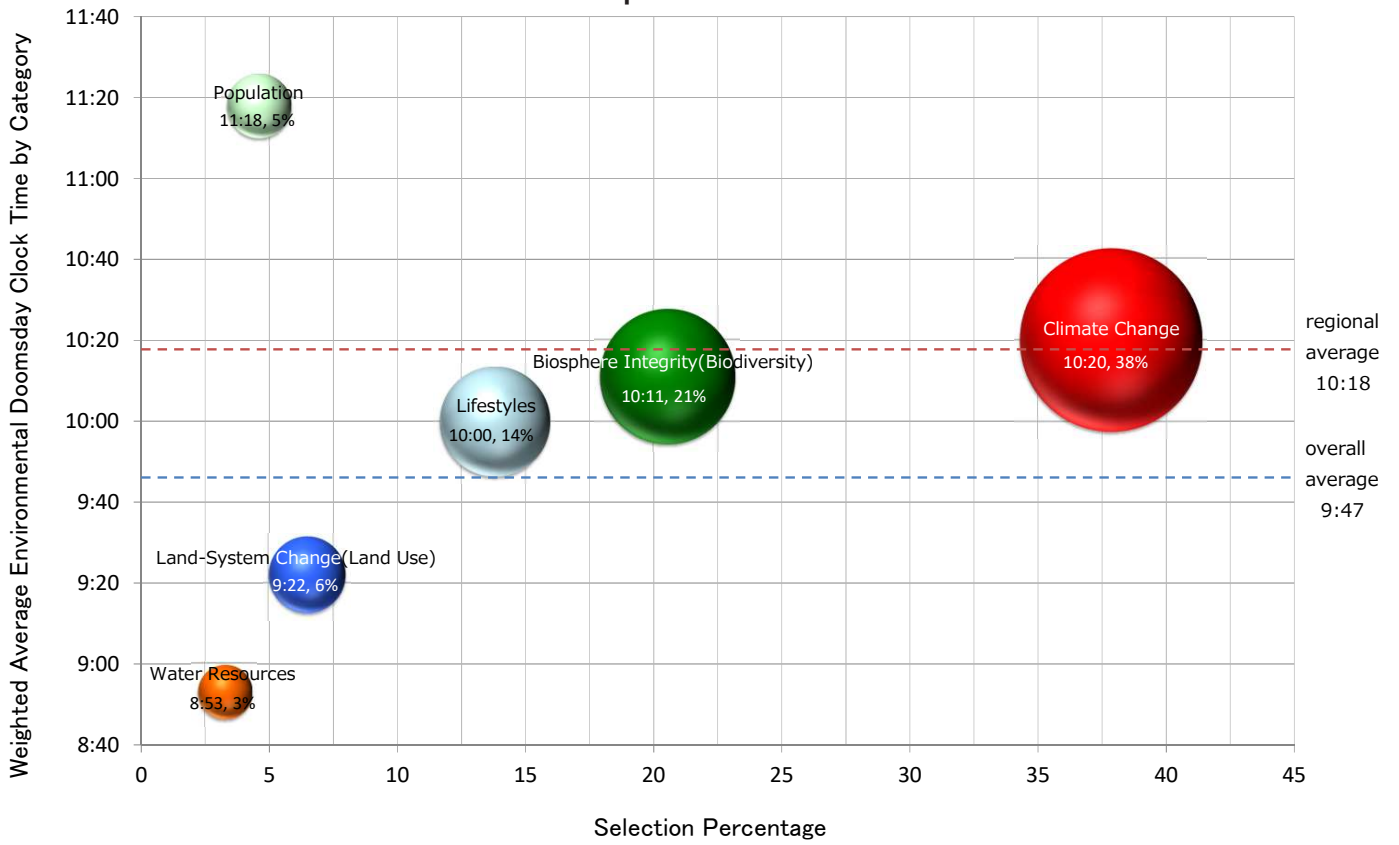
Graph 2-3. Oceania (Except Australia)



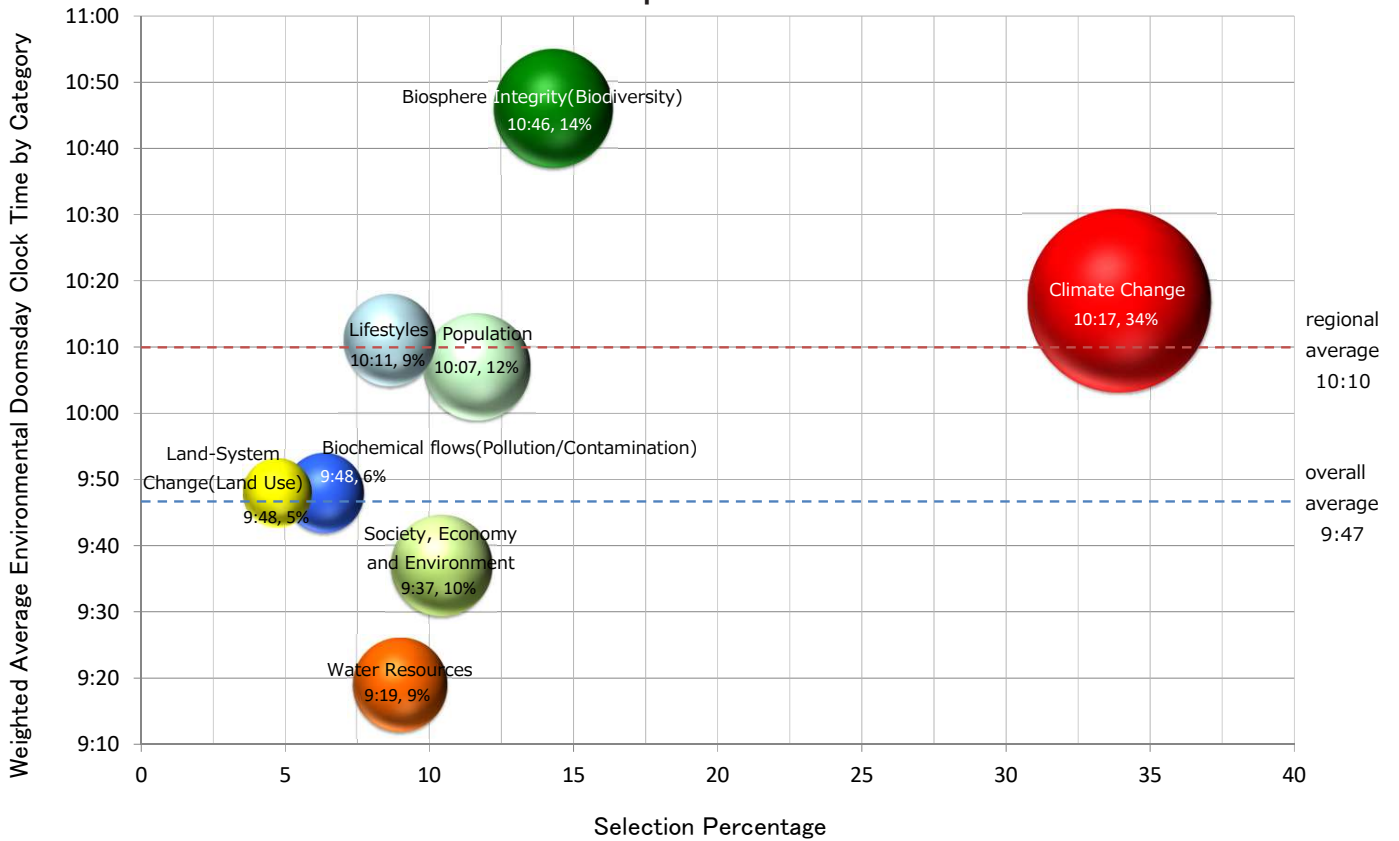
Graph 3-1. United States & Canada



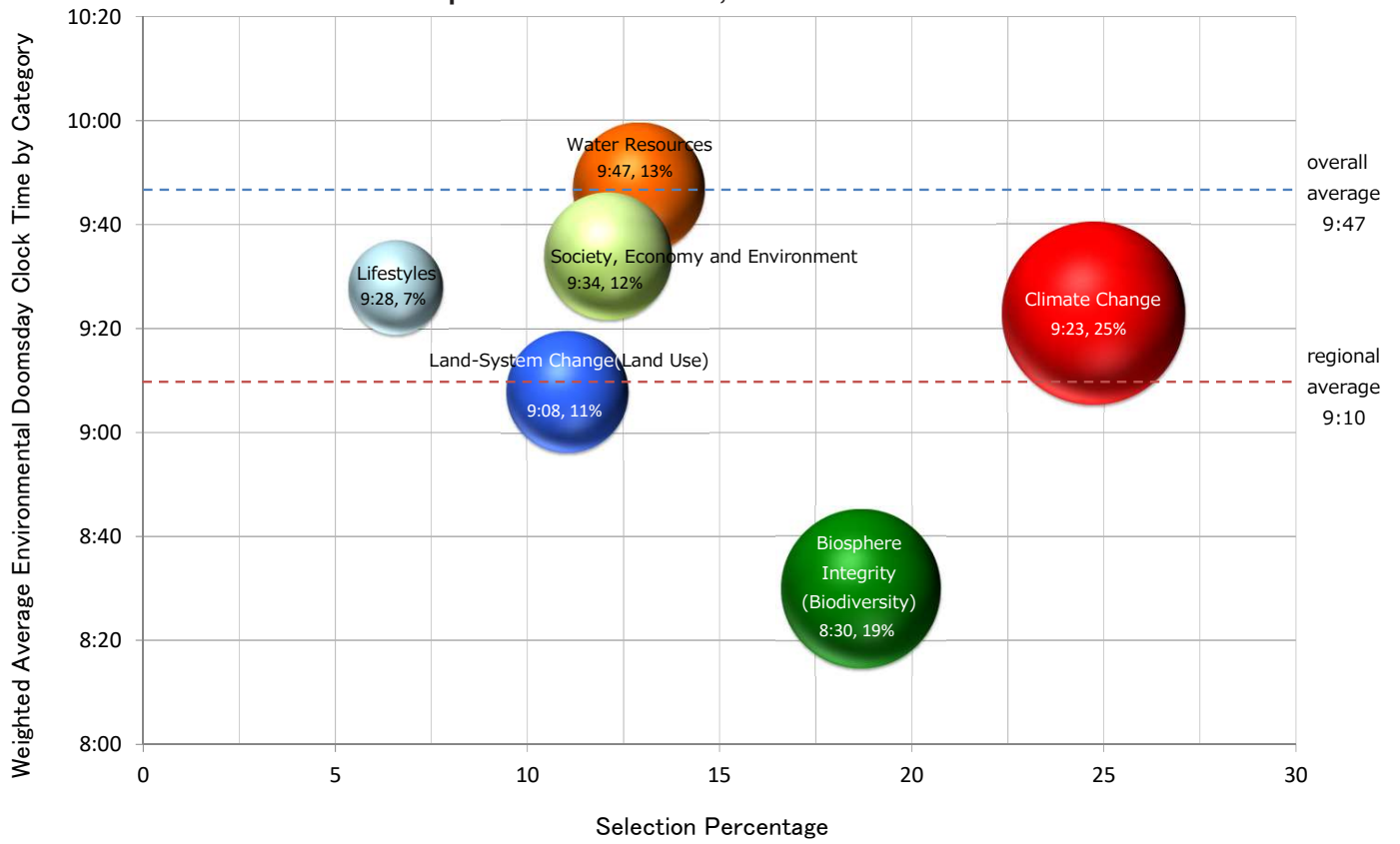
Graph 3-2. Canada



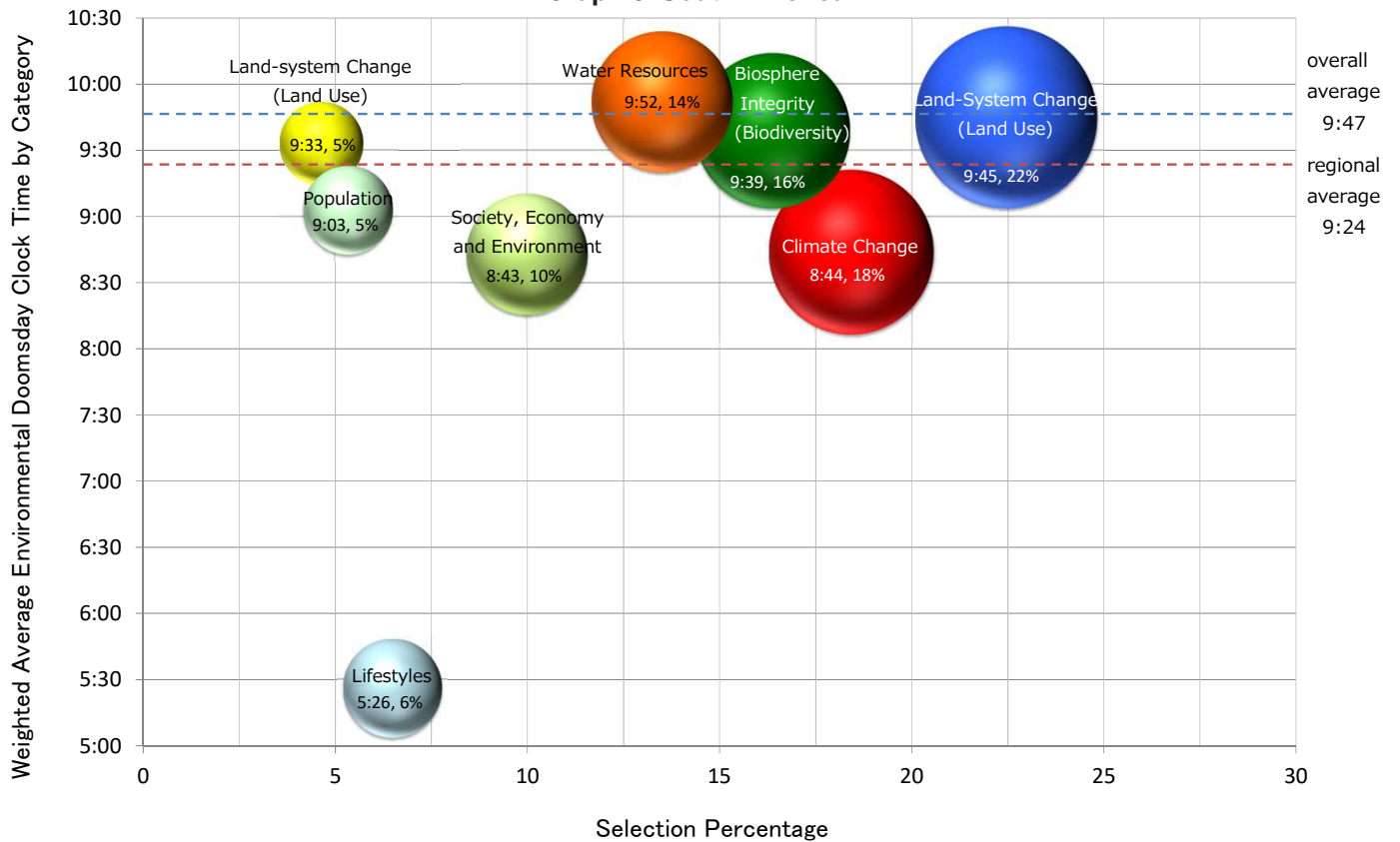
Graph 3-3. USA



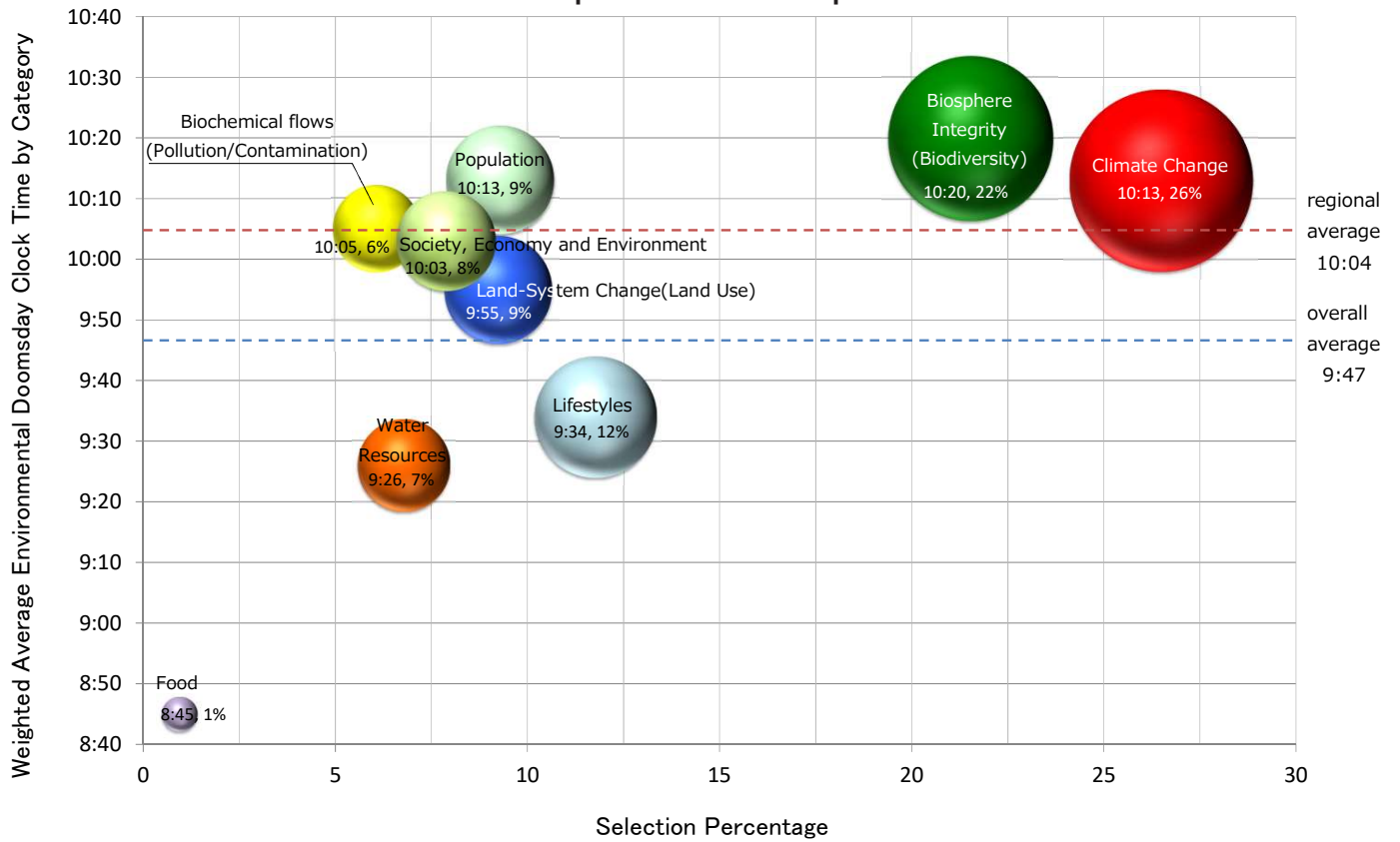
Graph 4. Central America, Caribbean countries



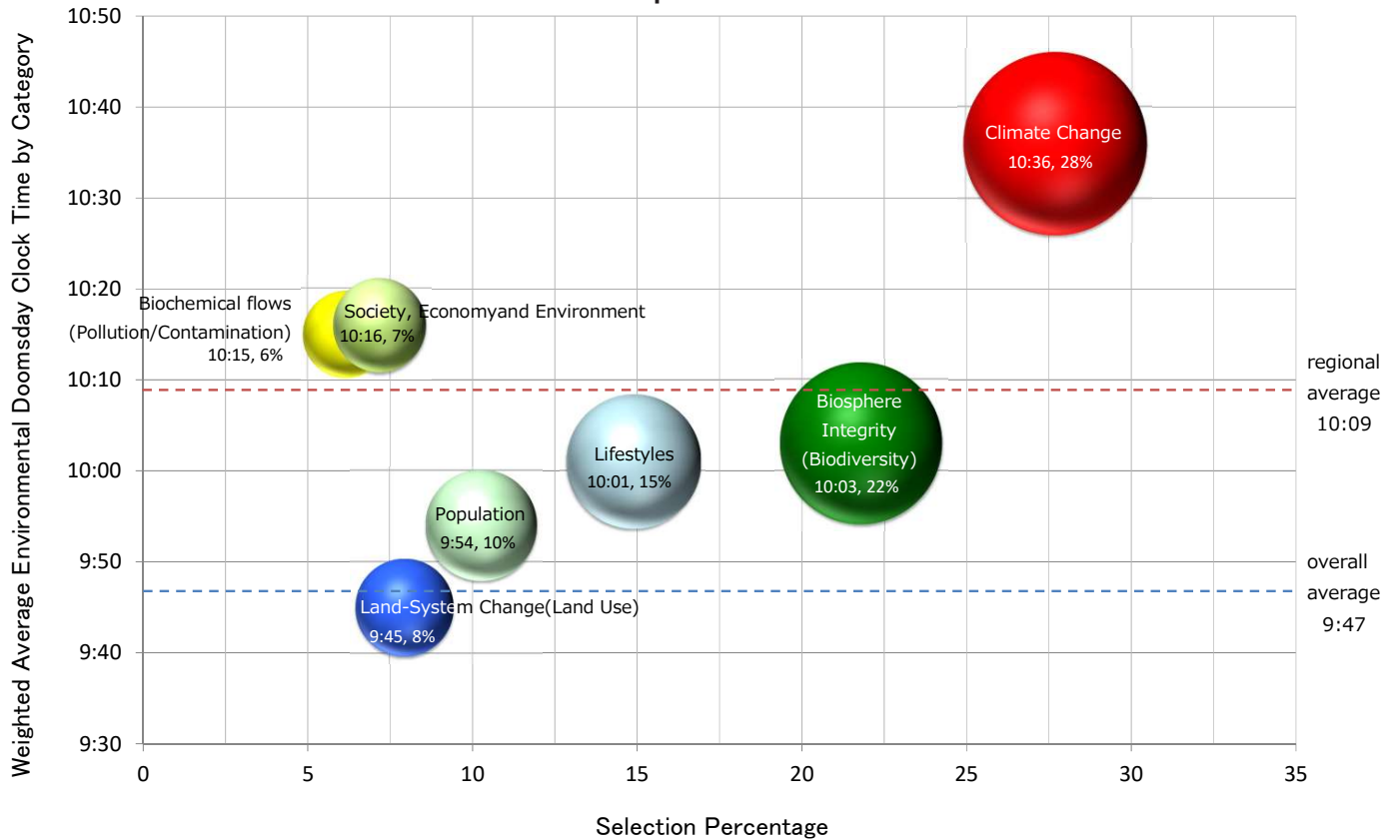
Graph 5. South America



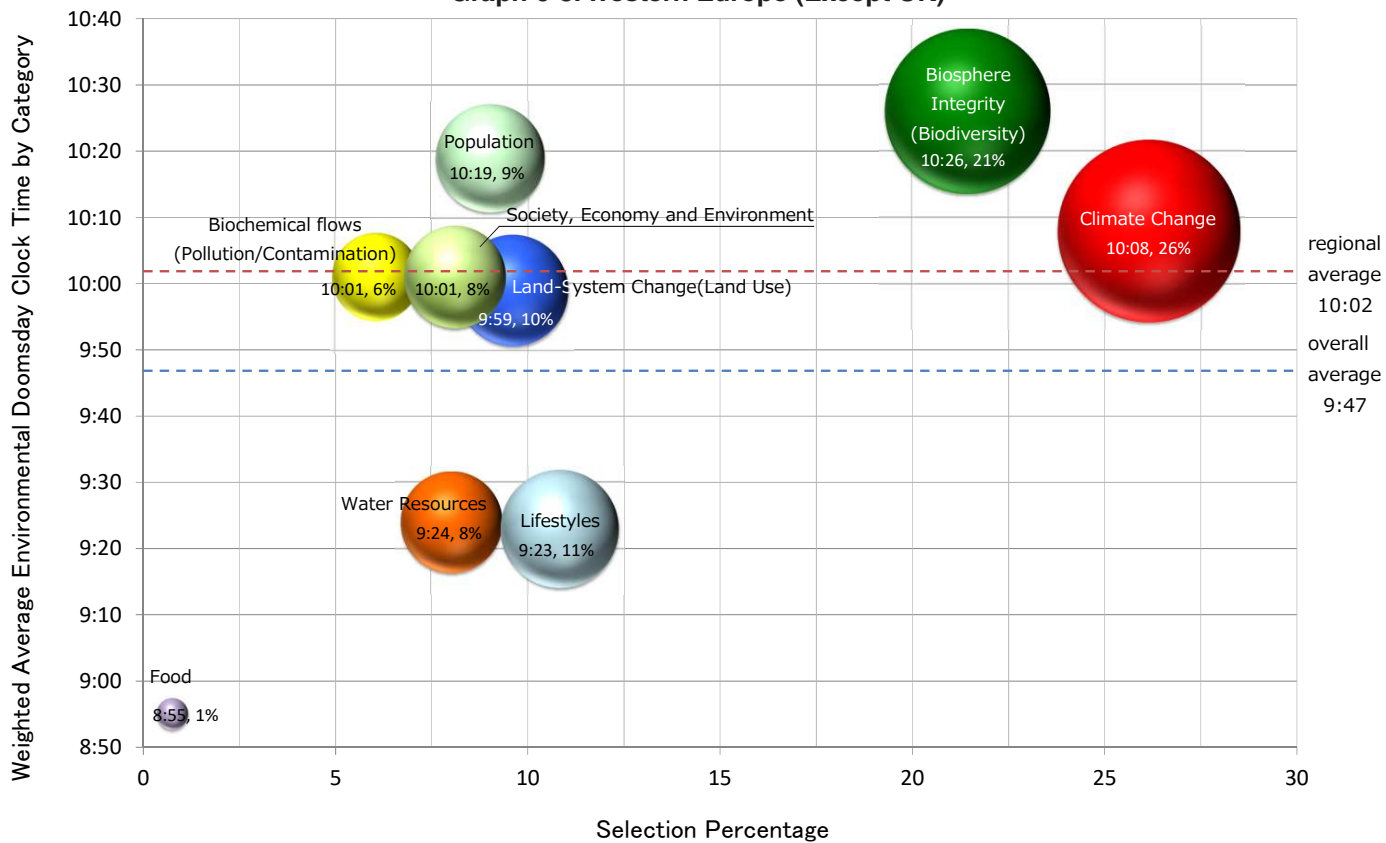
Graph 6-1. Western Europe



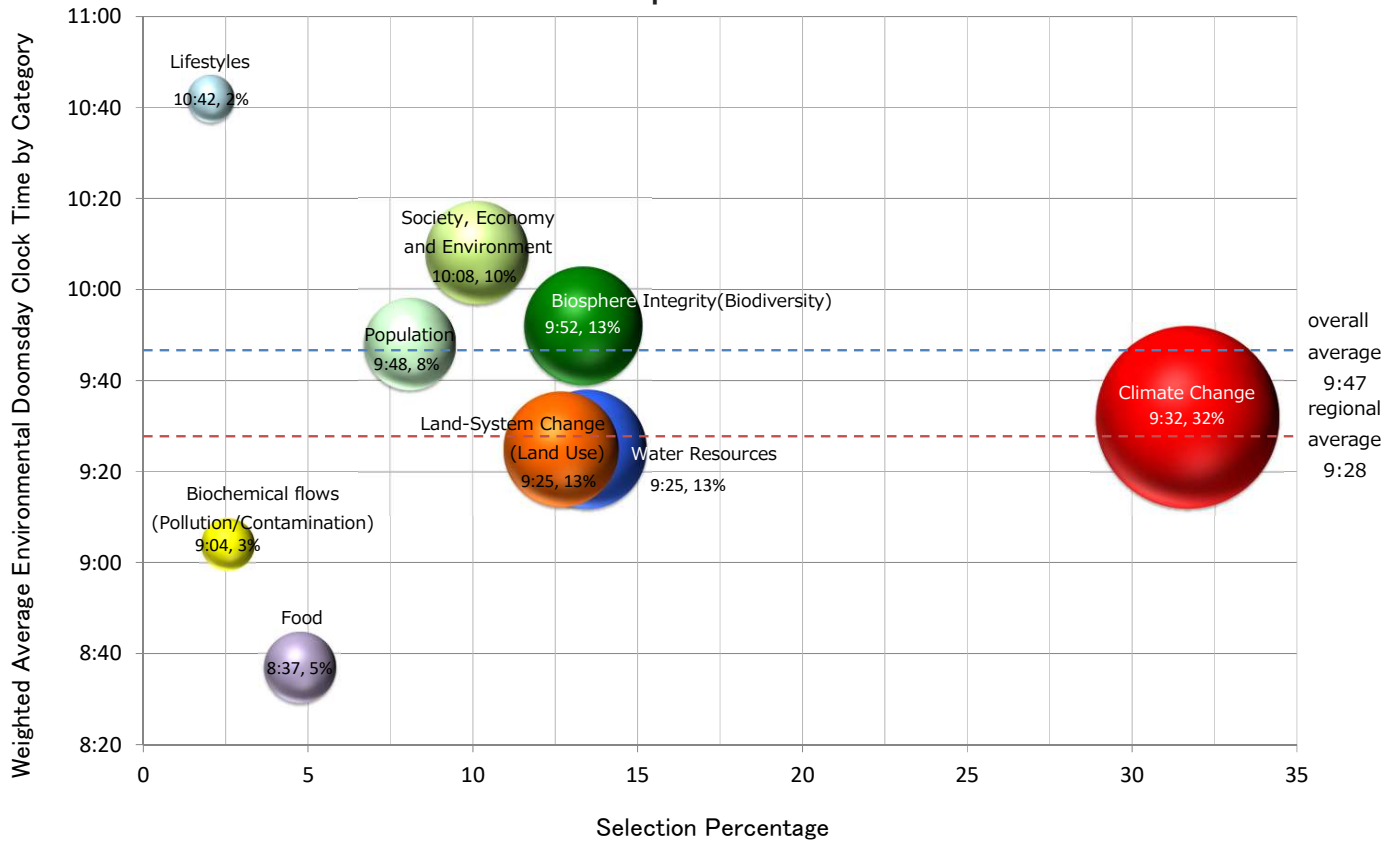
Graph 6-2. UK



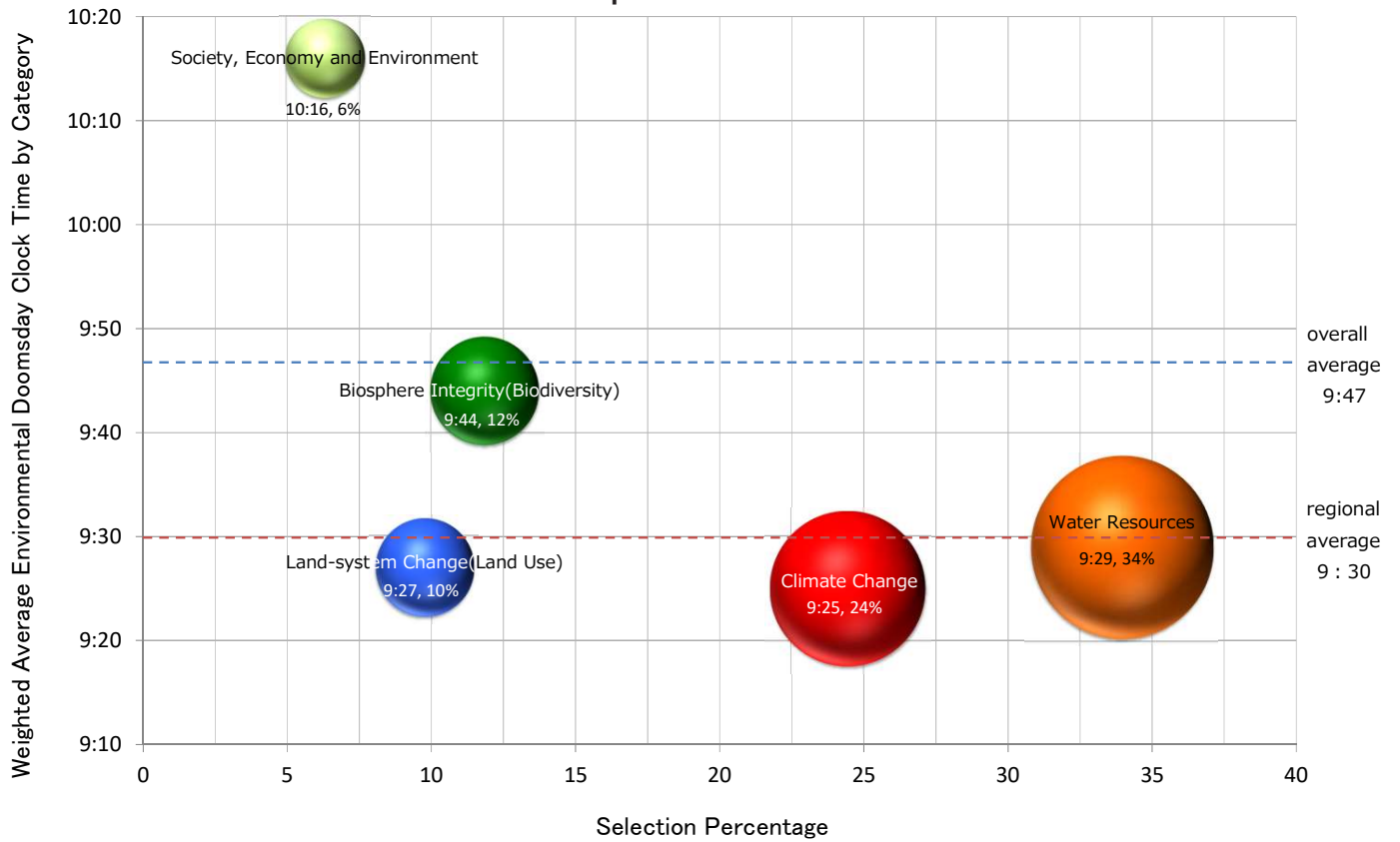
Graph 6-3. Western Europe (Except UK)



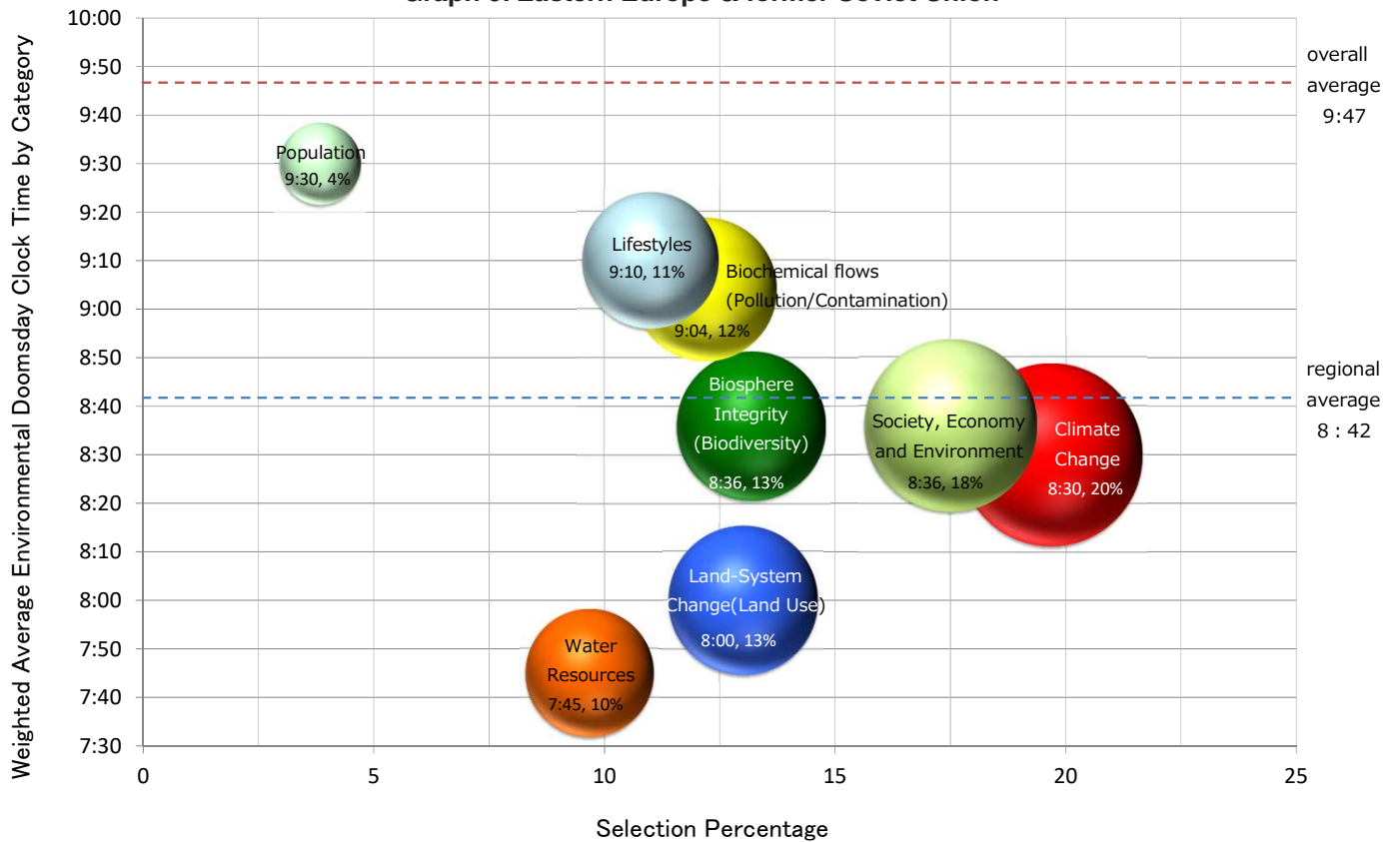
Graph 7. Africa



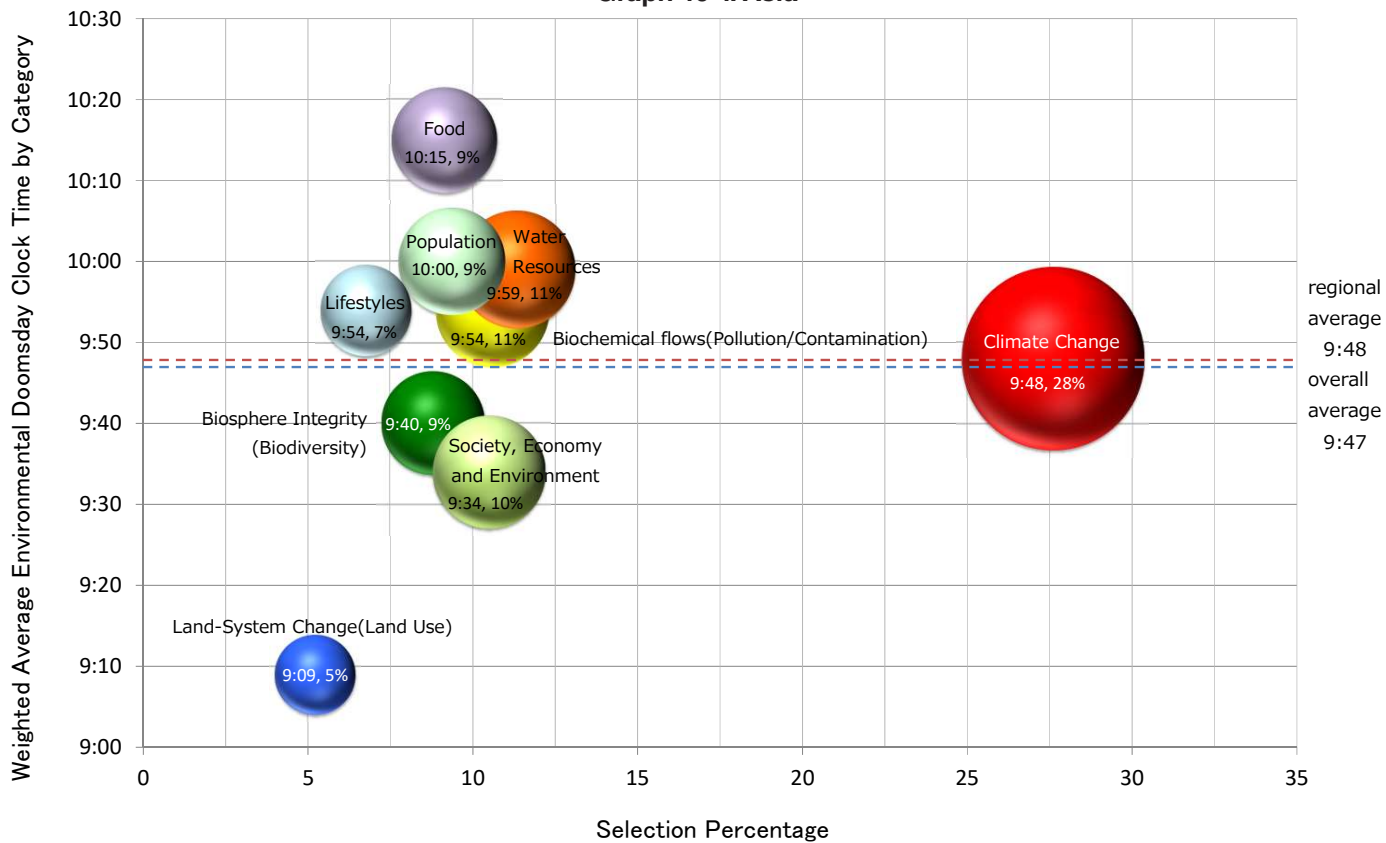
Graph 8. Middle East



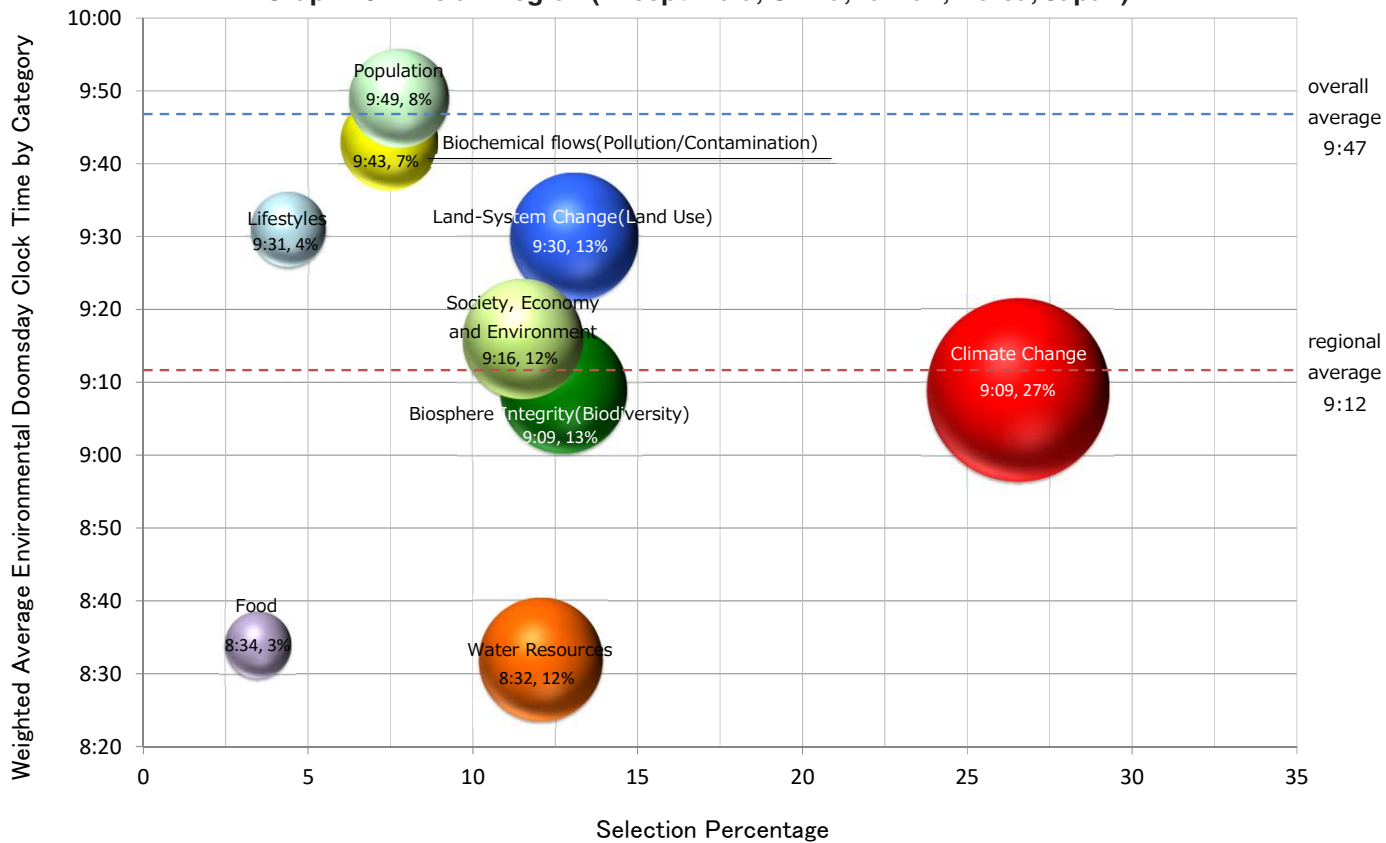
Graph 9. Eastern Europe & former Soviet Union



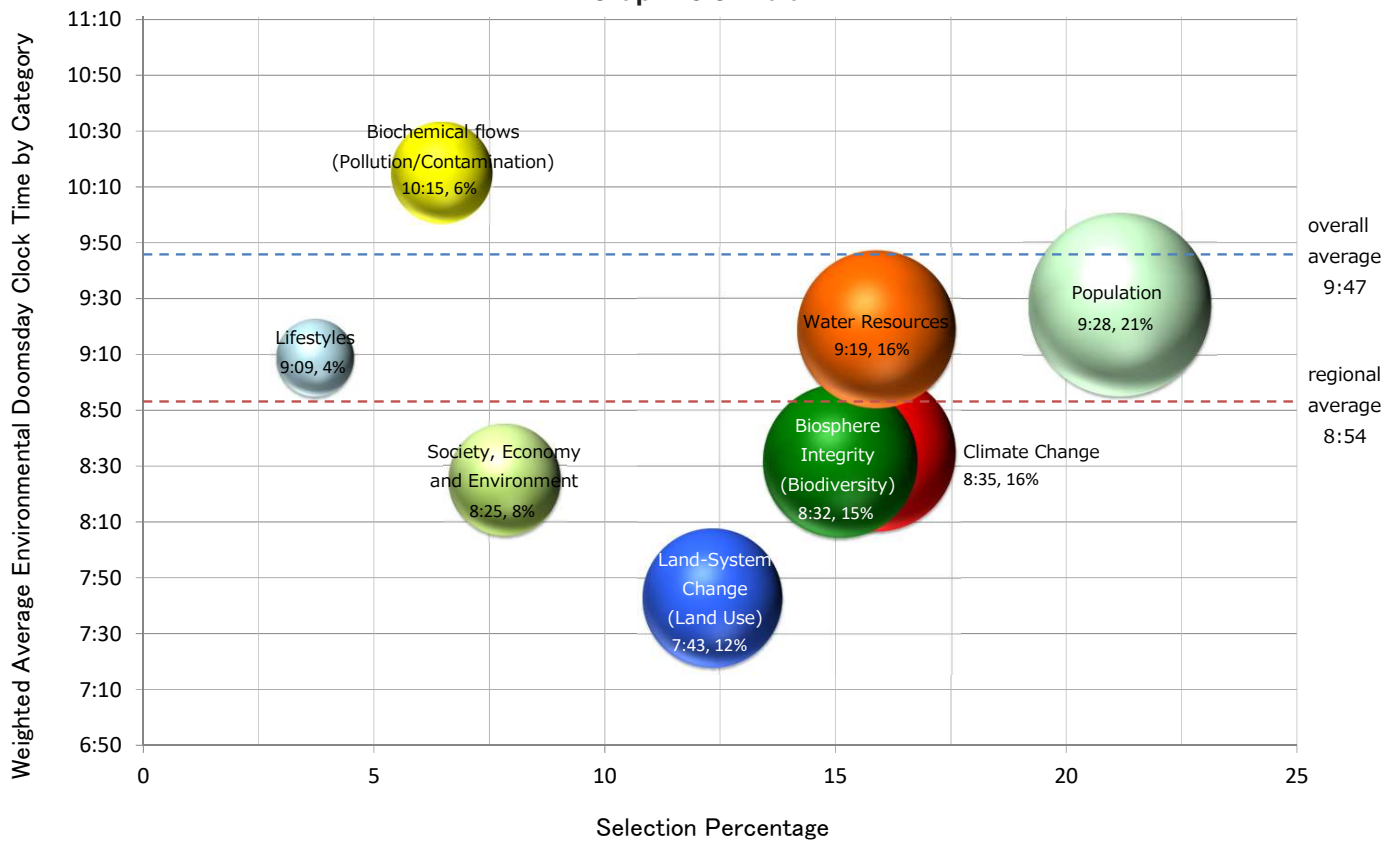
Graph 10-1. Asia



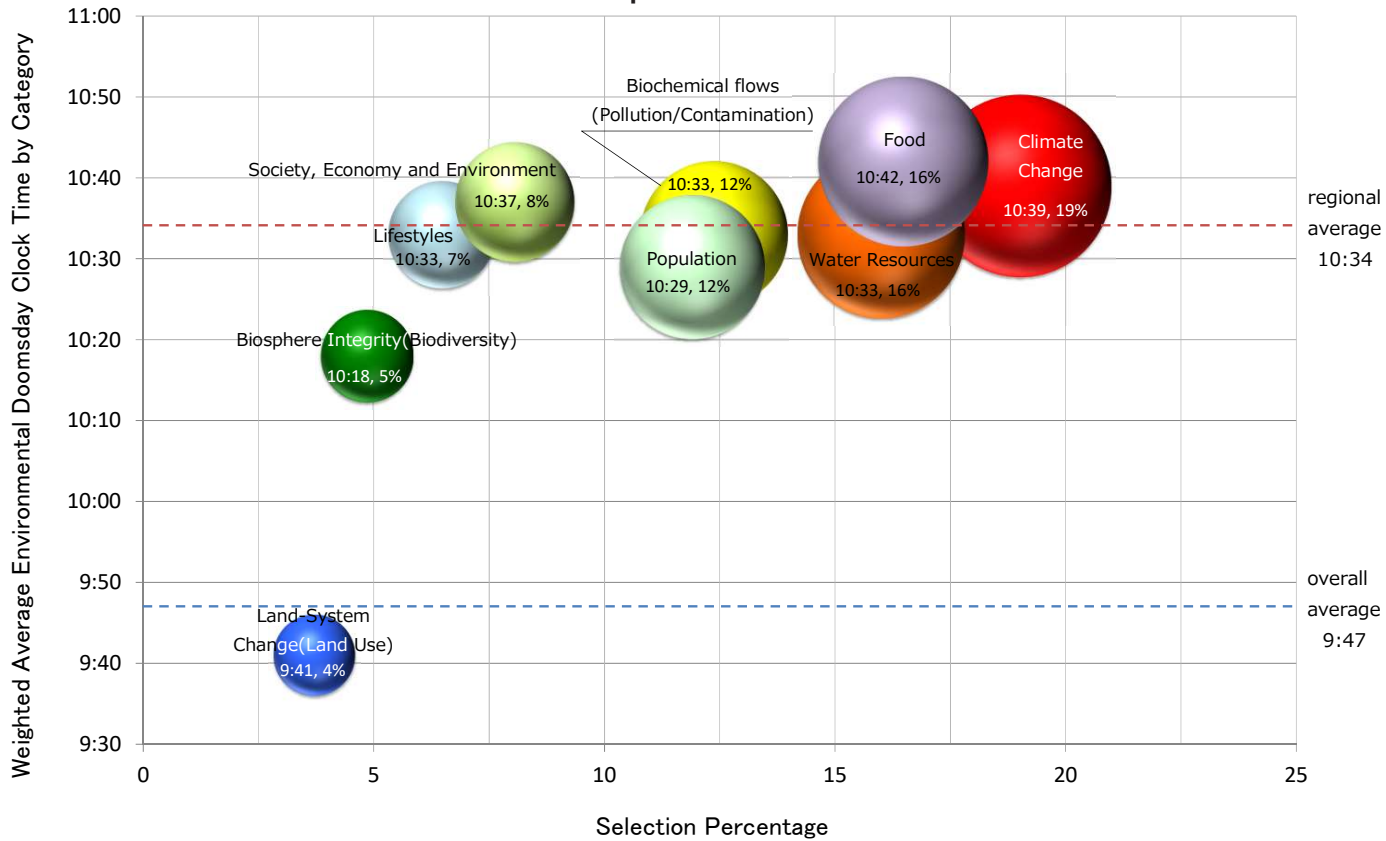
Graph 10-2. Asian Region (Except India, China, Taiwan, Korea, Japan)



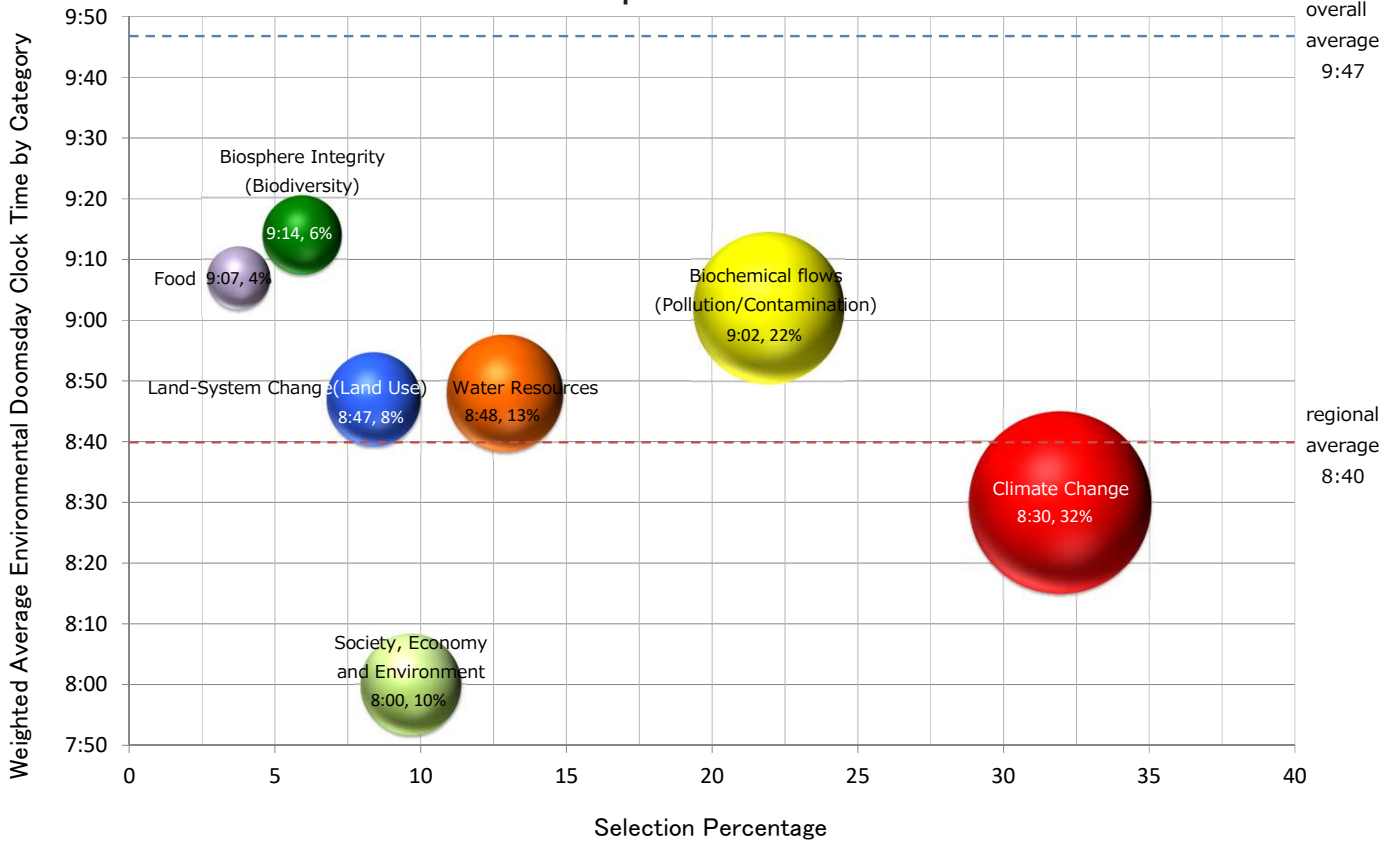
Graph 10-3. India



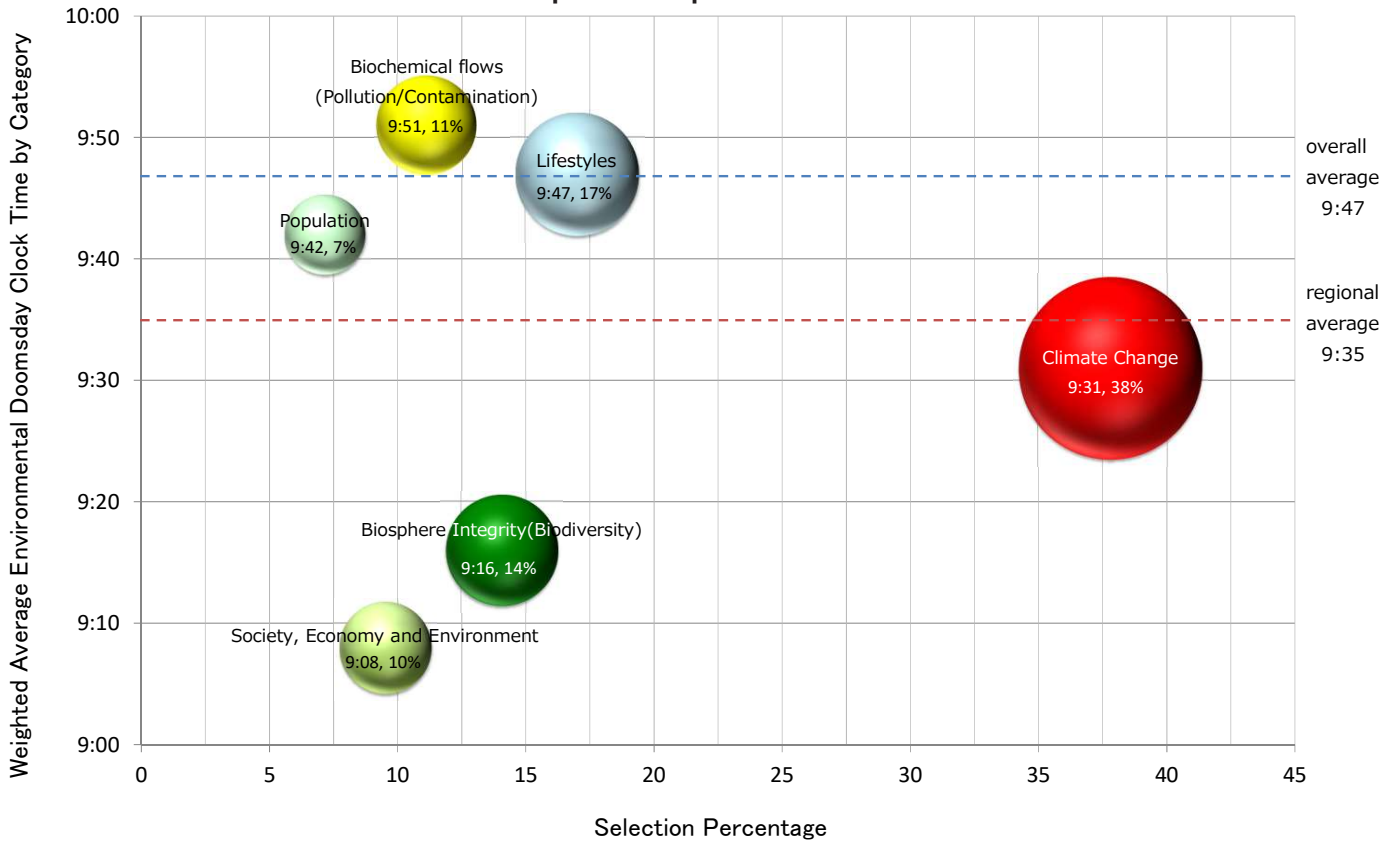
Graph 10-4. China



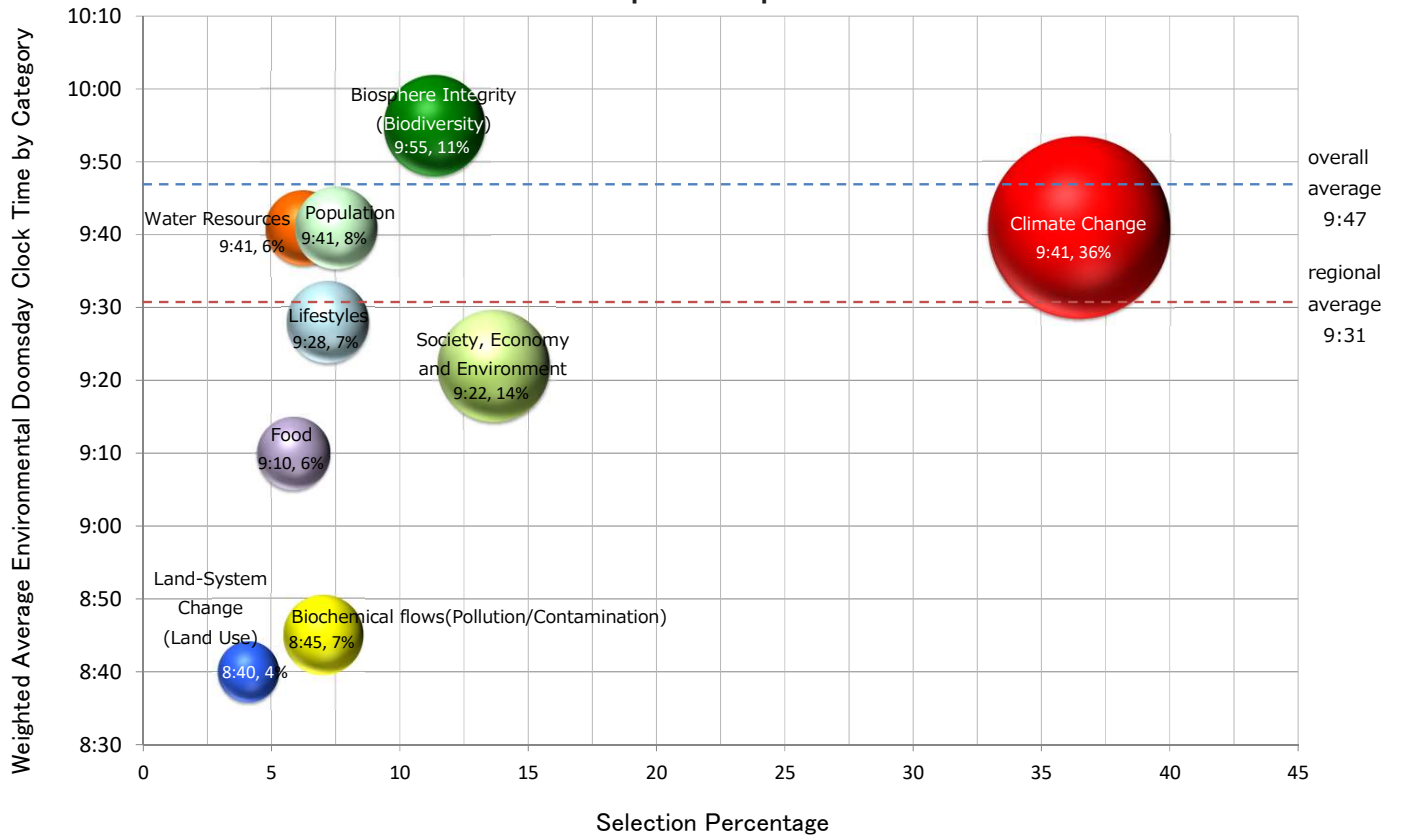
Graph 10-5. Taiwan



Graph 10-6. Republic of Korea



Graph 10-7. Japan



**Results of the 27th Annual
“Questionnaire on Environmental Problems and the Survival of Humankind”**

REPORT

September 2018
Published by the Asahi Glass Foundation
2nd Floor, Science Plaza, 5-3, Yonbancho
Chiyoda-ku, Tokyo 102-0081, Japan
Phone +813 5275 0620
Fax +813 5275 0871

**If you have inquiries regarding this questionnaire,
please contact Junichi Shimizu at the Asahi Glass Foundation.**

af **THE ASAHI GLASS FOUNDATION**
2nd Floor, Science Plaza, 5-3, Yonbancho
Chiyoda-ku, Tokyo 102-0081, Japan
Tel.: +81 3 5275 0620 Fax: +81 3 5275 0871
E-Mail: post@af-info.or.jp
URL: <http://www.af-info.or.jp>