

## Supplementary File S1

### Message Stimuli and Survey Instrument

#### Page 1: Introduction and Efficacy Statement

In this study, we describe a carbon emission reduction policy that the Canadian government is proposing to tackle climate change. Although this policy is not real, it is based on similar policies already enacted by other countries. **[Page 1 ends here for those in efficacy-absent conditions.]** Canada's will soon follow these countries: Our federal government recently confirmed that some type of policy to reduce carbon emissions will be enacted in 2018. Canada's commitment to reducing carbon emissions was reinforced by Canada recently ratifying the United Nations' Paris Agreement.

From the United Nations' official website:

*The Paris Agreement . . . brings all nations into a common cause to undertake ambitious efforts to combat climate change and adapt to its effects, with enhanced support to assist developing countries to do so. As such, it charts a new course in the global climate effort....The Paris Agreement central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. Additionally, the agreement aims to strengthen the ability of countries to deal with the impacts of climate change.*

As of August 2017, 195 countries have signed the agreement and 158 countries--including Canada--have ratified the agreement (i.e., they are legally bound to its terms). With this unprecedented worldwide support, the Paris Agreement is the most ambitious and promising effort to tackle climate change to date. To ensure that efforts remain ambitious and continue to grow over the long-term, countries are required to routinely and publicly report their mitigation and adaptation efforts and to strengthen these efforts as time goes on.

#### Page 2: Policy Description

Suppose the Canadian government is proposing a new carbon emissions policy to gradually reduce Canada's carbon dioxide emissions by 75% across the years 2020-2050.

For Canada to reduce carbon emissions by 75%, the government intends to:

- Expand and develop alternative energy sources (e.g., nuclear, solar, and wind power);
- Improve waste management, recycling, and composting;
- Decrease carbon emissions from transportation (e.g., develop walking and cycling routes; create park-and-ride and car pool-only lanes; improve public transit services)
- Significantly increase the number of trees and greenspace in cities.

The government will also enact legislation that requires:

- Industry to shift to low-carbon production;

- New vehicles to adhere to strict fuel efficiency standards;
- Homes and buildings to shift to low-carbon heating, cooling, and energy supplies.

The policy would cost about Canadian taxpayers about \$20 billion per year.

Whether the policy will be enacted in full (a 75% total carbon dioxide emission reduction based on the above intentions and legislation) at \$20 billion per year will depend on a national vote.

Next, we ask you to read a message that explains **why** Canada proposed the above policy. Afterward, please take a moment to accurately express your views and feelings, whether they are negative or positive, toward the policy.

**Page 3: First Section of Framed Text (Title: “Why vote for Canada’s carbon policy?”)**

<i>Non-loss Frame</i>	<i>Loss Frame</i>	<i>Gain Frame</i>
It’s because your vote today helps determine the size of climate change impacts. With Canada’s carbon policy, climate change impacts are not likely to be large and hard to manage. Mitigation strategies are therefore not complex or expensive and do not have a high chance of leaving us poorly-protected. With smart carbon policy, Canadians are not in danger from climate change impacts.	It’s because your vote today helps determine the size of climate change impacts. Without Canada’s carbon policy, climate change impacts are likely to be large and hard to manage. Mitigation strategies are therefore complex and expensive and have a high chance of leaving us poorly-protected. Without smart carbon policy, Canadians are in danger from climate change impacts.	It’s because your vote today helps determine the size of climate change impacts. With Canada’s carbon policy, climate change impacts are likely to be small and easy to manage. Mitigation strategies are therefore simple and inexpensive and have a high chance of leaving us well-protected. With smart carbon policy, Canadians are safe from climate change impacts.
For example, without a large amount of pollution in our water supplies, purification systems do not have difficulty cleaning the water. Water is not dangerous for drinking or swimming. Or, when floods occur (e.g., on the [removed for blind review]), they will not be large. Floodgates and diversion channels throughout [removed for blind review] will not fail in managing water levels,	For example, with a large amount of pollution in our water supplies, purification systems have difficulty cleaning the water. Water is dangerous for drinking or swimming. Or, when floods occur (e.g., on the [removed for blind review]), they will be large. Floodgates and diversion channels throughout [removed for blind review] will fail in managing water levels,	For example, with a small amount of pollution in our water supplies, purification systems can easily clean the water. Water is safe for drinking or swimming. Or, when floods occur (e.g., on the [removed for blind review]), they will be small. Floodgates and diversion channels throughout [removed for blind review] will succeed in managing water levels, leaving homes and buildings in safety.

leaving homes and buildings out of danger.	leaving homes and buildings in danger.	
If Canada enacts carbon policy, whether water-cleaning or flood-preventing, these solutions are not complex or expensive, and do not have a high chance of being ineffective. This is true of all extreme weather effects that climate change may cause in [removed for blind review]: floods, tornadoes, droughts, heavy rains, forest fires, and heatwaves. With controlled carbon emissions, these events are not frequent or severe. Being affected by such an event, you would not receive low quality health care, as Canada's hospitals and shelters would not suffer insufficient space and resources.	If Canada does not enact carbon policy, whether water-cleaning or flood-preventing, these solutions are complex, expensive, and have a high chance of being ineffective. This is true of all extreme weather effects that climate change may cause in [removed for blind review]: floods, tornadoes, droughts, heavy rains, forest fires, and heatwaves. Without controlled carbon emissions, these events are frequent and severe. Being affected by such an event, you would receive low quality health care, as Canada's hospitals and shelters would suffer insufficient space and resources.	If Canada enacts carbon policy, whether water-cleaning or flood-preventing, these solutions are simple, inexpensive, and have a high chance of being effective. This is true of all extreme weather effects that climate change may cause in [removed for blind review]: floods, tornadoes, droughts, heavy rains, forest fires, and heatwaves. With controlled carbon emissions, these events are infrequent and mild. Being affected by such an event, you would receive high quality health care, as Canada's hospitals and shelters would enjoy sufficient space and resources.

**Page 4: Second Section of Framed Text (Title: "More than just your own health")**

<i>Non-loss Frame</i>	<i>Loss Frame</i>	<i>Gain Frame</i>
Of course, climate change affects more than just your own health. With carbon policy, the biodiversity and health of the plants, animals, and other organisms that make up our natural environment are not threatened. When climate change impacts are not large, ecosystem disruptions are not large. That means species are not left with unsustainable populations, including iconic animals such as [removed for blind review].	Of course, climate change affects more than just your own health. Without carbon policy, the biodiversity and health of the plants, animals, and other organisms that make up our natural environment are threatened. When climate change impacts are large, ecosystem disruptions are large. That means species are left with unsustainable populations, including iconic animals such as [removed for blind review]. And because of	Of course, climate change affects more than just your own health. With carbon policy, the biodiversity and health of the plants, animals, and other organisms that make up our natural environment are secured. When climate change impacts are small, ecosystem disruptions are small. That means species are left with sustainable populations, including iconic animals such as [removed for blind review]. And because of

<i>review</i> ]. And because of your intimate connection with the health of our natural environment, when ecosystems are not threatened, they don't produce air, water, and soil that threatens your health too.	your intimate connection with the health of our natural environment, when ecosystems are threatened, they produce air, water, and soil that threatens your health too.	your intimate connection with the health of our natural environment, when ecosystems are protected, they produce air, water, and soil that protects your health too.
--	--	--

**Page 5: Third Section of Framed Text (Title: “The psychology of ourselves and our countries”)**

<i>Non-loss Frame</i>	<i>Loss Frame</i>	<i>Gain Frame</i>
Beyond our physical health, scientists are increasingly finding that sufficient time spent in nature means that one does not suffer psychological costs: Your mental health and functioning—including self-control, attention, and memory—isn't unsteadied; your body doesn't have greater difficulty coping with stressors; and your sleep quality—a basic requirement for physical and mental health—isn't worsened. Studies have even shown that simply looking at images of nature or listening to sounds of nature produce measurable changes in stress levels. With carbon policy, our urban greenspace—the most common source of exposure to nature—will not shrink. The same is true of our provincial and national parks.	Beyond our physical health, scientists are increasingly finding that insufficient time spent in nature means that one suffers psychological costs: Your mental health and functioning—including self-control, attention, and memory—is unsteadied; your body has greater difficulty coping with stressors; and your sleep quality—a basic requirement for physical and mental health—is worsened. Studies have even shown that simply looking at images of nature or listening to sounds of nature produce measurable changes in stress levels. Without carbon policy, our urban greenspace—the most common source of exposure to nature—will shrink. The same is true of our provincial and national parks.	Beyond our physical health, scientists are increasingly finding that sufficient time spent in nature means that one enjoys psychological benefits: Your mental health and functioning—including self-control, attention, and memory—is steadied; your body has greater ease coping with stressors; and your sleep quality—a basic requirement for physical and mental health—is improved. Studies have even shown that simply looking at images of nature or listening to sounds of nature produce measurable changes in stress levels. With carbon policy, our urban greenspace—the most common source of exposure to nature—will grow. The same is true of our provincial and national parks.
Beyond your own physical and psychological health, it is well-known that countries	Beyond your own physical and psychological health, it is well-known that countries with endangered	Beyond your own physical and psychological health, it is well-known that countries with protected environments tend to be countries that

without endangered environments tend to be countries that do not have unstable economies and unreliable job markets. Enacting Canada's carbon policy contributes to avoiding an unstable Canadian economy and an insecure job market that is harder to find work in. And further, countries without unsatisfied people who have difficulty fulfilling their needs are countries that tend not to have poor international relationships, characterized by disharmony and disagreement.	environments tend to be countries that have unstable economies and unreliable job markets. Not enacting Canada's carbon policy contributes to producing an unstable Canadian economy and an insecure job market that is harder to find work in. And further, countries with unsatisfied people who have difficulty fulfilling their needs are countries that tend to have poor international relationships, characterized by disharmony and disagreement.	have stable economies and reliable job markets. Enacting Canada's carbon policy contributes to a producing a stable Canadian economy and a secure job market that is easier to find work in. And further, countries with satisfied people who are easily fulfilling their needs are countries that tend to have good international relationships, characterized by harmony and agreement.
---	---	---

**Page 6: Fourth Section of Framed Text (Title: "Consider Canada's carbon policy")**

<i>Non-loss Frame</i>	<i>Loss Frame</i>	<i>Gain Frame</i>
There is much more than temperature when it comes to climate change and carbon policy. By supporting Canada's carbon policy, our planet is not endangered, and therefore, neither is your health, nor our economy, nor our international relationships.	There is much more than temperature when it comes to climate change and carbon policy. By not supporting Canada's carbon policy, our planet is endangered, and therefore, so is your health, our economy, and our international relationships.	There is much more than temperature when it comes to climate change and carbon policy. By supporting Canada's carbon policy, our planet is safe, and therefore, so is your health, our economy, and our international relationships.
Please take a moment to consider what losses are prevented if we support Canada's carbon policy and are not poorly-prepared for climate change.	Please take a moment to consider what losses are incurred if we don't support Canada's carbon policy and are poorly-prepared for climate change.	Please take a moment to consider what gains are incurred if we support Canada's carbon policy and are well-prepared for climate change.

**Page 7: Manipulation Check**

When describing climate change impacts, the text described the...

- ☐ 1 = Negative outcomes that will occur without carbon policy

- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 = Positive outcomes that will occur with carbon policy

When describing climate change impacts, the text described the...

- ☐ 1 = Gains and advantages of supporting (voting for) carbon policy
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 = Losses and disadvantages of opposing (voting against) carbon policy

### **Page 8: Pro-Policy Attitude**

How strongly do you agree or disagree with the message supporting Canada's carbon policy?

- ☐ 1 = Strongly disagree
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 = Strongly agree

How positive or negative do you feel about Canada's carbon policy?

- ☐ 1 = Very negative
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 = Very positive

If Canada's carbon policy was enacted, how strongly would you support or oppose the policy?

- ☐ 1 = Strongly oppose the policy
- ☐ 2
- ☐ 3
- ☐ 4

- ☐ 5
- ☐ 6
- ☐ 7 = Strongly support the policy

If you agree to support Canada's carbon policy, how strong is your agreement?

- ☐ 1 = Not strong at all
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 = Very strong

- ☐ I disagree with the policy

### Page 9: Dichotomous-Choice Willingness-to-Pay (Choice 1)

*Imagine the following scenario:*

To fund the carbon policy described earlier, a proportion of each Canadian's income would be deducted as an environmental fee. The average university student earns **\$2000 per month** from their summer job.

Imagine that you make as much as the average university student (\$2000) during your summer job.

If a **monthly \$75 environmental fee** was deducted from your monthly \$2000 income, would you vote for or vote against the carbon policy?

- ☐ Vote FOR the carbon policy
- ☐ Vote AGAINST the carbon policy

### Page 10: Dichotomous-Choice Willingness-to-Pay (Choice 2)

*<If participant voted FOR in Choice 1>:*

If a **monthly \$113 environmental fee** was deducted from your monthly \$2000 income, would you vote for or vote against the carbon policy?

- ☐ Vote FOR the carbon policy
- ☐ Vote AGAINST the carbon policy

*<If participant voted AGAINST in Choice 1>:*

If a **monthly \$38 environmental fee** was deducted from your monthly \$2000 income, would you vote for or vote against the carbon policy?

- ☐ Vote FOR the carbon policy
- ☐ Vote AGAINST the carbon policy

### Page 11: Dichotomous-Choice Willingness-to-Pay (Choice 3)

*<If participant voted FOR in Choice 1 and voted FOR in Choice 2>:*

If a **monthly \$170 environmental fee** was deducted from your monthly \$2000 income, would you vote for or vote against the carbon policy?

- ☐ Vote FOR the carbon policy
- ☐ Vote AGAINST the carbon policy

*<If participant voted FOR in Choice 1 and voted AGAINST in Choice 2>:*

If a **monthly \$90 environmental fee** was deducted from your monthly \$2000 income, would you vote for or vote against the carbon policy?

- ☐ Vote FOR the carbon policy
- ☐ Vote AGAINST the carbon policy

*<If participant voted AGAINST in Choice 1 and voted FOR in Choice 2>:*

If a **monthly \$57 environmental fee** was deducted from your monthly \$2000 income, would you vote for or vote against the carbon policy?

- ☐ Vote FOR the carbon policy
- ☐ Vote AGAINST the carbon policy

*<If participant voted AGAINST in Choice 1 and voted AGAINST in Choice 2>:*

If a **monthly \$30 environmental fee** was deducted from your monthly \$2000 income, would you vote for or vote against the carbon policy?

- ☐ Vote FOR the carbon policy
- ☐ Vote AGAINST the carbon policy

### Page 12: Open-Ended Willingness-to-Pay

*Imagine the following scenario:*

You have a stable job as a university graduate that earns you **\$6000 per month** and you live alone. How much money per month would you be willing to pay so the Canadian government

could enact and follow through with the carbon emission policy from 2020 to 2050?

Please type in the dollars per month ranging from **0 to 500**. Please exclude a dollar sign (\$) or the word "dollars".

### Page 13: Emotions

How strongly did you feel *worried* after reading the message?

- ☐ 1 = Not strongly at all
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 = Very strongly

How strongly did you feel *afraid* after reading the message?

- ☐ 1 = Not strongly at all
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 = Very strongly

How strongly did you feel *hopeful* after reading the message?

- ☐ 1 = Not strongly at all
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 = Very strongly

For this item, please select 6.

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5

- ☐ 6
- ☐ 7

#### **Page 14: Message Processing**

How interested were you when you read the message?

- ☐ 1 = Not at all interested
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 = Very interested

How involved were you when reading the message?

- ☐ 1 = Not involved at all
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 = Very involved

How carefully did you read the message?

- ☐ 1 = Not at all carefully
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 = Read it carefully

#### **Page 15: Perceived Message Strength**

Did the message provide strong reasons for supporting Canada's carbon policy?

- ☐ 1 = Not at all strong
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 = Very strong

Is the message's argument for supporting Canada's carbon policy a weak or strong one?

- ☐ 1 = Very weak
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 = Very strong

How effective was the message supporting Canada's carbon policy?

- ☐ 1 = Not at all effective
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 = Very effective

**Page 16: Perceived Threat (Severity and Susceptibility)**

*Please indicate how strongly you agree or disagree with the following statements.*

Climate change impacts are likely to pose a major threat to society.

- ☐ 1 = Strongly disagree
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 = Strongly agree

Without mitigation, climate change will likely cause serious, persistent environmental impacts.

- ☐ 1 = Strongly disagree
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 = Strongly agree

Without mitigation, climate change will likely result in severe risks worldwide.

- ☐ 1 = Strongly disagree
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 = Strongly agree

Climate change is definitely occurring.

- ☐ 1 = Strongly disagree
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 = Strongly agree

Human activities [i.e., greenhouse gas emissions] are causing climate change.

- ☐ 1 = Strongly disagree
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 = Strongly agree

**Page 17: Perceived Threat (Holistic Concern and Holistic Affect)**

Overall, how concerned are you about climate change?

- ☐ 1 = Not concerned at all
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 = Very concerned

Overall, how negative or positive are your feelings toward climate change?

- ☐ 1 = Very negative
- ☐ 2
- ☐ 3
- ☐ 4

- ☐ 5
- ☐ 6
- ☐ 7 = Very positive

### **Page 18: Perceived Collective Efficacy**

*Please indicate how strongly you agree or disagree with the following statements.*

By nations of the world cooperating, we can reduce global warming.

- ☐ 1 = Strongly disagree
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 = Strongly agree

By governments taking necessary and responsible action, we can reduce global warming.

- ☐ 1 = Strongly disagree
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 = Strongly agree

Humanity can still rise to the occasion and reduce global warming.

- ☐ 1 = Strongly disagree
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 = Strongly agree

For this item, please select 3.

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6

☐ 7

### Page 19: Denial

*Please indicate how strongly you agree or disagree with the following statements.*

Climate change is definitely occurring.

- ☐ 1 = Strongly disagree
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 = Strongly agree

Human activities [i.e., greenhouse gas emissions] are causing climate change.

- ☐ 1 = Strongly disagree
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 = Strongly agree

### Page 20: Demographics

My identified gender is...

- ☐ Male
- ☐ Female
- ☐ Transgender
- ☐ Not listed
- ☐ Prefer not to disclose

My age is...

Which of the following racial identities describes you?

- ☐ Black
- ☐ Inuit, First Nations, or Métis
- ☐ White
- ☐ Asian

☐ Mixed

☐ Other