8. Environment field

8.1. Overview

For this survey, the environment field was divided into 55 topics in Areas 1 through 7.

When we were preparing questions, there was a very strong possibility that the Kyoto Protocol come into force, and partly because of that, Area 1 became "global environment (focus on global warming)," with questions regarding the global environment mainly concerning climate change. Area 2 is "urban environment," based on the awareness that urban environmental issues will become increasingly important. Area 3, "focus on identification and mitigation of ecological effects (including soil and water)," reflects international recognition of the importance of maintaining biodiversity. Area 4 is "environmental economic index," a rapidly developing area. Area 5 covers "lifestyle based on environment," which will be an important element in solving environmental issues. Although Area 6, "environmental disasters (urban and community security—science and technology for disaster minimization and prevention)," only has three survey questions, it combines the environment and disaster management. Finally, Area 7 covers "water resources (water cycle research and water resources management)," an area of increasing international importance.

First, we would like to address the environmental expertise of the respondents. Only 8.7 percent of respondents claimed a high degree in the environment field, versus an average of 15 percent in other fields. Throughout the field, from Area 1 through Area 7, on average a high percentage of respondents evaluated themselves as having a low degree of expertise. In Area 7, environmental disasters, in particular, more respondents than in other fields described their expertise as low.

The question of how to assess this characteristic of the respondents is one that requires considerable debate. Similar issues probably exist outside the environment field, but a particular characteristic of the environment field is that the general media cover environmental issues, and people with a low level of expertise predictably have a strong tendency to accept this media coverage uncritically. The responses must therefore be taken as having a certain kind of bias.

Another characteristic of the environment field is that it is necessary to create topics that have a low possibility of realization. More precisely, this refers to the disposal of carbon dioxide in the ocean. "03 Formation of international consensus on the CO_2 disposal in the deep-sea below 3,000m." is the topic in question. One-third of those responding answered that this will never be realized. For those who answered the question negatively, questions regarding the necessity of government involvement or effective measures that should be taken by government in Japan lost any meaning. In the lifestyle and the environment area as well, almost 30 percent responded negatively to the possibility of realizing "40 Energy consumption per capita in Japan reduces by half."

With this situation in mind, how are we to read the results for times of technological realization and social application, or importance to Japan in the environment field?

What tendencies do the responses of those with somewhat low expertise show? In general, they tend to appear rather pessimistic about technology and optimistic about times of social application. The responses this time displayed this perspective, but there was not a particularly large difference between the responses of experts and responses that included a large number from those claiming a low degree of expertise. If we must note the categories in which large differences were found, there appeared to be many places where gaps exist between experts and general respondents on whether tightened and new regulations are effective measures towards social application. In some cases, experts strongly asserted the need for tightened and new regulation, while in other cases they judged other methods effective, so there was no

regular tendency. Because of the low number of experts, however, further examination is needed to determine whether this is statistically significant.

Regarding the adequacy of individual questions on time of technological realization and time of social application, we will leave that to the descriptions of each area. Checking those items where my own opinion differs relatively largely from the response, however, I was left with the sense that they tend to be those that are more important internationally than to Japan. For example, for the topics "43: Technology for the early detection of and response to large-scale forest fires around the world" and "55: Social consensus building on the process for avoiding water conflicts associated with development," a majority of responses answered that their importance to Japan is low, but I wish that the questions had been interpreted as whether Japanese science and technology can make a contribution to the world rather than whether such things are likely to occur in Japan.

Another characteristic of environmental issues is that there are shared global topics such as those related to climate change, and there are topics specific to individual countries. Japan's environmental problems began with Minamata disease and other pollution issues. Looking around the world, this is an anomaly. In addition, the social systems that adopted the world's strictest—arguably excessive—safety measures against BSE and the public's sense of risk that demanded those measures further point out Japan's idiosyncratic character.

Considered in this way, discussion of the results of this Delphi analysis in terms of international competitiveness may not necessarily be appropriate. Instead, it may be essential to consider the mission of the environment field of science and technology, including responses to the idiosyncrasies of Japanese society.

Based on points such as those above, I will consider the results of the current questionnaire. The category of degree of importance to Japan is one that draws much attention. The highest score was that of "45: Technology for forecasting abnormal weather disasters resulting from climate change." This suggests the necessity not just of predicting climate change, but also of studying it from the perspective of how it can cause disasters. In other words, it asserts the need for continued analysis not just of an environmental issue, but also of how that issue affects human activity. This point is extremely easy to agree with, and can be considered something that transcends high or low levels of expertise.

In second place was "34: Technology for predicting and assessing global depletion of the resources that area used in Japan." This evaluation of degree of importance is also easy to agree with. Indeed, there is a high possibility that a lack of expertise in the environment led to a balanced response. In order for a resource-poor country such as Japan to survive, it must import resources from around the world. Lack of security on this point therefore is probably seen as dangerous.

In third place was the topic "40: Energy consumption per capita in Japan reduces by half." This is meant as a combination with the second-place topic of resources.

On the other hand, topics for which the degree of importance index was relatively low include "12: Widespread use of technology for the active control of urban noise and vibration to conform to environmental standards," "30: Technology for efficient revegetation in deserts," and "48: Groundwater observation from satellites (improvement of spatial accuracy from a few hundreds to a few kilometers)." As discussed above, the latter two are probably distorted by the idea of degree of importance specifically to Japan. Regarding the low score for control of urban noise, it is impossible to judge whether it is because the problem is considered under control, or because other issues are seen as more important.

The results for necessity of government involvement correlate strongly with the above-described values for degree of importance. Many of the areas where human resources development is necessary are

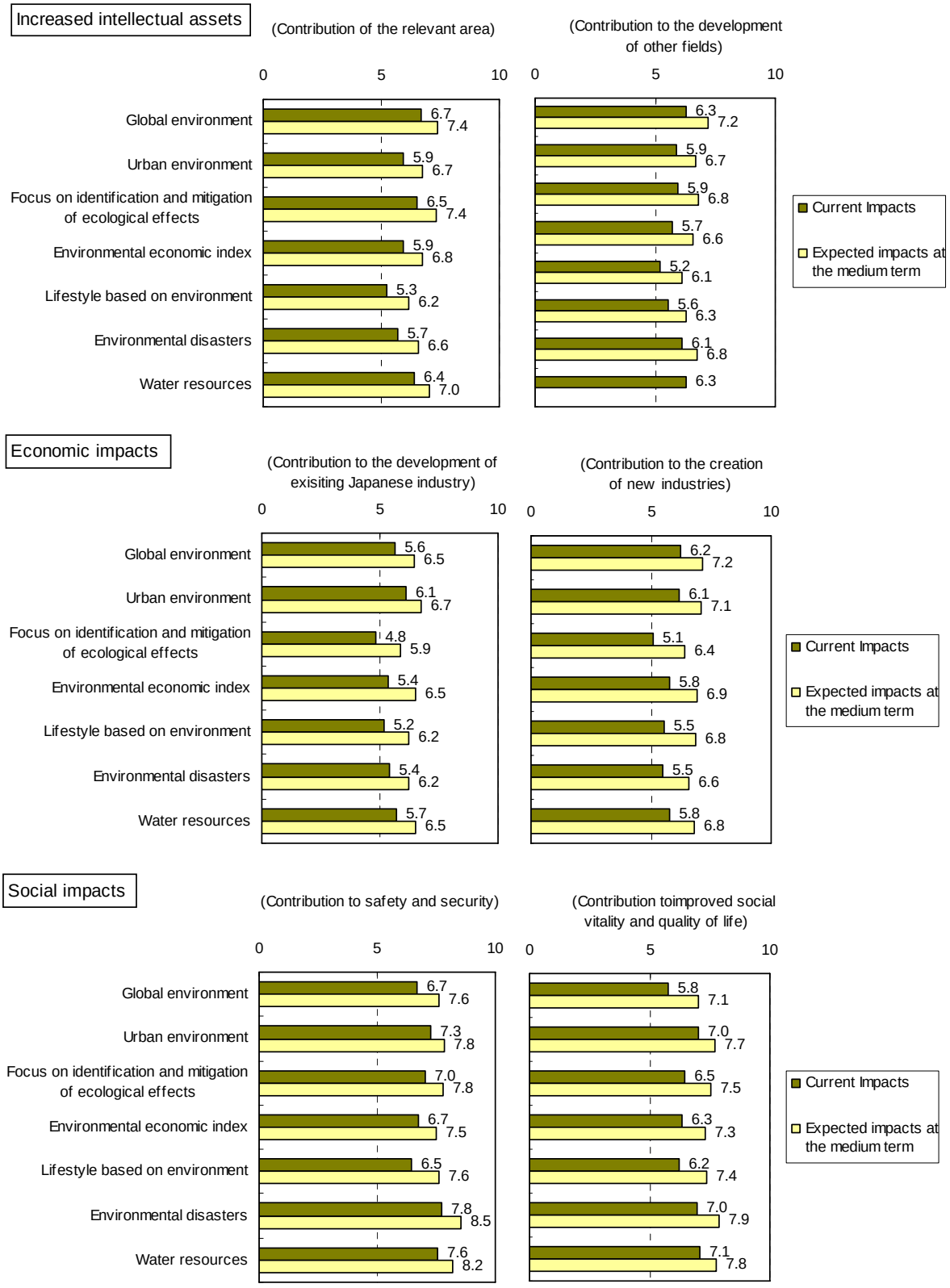
related to ecology, and in fact the actual number of personnel is low. A number of composite areas are named as requiring strengthened collaboration, which seems a very appropriate selection.

In conclusion, this Delphi method questionnaire itself covers a very extensive array of questions and responses, and it is nearly impossible to analyze them in detail. In general, however, it strongly reflects today's Japan, and I could agree with many of its judgments on degree of importance. Yet, as I have already stated, the importance of environmental issues in Japan, particularly those related to the effects of the environment on the human body, is declining because of progress in improving the environment. Instead, we have reached a point when a shared awareness that it is necessary to judge importance based on contribution to global environmental improvement, is essential.

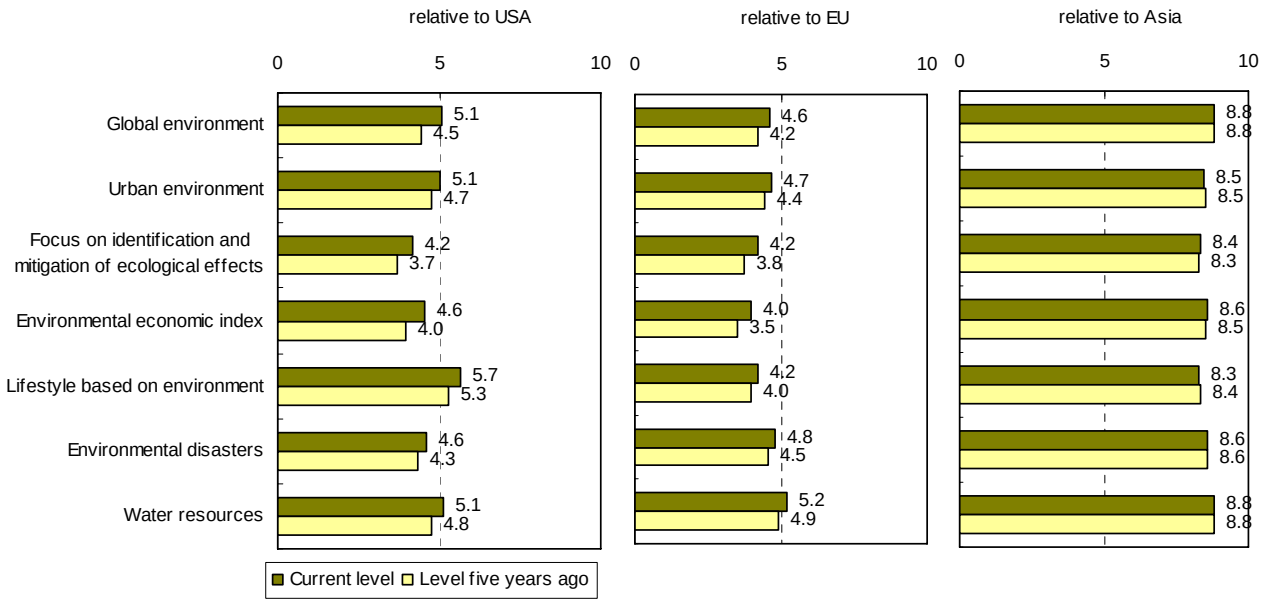
(YASUI Itaru)

8.2. Main results

A. Impacts



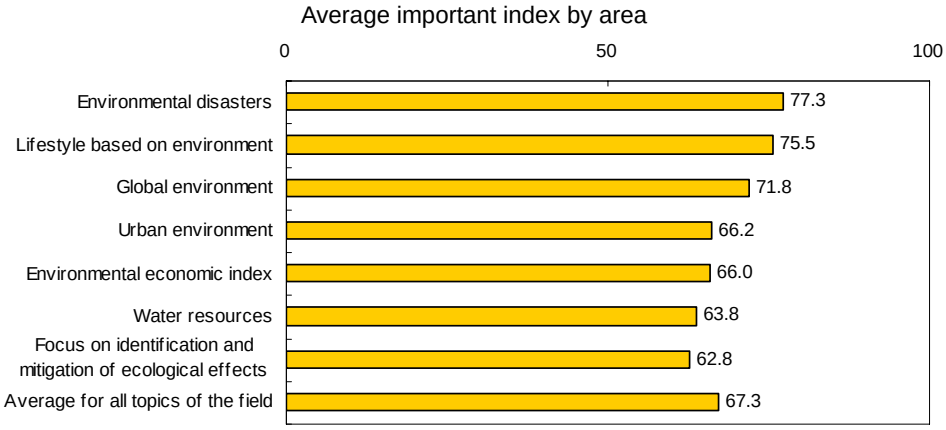
*Responses are indexed on a 10-point scale.



B. Japan's R&D Level

*Responses are indexed on a 10-point scale.

C. Importance to Japan



The most important 10 topics

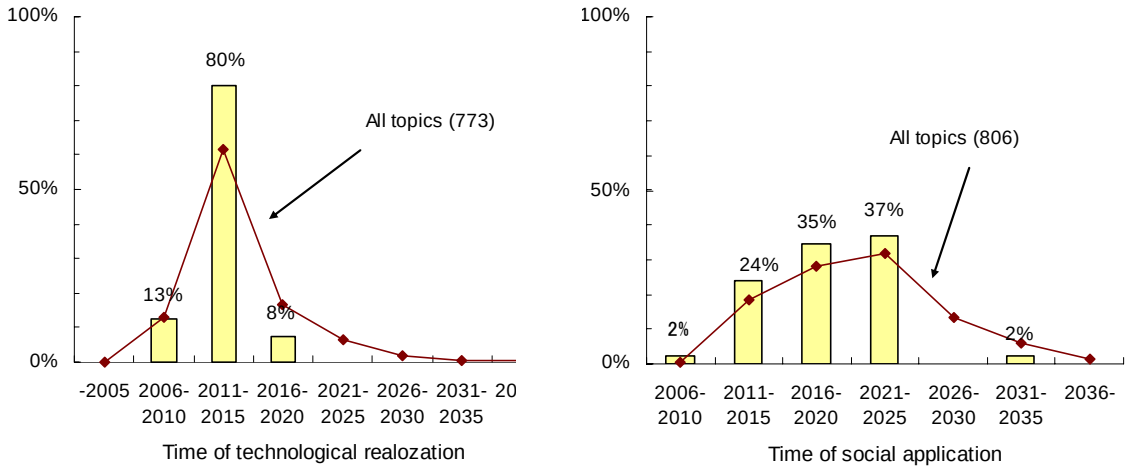
	Topic	Index	Year T*	Year S*
1	45: Technology for forecasting abnormal weather disasters resulting from climate change.	94	2015	2023
2	34: Technology for predicting and assessing global depletion of the resources that are used in Japan.	93	2012	2018
3	40: Energy consumption per capita in Japan reduces by half.	92	-	2031
4	44: Technology for minimizing the impacts of and restoring damage from large-scale industrial accidents.	90	2012	2017
5	42: Introduction of an automobile tax based on CO_2 emissions.	90	-	2013
6	14: Clean fuel (other than hydrogen) that does not emit particulates, NOx, etc.	90	2014	2021
7	09: Discovery of the seeds of new practical technologies for the safe disposal of CO_2 with long-term stability.	87	2017	-
8	01: Elucidation of the emission, absorption and fixation mechanism of greenhouse gases in a natural system as a result of climate change.	87	2014	-
9	50: Meso-scale (about 10-km mesh) precipitation simulation.	85	2011	2018
10	07: Development of a global monitoring system for marine pollution.	83	2014	2022

Year T: Time of technological realization Year S: Time of social application

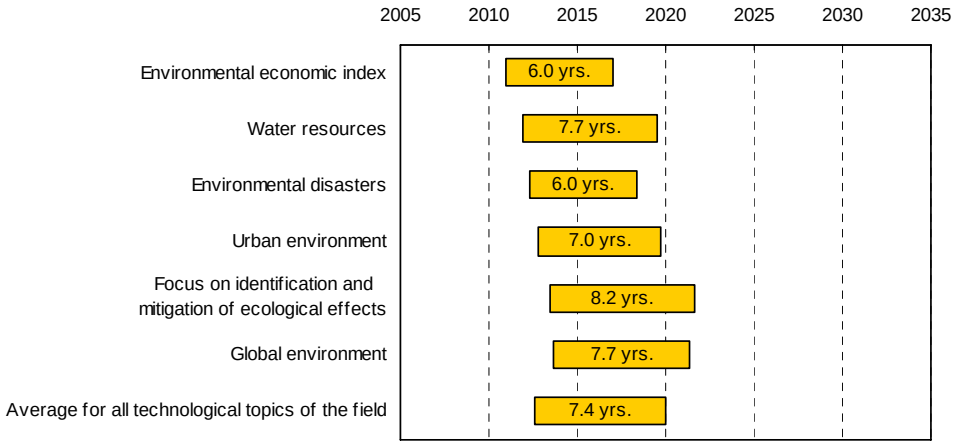
*Responses were indexed on a 100-point scale.

D. Time of realization

Distribution of topics



Gap between technological realization and social application



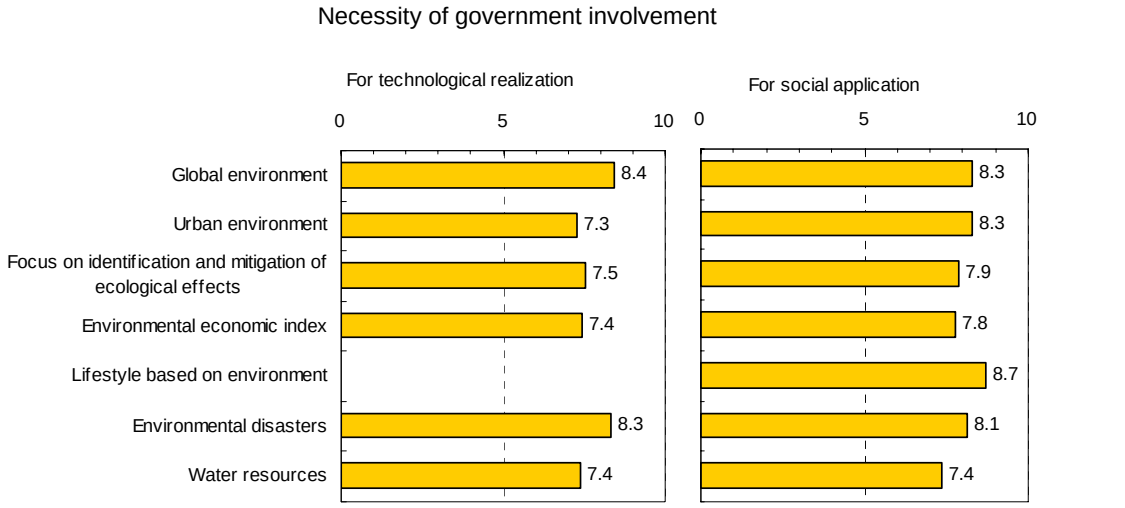
Topics with short or long periods until social application

Topic	Year T*	Period*	Area
22: Technology for conserving and restoring the genetic diversity of endangered species.	2015	10	Focus on identification and mitigation of ecological effects
04: Deveolpment of a technology for accurately forecasting climate changes resulting from global warming using a mesh with a resolution of about 10 km around the globe.	2015	9	Global environment
23: Technology for ecologically identifying invasive foreign species.	2013	9	Focus on identification and mitigation of ecological effects
24: Environmental monitoring technology based on high-precision satellite sensors and the Internet for vegetation mapping.	2010	9	Focus on identification and mitigation of ecological effects
26: Technology for controlling species inhibiting the conservation and restoration of the natural ecosystem.	2016	9	Focusing on identification and mitigation of ecological effects
46: Global-scale observation of water use and water contaminants (data acquisition with a global 1-km mesh; including rivers, lakes and marshes, ground water, extraction, drainage, siltation in dams, urban pollution, industrial pollution, natural chemical substances).	2014	9	Water resources

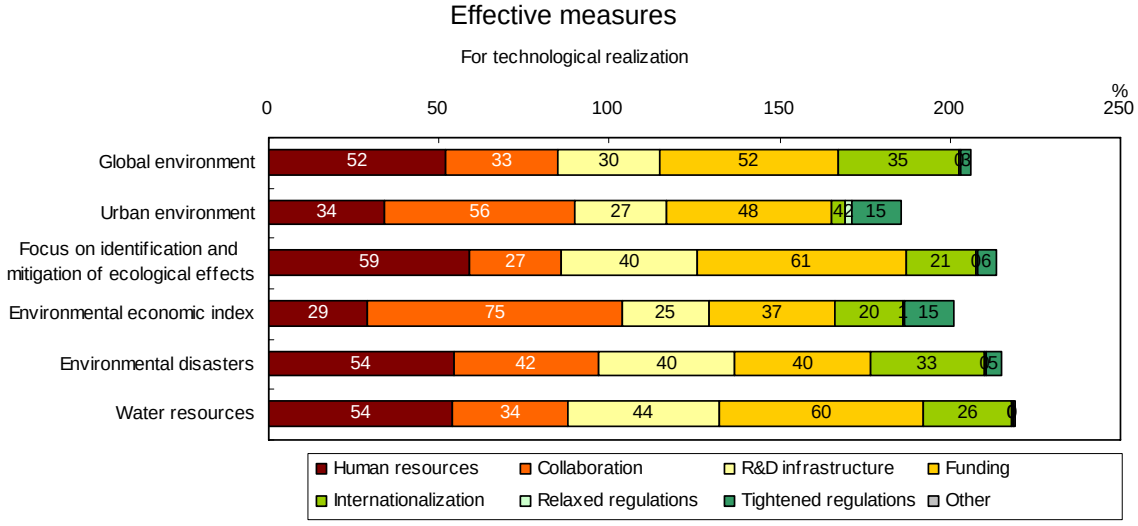
Topic	Year T*	Period*	Area
12: Widespread use of technology for the active control of urban noise and vibration to conform to environmental standards.	2013	5	Urban environment
33: Methodology for tracing and identifying recycled materials (plastics and metals).	2010	5	Environmental economic index
43: Technology for the early detection of and response to large-scale forest fires around the world.	2010	5	Environmental disasters
44: Technology for minimizing the impacts of and restoring damage from large-scale industrial accidents.	2012	5	Environmental disasters
08: Development of alternative substances or processes for SF6 gas, which has been additionally listed as a regulated substance by the Kyoto Protocol.	2012	6	Global environment
34: Technology for predicting and assessing global depletion of the resources that are used in Japan.	2012	6	Environmental economic index

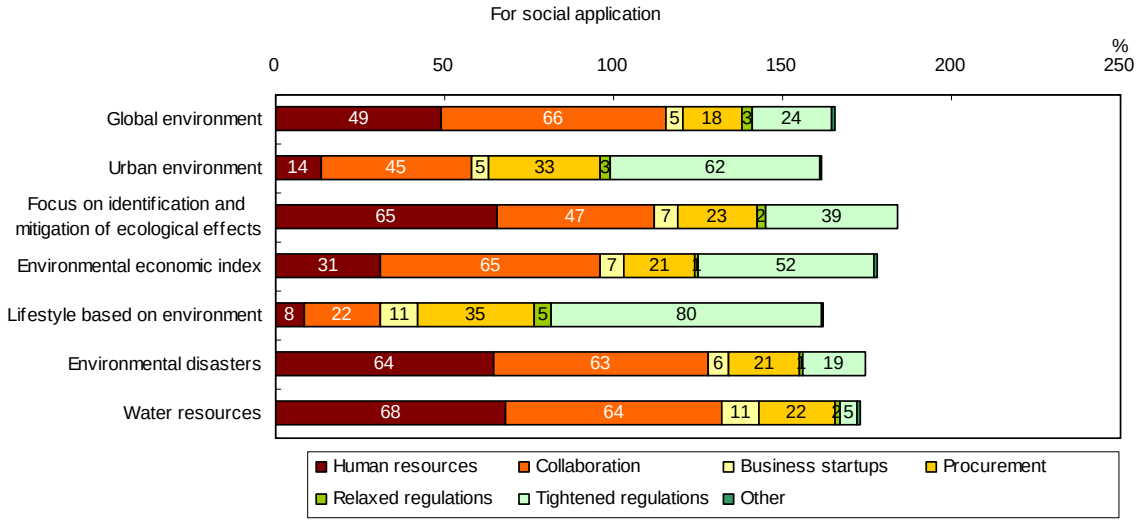
*Year T: Time of technological realization Period: Period until social application (years)

E. Effective measures that should taken by government



*Responses were indexed on a 10-point scale





F. Time-line of topics

Technological realization

year	topic
2006	52: Technology for economically and practically desalinating seawater and purifying polluted water using reverse osmosis membrane or other methods.
2009	53: Technology for identifying the groundwater pollution sources using isotopes.
2010	24: Environmental monitoring technology based on high-precision satellite sensors and the Internet for vegetation mapping.
	33: Methodology for tracing and identifying recycled materials (plastics and metals).
	43: Technology for the early detection of and response to large-scale forest fires around the world.
2011	17: Technology for utilizing underground cold energy to mitigate heat island effects.
	37: Technology for an efficient recovery of rare metals from molten fly ash as a domestic source of its sypply.
	50: Meso-scale (about 10-km mesh) precipitation simulation.
2012	08: Development of alternative substances or processes for SF6 gas, which has been additionally listed as a regulated substance by the Kyoto Protocol.
	16: Verification of emission inventory data through monitoring.
	20: Elucidation of the mechanism of the effect of acid rain on the flora and fauna and the ecosystem.
	25: Quantitative elucidation of the effect of the flow structure on the tideland ecosystem structure and function.
	34: Technology for predicting and assessing global depletion of the resources that are used in Japan.
	44: Technology for minimizing the impacts of and restoring damage from large-scale industrial accidents.
	47: Streamflow measurement and flood forecasts to prevent unexpected disasters by using satellite observation.
2013	05: Elucidation of the acid deposition mechanisms including lond-distance transport of SOx and NOx and their accumulation and decomposition in soil.
	12: Widespread use of technology for the active control of urban noise and vibration to conform to environmental standards.
	18: Application of prediction and assessment technologies possibly useful for the minimization of environmental burdens on urban planning.
	23: Technology for ecologically identifying invasive foreign species.
	27: Technology for addressing endocrine disruptors emitted from sewage into the rivers.
	51: Integration of hydrology (basin water cycle) and meteorology on the Earth Simulator.
	54: Technology for reclamation of salinized soils.
2014	01: Elucidation of the emission, absorption and fixation mechanism of greenhouse gases in a natural system as a result of climate change.
	07: Development of a global monitoring system for marine pollution.
	13: Scientific elucidation of the impacts of the stress in an urban living environment on children's physical and mental development.

year	topic
	14: Clean fuel (other than hydrogen) that does not emit particulates, NOx, etc.
	21: Technology for restoring the ecosystem and biodiversity of wetlands.
	29: Technology for removing dioxin and other POPs (Persistent Organic Pollutants) from ocean floor soil.
	30: Technology for efficient revegetation in deserts.
	46: Global-scale observation of water use and water contaminants (data acquisition with a global 1-km mesh; including rivers, lakes and marshes, ground water, extraction, drainage, siltation in dams, urban pollution, industrial pollution, natural chemical substances).
	49: Construction of a hydrologic prediction model (including soil, snow/ice, and groundwater) for basins where there is poor ground observations.
2015	04: Deveolpment of a technology for accurately forecasting climate changes resulting from global warming using a mesh with a resolution of about 10 km around the globe.
	06: Elucidation of the global impacts of fine particulates associated with extension of arid land.
	10: Near-complete elucidation of the correlation between environmental pollutants and allergic diseases.
	22: Technology for conserving and restoring the genetic diversity of endangered species.
	45: Technology for forecasting abnormal weather disasters resulting from climate change.
	48: Groundwater observation from satellites (improvement of spatial resolution from a few hundreds to a few kilometers).
2016	02: Establishment of a quantitative model of global warming, including disruption in the oceanic general circulation.
	26: Technology for controlling species inhibiting the conservation and restoration of the natural ecosystem.
2017	09: Discovery of the seeds of new practical technologies for the safe disposal of CO2 with long-term stability.

Social application

year	topic
2010	11: Mandatory addition of an idling-stop function to automobiles.
2012	38: Publication of an environmental report by all listed companies.
2013	19: Listing of additional environmental pollutants contained in motor vehicle emissions as regulated substances.
	31: Development and standardization of socially approved tools for the risk assessment of chemical substances (including RoHS (Restriction of the Use of Hazardous Substances)-compliant alternatives).
	32: Establishment of the definition and calculation method of corporate environmental efficiency indicators.
	42: Introduction of an automobile tax based on CO2 emissions.
2013	52: Technology for economically and practically desalinating seawater and purifying polluted water using reverse osmosis membrane or other methods.
2014	35: Social recognition of life cycle assessment (LCA) as an objective and quantitative tool.
	36: Pervasion of the standardized life cycle cost (LCC) assessment in the pricing of products and serivices.
2015	28: Establishment of a system for ensuring that development projects involve setting up targets concerning ecosystem conservation and restoration through a consensus-building process.
	33: Methodology for tracing and identifying recycled materials (plastics and metals).
	43: Technology for the early detection of and response to large-scale forest fires around the world.
2016	39: Use of virgin natural resources (non-recycled material) becomes taxable in Japan for global environmental conservation.
	53: Technology for identifying the groundwater pollution sources using isotopes.
2017	44: Technology for minimizing the impacts of and restoring damage from large-scale industrial accidents.
2018	08: Development of alternative substances or processes for SF6 gas, which has been additionally listed as a regulated substance by the Kyoto Protocol.
	12: Widespread use of technology for the active control of urban noise and vibration to conform to environmental standards.
	34: Technology for predicting and assessing global depletion of the resources that are used in Japan.
	37: Technology for an efficient recovery of rare metals from molten fly ash as a domestic source of its sypply.
	50: Meso-scale (about 10-km mesh) precipitation simulation.
	55: Social consensus building on the process for avoiding water conflicts associated with development.
2019	15: Full implementation of traffic demand management (TDM) for the optimization and minimization of traffic volume in large cities.

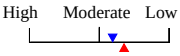
year	topic
	17: Technology for utilizing underground cold energy to mitigate heat island effects.
	24: Environmental monitoring technology based on high-precision satellite sensors and the Internet for vegetation mapping.
2020	25: Quantitative elucidation of the effect of the flow structure on the tideland ecosystem structure and function.
	27: Technology for addressing endocrine disruptors emitted from sewage into the rivers.
	47: Streamflow measurement and flood forecasts to prevent unexpected disasters by using satellite observation.
	54: Technology for reclamation of salinized soils.
2021	14: Clean fuel (other than hydrogen) that does not emit particulates, NOx, etc.
	18: Application of prediction and assessment technologies possibly useful for the minimization of environmental burdens on urban planning.
	21: Technology for restoring the ecosystem and biodiversity of wetlands.
	29: Technology for removing dioxin and other POPs (Persistent Organic Pollutants) from ocean floor soil.
	51: Integration of hydrology (basin water cycle) and meteorology on the Earth Simulator.
2022	07: Development of a global monitoring system for marine pollution.
	23: Technology for ecologically identifying invasive foreign species.
	30: Technology for efficient revegetation in deserts.
	49: Construction of a hydrologic prediction model (including soil, snow/ice, and groundwater) for basins where there is poor ground observations.
2023	45: Technology for forecasting abnormal weather disasters resulting from climate change.
	46: Global-scale observation of water use and water contaminants (data acquisition with a global 1-km mesh; including rivers, lakes and marshes, ground water, extraction, drainage, siltation in dams, urban pollution, industrial pollution, natural chemical substances).
	48: Groundwater observation from satellites (improvement of spatial resolution from a few hundreds to a few kilometers).
2024	03: Formation of international consensus on the CO2 disposal in the deep-sea below 3,000m.
	04: Deveolpment of a technology for accurately forecasting climate changes resulting from global warming using a mesh with a resolution of about 10 km around the globe.
	41: Most consumer durables are not purchased but leased.
2025	22: Technology for conserving and restoring the genetic diversity of endangered species.
	26: Technology for controlling species inhibiting the conservation and restoration of the natural ecosystem.
2031	40: Energy consumption per capita in Japan reduces by half.

Appendix: Results of R1 and R2

I. Global environment (focus on global warming)

1. Questions regading therelevant area

1) Degree of expertise in the area

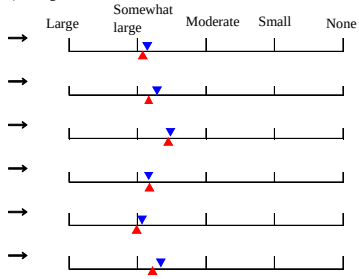


2) Currrent impacts

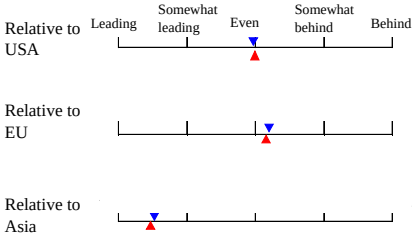
2. Questions regarding topics

No	Topic	Questionnaire	Respondents (persons)	Degree of expertise (%)				Importance to Japan					Time of technological realization							
				High	Moderate	Low	None	Index	High	Moderate	Low	None	Already realized	2006–2010	2011–2015	2016–2025	2026–2035	2036–	Will not be realized	Do not know
1	Elucidation of the emission, absorption and fixation mechanism of greenhouse gases in a natural system as a result of climate change.	1	**161**	**12**	**42**	**46**	**-**	**79**	**62**	**30**	**8**	**0**							**4**	**8**
		2	**150**	**9**	**30**	**61**	**-**	**87**	**75**	**23**	**2**	**0**							**1**	**5**
		E	**14**	**100**	**0**	**0**	**-**	**100**	**100**	**0**	**0**	**0**							**0**	**0**
2	Establishment of a quantitative model of global warming, including disruption in the oceanic general circulation.	1	**134**	**6**	**31**	**63**	**-**	**75**	**53**	**42**	**4**	**1**							**5**	**10**
		2	**128**	**7**	**16**	**77**	**-**	**82**	**65**	**33**	**2**	**0**							**2**	**5**
		E	**9**	**100**	**0**	**0**	**-**	**94**	**89**	**11**	**0**	**0**							**11**	**0**
3	Formation of international consensus on the CO_2 disposal in the deep-sea below 3,000m.	1	**133**	**6**	**28**	**66**	**-**	**57**	**31**	**44**	**16**	**9**								
		2	**128**	**7**	**17**	**76**	**-**	**51**	**19**	**54**	**20**	**7**								
		E	**9**	**100**	**0**	**0**	**-**	**61**	**45**	**33**	**0**	**22**								
4	Deveolpment of a technology for accurately forecasting climate changes resulting from global warming using a mesh with a resolution of about 10 km around the globe.	1	**144**	**12**	**31**	**57**	**-**	**65**	**40**	**41**	**16**	**3**							**9**	**6**
		2	**141**	**10**	**19**	**71**	**-**	**68**	**41**	**50**	**8**	**1**							**5**	**3**
		E	**14**	**100**	**0**	**0**	**-**	**96**	**93**	**7**	**0**	**0**							**0**	**0**
5	Elucidation of the acid deposition mechanisms including lond-distance transport of SOx and NOx and their accumulation and decomposition in soil.	1	**143**	**10**	**33**	**57**	**-**	**66**	**39**	**49**	**11**	**1**							**1**	**6**
		2	**133**	**8**	**22**	**70**	**-**	**65**	**33**	**60**	**7**	**0**							**1**	**1**
		E	**10**	**100**	**0**	**0**	**-**	**80**	**60**	**40**	**0**	**0**							**0**	**0**
6	Elucidation of the global impacts of fine particulates associated with extension of arid land.	1	**123**	**14**	**28**	**58**	**-**	**59**	**30**	**48**	**21**	**1**							**3**	**11**
		2	**122**	**8**	**17**	**75**	**-**	**57**	**22**	**61**	**16**	**1**							**0**	**3**
		E	**10**	**100**	**0**	**0**	**-**	**70**	**40**	**60**	**0**	**0**							**0**	**0**
7	Development of a global monitoring system for marine pollution.	1	**133**	**11**	**29**	**60**	**-**	**74**	**53**	**38**	**8**	**1**							**5**	**8**
		2	**126**	**10**	**17**	**73**	**-**	**83**	**67**	**31**	**2**	**0**							**2**	**2**
		E	**12**	**100**	**0**	**0**	**-**	**96**	**92**	**8**	**0**	**0**							**0**	**0**
8	Development of alternative substances or processes for SF6 gas, which has been additionally listed as a regulated substance by the Kyoto Protocol.	1	**110**	**8**	**34**	**58**	**-**	**69**	**44**	**45**	**11**	**0**							**4**	**9**
		2	**117**	**5**	**21**	**74**	**-**	**66**	**35**	**60**	**4**	**1**							**1**	**3**
		E	**6**	**100**	**0**	**0**	**-**	**83**	**67**	**33**	**0**	**0**							**0**	**0**

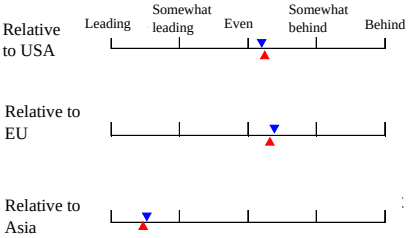
3) Expected impacts at the medium term



4) Japan's current R&D level



5) Japan's R&D level five years ago



*Relative to EU and Asia means relative to their most advanced countries.

Countries at the leading edge					Regarding technological realization												Time of social application							Regarding social application													
					Necessity of gov't involvement				Effective measures that should be taken by gov't																Necessity of gov't involvement				Effective measures that should be taken by gov't							
Japan	USA	EU	Asia	Other	High	Moderate	Low	None	Human resources development	Strengthened industry-academic-government and interdisciplinary collaboration	Development of R&D infrastructure	Expansion of R&D funding	Internationalization of R&D activities	Relaxation or elimination of relevant regulations	Tightened or new regulations	Other	2006–2010	2011–2015	2016–2025	2026–2035	2036–	Will not be applied	Do not know	High	Moderate	Low	None	Human resources development	Strengthened industry-academic-government and interdisciplinary collaboration	Improvement of environment for business startups	Support through taxation, subsidies, and procurement	Relaxation or elimination of relevant regulations	Tightened or new regulations	Other
(%)					(%)				(%)													(%)		(%)				(%)							
8	50	41	0	1	55	34	9	2	44	38	38	49	36	1	10	1																			
4	69	27	0	0	77	20	2	1	62	37	30	58	32	1	3	0																			
14	65	21	0	0	93	7	0	0	86	36	43	57	21	0	0	0																			
9	65	24	0	2	43	44	11	2	43	27	36	43	40	1	1	1																			
2	86	12	0	0	58	37	4	1	65	16	32	54	38	0	2	0																			
11	67	22	0	0	67	33	0	0	89	22	67	56	22	0	0	0																			
																						33	14	56	21	10	13	30	44	14	22	19	35	8
																						32	7	66	18	6	10	38	67	6	8	5	41	3
																						33	0	67	11	0	22	14	71	0	0	29	29	14
36	50	13	0	1	44	36	15	5	46	29	41	51	41	1	1	1						9	11	38	39	14	9	54	53	14	25	6	7	5
28	70	2	0	0	60	29	8	3	62	21	37	58	32	0	2	0						5	5	46	43	7	4	65	67	5	16	2	2	0
71	29	0	0	0	72	21	0	7	100	15	38	69	31	0	0	0						0	0	50	42	8	0	67	75	8	8	17	8	0
29	33	37	0	1	38	45	15	2	38	35	28	44	38	1	7	0																			
22	22	56	0	0	34	59	5	2	40	35	24	60	40	0	2	0																			
40	20	40	0	0	40	50	10	0	60	50	10	40	10	0	0	0																			
20	45	30	2	3	42	39	17	2	45	31	34	44	45	1	1	1																			
13	71	13	3	0	50	38	9	3	59	18	21	54	53	1	0	0																			
60	40	0	0	0	67	22	11	0	67	33	11	44	44	0	0	0																			
18	63	16	0	3	53	39	6	2	40	28	44	47	51	1	4	1						2	14	59	29	10	2	49	52	9	28	5	20	6
4	90	5	0	1	79	17	4	0	52	18	40	43	55	0	2	0						2	5	78	18	3	1	65	68	3	19	3	15	2
42	58	0	0	0	84	8	8	0	67	33	42	58	50	0	0	0						0	8	75	17	8	0	58	67	8	25	17	25	8
39	25	34	0	2	44	38	17	1	24	46	32	39	25	5	22	0						4	8	44	36	17	3	30	45	17	33	8	34	0
60	14	26	0	0	63	29	6	2	19	62	22	39	20	0	14	0						0	4	59	33	6	2	28	64	7	27	3	37	0
67	33	0	0	0	66	0	17	17	40	60	40	60	0	0	20	0						0	0	17	49	17	17	40	80	0	0	0	40	0

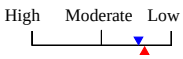
No	Topic	Questionnaire	Respondents (persons)	Degree of expertise (%)				Importance to Japan (%)					Time of technological realization							
				High	Moderate	Low	None	Index	High	Moderate	Low	None	Already realized	2006–2010	2011–2015	2016–2025	2026–2035	2036–	Will not be realized	Do not know
9	Discovery of the seeds of new practical technologies for the safe disposal of CO_2 with long-term stability.	1	**143**	**9**	**31**	**60**	**-**	**77**	**61**	**28**	**8**	**3**							**10**	**14**
		2	**136**	**5**	**17**	**78**	**-**	**87**	**78**	**17**	**3**	**2**							**7**	**5**
		E	**7**	**100**	**0**	**0**	**-**	**89**	**86**	**0**	**14**	**0**							**29**	**0**

Countries at the leading edge					Regarding technological realization												Time of social application							Regarding social application											
					Necessity of gov't involvement				Effective measures that should be taken by gov't															Necessity of gov't involvement				Effective measures that should be taken by gov't						
Japan	USA	EU	Asia	Other	High	Moderate	Low	None	Human resources development	Strengthened industry-academic-government and interdisciplinary collaboration	Development of R&D infrastructure	Expansion of R&D funding	Internationalization of R&D activities	Relaxation or elimination of relevant regulations	Tightened or new regulations	Other	2006–2010	2011–2015	2016–2025	2026–2035	2036–	Will not be applied	Do not know	High	Moderate	Low	None	Human resources development	Strengthened industry-academic-government and interdisciplinary collaboration	Improvement of environment for business startups	Support through taxation, subsidies, and procurement	Relaxation or elimination of relevant regulations	Tightened or new regulations	Other
(%)					(%)				(%)													(%)		(%)				(%)						
34	**38**	**23**	**0**	**5**	**48**	**33**	**13**	**6**	**46**	**46**	**41**	**42**	**21**	**3**	**5**	**1**																		
38	**51**	**11**	**0**	**0**	**71**	**21**	**3**	**5**	**57**	**58**	**32**	**51**	**14**	**0**	**2**	**0**																		
71	**29**	**0**	**0**	**0**	**72**	**0**	**14**	**14**	**33**	**67**	**17**	**67**	**17**	**0**	**17**	**0**																		

II. Urban environment

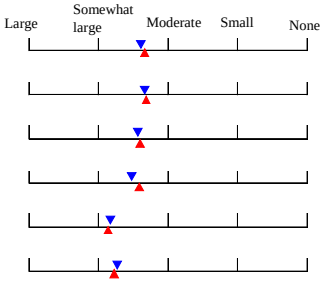
1. Questions regading therelevant area

1) Degree of expertise in the area



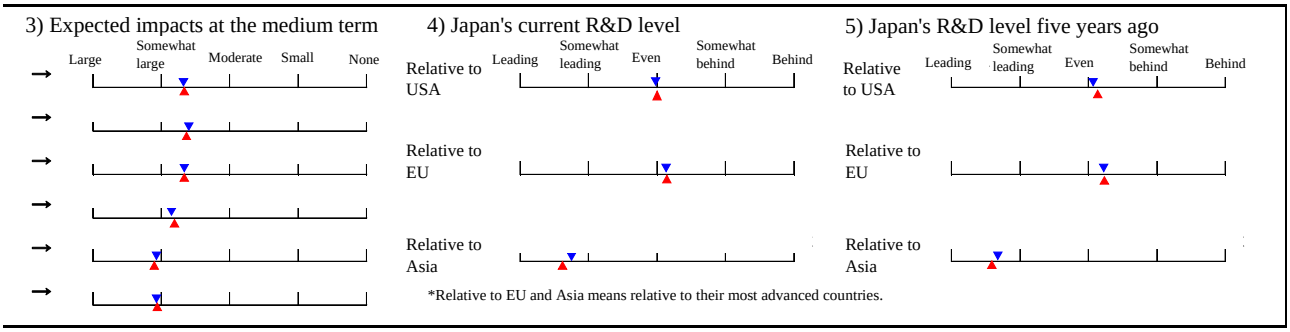
2) Current impacts

[Increased intellectual assets]	Contribution of the relevant area itself to increased intellectual assets	
	Contribution to the development of other fields	
[Economic impacts]	Contribution to the development of existing Japanese industry	
	Contribution to the creation of new industries or businesses	
[Social impacts]	Contribution to safety and security	
	Contribution to improved social vitality and quality of life	



2. Questions regarding topics

No	Topic	Questionnaire	Respondents (persons)	Degree of expertise (%)				Importance to Japan					Time of technological realization									
				High	Moderate	Low	None	Index	High	Moderate	Low	None	Already realized	2006–2010	2011–2015	2016–2025	2026–2035	2036–	Will not be realized	Do not know
																					(%)	
10	Near-complete elucidation of the correlation between environmental pollutants and allergic diseases.	1	**107**	**6**	**21**	**73**	**-**	**71**	**44**	**51**	**5**	**0**								**8**	**10**
		2	**112**	**2**	**18**	**80**	**-**	**68**	**39**	**58**	**2**	**1**								**4**	**5**
		E	**2**	**100**	**0**	**0**	**-**	**100**	**100**	**0**	**0**	**0**								**0**	**0**
11	Mandatory addition of an idling-stop function to automobiles.	1	**119**	**5**	**29**	**66**	**-**	**59**	**34**	**37**	**26**	**3**									
		2	**125**	**5**	**14**	**81**	**-**	**62**	**31**	**54**	**13**	**2**									
		E	**6**	**100**	**0**	**0**	**-**	**54**	**17**	**66**	**17**	**0**									
12	Widespread use of technology for the active control of urban noise and vibration to conform to environmental standards.	1	**107**	**5**	**23**	**72**	**-**	**51**	**19**	**51**	**27**	**3**								**5**	**9**
		2	**109**	**4**	**12**	**84**	**-**	**47**	**7**	**67**	**25**	**1**								**5**	**3**
		E	**4**	**100**	**0**	**0**	**-**	**44**	**0**	**75**	**25**	**0**								**25**	**0**
13	Scientific elucidation of the impacts of the stress in an urban living environment on children's physical and mental development.	1	**86**	**2**	**16**	**82**	**-**	**66**	**37**	**55**	**7**	**1**								**7**	**15**
		2	**94**	**0**	**6**	**94**	**-**	**59**	**24**	**66**	**9**	**1**								**2**	**13**
		E																			
14	Clean fuel (other than hydrogen) that does not emit particulates, NOx, etc.	1	**127**	**15**	**24**	**61**	**-**	**76**	**55**	**38**	**6**	**1**								**2**	**14**
		2	**125**	**10**	**23**	**67**	**-**	**90**	**79**	**21**	**0**	**0**								**1**	**5**
		E	**12**	**100**	**0**	**0**	**-**	**79**	**58**	**42**	**0**	**0**								**0**	**0**
15	Full implementation of traffic demand management (TDM) for the optimization and minimization of traffic volume in large cities.	1	**115**	**5**	**23**	**72**	**-**	**76**	**57**	**34**	**8**	**1**									
		2	**112**	**3**	**16**	**81**	**-**	**83**	**67**	**31**	**2**	**0**									
		E	**3**	**100**	**0**	**0**	**-**	**100**	**100**	**0**	**0**	**0**									
16	Verification of emission inventory data through monitoring.	1	**107**	**18**	**26**	**56**	**-**	**61**	**30**	**55**	**14**	**1**								**4**	**4**
		2	**104**	**8**	**22**	**70**	**-**	**55**	**14**	**79**	**7**	**0**								**2**	**1**
		E	**8**	**100**	**0**	**0**	**-**	**59**	**25**	**62**	**13**	**0**								**0**	**0**
17	Technology for utilizing underground cold energy to mitigate heat island effects.	1	**119**	**9**	**31**	**60**	**-**	**55**	**26**	**48**	**20**	**6**								**4**	**9**
		2	**111**	**5**	**23**	**72**	**-**	**51**	**13**	**67**	**18**	**2**								**4**	**4**
		E	**6**	**100**	**0**	**0**	**-**	**54**	**17**	**66**	**17**	**0**								**0**	**0**



*Relative to EU and Asia means relative to their most advanced countries.

Countries at the leading edge					Regarding technological realization												Time of social application							Regarding social application													
					Necessity of gov't involvement				Effective measures that should be taken by gov't															Necessity of gov't involvement				Effective measures that should be taken by gov't									
Japan	USA	EU	Asia	Other	High	Moderate	Low	None	Human resources development	Strengthened industry-academic-government and interdisciplinary collaboration	Development of R&D infrastructure	Expansion of R&D funding	Internationalization of R&D activities	Relaxation or elimination of relevant regulations	Tightened or new regulations	Other	2006–2010	2011–2015	2016–2025	2026–2035	2036–	Will not be applied	Do not know	High	Moderate	Low	None	Human resources development	Strengthened industry-academic-government and interdisciplinary collaboration	Improvement of environment for business startups	Support through taxation, subsidies, and procurement	Relaxation or elimination of relevant regulations	Tightened or new regulations	Other
(%)					(%)				(%)													(%)		(%)				(%)							
17	63	17	1	2	43	45	11	1	43	30	42	53	12	1	20	0																			
6	87	7	0	0	43	52	3	2	56	30	37	63	5	1	8	0																			
0	50	50	0	0	100	0	0	0	0	100	0	50	0	0	0	0																			
																						4	7	56	23	15	6	5	22	7	32	7	75	3
																						2	2	84	12	2	2	3	21	2	34	4	80	0
																						17	0	49	17	17	17	20	0	0	20	20	60	0
48	21	26	0	5	23	46	26	5	26	38	31	34	4	7	29	4						6	9	36	37	21	6	14	23	12	30	11	66	5
83	9	8	0	0	12	72	12	4	15	64	17	41	1	0	35	0						4	6	37	53	7	3	6	27	4	39	1	71	0
50	25	25	0	0	0	75	0	25	0	67	0	33	0	0	67	0						25	0	50	25	0	25	0	0	0	0	0	100	0
14	57	20	3	6	25	57	17	1	50	29	44	40	9	1	12	1																			
10	81	9	0	0	19	69	10	2	65	22	36	38	4	0	8	0																			
52	19	24	0	5	38	39	21	2	27	46	32	46	9	10	21	0						2	10	50	37	11	2	15	35	21	42	15	51	0
84	6	8	0	2	45	49	3	3	18	68	19	64	4	3	18	0						1	3	74	20	3	3	9	43	13	47	5	56	0
83	0	17	0	0	33	51	8	8	0	64	9	27	9	9	27	0						0	0	66	17	0	17	10	30	30	20	10	40	0
																						8	10	60	31	7	2	13	44	10	30	15	58	3
																						1	5	90	9	1	0	7	52	4	22	3	77	0
																						0	0	100	0	0	0	0	33	0	0	0	67	0
33	27	37	0	3	44	41	11	4	30	40	35	37	18	2	23	2																			
37	15	48	0	0	58	36	6	0	25	68	31	41	7	0	16	0																			
37	38	25	0	0	62	25	13	0	38	38	38	63	13	0	13	0																			
58	16	21	1	4	23	39	29	9	25	45	31	52	4	11	14	2						5	15	25	40	25	10	19	40	16	41	19	33	3
86	5	8	0	1	13	70	10	7	20	66	25	55	4	5	5	1						7	9	16	63	14	7	13	68	9	44	9	33	1
66	17	17	0	0	17	66	0	17	40	60	0	60	20	20	20	0						0	17	33	50	0	17	20	60	20	60	20	80	0

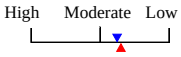
No	Topic	Questionnaire	Respondents (persons)	Degree of expertise				Importance to Japan					Time of technological realization									
				High	Moderate	Low	None	Index	High	Moderate	Low	None	Already realized	2006–2010	2011–2015	2016–2025	2026–2035	2036–	Will not be realized	Do not know
				(%)					(%)											(%)	
18	Application of prediction and assessment technologies possibly useful for the minimization of environmental burdens on urban planning.	1	**117**	**16**	**29**	**55**	**-**	**69**	**46**	**40**	**12**	**2**								**3**	**7**
		2	**116**	**7**	**24**	**69**	**-**	**74**	**52**	**43**	**5**	**0**								**0**	**3**
		E	**8**	**100**	**0**	**0**	**-**	**91**	**87**	**0**	**13**	**0**								**0**	**0**
19	Listing of additional environmental pollutants contained in motor vehicle emissions as regulated substances.	1	**120**	**18**	**23**	**59**	**-**	**68**	**43**	**44**	**12**	**1**									
		2	**119**	**10**	**21**	**69**	**-**	**72**	**47**	**47**	**6**	**0**									
		E	**12**	**100**	**0**	**0**	**-**	**67**	**41**	**42**	**17**	**0**									

Countries at the leading edge					Regarding technological realization												Time of social application							Regarding social application													
					Necessity of gov't involvement				Effective measures that should be taken by gov't															Necessity of gov't involvement				Effective measures that should be taken by gov't									
Japan	USA	EU	Asia	Other	High	Moderate	Low	None	Human resources development	Strengthened industry-academic-government and interdisciplinary collaboration	Development of R&D infrastructure	Expansion of R&D funding	Internationalization of R&D activities	Relaxation or elimination of relevant regulations	Tightened or new regulations	Other	2006–2010	2011–2015	2016–2025	2026–2035	2036–	Will not be applied	Do not know	High	Moderate	Low	None	Human resources development	Strengthened industry-academic-government and interdisciplinary collaboration	Improvement of environment for business startups	Support through taxation, subsidies, and procurement	Relaxation or elimination of relevant regulations	Tightened or new regulations	Other
(%)					(%)				(%)													(%)		(%)				(%)							
33	**20**	**45**	**0**	**2**	**35**	**44**	**20**	**1**	**37**	**49**	**33**	**42**	**8**	**6**	**19**	**1**						**4**	**10**	**36**	**45**	**18**	**1**	**38**	**51**	**15**	**24**	**6**	**29**	**0**
28	**8**	**63**	**0**	**1**	**25**	**66**	**8**	**1**	**37**	**73**	**24**	**37**	**5**	**3**	**13**	**0**						**0**	**4**	**27**	**62**	**9**	**2**	**47**	**68**	**2**	**20**	**0**	**37**	**1**
62	**0**	**38**	**0**	**0**	**38**	**49**	**13**	**0**	**25**	**63**	**0**	**13**	**0**	**13**	**13**	**0**						**0**	**0**	**38**	**49**	**13**	**0**	**38**	**63**	**0**	**0**	**0**	**38**	**0**
																						4	**10**	**66**	**26**	**6**	**2**	**16**	**26**	**6**	**23**	**6**	**75**	**2**
																						2	**2**	**86**	**12**	**2**	**0**	**10**	**35**	**1**	**22**	**0**	**79**	**2**
																						8	**0**	**83**	**17**	**0**	**0**	**25**	**33**	**0**	**17**	**0**	**58**	**0**

III. Focus on identification and mitigation of ecological effects (including soil and water)

1. Questions regading therelevant area

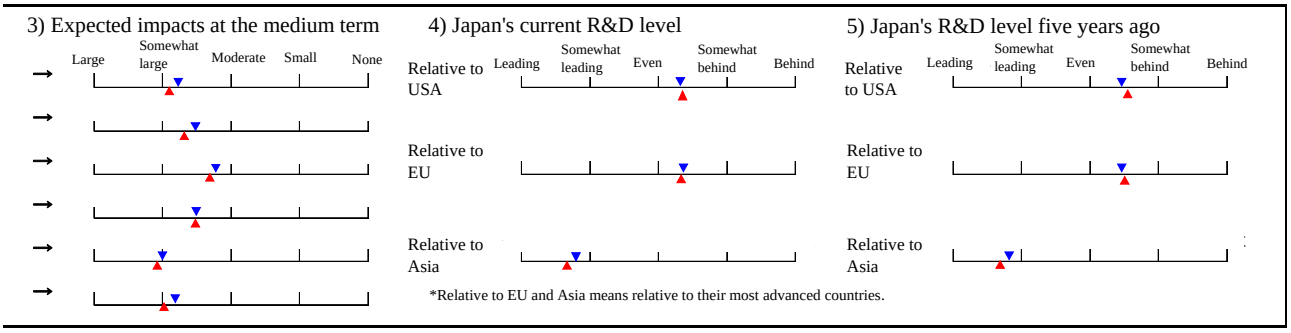
1) Degree of expertise in the area



2) Current impacts

2. Questions regarding topics

No	Topic	Questionnaire	Respondents (persons)	Degree of expertise (%)				Importance to Japan					Time of technological realization									
				High	Moderate	Low	None	Index	High	Moderate	Low	None	Already realized	2006–2010	2011–2015	2016–2025	2026–2035	2036–	Will not be realized (%)	Do not know (%)
20	Elucidation of the mechanism of the effect of acid rain on the flora and fauna and the ecosystem.	1	**148**	**14**	**30**	**56**	-	**62**	**34**	**47**	**18**	**1**								**1**	**8**
		2	**130**	**6**	**28**	**66**	-	**63**	**30**	**63**	**7**	**0**								**1**	**2**
		E	**8**	**100**	**0**	**0**	-	**75**	**50**	**50**	**0**	**0**								**0**	**0**
21	Technology for restoring the ecosystem and biodiversity of wetlands.	1	**135**	**19**	**33**	**48**	-	**61**	**31**	**52**	**17**	**0**								**2**	**6**
		2	**123**	**13**	**34**	**53**	-	**60**	**24**	**69**	**7**	**0**								**0**	**2**
		E	**16**	**100**	**0**	**0**	-	**70**	**44**	**50**	**6**	**0**								**0**	**0**
22	Technology for conserving and restoring the genetic diversity of endangered species.	1	**101**	**8**	**37**	**55**	-	**61**	**31**	**53**	**15**	**1**								**4**	**9**
		2	**110**	**4**	**22**	**74**	-	**58**	**18**	**76**	**6**	**0**								**3**	**1**
		E	**4**	**100**	**0**	**0**	-	**63**	**25**	**75**	**0**	**0**								**0**	**0**
23	Technology for ecologically identifying invasive foreign species.	1	**107**	**14**	**31**	**55**	-	**69**	**45**	**40**	**13**	**2**								**1**	**8**
		2	**109**	**6**	**23**	**71**	-	**74**	**49**	**48**	**3**	**0**								**1**	**2**
		E	**7**	**100**	**0**	**0**	-	**86**	**71**	**29**	**0**	**0**								**0**	**0**
24	Environmental monitoring technology based on high-precision satellite sensors and the Internet for vegetation mapping.	1	**146**	**11**	**34**	**55**	-	**61**	**32**	**49**	**18**	**1**								**1**	**3**
		2	**134**	**8**	**25**	**67**	-	**56**	**20**	**66**	**13**	**1**								**0**	**1**
		E	**11**	**100**	**0**	**0**	-	**55**	**18**	**64**	**18**	**0**								**0**	**0**
25	Quantitative elucidation of the effect of the flow structure on the tideland ecosystem structure and function.	1	**117**	**19**	**25**	**56**	-	**64**	**35**	**52**	**11**	**2**								**3**	**9**
		2	**109**	**13**	**21**	**66**	-	**60**	**24**	**70**	**6**	**0**								**1**	**2**
		E	**14**	**100**	**0**	**0**	-	**79**	**57**	**43**	**0**	**0**								**0**	**0**
26	Technology for controlling species inhibiting the conservation and restoration of the natural ecosystem.	1	**103**	**12**	**32**	**56**	-	**59**	**24**	**63**	**12**	**1**								**9**	**14**
		2	**107**	**9**	**16**	**75**	-	**55**	**12**	**84**	**4**	**0**								**2**	**3**
		E	**10**	**100**	**0**	**0**	-	**72**	**44**	**56**	**0**	**0**								**0**	**0**
27	Technology for addressing endocrine disruptors emitted from sewage into the rivers.	1	**128**	**15**	**33**	**52**	-	**66**	**41**	**41**	**17**	**1**								**2**	**9**
		2	**121**	**13**	**30**	**57**	-	**70**	**45**	**48**	**7**	**0**								**1**	**3**
		E	**16**	**100**	**0**	**0**	-	**69**	**43**	**44**	**13**	**0**								**0**	**0**



Countries at the leading edge					Regarding technological realization													Time of social application							Regarding social application													
					Necessity of gov't involvement				Effective measures that should be taken by gov't																	Necessity of gov't involvement				Effective measures that should be taken by gov't							
Japan	USA	EU	Asia	Other	High	Moderate	Low	None	Human resources development	Strengthened industry-academic-government and interdisciplinary collaboration	Development of R&D infrastructure	Expansion of R&D funding	Internationalization of R&D activities	Relaxation or elimination of relevant regulations	Tightened or new regulations	Other	2006–2010	2011–2015	2016–2025	2026–2035	2036–	Will not be applied	Do not know	High	Moderate	Low	None	Human resources development	Strengthened industry-academic-government and interdisciplinary collaboration	Improvement of environment for business startups	Support through taxation, subsidies, and procurement	Relaxation or elimination of relevant regulations	Tightened or new regulations	Other
(%)					(%)				(%)													(%)		(%)				(%)							
15	13	71	1	0	37	44	16	3	37	26	36	49	43	0	9	0																				
5	6	88	1	0	30	63	7	0	46	22	32	59	45	0	4	0																				
0	0	100	0	0	38	49	13	0	38	13	38	88	13	0	0	0																				
16	34	45	1	4	38	43	17	2	53	27	47	48	25	3	16	1						4	10	37	48	12	3	49	37	13	34	12	43	2
5	25	70	0	0	31	64	5	0	70	19	44	66	16	1	9	0						0	3	29	66	5	0	71	32	8	37	5	50	0
0	31	69	0	0	60	33	7	0	53	20	33	67	7	7	20	0						0	6	60	33	7	0	64	7	7	36	14	64	0
8	67	22	0	3	41	43	15	1	51	17	53	55	24	3	9	1						6	15	40	44	13	3	60	30	13	30	6	34	0
0	93	7	0	0	26	67	7	0	65	7	59	66	13	0	3	0						3	2	36	59	5	0	80	25	6	31	4	43	0
0	100	0	0	0	50	50	0	0	50	0	50	50	0	0	0	0						0	25	75	25	0	0	50	25	0	0	0	50	0
15	50	28	0	7	43	40	16	1	54	20	44	49	37	2	11	1						4	9	52	33	14	1	53	34	10	27	4	44	0
3	86	10	0	1	47	45	8	0	78	8	46	57	20	0	4	0						0	3	66	29	5	0	82	22	6	18	1	55	0
0	100	0	0	0	67	33	0	0	67	0	33	50	33	0	17	0						0	0	86	14	0	0	71	14	0	14	0	57	0
7	85	7	0	1	42	40	16	2	43	39	46	53	37	4	1	1						1	4	38	41	16	5	46	55	23	33	7	7	2
0	99	1	0	0	39	53	6	2	48	25	52	68	24	1	0	0						0	2	29	63	8	0	54	75	11	26	3	5	0
0	100	0	0	0	46	36	18	0	70	30	50	70	40	0	0	0						0	0	36	46	18	0	64	73	9	36	0	0	0
36	32	29	0	3	40	42	14	4	52	36	45	52	14	4	12	0						3	11	42	42	15	1	52	45	16	28	9	28	0
58	29	13	0	0	32	65	3	0	65	27	47	62	6	1	5	0						0	2	39	58	3	0	77	45	6	26	3	30	0
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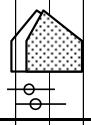
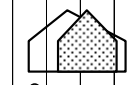
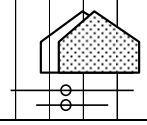
11	49	29	1	10	31	46	21	2	45	39	38	54	23	1	8	0						6	19	31	47	22	0	51	40	17	29	4	29	2
4	86	9	0	1	15	79	6	0	69	22	28	64	16	0	4	0						0	4	16	74	10	0	71	54	6	18	1	30	0
0	90	10	0	0	40	60	0	0	60	20	20	70	10	0	10	0						0	0	30	70	0	0	50	60	10	20	0	30	0
28	41	26	0	5	43	39	16	2	38	44	41	50	11	3	26	0						4	10	46	38	15	1	39	44	15	29	6	50	0
22	67	11	0	0	56	41	3	0	44	50	38	63	5	0	17	0						3	4	62	35	3	0	44	60	6	17	2	54	0
50	31	19	0	0	56	44	0	0	50	56	25	69	0	0	13	0						0	0	62	38	0	0	50	69	6	6	0	50	0

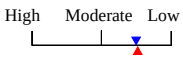
No	Topic	Questionnaire	Respondents (persons)	Degree of expertise (%)				Importance to Japan					Time of technological realization									
				High	Moderate	Low	None	Index	High	Moderate	Low	None	Already realized	2006–2010	2011–2015	2016–2025	2026–2035	2036–	Will not be realized	Do not know
				(%)					(%)											(%)	
28	Establishment of a system for ensuring that development projects involve setting up targets concerning ecosystem conservation and restoration through a consensus-building process.	1	**119**	**14**	**29**	**57**	**-**	**73**	**51**	**39**	**8**	**2**										
		2	**114**	**11**	**27**	**62**	**-**	**80**	**63**	**32**	**5**	**0**										
		E	**12**	**100**	**0**	**0**	**-**	**86**	**73**	**27**	**0**	**0**										
29	Technology for removing dioxin and other POPs (Persistent Organic Pollutants) from ocean floor soil.	1	**120**	**12**	**32**	**56**	**-**	**67**	**42**	**42**	**15**	**1**									**3**	**12**
		2	**110**	**8**	**30**	**62**	**-**	**70**	**45**	**45**	**8**	**2**									**3**	**5**
		E	**9**	**100**	**0**	**0**	**-**	**72**	**44**	**56**	**0**	**0**									**0**	**0**
30	Technology for efficient revegetation in deserts.	1	**118**	**8**	**34**	**58**	**-**	**44**	**13**	**45**	**36**	**6**									**10**	**7**
		2	**117**	**5**	**28**	**67**	**-**	**43**	**5**	**61**	**31**	**3**									**3**	**3**
		E	**6**	**100**	**0**	**0**	**-**	**50**	**17**	**50**	**33**	**0**									**0**	**0**

Countries at the leading edge					Regarding technological realization												Time of social application							Regarding social application													
					Necessity of gov't involvement				Effective measures that should be taken by gov't															Necessity of gov't involvement				Effective measures that should be taken by gov't								
Japan	USA	EU	Asia	Other	High	Moderate	Low	None	Human resources development	Strengthened industry-academic-government and interdisciplinary collaboration	Development of R&D infrastructure	Expansion of R&D funding	Internationalization of R&D activities	Relaxation or elimination of relevant regulations	Tightened or new regulations	Other	2006–2010	2011–2015	2016–2025	2026–2035	2036–	Will not be applied	Do not know	High	Moderate	Low	None	Human resources development	Strengthened industry-academic-government and interdisciplinary collaboration	Improvement of environment for business startups	Support through taxation, subsidies, and procurement	Relaxation or elimination of relevant regulations	Tightened or new regulations	Other
(%)					(%)				(%)													(%)		(%)				(%)							
																						4	8	53	38	8	1	43	31	5	24	11	62	0
																						1	3	77	20	3	0	62	28	5	13	4	73	0
																						0	0	75	25	0	0	33	25	17	8	8	75	0
48	27	19	0	6	43	39	15	3	37	48	40	56	12	4	21	0						5	17	48	41	9	2	36	44	18	37	8	42	0
83	11	6	0	0	58	33	7	2	36	59	30	67	4	0	13	0						5	5	65	27	5	3	36	70	8	23	1	45	1
78	11	11	0	0	44	56	0	0	11	78	11	67	11	0	11	0						11	0	45	44	0	11	38	88	0	25	0	38	0
30	36	12	9	13	21	43	31	5	50	37	36	39	52	1	2	1						10	12	24	42	30	4	53	48	26	30	6	7	5
35	59	3	2	1	9	69	19	3	70	28	25	41	57	0	1	0						3	4	13	66	19	2	76	55	11	26	1	3	0
50	50	0	0	0	0	67	33	0	83	67	50	67	50	0	0	0						0	0	40	40	20	0	80	80	20	40	0	0	0

IV. Environmental economic index

1. Questions regading therelevant area

1) Degree of expertise in the area

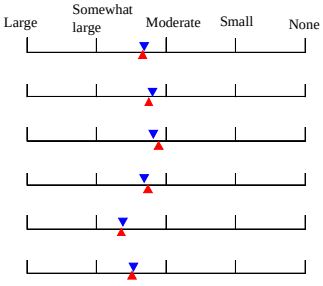


2) Current impacts

[Increased intellectual assets]
- Contribution of the relevant area itself to increased intellectual assets
- Contribution to the development of other fields

[Economic impacts]
- Contribution to the development of existing Japanese industry
- Contribution to the creation of new industries or businesses

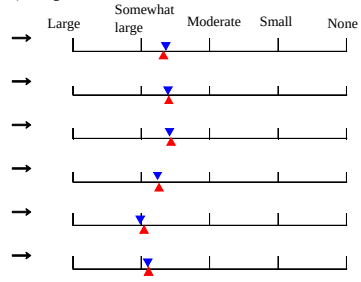
[Social impacts]
- Contribution to safety and security
- Contribution to improved social vitality and quality of life



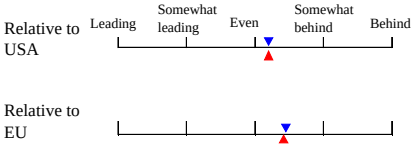
2. Questions regarding topics

No	Topic	Questionnaire	Respondents (persons)	Degree of expertise (%)				Importance to Japan					Time of technological realization									
				High	Moderate	Low	None	Index	High	Moderate	Low	None	Already realized	2006–2010	2011–2015	2016–2025	2026–2035	2036–	Will not be realized	Do not know
																					(%)	
31	Development and standardization of socially approved tools for the risk assessment of chemical substances (including RoHS (Restriction of the Use of Hazardous Substances)-compliant alternatives).	1	**112**	**16**	**28**	**56**	-	**74**	**50**	**44**	**6**	**0**										
		2	**110**	**11**	**26**	**63**	-	**82**	**65**	**34**	**1**	**0**										
		E	**12**	**100**	**0**	**0**	-	**92**	**83**	**17**	**0**	**0**										
32	Establishment of the definition and calculation method of corporate environmental efficiency indicators.	1	**119**	**16**	**23**	**61**	-	**59**	**25**	**60**	**14**	**1**										
		2	**116**	**9**	**26**	**65**	-	**56**	**15**	**80**	**5**	**0**										
		E	**11**	**100**	**0**	**0**	-	**66**	**36**	**55**	**9**	**0**										
33	Methodology for tracing and identifying recycled materials (plastics and metals).	1	**108**	**10**	**31**	**59**	-	**60**	**30**	**52**	**17**	**1**									**2**	**9**
		2	**100**	**8**	**17**	**75**	-	**56**	**17**	**72**	**10**	**1**									**2**	**1**
		E	**8**	**100**	**0**	**0**	-	**63**	**37**	**38**	**25**	**0**									**0**	**0**
34	Technology for predicting and assessing global depletion of the resources that are used in Japan.	1	**118**	**8**	**31**	**61**	-	**82**	**69**	**23**	**6**	**2**									**6**	**14**
		2	**114**	**5**	**25**	**70**	-	**93**	**85**	**15**	**0**	**0**									**2**	**4**
		E	**6**	**100**	**0**	**0**	-	**92**	**83**	**17**	**0**	**0**									**0**	**0**
35	Social recognition of life cycle assessment (LCA) as an objective and quantitative tool.	1	**146**	**21**	**34**	**45**	-	**67**	**39**	**53**	**7**	**1**										
		2	**130**	**16**	**33**	**51**	-	**60**	**22**	**73**	**5**	**0**										
		E	**21**	**100**	**0**	**0**	-	**68**	**38**	**57**	**5**	**0**										
36	Pervasion of the standardized life cycle cost (LCC) assessment in the pricing of products and serivices.	1	**132**	**17**	**29**	**54**	-	**67**	**42**	**45**	**12**	**1**										
		2	**122**	**13**	**28**	**59**	-	**62**	**28**	**64**	**7**	**1**										
		E	**16**	**100**	**0**	**0**	-	**67**	**44**	**44**	**6**	**6**										
37	Technology for an efficient recovery of rare metals from molten fly ash as a domestic source of its sypply.	1	**98**	**16**	**27**	**57**	-	**66**	**40**	**44**	**16**	**0**									**2**	**6**
		2	**93**	**10**	**18**	**72**	-	**65**	**35**	**56**	**8**	**1**									**0**	**2**
		E	**9**	**100**	**0**	**0**	-	**72**	**56**	**33**	**0**	**11**									**0**	**0**
38	Publication of an environmental report by all listed companies.	1	**139**	**20**	**31**	**49**	-	**55**	**24**	**52**	**22**	**2**										
		2	**128**	**13**	**29**	**58**	-	**55**	**17**	**68**	**14**	**1**										
		E	**17**	**100**	**0**	**0**	-	**57**	**29**	**47**	**18**	**6**										

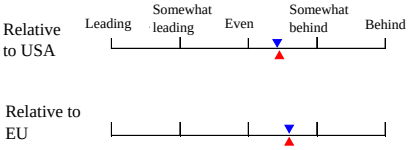
3) Expected impacts at the medium term



4) Japan's current R&D level



5) Japan's R&D level five years ago



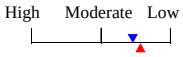
*Relative to EU and Asia means relative to their most advanced countries.

Countries at the leading edge					Regarding technological realization													Time of social application							Regarding social application													
					Necessity of gov't involvement				Effective measures that should be taken by gov't																	Necessity of gov't involvement				Effective measures that should be taken by gov't								
Japan	USA	EU	Asia	Other	High	Moderate	Low	None	Human resources development	Strengthened industry-academic-government and interdisciplinary collaboration	Development of R&D infrastructure	Expansion of R&D funding	Internationalization of R&D activities	Relaxation or elimination of relevant regulations	Tightened or new regulations	Other	2006–2010	2011–2015	2016–2025	2026–2035	2036–	Will not be applied	Do not know	High	Moderate	Low	None	Human resources development	Strengthened industry-academic-government and interdisciplinary collaboration	Improvement of environment for business startups	Support through taxation, subsidies, and procurement	Relaxation or elimination of relevant regulations	Tightened or new regulations	Other
(%)					(%)				(%)													(%)		(%)				(%)								
																						3	8	50	41	9	0	36	45	10	26	9	57	2
																						1	1	81	17	2	0	33	69	3	15	1	68	1
																						0	0	73	27	0	0	64	82	0	18	0	45	0
																						6	2	36	38	21	5	32	47	8	28	14	45	2
																						3	0	34	52	14	0	25	63	5	19	0	60	2
																						18	0	30	40	30	0	30	60	10	40	0	60	0
47	18	32	0	3	35	39	20	6	31	48	33	29	24	9	32	0						3	7	40	38	19	3	28	45	22	28	15	51	3
84	1	14	0	1	22	66	9	3	16	85	20	19	9	0	35	0						2	1	49	40	9	2	18	65	7	18	3	69	1
87	0	13	0	0	37	25	13	25	17	50	67	0	33	0	50	0						0	13	49	13	25	13	14	57	0	0	0	57	0
20	66	13	0	1	51	31	13	5	42	52	40	42	44	3	6	0						5	12	54	27	14	5	44	62	13	20	7	15	4
3	97	0	0	0	74	23	3	0	52	69	36	36	47	0	1	0						1	4	78	18	4	0	54	79	5	17	2	7	0
17	83	0	0	0	83	17	0	0	67	67	50	67	33	0	0	0						0	0	100	0	0	0	83	50	17	17	0	17	0
																						4	1	38	40	18	4	38	52	12	27	7	44	1
																						3	0	27	62	8	3	38	74	5	13	0	56	0
																						0	0	19	66	10	5	45	60	5	10	0	60	0
																						6	5	39	42	14	5	37	48	10	29	9	43	4
																						3	1	31	60	6	3	38	72	6	18	1	58	0
																						6	0	25	69	0	6	40	60	7	13	0	53	0
66	18	15	0	1	18	42	32	8	25	46	33	43	11	3	14	1						1	11	20	52	24	4	20	47	35	42	13	24	0
93	6	1	0	0	10	72	16	2	18	70	21	56	3	2	8	0						1	3	13	74	11	2	10	69	26	48	3	24	0
100	0	0	0	0	33	45	11	11	13	75	25	63	0	25	0	0						0	0	33	45	11	11	13	63	25	50	13	38	0
																						5	4	36	32	17	15	29	29	6	24	6	54	6
																						3	1	49	34	11	6	31	29	2	16	1	73	3
																						6	0	41	18	29	12	47	33	0	13	0	60	0

V. Lifestyle based on environment

1. Questions regading therelevant area

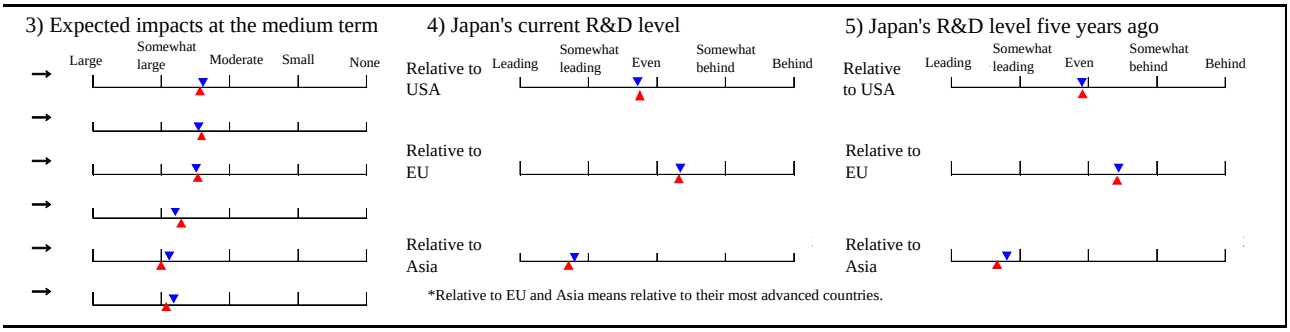
1) Degree of expertise in the area



2) Current impacts

2. Questions regarding topics

No	Topic	Questionnaire	Respondents (persons)	Degree of expertise (%)				Importance to Japan					Time of technological realization									
				High	Moderate	Low	None	Index	High	Moderate	Low	None	Already realized	2006–2010	2011–2015	2016–2025	2026–2035	2036–	Will not be realized	Do not know		
																					(%)	
39	Use of virgin natural resources (non-recycled material) becomes taxable in Japan for global environmental conservation.	1	**140**	**9**	**31**	**60**	-	**65**	**40**	**43**	**16**	**1**										
		2	**135**	**4**	**22**	**74**	-	**68**	**41**	**50**	**8**	**1**										
		E	**6**	**100**	**0**	**0**	-	**92**	**83**	**17**	**0**	**0**										
40	Energy consumption per capita in Japan reduces by half.	1	**154**	**15**	**30**	**55**	-	**77**	**61**	**31**	**5**	**3**										
		2	**141**	**13**	**24**	**63**	-	**92**	**85**	**13**	**2**	**0**										
		E	**19**	**100**	**0**	**0**	-	**92**	**84**	**16**	**0**	**0**										
41	Most consumer durables are not purchased but leased.	1	**126**	**11**	**28**	**61**	-	**54**	**24**	**48**	**23**	**5**										
		2	**128**	**8**	**17**	**75**	-	**52**	**14**	**69**	**15**	**2**										
		E	**10**	**100**	**0**	**0**	-	**63**	**30**	**60**	**10**	**0**										
42	Introduction of an automobile tax based on CO2 emissions.	1	**147**	**13**	**27**	**60**	-	**72**	**51**	**37**	**9**	**3**										
		2	**141**	**6**	**21**	**73**	-	**90**	**82**	**16**	**1**	**1**										
		E	**9**	**100**	**0**	**0**	-	**83**	**67**	**33**	**0**	**0**										



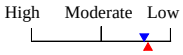
*Relative to EU and Asia means relative to their most advanced countries.

Countries at the leading edge					Regarding technological realization													Time of social application							Regarding social application													
					Necessity of gov't involvement				Effective measures that should be taken by gov't																	Necessity of gov't involvement				Effective measures that should be taken by gov't								
Japan	USA	EU	Asia	Other	High	Moderate	Low	None	Human resources development	Strengthened industry-academic-government and interdisciplinary collaboration	Development of R&D infrastructure	Expansion of R&D funding	Internationalization of R&D activities	Relaxation or elimination of relevant regulations	Tightened or new regulations	Other	2006–2010	2011–2015	2016–2025	2026–2035	2036–	Will not be applied	Do not know	High	Moderate	Low	None	Human resources development	Strengthened industry-academic-government and interdisciplinary collaboration	Improvement of environment for business startups	Support through taxation, subsidies, and procurement	Relaxation or elimination of relevant regulations	Tightened or new regulations	Other
(%)					(%)				(%)													(%)		(%)				(%)							
																						14	13	65	24	7	4	10	27	11	31	10	77	2
																						11	5	85	10	2	3	7	19	5	28	4	86	0
																						33	0	100	0	0	0	40	20	0	40	0	60	0
																						26	16	61	26	8	5	21	33	16	36	11	64	8
																						31	6	87	11	1	1	16	33	8	39	5	79	1
																						11	5	76	18	0	6	44	50	13	38	19	56	0
																						22	19	30	37	19	14	15	26	33	39	19	46	2
																						27	7	25	51	17	7	6	16	29	44	8	68	0
																						30	10	67	11	11	11	13	25	13	38	13	50	0
																						8	9	73	18	4	5	6	25	8	31	9	82	2
																						2	1	92	6	1	1	4	22	3	29	2	88	0
																						0	0	89	11	0	0	22	33	11	44	0	22	0

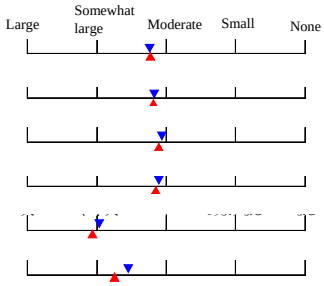
VI. Environmental disasters

1. Questions regading therelevant area

1) Degree of expertise in the area



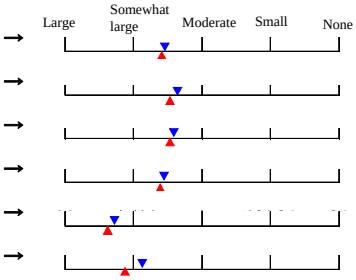
2) Current impacts



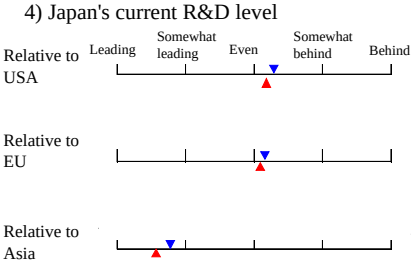
2. Questions regarding topics

No	Topic	Questionnaire	Respondents (persons)	Degree of expertise (%)				Importance to Japan					Time of technological realization							
				High	Moderate	Low	None	Index	High	Moderate	Low	None	Already realized	2006–2010	2011–2015	2016–2025	2026–2035	2036–	Will not be realized (%)	Do not know (%)
43	Technology for the early detection of and response to large-scale forest fires around the world.	1	**97**	**8**	**27**	**65**	**-**	**45**	**14**	**42**	**42**	**2**							**1**	**7**
		2	**111**	**5**	**19**	**76**	**-**	**48**	**10**	**63**	**26**	**1**							**3**	**2**
		E	**5**	**100**	**0**	**0**	**-**	**50**	**0**	**100**	**0**	**0**							**0**	**0**
44	Technology for minimizing the impacts of and restoring damage from large-scale industrial accidents.	1	**94**	**11**	**24**	**65**	**-**	**75**	**55**	**35**	**10**	**0**							**1**	**10**
		2	**107**	**4**	**16**	**80**	**-**	**90**	**81**	**18**	**1**	**0**							**1**	**5**
		E	**4**	**100**	**0**	**0**	**-**	**100**	**100**	**0**	**0**	**0**							**0**	**0**
45	Technology for forecasting abnormal weather disasters resulting from climate change.	1	**122**	**16**	**32**	**52**	**-**	**84**	**70**	**25**	**5**	**0**							**4**	**8**
		2	**122**	**13**	**23**	**64**	**-**	**94**	**87**	**13**	**0**	**0**							**3**	**3**
		E	**16**	**100**	**0**	**0**	**-**	**100**	**100**	**0**	**0**	**0**							**0**	**0**

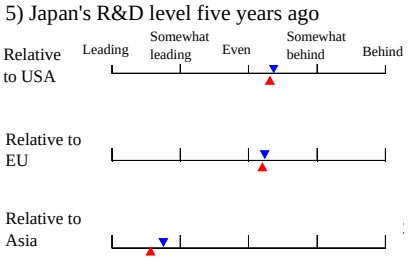
3) Expected impacts at the medium term



4) Japan's current R&D level



5) Japan's R&D level five years ago



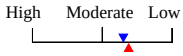
*Relative to EU and Asia means relative to their most advanced countries.

Countries at the leading edge					Regarding technological realization													Time of social application							Regarding social application											
					Necessity of gov't involvement				Effective measures that should be taken by gov't																Necessity of gov't involvement				Effective measures that should be taken by gov't							
Japan	USA	EU	Asia	Other	High	Moderate	Low	None	Human resources development	Strengthened industry-academic-government and interdisciplinary collaboration	Development of R&D infrastructure	Expansion of R&D funding	Internationalization of R&D activities	Relaxation or elimination of relevant regulations	Tightened or new regulations	Other	2006–2010	2011–2015	2016–2025	2026–2035	2036–	Will not be applied	Do not know	High	Moderate	Low	None	Human resources development	Strengthened industry-academic-government and interdisciplinary collaboration	Improvement of environment for business startups	Support through taxation, subsidies, and procurement	Relaxation or elimination of relevant regulations	Tightened or new regulations	Other
(%)					(%)				(%)													(%)		(%)				(%)							
3	88	6	0	3	29	40	26	5	41	33	40	30	49	1	2	2						2	9	26	43	25	6	47	42	16	24	5	11	11
1	98	1	0	0	22	63	11	4	53	26	45	32	52	0	1	0						3	2	20	68	9	3	65	59	5	23	1	7	0
0	100	0	0	0	20	60	20	0	60	40	20	20	20	0	0	0						0	0	20	80	0	0	60	40	20	20	0	0	0
23	58	18	0	1	44	39	14	3	37	49	30	31	20	1	20	0						1	11	41	43	14	2	38	45	11	25	6	39	0
10	88	2	0	0	66	30	4	0	37	77	29	25	12	1	12	0						0	5	51	47	2	0	42	72	8	20	1	46	0
0	100	0	0	0	50	50	0	0	0	75	0	0	0	25	25	0						0	0	75	25	0	0	25	75	25	50	0	25	0
19	67	13	0	1	62	28	8	2	58	37	52	59	39	0	3	1						6	5	54	30	13	3	58	54	17	23	6	10	8
7	87	6	0	0	85	14	1	0	73	24	45	63	36	0	1	0						3	4	80	18	2	0	86	59	7	19	0	3	0
31	56	13	0	0	94	6	0	0	81	38	50	56	50	0	0	0						0	0	87	13	0	0	81	69	19	19	0	6	0

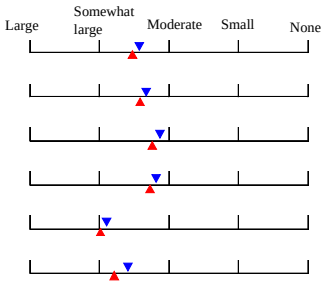
VII. Water resources

1. Questions regading therelevant area

1) Degree of expertise in the area

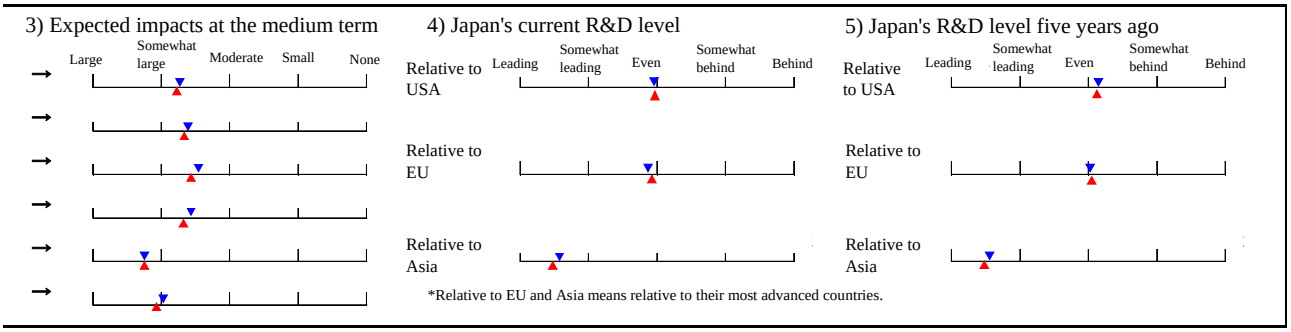


2) Current impacts



2. Questions regarding topics

No	Topic	Questionnaire	Respondents (persons)	Degree of expertise (%)				Importance to Japan					Time of technological realization							
				High	Moderate	Low	None	Index	High	Moderate	Low	None	Already realized	2006–2010	2011–2015	2016–2025	2026–2035	2036–	Will not be realized (%)	Do not know (%)
46	Global-scale observation of water use and water contaminants (data acquisition with a global 1-km mesh; including rivers, lakes and marshes, ground water, extraction, drainage, siltation in dams, urban pollution, industrial pollution, natural chemical substances).	1	**128**	**20**	**38**	**42**	-	**68**	**44**	**41**	**14**	**1**							**3**	**5**
		2	**129**	**16**	**29**	**55**	-	**78**	**58**	**38**	**4**	**0**							**1**	**2**
		E	**21**	**100**	**0**	**0**	-	**80**	**62**	**33**	**5**	**0**							**0**	**0**
47	Streamflow measurement and flood forecasts to prevent unexpected disasters by using satellite observation.	1	**120**	**19**	**34**	**47**	-	**69**	**45**	**42**	**12**	**1**							**2**	**8**
		2	**120**	**16**	**25**	**59**	-	**81**	**63**	**34**	**3**	**0**							**2**	**3**
		E	**19**	**100**	**0**	**0**	-	**80**	**63**	**32**	**5**	**0**							**5**	**0**
48	Groundwater observation from satellites (improvement of spatial resolution from a few hundreds to a few kilometers).	1	**102**	**12**	**31**	**57**	-	**54**	**28**	**34**	**35**	**3**							**9**	**13**
		2	**106**	**9**	**22**	**69**	-	**49**	**11**	**60**	**29**	**0**							**7**	**5**
		E	**10**	**100**	**0**	**0**	-	**53**	**20**	**50**	**30**	**0**							**20**	**20**
49	Construction of a hydrologic prediction model (including soil, snow/ice, and groundwater) for basins where there is poor ground observations.	1	**107**	**21**	**31**	**48**	-	**56**	**29**	**44**	**22**	**5**							**3**	**10**
		2	**110**	**16**	**22**	**62**	-	**55**	**17**	**69**	**14**	**0**							**1**	**2**
		E	**18**	**100**	**0**	**0**	-	**71**	**44**	**50**	**6**	**0**							**0**	**0**
50	Meso-scale (about 10-km mesh) precipitation simulation.	1	**114**	**17**	**31**	**52**	-	**76**	**57**	**33**	**8**	**2**							**0**	**5**
		2	**110**	**13**	**31**	**56**	-	**85**	**72**	**22**	**6**	**0**							**0**	**2**
		E	**14**	**100**	**0**	**0**	-	**86**	**71**	**29**	**0**	**0**							**0**	**0**
51	Integration of hydrology (basin water cycle) and meteorology on the Earth Simulator.	1	**110**	**18**	**28**	**54**	-	**70**	**49**	**34**	**15**	**2**							**1**	**9**
		2	**110**	**11**	**24**	**65**	-	**81**	**67**	**25**	**8**	**0**							**5**	**2**
		E	**12**	**100**	**0**	**0**	-	**96**	**92**	**8**	**0**	**0**							**0**	**0**
52	Technology for economically and practically desalinating seawater and purifying polluted water using reverse osmosis membrane or other methods.	1	**128**	**20**	**27**	**53**	-	**59**	**31**	**46**	**21**	**2**							**0**	**5**
		2	**125**	**14**	**24**	**62**	-	**59**	**25**	**61**	**14**	**0**							**0**	**2**
		E	**18**	**100**	**0**	**0**	-	**65**	**33**	**61**	**6**	**0**							**0**	**0**
53	Technology for identifying the groundwater pollution sources using isotopes.	1	**104**	**12**	**33**	**55**	-	**54**	**24**	**47**	**26**	**3**							**1**	**7**
		2	**103**	**7**	**27**	**66**	-	**52**	**14**	**66**	**20**	**0**							**1**	**4**
		E	**7**	**100**	**0**	**0**	-	**68**	**43**	**43**	**14**	**0**							**0**	**0**



Countries at the leading edge					Regarding technological realization													Time of social application							Regarding social application											
					Necessity of gov't involvement				Effective measures that should be taken by gov't																Necessity of gov't involvement				Effective measures that should be taken by gov't							
Japan	USA	EU	Asia	Other	High	Moderate	Low	None	Human resources development	Strengthened industry-academic-government and interdisciplinary collaboration	Development of R&D infrastructure	Expansion of R&D funding	Internationalization of R&D activities	Relaxation or elimination of relevant regulations	Tightened or new regulations	Other	2006–2010	2011–2015	2016–2025	2026–2035	2036–	Will not be applied	Do not know	High	Moderate	Low	None	Human resources development	Strengthened industry-academic-government and interdisciplinary collaboration	Improvement of environment for business startups	Support through taxation, subsidies, and procurement	Relaxation or elimination of relevant regulations	Tightened or new regulations	Other
(%)					(%)				(%)													(%)		(%)				(%)							
22	62	14	0	2	45	45	8	2	46	41	49	60	42	1	4	1						4	7	45	43	11	1	48	52	12	38	3	10	7
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19	81	0	0	0	55	40	5	0	65	45	40	60	30	0	0	0						5	0	76	19	5	0	76	76	10	29	0	0	0
31	58	8	0	3	50	37	9	4	44	40	49	58	27	2	5	2						4	8	50	35	12	3	50	54	13	33	4	7	6
18	80	1	0	1	82	16	1	1	56	27	53	72	18	0	1	0						1	3	80	18	1	1	73	72	8	23	0	3	0
32	68	0	0	0	74	21	0	5	44	28	33	72	17	0	0	0						5	0	74	21	0	5	44	94	11	0	0	6	0
7	80	13	0	0	32	42	21	5	49	28	50	55	39	2	2	1						8	14	30	38	29	3	57	47	17	31	0	2	5
1	96	2	0	1	20	71	5	4	54	20	47	66	30	0	0	0						4	6	22	67	7	4	80	61	8	21	0	0	0
10	70	10	0	10	20	60	0	20	63	25	50	75	38	0	0	0						20	10	20	50	10	20	100	50	25	25	0	0	0
17	69	12	0	2	30	49	17	4	55	32	51	55	35	0	1	0						3	10	30	47	18	5	58	47	17	31	1	2	4
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94	6	0	0	0	11	72	11	6	35	82	24	47	41	6	0	0						0	0	17	66	11	6	29	76	47	35	18	6	0
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No	Topic	Questionnaire	Respondents (persons)	Degree of expertise (%)				Importance to Japan (%)					Time of technological realization									
				High	Moderate	Low	None	Index	High	Moderate	Low	None	Already realized	2006–2010	2011–2015	2016–2025	2026–2035	2036–	Will not be realized	Do not know
54	Technology for reclamation of salinized soils.	1	**94**	**11**	**28**	**61**	**-**	**44**	**12**	**43**	**42**	**3**								**2**	**11**
		2	**96**	**7**	**22**	**71**	**-**	**42**	**3**	**61**	**36**	**0**								**1**	**1**
		E	**7**	**100**	**0**	**0**	**-**	**43**	**0**	**71**	**29**	**0**								**0**	**0**
55	Social consensus building on the process for avoiding water conflicts associated with development.	1	**88**	**15**	**23**	**62**	**-**	**58**	**33**	**39**	**22**	**6**									
		2	**103**	**11**	**19**	**70**	**-**	**57**	**22**	**62**	**16**	**0**									
		E	**11**	**100**	**0**	**0**	**-**	**80**	**64**	**27**	**9**	**0**									

Countries at the leading edge					Regarding technological realization												Time of social application							Regarding social application													
					Necessity of gov't involvement				Effective measures that should be taken by gov't															Necessity of gov't involvement				Effective measures that should be taken by gov't									
Japan	USA	EU	Asia	Other	High	Moderate	Low	None	Human resources development	Strengthened industry-academic-government and interdisciplinary collaboration	Development of R&D infrastructure	Expansion of R&D funding	Internationalization of R&D activities	Relaxation or elimination of relevant regulations	Tightened or new regulations	Other	2006–2010	2011–2015	2016–2025	2026–2035	2036–	Will not be applied	Do not know	High	Moderate	Low	None	Human resources development	Strengthened industry-academic-government and interdisciplinary collaboration	Improvement of environment for business startups	Support through taxation, subsidies, and procurement	Relaxation or elimination of relevant regulations	Tightened or new regulations	Other
(%)					(%)				(%)													(%)		(%)				(%)							
21	**48**	**21**	**5**	**5**	**15**	**50**	**33**	**2**	**45**	**41**	**45**	**42**	**35**	**1**	**2**	**1**						**3**	**19**	**16**	**50**	**33**	**1**	**49**	**48**	**34**	**33**	**1**	**5**	**6**
6	**84**	**6**	**3**	**1**	**3**	**85**	**11**	**1**	**62**	**40**	**44**	**36**	**37**	**0**	**0**	**1**						**1**	**2**	**8**	**74**	**17**	**1**	**65**	**73**	**23**	**21**	**2**	**2**	**0**
0	**100**	**0**	**0**	**0**	**0**	**86**	**14**	**0**	**43**	**29**	**57**	**29**	**29**	**0**	**0**	**0**						**0**	**0**	**17**	**50**	**33**	**0**	**83**	**83**	**0**	**0**	**0**	**0**	**0**
																						8	**17**	**45**	**38**	**15**	**2**	**61**	**30**	**5**	**14**	**10**	**32**	**10**
																						2	**7**	**62**	**30**	**8**	**0**	**83**	**33**	**3**	**8**	**6**	**29**	**3**
																						9	**9**	**64**	**18**	**18**	**0**	**82**	**55**	**9**	**0**	**9**	**18**	**0**