Supplementary Material

Developing Behavioral Models of Citizens for Adapting to and Mitigating Climate Change: A Study on Four Prefectures in Japan

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# The contents of the questionnaire

## Recognition of local climate change at the local scale

Q. We would like to ask you a question about some changes in your area.

For each of the items in the table, please choose the one that most closely matches your view from the six choices at the top of the table for each.

Comparing your experience of the past few years with that 10 years ago, do you recognize any changes in the climate in your area? (\*If the area you lived in about 10 years ago is different from the area you live in now, please answer this question by comparing it to when you started living in your current area.)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | I strongly feel it. | I feel it. | I feel it somewhat. | I do not feel it somewhat. | I do not feel it. | I do not feel it at all. |
| Higher temperatures in summer and an increase in the summer, mid-summer, and extremely hot days and hot nights.  | þ | þ | þ | þ | þ | þ |
| Higher winter temperatures and fewer winter and mid-winter days.  | þ | þ | þ | þ | þ | þ |
| Increase in localized heavy rains, torrential rains, typhoons, etc.  | þ | þ | þ | þ | þ | þ |
| Changes in snowfall (increase or decrease in snow cover or changes in snow quality).  | þ | þ | þ | þ | þ | þ |
| Changes in the sense of seasons (shortening of the spring and autumn periods and an ambiguity of the four seasons). | þ | þ | þ | þ | þ | þ |

## Perceptions regarding the cause of local climate-change effects

Q. We would like to ask you a question about some changes in your area.

For each of the items in the table, please choose the one that most closely matches your view from the six choices at the top of the table for each.

Do you think these types of local climate-change effects are caused by global warming due to an increase in the emissions of carbon dioxide and other substances?

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | I strongly agree that global warming is the cause. | I agree that global warming is the cause. | I somewhat agree that global warming is the cause. | I somewhat disagree that global warming is the cause. | I disagree that global warming is the cause. | I strongly disagree that global warming is the cause. |
| Higher temperatures in summer and an increase in the summer, mid-summer, and extremely hot days and hot nights.  | þ | þ | þ | þ | þ | þ |
| Higher winter temperatures and fewer winter and mid-winter days.  | þ | þ | þ | þ | þ | þ |
| Increase in localized heavy rains, torrential rains, typhoons, etc.  | þ | þ | þ | þ | þ | þ |
| Changes in snowfall (increase or decrease in snow cover or changes in snow quality).  | þ | þ | þ | þ | þ | þ |
| Changes in the sense of seasons (shortening of the spring and autumn periods and an ambiguity of the four seasons). | þ | þ | þ | þ | þ | þ |

## Psychological perceptions of the target behavior groups

Q. We would like to ask you about your thoughts on four different types of behaviors implementation. Please choose the one that most closely matches your view from the six choices at the top of the table for each.

**About environmentally**-**friendly behaviors that you can take as an individual, such as saving electricity and reducing/recycling wastes.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | I strongly agree. | I agree. | I somewhat agree. | I somewhat disagree. | I disagree. | I strongly disagree. |
| It is effective in reducing emissions of greenhouse gases, such as carbon dioxide | þ | þ | þ | þ | þ | þ |
| It is effective in solving the problem of global warming | þ | þ | þ | þ | þ | þ |
| I feel I should behave | þ | þ | þ | þ | þ | þ |
| I personally feel it is necessary | þ | þ | þ | þ | þ | þ |
| Many people in the area are doing the behaviors | þ | þ | þ | þ | þ | þ |
| Many of my acquaintances are doing the behaviors | þ | þ | þ | þ | þ | þ |
| It is determined and required by society | þ | þ | þ | þ | þ | þ |
| It is socially recommended | þ | þ | þ | þ | þ | þ |
| It makes life more convenient | þ | þ | þ | þ | þ | þ |
| It is beneficial | þ | þ | þ | þ | þ | þ |
| It makes life more fun for me and my family | þ | þ | þ | þ | þ | þ |
| I can do it immediately/it does not require much time to do | þ | þ | þ | þ | þ | þ |
| I can do it easily/it does not require much effort to do | þ | þ | þ | þ | þ | þ |
| It is expensive | þ | þ | þ | þ | þ | þ |
| I want to do the behaviors | þ | þ | þ | þ | þ | þ |
| It is good to do the behaviors | þ | þ | þ | þ | þ | þ |

**About individual preparedness behaviors that ensure that you are ready to act when impacted, such as knowing how to evacuate in the event of a disaster or how to deal with a severe heat wave.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | I strongly agree. | I agree. | I somewhat agree. | I somewhat disagree. | I disagree. | I strongly disagree. |
| It is effective in preventing adverse effects (damage) of global warming and climate change  | þ | þ | þ | þ | þ | þ |
| It is effective for preparing for global warming and climate change | þ | þ | þ | þ | þ | þ |
| I feel I should behave | þ | þ | þ | þ | þ | þ |
| I personally feel it is necessary | þ | þ | þ | þ | þ | þ |
| Many people in the area are doing the behaviors | þ | þ | þ | þ | þ | þ |
| Many of my acquaintances are doing the behaviors | þ | þ | þ | þ | þ | þ |
| It is determined and required by society | þ | þ | þ | þ | þ | þ |
| It is socially recommended | þ | þ | þ | þ | þ | þ |
| It makes life more convenient | þ | þ | þ | þ | þ | þ |
| It is beneficial | þ | þ | þ | þ | þ | þ |
| It makes life more fun for me and my family | þ | þ | þ | þ | þ | þ |
| I can do it immediately/it does not require much time to do | þ | þ | þ | þ | þ | þ |
| I can do it easily/it does not require much effort to do | þ | þ | þ | þ | þ | þ |
| It is expensive | þ | þ | þ | þ | þ | þ |
| It ensures safety and security in the event of a disaster | þ | þ | þ | þ | þ | þ |
| I want to do the behaviors | þ | þ | þ | þ | þ | þ |
| It is good to do the behaviors | þ | þ | þ | þ | þ | þ |

**About drastic behaviors from a mid- to long-term perspective, such as changing where you live or work or changing your lifestyle in response to expected impacts of disasters or local climate change.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | I strongly agree. | I agree. | I somewhat agree. | I somewhat disagree. | I disagree. | I strongly disagree. |
| It is effective in preventing adverse effects (damage) of global warming and climate change  | þ | þ | þ | þ | þ | þ |
| It is effective for preparing for global warming and climate change | þ | þ | þ | þ | þ | þ |
| I feel I should behave | þ | þ | þ | þ | þ | þ |
| I personally feel it is necessary | þ | þ | þ | þ | þ | þ |
| It is determined and required by society | þ | þ | þ | þ | þ | þ |
| It is socially recommended | þ | þ | þ | þ | þ | þ |
| It makes life more convenient | þ | þ | þ | þ | þ | þ |
| It is beneficial | þ | þ | þ | þ | þ | þ |
| It makes life more fun for me and my family | þ | þ | þ | þ | þ | þ |
| I can do it immediately/it does not require much time to do | þ | þ | þ | þ | þ | þ |
| I can do it easily/it does not require much effort to do | þ | þ | þ | þ | þ | þ |
| It is expensive | þ | þ | þ | þ | þ | þ |
| It ensures safety and security in the event of a disaster | þ | þ | þ | þ | þ | þ |
| I want to do the behaviors | þ | þ | þ | þ | þ | þ |
| It is good to do the behaviors | þ | þ | þ | þ | þ | þ |

**About installation renewable energy equipment, such as solar power generation and solar thermal systems (solar hot water supply, etc.), at home.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | I strongly agree. | I agree. | I somewhat agree. | I somewhat disagree. | I disagree. | I strongly disagree. |
| It is effective in reducing emissions of greenhouse gases, such as carbon dioxide | þ | þ | þ | þ | þ | þ |
| It is effective in solving the problem of global warming | þ | þ | þ | þ | þ | þ |
| It is effective in preventing adverse effects (damage) of global warming and climate change  | þ | þ | þ | þ | þ | þ |
| It is effective for preparing for global warming and climate change | þ | þ | þ | þ | þ | þ |
| I feel I should behave | þ | þ | þ | þ | þ | þ |
| I personally feel it is necessary | þ | þ | þ | þ | þ | þ |
| Many people in the area are doing the behaviors | þ | þ | þ | þ | þ | þ |
| Many of my acquaintances are doing the behaviors | þ | þ | þ | þ | þ | þ |
| It is determined and required by society | þ | þ | þ | þ | þ | þ |
| It is socially recommended | þ | þ | þ | þ | þ | þ |
| It makes life more convenient | þ | þ | þ | þ | þ | þ |
| It is beneficial | þ | þ | þ | þ | þ | þ |
| It makes life more fun for me and my family | þ | þ | þ | þ | þ | þ |
| I can do it immediately/it does not require much time to do | þ | þ | þ | þ | þ | þ |
| I can do it easily/it does not require much effort to do | þ | þ | þ | þ | þ | þ |
| It is expensive | þ | þ | þ | þ | þ | þ |
| It ensures safety and security in the event of a disaster | þ | þ | þ | þ | þ | þ |
| I want to do the behaviors | þ | þ | þ | þ | þ | þ |
| Installation in my home is physically impossible due to rentals, lack of space or dilapidation | þ | þ | þ | þ | þ | þ |
| It is good to do the behaviors | þ | þ | þ | þ | þ | þ |

## Practice rates of the target behaviors

Q. Please select the option that best describes your current situation with respect to each of the following initiatives and behaviors in the table.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | I strongly agree that I am practicing the behavior. | I agree that I am practicing the behavior. | I somewhat agree that I am practicing the behavior. | I somewhat disagree that I am practicing the behavior. | I disagree that I am practicing the behavior. | I strongly disagree that I am practicing the behavior. |
| Refuse plastic bags and excessive packaging | þ | þ | þ | þ | þ | þ |
| Save electricity, by turning off lights and power frequently | þ | þ | þ | þ | þ | þ |
| Separate recyclable garbage for recycling | þ | þ | þ | þ | þ | þ |
| Always try to get warnings and forecasts for heavy rain, heatstroke, etc. | þ | þ | þ | þ | þ | þ |
| Try to voluntarily obtain information on the impacts of climate change and the required countermeasures | þ | þ | þ | þ | þ | þ |
| Prepare to protect against current heatstroke and water disasters | þ | þ | þ | þ | þ | þ |
| Choose the time and route when going out, in preparation for heatstroke and water disasters | þ | þ | þ | þ | þ | þ |
| Considering that the impact will become serious in the future, discuss with family and make preparations, such as improving housing and securing evacuation routes | þ | þ | þ | þ | þ | þ |
| Considering disruptions in food and energy supplies, work on energy stockpiles and self-sufficiency at home and in the community | þ | þ | þ | þ | þ | þ |
| Discuss ways to support the elderly and help each other in neighborhoods and community groups during events of extreme heat or water disasters | þ | þ | þ | þ | þ | þ |
| Choose places to live or work, while considering the expansion of damage from water disasters, good ventilation, and adjacency to cool spots | þ | þ | þ | þ | þ | þ |
| Have/plan to install renewable energy equipment, such as solar power generation and solar thermal systems (solar hot water supply, etc.), at home | þ | þ | þ | þ | þ | þ |