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Climate of Change

Analysis of a national survey of
Canadian opinions about climate
and energy issues

Erick Lachapelle, PhD
Valérie-Anne Mahéo, PhD
Richard Nadeau, PhD

Université de Montréal
Department of Political Science

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Executive Summary

Climate change is currently back on the political agenda at the international, federal and provincial levels. In this context of heightened salience, the present report draws on data from the inaugural EcoAnalytics *Climate of Change* survey (2016) to offer environmental organizations a detailed picture of mass Canadian attitudes toward this issue. This report will provide a benchmark for comparing where Canadians stand on climate change, with high quality data collected in the early years of the Trudeau-era. Knowing how and why Canadians are likely to engage with the issue of climate change, and tracking this change over time, will help organizations assess the efficacy of their work, and better tailor and target their information and education campaigns so that it ultimately engages more and more Canadians to address this environmental challenge.

This report pursues three main objectives. First, we deduce a framework to assess what Canadians think in regards to climate change. We show that Canadian attitudes towards this issue are quite heterogeneous, spread among Dismissive (14%), Sceptics (15%), Aware (42%) and Empowered (29%) segments of the Canadian population. A key challenge for organizations wishing to engage Canadians on this issue will thus be to change this distribution, bringing Sceptical segments of the population on side with the problem, convincing those already aware that there are effective solutions on hand, and mobilizing the Empowered segment to commit to actions on climate change.

As a first step in this process, we examine whom, among Canadians, is the least and most empowered, offering groups a socio-demographic profile of each potential target group. We find that young people, women, higher educated individuals, voters of left-of-centre parties, and citizens with egalitarian values are more likely to be engaged as they are more often Aware and Empowered. We also find a cross-cutting regional cleavage, with the greatest proportion of Aware and Empowered individuals residing in British Columbia and Quebec, while Canadians living in the Prairies are much more likely to be Dismissive and Sceptics. In identifying the socio-demographic, value-based and geographic profile of these segments, groups

can better prepare campaigns by targeting different segments in an effort to further engage Canadians on this crucial issue.

Finally, we explore the relationship between empowerment and environmentally significant behaviours (i.e. how supportive Canadians are of key governmental policies and citizen actions). We find that Canadians are generally supportive of individual and collective action, but that the higher they move up the ladder of engagement, the more this support strengthens. However certain factors may diminish Canadians' willingness to address climate change concretely, including failure to see the personal implications of climate change, a feeling that the costs of acting are too high. A feeling of Canada's relative unimportance and impotence is also a reason to disengage. In this sense, it is important to be aware of "activating" and "inhibiting factors" when addressing Canadians. Greater attention to how solutions are framed and by whom they are communicated is important. Future work performed by EcoAnalytics may help in this regard, by testing campaign messages and messengers to identify those that fit best with the values and identities of targeted demographic groups.

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Introduction

In November 2015, parties to the United Nations Framework Convention on Climate Change (UNFCCC) hammered out a broad agreement on collective climate action in Paris, and committed to limit the rise in Earth's temperature to "well below" two degrees Celsius this century. For the Agreement to take effect, a threshold of 55 Parties representing at least 55% of global emissions was established. A year later, 115 of the 197 parties to the Convention ratified the Paris Agreement, representing 79% of global emissions, and on 4 November 2016, the Paris Agreement officially came into force. In light of years of gridlock at international climate negotiations, the speed with which the Paris Agreement was ratified was truly remarkable, and reflects a significant change in the willingness of world leaders to address the climate challenge.

In Canada, after barely mentioning the words "climate change" in the 2015 electoral campaign, relegating the issue to page 39 of its platform, the newly elected Trudeau administration proudly announced Canada was "back" to play a constructive role within the UNFCCC framework. Over the next year, the Prime Minister then proceeded with a series of announcements that sent mixed-signals regarding just how his administration intends to handle its (modest) greenhouse gas (GHG) reduction commitments agreed to in Paris. These announcements included a plan unveiled in October requiring all provinces to have a price on carbon of at least \$10 per ton of carbon dioxide by 2018, rising by \$10 each year, up to \$50 per ton in 2022. Made on the same day of a federal-provincial environment ministers meeting in Montreal, Trudeau's carbon price announcement was followed by the decision in November to phase out coal-fired electricity production by 2030. But at the same time as he was taking these important steps forward on the fight against climate change, Trudeau also announced his approval of two new major oil pipelines, including the controversial Trans Mountain line through suburban Vancouver. While insisting his government remains committed to meeting its international climate obligations, the Prime Minister will face important challenges in the years to come as he juggles difficult trade-offs between climate change action and his commitment to "responsible" resource development.

While it remains unclear just how the Trudeau administration will square Canada's

climate change obligations with its intention to pursue resource development, the climate change issue is clearly back on the government agenda. Despite this heightened context, it is unclear if the issue will be equally salient, relative to competing issues, for the Canadian public. To be sure, Canadians will be asked to provide their opinion and be called upon for action. But are Canadians up for the challenge? Are they paying attention? Are they ready to engage?

This report aims to answer these questions and provide avenues for organizations that want to work with Canadian citizens on this issue. Indeed, understanding what Canadians know about climate change, how they conceive of this issue and what they envision as possible means of action to address this challenge will help actors of Canadian civil society comprehend how they can best inform, educate and ultimately engage citizens on climate.

To this end, we present the ladder of engagement as a conceptual map to help groups addressing climate change reflect on how they might better engage Canadians on climate change. We stress that this is a simplified model of engagement. In reality, the engagement process is non-linear, but for analytical purposes, it helps to present groups of Canadians in a ranking from least to most likely to be “engaged”. With this caveat, we identify people at the bottom of this ladder as least likely to be engaged, as they do not even believe climate change is happening. Alternatively, people at the top of the ladder are much more likely to become engaged, as they acknowledge the existence and human cause of climate change, and because they believe governments and citizens can actually do something about it. They are empowered. In our view, civil society organizations can contribute to help Canadians move up the ladder of engagement and increase the pool of Canadians who are ready to become engaged. We show that to move through the different steps of the ladder, individuals need to acquire knowledge, accept scientific evidence, gain awareness about climate change and its consequences, and acknowledge that effective actions can be taken by individuals and groups to address this environmental challenge.

For the purpose of this report, we present results from the Climate of Change Survey (Lachapelle and Nadeau 2016) to offer a snapshot of where Canadians stand on climate change in 2016, and where they fall on the ladder of engagement. Given the diversity of Canadian society, we pay specific attention to the background of individuals—including socio-demographic characteristics and political orientation—to identify who in the Canadian population is most or least prone to be

knowledgeable, aware or motivated to take action on climate change. Canadian society is anything but homogeneous, and information and mobilization campaigns thus need to be tailored to the needs of different groups. In the analytical sections of the report, we first profile four types of Canadians on our ladder of engagement: the Dismissive, the Sceptics, the Aware, and the Empowered. We then produce an assessment of Canadians' knowledge and beliefs about climate change, as a way to identify on which aspects of the issue work still needs to be done, and with which groups more specifically. Finally, we offer a detailed overview of Canadians' willingness to support or undertake a variety of means of action to address climate change. Knowing which policies or which modes of actions are the least or most likely to be supported by Canadians can guide civil society organizations in the development of more efficient communication and mobilization strategies. We conclude the report with a review of the results, some avenues of reflection and recommendations for civil society organizations.

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The Climate of Change Survey

Data used for this report come from the 2016 *Climate of Change Survey*. This random digit dialling (RDD) dual-frame telephone survey was administered to 1200 adult Canadians between October 5th to October 18th 2016, in English and in French. This probability-based method produces the most representative picture of Canadian attitudes possible within the allocated budget. Substantively, the survey covers a wide array of questions related to climate change: from Canadians' perceptions and beliefs about the causes and consequences of climate change and whether anything should be done about it, to support for specific climate actions at the individual and collective level. In turn, this survey provides an excellent data source to examine how Canadians are engaged (or likely to be engaged) with the issue of climate change. All data presented in this report are weighted to region, age and gender using the latest population estimates from Statistics Canada. Data presented may not always add to 100% due to rounding. Please see notes on methodology for further details.

The analyses presented here reflect three main objectives. First, to provide a general picture of the levels of engagement of Canadians with regards to climate change. In that sense, we will present how the general population falls on key attitudes. Second, we identify whom, among Canadians, is the least and most engaged. To that effect, we show differences in levels of engagement across several socio-demographic characteristics (such as gender, age, region, education, and area of residence) and political attitudes (such as partisan identification and political values). Finally, we aim to understand the relationship between where one falls on the “ladder of engagement” and the extent to which individuals are willing to support key policies and engage in political behaviours.

1. Canada's ladder of engagement

Citizen engagement is a process. One does not instantaneously become engaged on an issue or in a movement. In fact, individuals need resources to be able to be active in society, they further need to be interested and informed on issues, and they need to be offered opportunities to be engaged (Verba, Scholzman and Brady 1995). Citizens go through different stages of awareness, understanding, and activation before they become *engaged*. Political campaigns designed to engage the public must therefore pay attention to each phase in this process toward engagement. We define engagement here as a state of involvement leading to a propensity to take some kind of action. By this definition, the *Climate of Change* survey included a variety of items that provide indicators of engagement on the climate change issue. These include items measuring Canadians' willingness to support specific climate change policies, willingness to pay for more clean energy to be produced, and reported intentions to adopt a range of personal actions to promote a reduction of greenhouse gas emissions, at the individual or societal level.

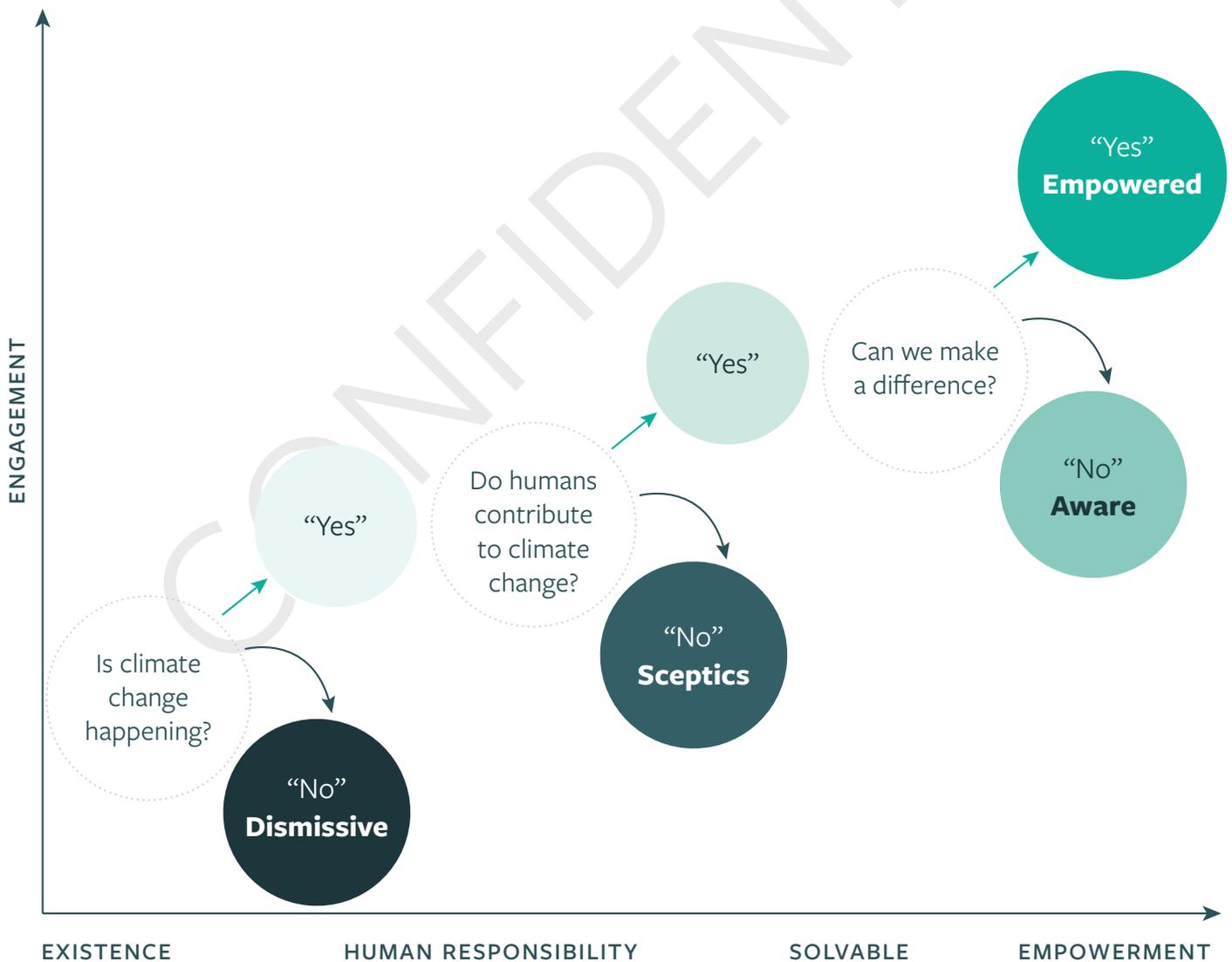
In this report, we present a model of the process of engagement on climate change that we call the ladder of engagement. In this model, engagement is understood as the propensity to engage in environmentally significant behaviours, such as environmental activism, non-activist behaviours in the public sphere (e.g. support policies), private sphere environmentalism (e.g. actions in the household) and other environmentally significant behaviours (Stern, 2000). The ladder toward this outcome is composed of four distinct steps, which represent a progressively higher propensity to be engaged on the climate change issue. A key factor leading to engagement identified in our model, and verified empirically, is that the process of engagement works through empowerment—information on the problem, its causes and importantly, a belief in the efficacy of the solutions at hand.

By presenting the sequences of this dynamic, we aim to make explicit some of the necessary stages in this engagement process, as well as to highlight the important transitions between each stage. We believe that this model can provide a simple yet useful guide for organizations wishing to structure their communication with different citizen audiences on climate change. It does so by highlighting the important steps toward attitudinal and behavioural engagement, the factors pushing one up the ladder, as well as the common challenges and pitfalls faced when trying to move targeted groups up each stage.

The ladder of engagement has four major rungs, or steps. This schema compiles

information from several variables measuring what Canadians think and know about the climate change issue, creating a composite measure, or index. Specifically, each step up the ladder increases the propensity for an individual to support specific policies and behavioural change. These steps also represent potential stumbling blocks on the way toward greater support for climate change solutions at the individual or societal level. The ladder can also serve to classify Canadians, as each step represents a distinctive subset of the population, or potential audience, that hold a common understandings of the climate change problem. Analyzing these steps can help identify more targeted communication practices and strategies for engaging the Canadian public on climate change.

Figure 1: ladder of engagement



The first step relates to acknowledgement of the core problem; namely, rising global temperature. At this stage, some individuals fail to acknowledge the increase in average global surface temperature observed on Earth over the last several decades. We identify this group as the “Dismissive,” or more formally, those responding “No” to the question “Is there solid evidence that the average temperature on Earth has been rising over the past four decades?” (Table 1 in the crosstabs). This segment represents about 14% of the Canadian population.

Second, we classify respondents in terms of their view on the causes of climate change. This too represents a potential stumbling block, as some Canadians are reluctant to accept human responsibility for rising average global surface temperature, believing instead that the observed warming is mostly the product of natural variation in the Earth’s climate, or other natural phenomenon (e.g. sunspots). We call these individuals “Sceptics,” and identify them as those responding “Mostly natural patterns” or “Not sure” to the question, “Is the Earth getting warmer mostly because of human activity, such as the burning of fossil fuels, or mostly because of natural patterns in the Earth’s environment?” (Table 3 in crosstabs). Note that the question on the causes of warming temperature is only asked to those saying they perceive solid evidence. The segment that perceives evidence of warming but continues to question a human contribution represents about 15% of the Canadian population.

Next, we identify a group that is willing to accept that humans contribute to the observed warming, but who “get stuck” on whether there is anything humans, governments or citizens themselves can or should be doing about it. We call this group the “Aware” because they recognize the problem, but have yet to internalize their own or Canada’s responsibility and capacity to develop solutions. Formally, we identify the Aware as those responding “Yes” to the question on the existence of climate change (Table 1 in crosstabs), and either “Mostly human activity” or “A combination” to the question on perceived cause (Table 3 in crosstabs). This group is the largest according to our categorization, representing 42% of the population. They are distinguished from the next group by their Scepticism related to their capacity to respond to the challenge, measured using four items that evaluate one’s individual and collective sense of efficacy.

Finally, we identify the “Empowered” segment. Like the Aware, people in this group endorse the scientific consensus on climate change regarding rising global average surface temperature and the contribution of human activity. They are distinct, how-

ever, in that they believe humans can prevent further climate change from happening (Table 4 in crosstabs), that Canada is responsible for taking action (Table 5 in crosstabs), that governments can take effective action (Table 12 in crosstabs) and that individual citizens can also take effective steps that would limit global climate change (Table 30 in crosstabs). Only when all of these conditions are met do we classify an individual as being Empowered. This category represents about 29% of the Canadian population.

Who are the Dismissive, the Sceptics, the Aware, and the Empowered?

Based on the conceptual model, we now provide a more “embodied” presentation of this ladder by showing whom in the Canadian population tends to be more Dismissive, Sceptics, Aware or Empowered. We thus present the socio-demographic and political profile of the four types of engagement, noting first that the share of the Dismissive and the Sceptics together represent about a third of the Canadian population (Figure 2). Next, a plurality of Canadians can be characterized as Aware (42%), while the remaining third of the Canadian population may be considered Empowered (29%).

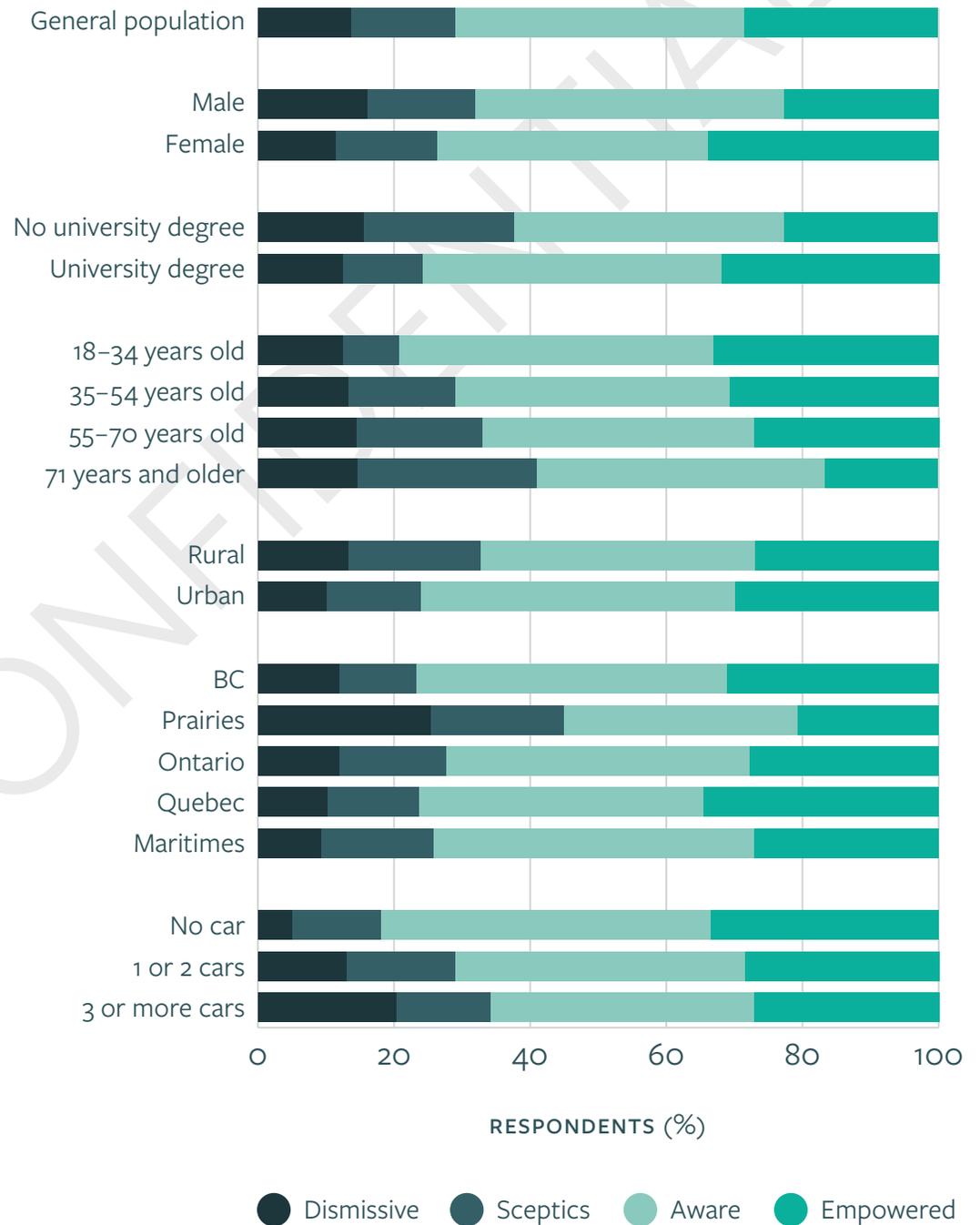
Looking at the distribution of these segments across socio-demographic characteristics reveals some interesting variation (Figure 2). Some groups in Canadian society are more prone to be Dismissive, while others are more likely to be Empowered. For instance, women tend to rank higher on the ladder of engagement. In fact, one in three Canadian women are Empowered, compared to less than one man in four. Also men tend to be more Dismissive (16%) than women (11%). These gender differences may be explained by the fact that women are generally socialized to be other oriented and socially responsible, ultimately leading to greater environmental consciousness than is developed in men (Zelezny et al. 2000).

Across levels of formal education, we also note some important differences. The higher educated, those who have at least one university degree, are more Empowered (32%) compared to the lower educated (23%), those who have less than a university degree. Also the latter are twice as likely to be among the Sceptics than their more educated counterparts (22% versus 11%). We know that post-secondary education, and especially university education, provides individuals with a broad set of skills and resources that make them more knowledgeable about societal issues and more participative in society (Delli Carpini and Keeter 1996; Nie

et al. 1996; Verba, Scholzman and Brady 1995). In this light, it is unsurprising that the higher educated are more prone to acknowledge the evidence about climate change and have a stronger sense of being able to do something about it.

Differences across age groups present another interesting pattern. While the share of Dismissive is relatively equal in each of the four age groups (about 13–15%), there

Figure 2: Engagement by sociodemographics



is quite some age-related variation across other levels of engagement. We note that moving from the youngest to the oldest age group, the share of the Sceptics progressively increases, while the share of the Aware decreases and the share of Empowered substantially decreases. This pattern is relatively progressive and linear; with each increase in age the share of each profile changes by a small amount. But even if the changes are small and progressive across age groups, they end up creating an important divide between the youngest and oldest Canadians. Young Canadians, aged 18 to 34 years old, are the least represented among the Sceptics, the most Aware and the most Empowered of all age groups, while the oldest Canadians, aged 71 years or older, are the most represented among the Sceptics and the least Empowered.

This age divide raises an important question: are these differences due to generational differences or to the process of aging? We know that individuals born in earlier time periods grew up in particular contexts that shape their values (Inglehart, 1995). Specifically, growing up in Canada in the post-war period was significantly different—economically, socially, politically, environmentally—from what individuals born more recently have experienced. The fact that different age cohorts are socialized in periods of time that have different environmental norms and scientific understanding of the environment may explain why they develop such different environmental beliefs and attitudes. Alternatively, we know that individuals change as they age. Citizens progressively become more politically active as they move from adolescence to adulthood, often paying more and more attention to some issues (such as health and retirement), and then they eventually become less engaged in political action at an older age (Wolfinger and Rosenstone 1980). We believe that the generational dynamic may be an important explanatory factor in the age differences, as the youngest generations grew up in a society where discussions and education programs about the environment have been the norm, and as a consequence they have become much more in tune with environmental issues. These older cohorts may also be more sensitive to the economic tradeoff and sacrifice frames. But looking at the evolution of environmental attitudes across time and across age groups—in a future analysis—will allow us to disentangle these generational and life-cycle processes.

When looking at Canadians who live in rural environments and those who live in medium- to large-size urban centres, we notice that Canadians in urban centres are generally more Aware and Empowered, but that the differences between urban and rural Canadians are not as great as might be expected. To be sure, this runs counter

to some previous work, that finds distinctive differences in climate change attitudes across rural and urban dwellers (Mildenberger et al., 2016). According to this research, urbanites tend to harbor more pro-environmental attitudes because they are generally more educated, affluent, and are also less dependent on fossil fuels. If rural dwellers in Canada rank higher than expected on the ladder of engagement in 2016, this may indicate that they may now be more ready to be engaged, provided that they are presented with solutions that make sense in rural settings.

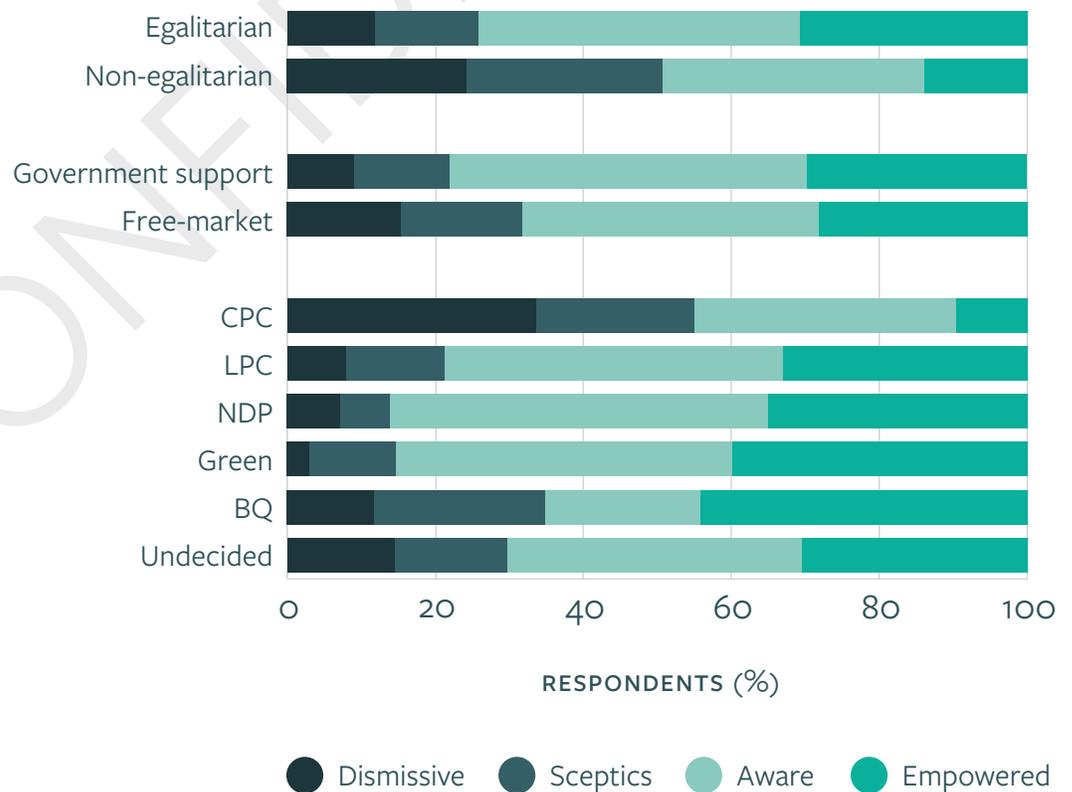
Turning to the examination of regions in Canada, we discover that there is significant variation within the country, in terms of citizens' potential for engagement. Two points are particularly noteworthy. First, the Prairies—including Alberta, Saskatchewan and Manitoba—stand out as the region where there is the greatest number of citizens who are among the Dismissive and Sceptics. In fact, in the Prairies, one Canadian in four believes there is no evidence of climate change. Secondly, we find in Quebec and British Columbia the greatest share of Canadians who are Empowered: about one Canadian in three in these two regions believe that citizens and governments can take effective actions to address climate change. So it is clear that Canada presents substantial regional differences and that Canadians cannot be considered in the singular. Several factors may explain why such regional variations arise in citizens' beliefs and levels of engagement. For one, these regions display distinct natural environments and different access to natural resources. Additionally, the interplay between multiple levels of government within the federation have an impact on the development of distinctive policies, on the economy, the energy and the environment. The fact that progressive public opinion on climate is present in two of the most active provinces (in terms of climate policy) is interesting and consistent with past research (Lachapelle et al. 2012; Mildenberger et al. 2016). While it is difficult to say whether this opinion drove the progressive policy stance, at a minimum, high levels of support suggest experience with more ambitious policy has not resulted in a backlash undermining this support.

Finally, we wanted to know whether citizens' lifestyles were linked to their engagement on climate. We find that Canadians with no car are much less Dismissive and are more Empowered, than Canadians who have three cars or more. In fact, individuals who have multiple cars are four times more likely to be Dismissive than those who have no car. While individuals' consumption behaviour may reflect latent environmental beliefs, it can also be the case that individuals' lifestyle choices condition their willingness to acknowledge scientific evidence about climate change and their belief that this is an issue that should be addressed.

The demographic segments (or types) identified on our ladder of engagement also display distinctive socio-political dynamics. In Figure 3, we compare voting intentions across segments, as well as differences among each in terms of socio-political values identified as important in the literature.

We first consider how beliefs about equality are associated with levels of engagement, and note on Figure 3 that there are important divides. Those who believe that inequalities between the rich and poor should be dramatically reduced (i.e. egalitarians) are more than twice as likely to be Empowered (31%) than those who disagree that inequalities should be reduced (i.e. non-egalitarians, 14%). Egalitarians are also much less likely to be Dismissive (12%) or Sceptics (14%), than the non-egalitarians (24% are Dismissive and 27% are Sceptics). These findings are consistent with past research on environmental attitudes and political values, which finds a consistent relationship between pro-environmental attitudes and behaviours, on the one hand, and an egalitarian worldview, on the other (Leiserowitz, 2006; Lachapelle et al., 2014).

Figure 3: Engagement by sociopolitical dynamics



If we now consider free-market values among Canadians in Canada, we observe certain differences in engagement, but less pronounced than those related to egalitarianism. The proportion of the Empowered is roughly equal (around 29%) among those valuing the free-market over government programs for providing individuals with the things they need. However, the Aware are more numerous among “interventionists” (48% compared to 40% in the partisans of a free market economy), and the Dismissive and the Sceptics are more numerous among partisans of “economic laissez-faire” (with respectively 15% and 16%, compared to 9% and 13% among the interventionists). The association between the socio-political values and engagement on climate change tend to indicate that—in general—those who are more progressive on social and economic issues, are also more progressive and engaged on environmental issues.

Again, this is consistent with theory and empirical results found elsewhere (Lachapelle et al. 2014). Essentially, issues like climate change are viewed through the prism of political values, ideology and worldviews. These values shape our cognitive processing such that new information must somehow fit with our pre-existing values and beliefs, or otherwise be discounted and ignored. In the case of climate change, acknowledging the problem as a market externality that requires new government regulations does not sit well among those with a free-market worldview. Conversely, reining in unfettered industrial activity is well aligned with egalitarian values, even strengthening this worldview relative to an anti-egalitarian one. It follows that individuals with egalitarian and free-market ideologies will react differently to new information, in predictable ways. This process of motivated reasoning—or fitting new information into pre-existing value and belief systems—is pervasive, and is the subject of much attention in the academic literature, as scholars seek to find ways to condition, curb and reverse its effects by crafting carefully constructed messages.

Voting intentions also diverge across different segments. For instance, Canadians supporting the Conservative Party of Canada are substantively distinct from Canadians who stated an intent to vote for other political parties. A third of them are Dismissive and do not believe that climate change is real, which is two to four times more than among most other partisans. Conservative Party supporters are also the least Empowered, with only 10% who believe that effective actions can be taken to address climate change, a proportion that is three to four times inferior to what is found among other partisans. In fact, between 33 and 44% of the “Liberals”, the “New Democrats”, the “Greens” and the “Bloquistes” are Empowered. The

“Liberals”, the “New Democrats” and the “Greens” display relatively comparable levels of engagement, with the great majority of these partisans being either Aware or Empowered. Interestingly, our results show that partisans of the Bloc actually display the highest proportion of Sceptics (23%) and the smallest proportion of Aware (21%). This is likely due to the shifting base of the Bloc Québécois, as many of its former left-leaning supporters have since gravitated away from the party following the Orange Wave of 2011, leaving a solid contingent of right-of-centre Quebec nationalists with nowhere else to go. With the potential exception of the Bloc, these distinctive patterns of engagement among partisans reflect quite realistically the programs of the political parties, with the Conservative Party of Canada questioning the existence of climate change and most other parties proposing various programs and policies to address climate change.

2. What Canadians know and think about climate change

At a basic level, knowledge is empowering. Before individuals become active and take action on an issue, they need to have a minimum understanding and awareness of an issue, and care about it, before they can be mobilized into action. To be sure, there is some debate in the literature as to whether or not knowledge is universally empowering. For instance, some research out of the United States has shown that knowledge of climate change can be polarizing, with knowledge having the opposite effect among conservatives and liberals in terms of climate change beliefs and attitudes (Kahan et al. 2012). Nevertheless, we take as a starting point the idea that knowledge and awareness of a problem are necessary (if insufficient) conditions for engagement, and we examine how much Canadians feel they know about climate change, their beliefs about scientific opinion, and how much attention they pay to related issues (like pipelines). In addition, we look into differences among Canadians and investigate which Canadians are more knowledgeable about and interested in climate change.

Knowledge

When Canadians are asked how much they feel they know about climate change, a majority responds positively. In fact, 72% of Canadians feel they know a lot (18%) or a moderate amount (54%) about the issue. If we look at different groups of Canadians we note some differences in knowledge: men feel more knowledgeable

than women, and the higher educated feel more knowledgeable than less educated Canadians. The gender difference may be explained by the fact that women usually underestimate their knowledge, despite in fact being more knowledgeable on climate change than men (McCright 2010). The education gap reflects a stable finding in research, where the university educated tend to be more resourceful and more attentive to news and information (Delli Carpini and Keeter 1996). Across Canadian regions, people living in British Columbia and the Prairies feel they are most knowledgeable, while people in Quebec and the Maritimes are somewhat less likely to feel the same. The higher level of self-reported knowledge found in BC and the Prairies may reflect the heightened level of public debate on these questions in these regions, relative to places like Quebec, where action on climate change is much less controversial. In the context of the ladder of engagement, and notwithstanding these regional differences, we note that individuals who feel most knowledgeable are much more likely to be Empowered, whereas those who report knowing little are much more likely to be Dismissive. This relationship between knowledge and engagement is, however, much more complex. Indeed, a reading of the open-ended responses probing different types of climate Sceptics reveals there are educated, well-heeled and outspoken individuals in the Dismissive ranks. While the relationship between knowledge and environmentally significant behaviours is likely more complex, at a minimum, knowledge does seem to be a precondition, or gateway, to get Canadians to move up the ladder of engagement.

Perceptions of the scientific consensus

Despite the tendency of Canadians to rate their understanding of the issue favourably, it is unrealistic to expect citizens to be well informed about relatively sophisticated policy measures designed to address complex problems, like climate change. Faced with such an information deficit, ordinary citizens tend to rely on a variety of heuristics—or cognitive shortcuts—allowing them to form opinions on issues with minimum effort (Lupia et al. 2000; Lupia, 1994). A variety of these heuristics exist—including elite cues, likeability and affect—and future research should look into which cues are most powerful for particular groups. For now, we examine one key heuristic found in the literature—perception of scientific consensus. Among those who trust science, perceptions of what mainstream science believes can be a powerful force in shaping attitudes toward global climate change (van der Linden et al., 2015).

Even if Canadians generally feel they are knowledgeable about climate change, only one in two accurately perceive the scientific consensus on anthropogenic global warming held by 97% of publishing climate scientists (Cook et al., 2013). When asked if they believe there is a scientific consensus on the human cause of climate change, half of Canadians (48%) think that most experts agree that humans are the primary cause, while half believe experts are divided (51%). Where does this Scepticism about a scientific consensus come from? We find that youth aged 18 to 34 years old are the most likely to perceive a scientific consensus (compared to people aged 71 years or older). More highly educated Canadians are also more likely to perceive a scientific consensus on the human causes of climate change (compared to the lower educated). Meanwhile, the majority of Conservative Party supporters believe that experts are divided, as do a majority of Canadians living in the Prairies.

A number of factors might explain these differences. First, the youngest Canadians have grown up in a context where there is a wealth of scientific information, and were perhaps made aware of studies confirming the human cause of climate change at a relatively early stage in life. In contrast, older people may be less trusting of science in general, and more likely to rely on personal experience with weather, including memories of significant weather anomalies seen in the past. University education helps individuals develop their intellectual skills and critical thinking, which may help them process scientific information more effectively and accurately. Finally, the fact that people living in the Prairies and partisans of the Conservative Party are much less likely to perceive a scientific consensus on a human contribution to climate change may reflect some cognitive dissonance, as these groups tend to be more averse to reducing greenhouse gases given their affinity for oil and gas production and general pro-market ideology more generally (among conservatives). When considering the ladder of engagement, we note that belief in the scientific consensus about the human cause of climate change moves people up the ladder, as they are much more likely to be Aware and Empowered, compared to those who believe that experts are divided. This, again, shows that knowledge—and crucially, acceptance of that knowledge—are key to increase the potential for engagement among Canadians.

Interest: the Energy East pipeline project

Beyond knowledge of climate science, awareness and attention to specific climate change issues is also relevant for understanding mass public attitudes toward

climate change in Canada. We might, for instance, examine how closely Canadians follow the debate over specific pipelines to explore their propensity for engagement. The Climate of Change survey asked Canadians how much they have heard about the Energy East project, and results paint a mixed picture. About half of Canadians (56%) said they had heard a lot about the project, but almost half of Canadians (44%) reported they had heard nothing at all or only a little about this project. Given the controversy sparked by this project, campaigns to mobilize opposition and support, as well as the fact that this particular project affects several provinces, this relatively low level of awareness may come as a surprise. We find that young people are actually the least attentive to this project (i.e. less than half of them report having heard a good or great deal about it), which may reflect youth's general tendency to pay less attention to the news. Across Canada, the majority of Canadians living in the Prairies (69%) and in Quebec (62%) report being very attentive, and Ontarians are the least attentive (41%). This difference could potentially be explained by the more intense discussions about this project in the Prairies and Quebec, and the higher level of popular protest, making the issue more salient in the public sphere and the media in these provinces.

3. What Canadians think about solutions for climate change

Our analysis thus far has shown that there is quite a bit of variation in mass Canadian attitudes toward the climate change problem. About 30% of the population does not see a problem (the Dismissive and the Sceptics), a plurality (40%) see a problem but are less sure about the solutions (the Aware) and the other third (about 30%) of Canadians see a problem and the solutions at hand (the Empowered). We also know that Canadians are generally informed, though less so on the science, and that about half are paying attention to high profile issues covered in the media, like pipelines. We now turn to attitudes toward specifics—policies, behaviours and the future of Canada's energy system.

With the heightened salience of climate change, political parties, social movements, environmental organizations and other actors of civil society will (and should) increasingly present citizens with numerous options to solve the climate challenge. These should focus on a range of government regulations and programs, individual actions and behavioural change, and the transition toward a cleaner economy. In this context, the 2016 survey helps establish a baseline on Canadians' current opinions and knowledge: what do Canadians think about diverse solutions to climate change?

3.1. National and provincial government responsibilities and means of action

As highlighted in some of the open-ended responses, some Canadians are wondering how the actions of the Government of Canada can be effective when climate is a global problem, not just a national problem. In this vein, one respondent argued: “Canada does not have enough weight to change [actions in] other countries.” Another referenced the difference between countries in the North and South, suggesting that emerging countries at an intensive phase of economic development and industrialization are unwilling to compromise that development for environmental protection: “the Canadian government cannot control industrial nations like China, India and the African continent, [they] will be contributing more pollution in the future.” So for some Canadians, the effectiveness of the federal and provincial governments to reduce emissions at home may not be so much the problem, as the inability of world leaders to obtain a global consensus on clear climate change objectives and a set plan of action. In this context, educating Canadians on recent progress made at the international level, and indeed, actions undertaken by other countries, may help assuage concerns that Canada is doing too much, and empower Canadians to support more actions at home. But to what extent do Canadians support government action? And what kind of policies and regulations would they like the government to implement?

Government action

Overall, Canadians express support for more government action on climate change. Specifically, three in four Canadians feel governments should do more about climate change. Moreover, those who feel governments can be effective are much more supportive. Among those who believe governments in Canada can be effective, 87% support more action; conversely, only 42% of those who are Sceptical of governmental efficacy support more climate policy in Canada. Strengthening the positive message that governments in Canada can be effective thus seems like an important narrative to build.

Among all Canadians, women, young people, the higher educated and people living in urban environments want to see governments be more proactive about climate change. This reflects the pool of Canadians that have developed more pro-environmental attitudes, and in the case of urban dwellers, a segment of the population for whom alternative practices and behaviours are more readily available and less

costly (e.g. public transit). It comes as no surprise that these segments are most likely to support environmental action. For other segments, support is less intense. For instance, in the Prairies, where people have more to lose from environmental regulations, Canadians are much less likely to support governmental action (58%) than people from other regions (with levels of support between 78% and 81%). For these groups, emphasis on what works, and alternative practices and behaviours that make sense in specific settings (e.g. Prairie, rural) could help empower these Canadians and bring up their level of support for climate action.

When looking at the figures of the ladder of engagement, we find—with no surprise—that the great majority of the Aware and Empowered would like to see governments do more. However, more surprisingly, about 60% of the Dismissive—those who doubt climate change is real—would like to see the same amount or even more governmental action, and close to 60% of the Sceptics—those who doubt humans are part of the cause of climate change—would like to see more governmental action. This may seem counter-intuitive, but is explained by several points worth noting. First and foremost, it must be kept in mind that this is a 15-minute survey on climate change. As the survey proceeds, there is some bias created in that respondents tend to give what they see as “socially desirable” responses. This is related to “acquiescence bias,” i.e. the propensity of survey respondents to answer questions “in the affirmative” and to over-report “good behaviours.” Second, the question on support for government action is not specific to concrete policies. Specific questions generally provide more discrete measures for particular policies. To avoid acquiescence bias and satisficing behaviours, researchers like to specify costs to questions in order to obtain a more robust measure of effective support for policy and behavioural change.

Finally, and importantly, the strong level of support found for more climate action in Canada suggests that for Canadians, climate change is a “valence issue” (Stokes, 1963). In contrast to positional issues—i.e. “those that involve advocacy of government actions from a set of alternatives over which a distribution of voter preferences is defined” (Stokes, 1963: 373), valence issues are characterized by a broad convergence in public preferences, either positive or negative. Classic examples include “prosperity” (no one is against virtue) and “less corruption” (no one is for more corruption). If climate change truly is a valence issue in Canada (which should be tested), then this too has important implications concerning how groups should go about communicating. Indeed, communicating on valence issues should involve less education on the means, and more identification of trusted sources that can

best lead Canada toward the commonly desired, virtuous end. While non-partisan groups cannot be seen to support any one party for this job, they can lay the groundwork for progressive (or opportunistic) political entrepreneurs by building the vision of what a clean energy transition in Canada might look like. This would create a window for political actors to occupy the space, and build on the frames already put in place by groups, while purporting to take a leadership role (and getting credit!).

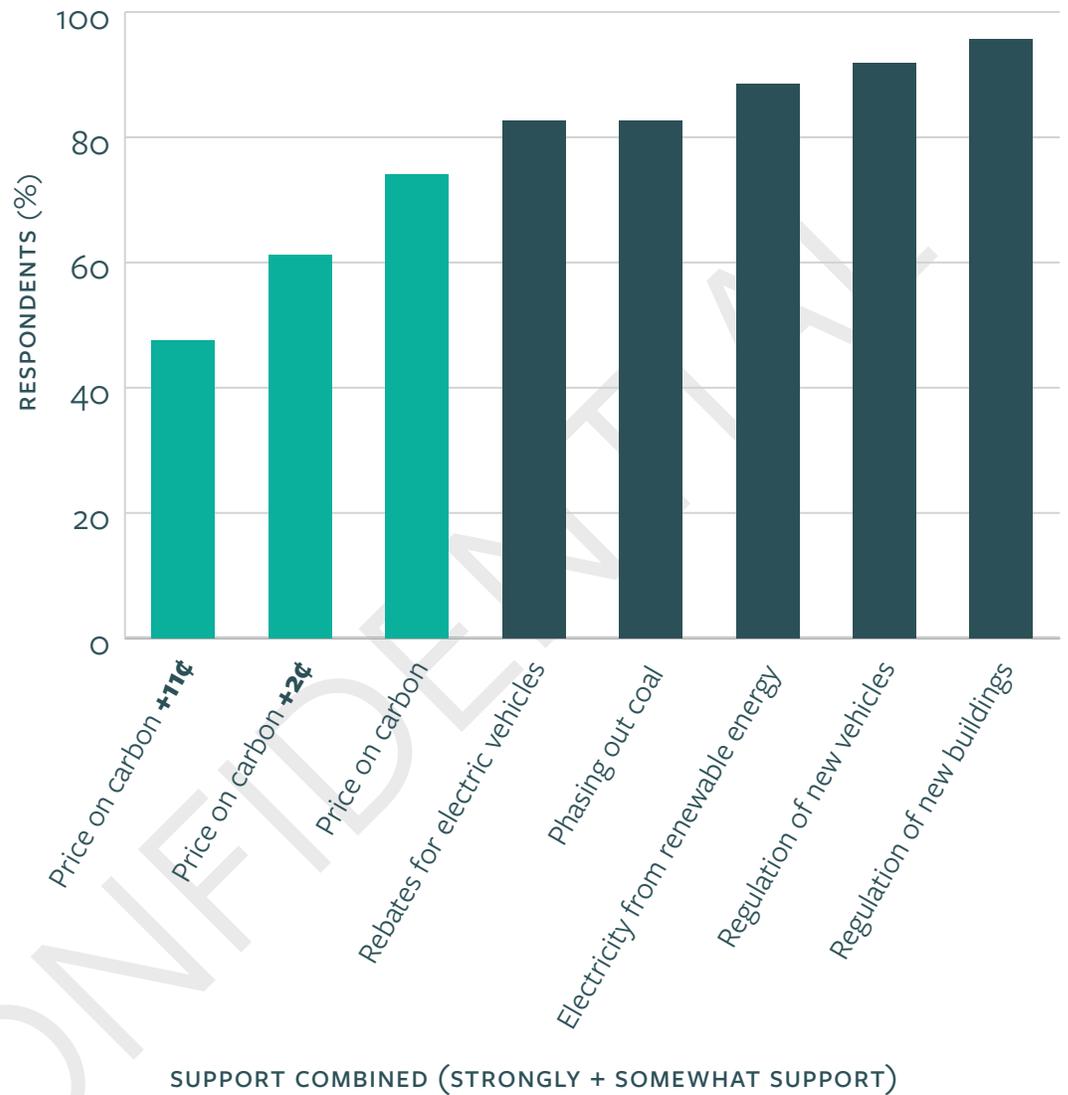
Opinions on six specific governmental policies to address climate change

Irrespective of whether or not more climate action is a valence issue in Canada, the reality is that means (i.e. policies and programs) have been and continue to be heavily debated. In this context, we asked respondents whether they opposed or supported six different government policies: putting a price on carbon pollution, putting a price on carbon pollution that would increase the price of gasoline by two cents or 11 cents per litre, requiring a set portion of all electricity to come from renewable energy sources (like wind and solar energy), offering rebates to business and households that purchase electric vehicles, regulations that require new buildings to be more energy efficient, phasing out coal-fired power plants, and regulations increasing the average fuel economy of new vehicles.

As shown on Figure 4, Canadians display high levels of support for these governmental policies. In fact, more than 80% of Canadians support renewable portfolio standards, rebates for electric vehicles, stricter energy efficiency regulations for new buildings, the phase out of coal electricity generation, and increased fuel economy standards for new vehicles. Overall, a majority of Canadians support all of these policies (67%). One note of caution—here we refer to combined levels of support, collapsing “strongly” and “somewhat agree” into a single “support” category. This simplification aids the analysis and may look good when groups communicate results, but it also glosses over the intensity with which different segments of the population support different policies. This should be kept in mind and where details are required, groups are asked to refer to the crosstabs to get a more nuanced picture of actual levels of support across socio-demographic categories.

While support for the different policies is generally high, we still note that some groups are generally more supportive, such as women, the two youngest age groups (18–34 and 35–54 years old), urbanites and those with more egalitarian

Figure 4: Support for various climate policies in Canada



values. Across Canada, individuals living in the Prairies are again those least supportive of climate policies: they are less supportive of rebates for electric vehicles and renewable portfolio standards, and much less supportive of banning coal and implementing a carbon price, compared to the other regions (which all display relatively similar levels of policy support). Among partisans, the Conservatives also stand out. A majority of Conservatives oppose any carbon price (64%), while other partisans are highly supportive (between 75 and 92% of support). Conservatives also display the lowest level of support for renewable portfolio standards (71%), rebates on electric vehicles (66%), and banning coal (59%), compared to other partisans (with levels of support above 90%, 84% and 86% for each of these policies). Only two

policies rally all partisans and achieve a consensus: regulations to make new buildings energy efficient, and regulations increasing the average fuel economy of new vehicles. On the ladder of engagement, we observe that the Empowered are the most supportive of each policy, while the Dismissive are the least supportive.

When we consider the possibility of putting a price on carbon pollution, we see that Canadians are slightly less supportive of this policy (73%). However, Canadians' support for a carbon price decreases significantly when a cost is specified, whether an increase in the price of gasoline of two or 11 cents per litre. In each of these cases, support decreases, to 61% and 48% respectively. This indicates that citizens' continued reliance on gasoline and their "pocketbook" considerations have a substantial impact on the strength of their support for policies to address climate change. However, we note that even when a cost of 11 cents per litre is specified, support for this policy remains relatively high (46%).

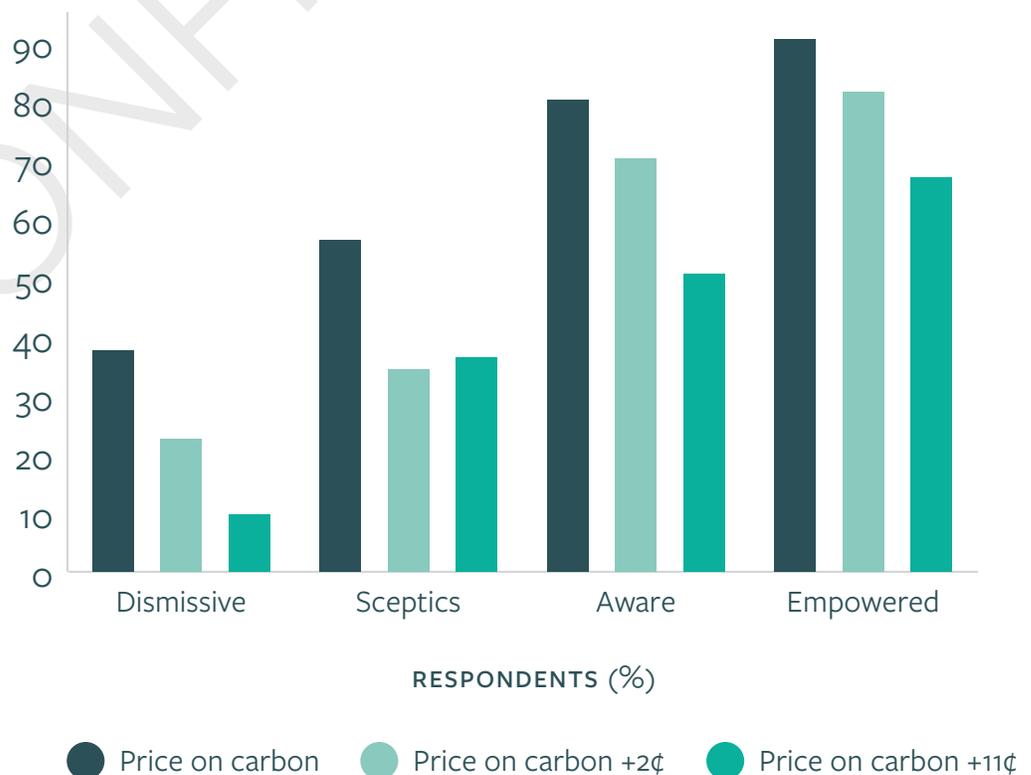
Further analysis reveals that policy support among some segments is more robust to such cost specifications than others. As we can see from Figure 5, the Dismissive are the least likely to support a carbon price (38%)—even if it does not include an increase in gasoline price—and their support significantly and progressively drops to 23% and 10% as an increase in the price of gasoline is specified. Alternatively, the Sceptics—who are more supportive of a carbon price (56%)—display an equal aversion to increases in gasoline prices, regardless of the amount, and their support falls to 34% and 36%. At the higher levels of the ladder of engagement, we find that the Aware and the Empowered offer the highest levels of support for a price on carbon, with 80% and 90% of individuals in these segments supporting such a policy. But they too display some sensitivity to question wording that specified costs. When an increase of two cents per litre is considered, support among the Empowered drops by ten percentage points, which is substantially smaller than the drop observed among the Dismissive and the Sceptics at two cents per litre (minus 15 and 22 percentage points). However, when an increase of 11 cents per litre is considered, the drop in support among the Empowered is as large as the one observed for the Dismissive or the Sceptics (i.e. a drop between 20 and 30 percentage points). So it is clear that, as citizens move up the ladder of engagement, they are increasingly likely to support a carbon price, even if it entails a small increase in gasoline price. But, many Canadians—even the most Aware and Empowered—are reluctant to support policies that would may be perceived as "too costly" in an area perceived as crucial to them (i.e. driving a car). Clearly, the power of the cost/sacrifice frame is pervasive, and powerful, even among more engaged Canadians. This

framing will no doubt be used by opponents to any climate policy action. Groups need to be prepared and arm themselves with effective counter-frames that can help neutralize the powerful sacrifice frame. This may involve a re-framing of the ends, not means. Alternatively, it may require a focus on specific benefits of the tax in terms of its effectiveness, ability to produce desirable social outcomes, not least of through which the effective use of revenues raised (Lachapelle, 2015).

3.2. Individual responsibility and citizens as agents of change

Beyond governments, individuals can also be important agents in the fight against climate change (Dietz et al. 2013). Some Canadians have a strong sense of their own efficacy, and doubt the usefulness of government’s actions because they feel it all comes down to individual citizens. In this vein, one respondent argued: “Climate change highly depends on people, not governments. Policies set by the government is not equally translated to people obeying them. It’s more [about] humans, and the government can’t do much... [Climate change is about] human nature”. But are Canadians willing to be proactive? And if so, what would they be willing to do about climate change themselves?

Figure 5: Support for a price on carbon by level of engagement



Citizen action

A great majority of Canadians (79%) call for more action on the part of individual citizens. Notably, the great majority of the Empowered (95%) and the Aware (84%) want to see more individual actions, while a small majority of the Sceptics (61%) and close to half of the Dismissive (47%) want to see more done on the part of citizens. As in the case of government action, we see that the higher citizens move up the ladder of engagement, the more they call for action to address climate change. We find that women, young people, the higher educated and people living in urban centres want to see individual citizens do more about climate change, which is consistent with the pattern of environmental attitudes presented in previous sections. Again, while most regions see a great majority of their citizens support more individual actions, the Prairies rank 10 percentage points lower in their support, compared to all other regions.

Opinions on six specific types of citizen action

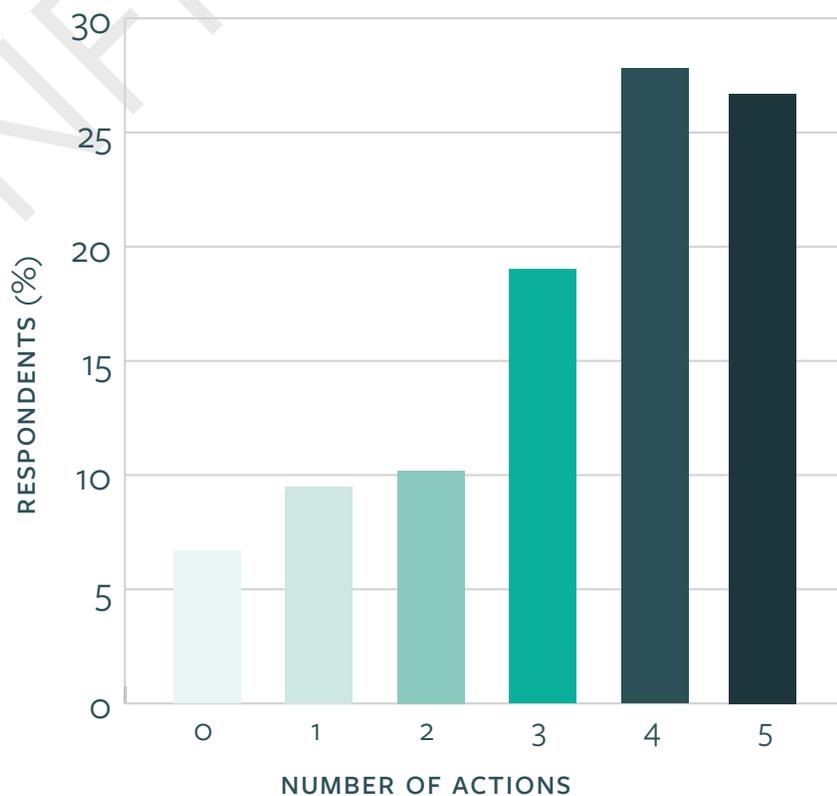
But more specifically, what would citizens be willing to do to address climate change? We asked respondents how likely they would be to do any of the following actions: sign a petition asking for more climate action, voting for a political party promising stricter climate policy, boycotting companies that oppose steps to reduce climate change, participating in a public demonstration for more climate action, or using public transit, walk or bike instead of taking your car.

We find that Canadians prove to be very willing to take action. About three Canadians in four are willing to boycott products, vote for certain political parties, sign petitions, or use public transit to have an impact on climate change. However, only a minority would join a demonstration for that cause (39%), and young people, urbanites, partisans of the Green Party and people from British Columbia and Quebec are the ones most likely to join such action. For all the other types of citizen actions, we still find the same general trend where women, the higher educated, urbanites, younger citizens and individuals with egalitarian values are more willing to use these actions, while citizens from the Prairies and partisans of the Conservative Party are less likely to do so. The Empowered are consistently the most motivated to do any of these six actions (with about 80% of them likely to do these actions), followed by the Aware (approximately 70%), the Sceptics (approximately 60%) and the Dismissive—who are consistently the least likely to engage in the individual actions (with only about 40% who are likely to take up these actions). So there

is a constant gap in the likelihood of individual engagement between the figures of the ladder of engagement, where the Empowered are always the most likely to be engaged and the Dismissive are the least likely to do something about climate change themselves.

In general, slightly more than half of Canadians were willing to do four or five actions in their lives to address climate change (as seen with the last two bars in Figure 6). These are mostly the Empowered, and the Aware. And less than 10% reported they did not want to do any action themselves to address climate change; and these individuals are especially the Dismissive. While these numbers on Canadians’ potential to be active are quite encouraging, they refer to “intentions” to participate and do not actually capture “actual behaviours”. We know that people generally over-report their willingness to be politically or socially active in society (Belli et al. 2001), and so we can expect that actual rates of participation in any of the individual actions would be lower. Getting people to move from “the motivation to change” to “actual changes” in their behaviours—would it be in terms of political participation (such as voting) or in terms of lifestyle habits (such as commuting)—is not so easy. The positive note is that Canadians display significant motiva-

Figure 6: Number of actions Canadians are likely to take



tion and openness to be active. Whether they ultimately do so will depend on the information they receive, the incentives they have to assimilate this information into their pre-existing views, the actual presence of alternatives they can choose from in their daily life, and crucially, how much they are mobilized and pushed to take action by civil society organizations, peers, and others in their personal network.

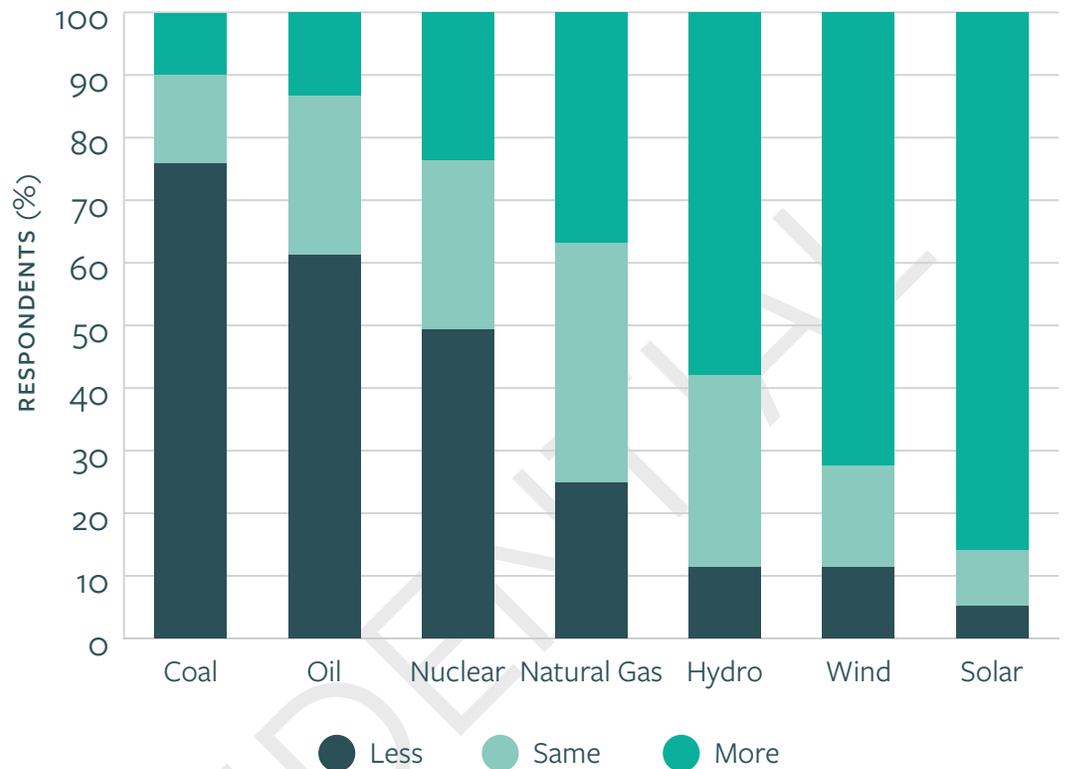
3.3. Views on the energy system

A key challenge for Canada moving forward relates to how it will transition away from production of fossil fuels and develop a cleaner economy. While the politics of this transition will be tricky, the good news is that Canada has access to a diversity of natural resources and is presented with an array of options to produce domestic energy. Past research (Trottier Energy Futures Project, 2016) has sought to explore what Canada's energy system might look like in a carbon constrained world, in which optimization models suggested nuclear would play a larger role. These models ignore the politics, and specifically, assume homogenous public preferences for different energy sources. In this context, we asked Canadians whether they thought governments should put more, less or about the same emphasis on each of the following sources of energy: solar power, wind, hydro, natural gas, oil, nuclear and coal.

As can be seen from Figure 7, there is substantial variation in the types of energy Canadians prefer, with a clear distinction made between carbon-intensive and cleaner forms of energy. For instance, a large majority of Canadians want governments to place less emphasis on coal and oil, and close to half of Canadians want less emphasis on nuclear energy. Alternatively, large majorities of Canadians want the country to rely more on hydro, wind and solar energy. Opinion on natural gas is more ambiguous, falling in between the carbon-intensive and clean energy options. This reflects the carbon content of conventional natural gas (though it is far from clear that unconventional gas is "clean" on a lifecycle basis), as well as efforts to frame natural gas as a clean alternative. Such framing is only partially reflected in Canadian attitudes, as opinions on this energy source are roughly equally distributed between the more, less and about the same response options.

Views on Canada's energy system also raise important regional variation, as the Prairies are again found to be distinct from other regions. A third of Canadians living in the Prairie provinces prefer to keep the status quo with regards to oil and they are much less likely to indicate governments should put less emphasis on this source, compared to citizens living in BC, Quebec and the Maritimes. Canadians

Figure 7: Preferred focus on energy production sources in Canada



from the Prairies are also more likely than other Canadians—in other regions—to want the same or more emphasis on coal (37%). Another notable difference is that Quebecers want much less emphasis on nuclear energy (70%).

We also observe substantial differences in opinions about energy sources across the four demographic types on the ladder of engagement. Differences in opinions between the four types on the ladder are not that great on nuclear power, gas and hydro energy (i.e. with differences in levels of support oscillating from one to 20 percentage points between the Dismissive and the Empowered). Alternatively, there are substantial differences in levels of support for the other types of energies (i.e. with differences of about 30 percentage points between the Dismissive and the Empowered). In fact, the Empowered and the Aware want much more emphasis on wind and solar energies than the Dismissive and the Sceptics, and they want much less emphasis on coal and oil than the Dismissive and the Sceptics. This indicates that individuals who move up the ladder of engagement, and become Aware and Empowered, are much more willing to see Canada change its energy profile, than individuals who are Dismissive and Sceptics about climate change.

These results generally indicate an openness among Canadians to change the way energy is produced in the country. However, it is important to note that the question asked only whether Canadians would want “more” or “less” emphasis on these different energy forms. After years of having a government in power that did not hide its support for Canada’s oil industry, it is not surprising that Canadians report wanting less emphasis on oil, as Canadians have a general sense that for nearly a decade their government put all their eggs in the same energy basket. This data does not allow us to infer, however, that such large majorities want Canada to stop producing oil. Support for this would probably drop if Canadians were pushed on their oil dependence (e.g. for transport) or on the costs for them of such a transition. But the fact that Canadians are open to putting less emphasis on coal and oil leaves little doubt that they are open to the conversation on Canada’s clean energy future.

Willingness to pay for clean energy

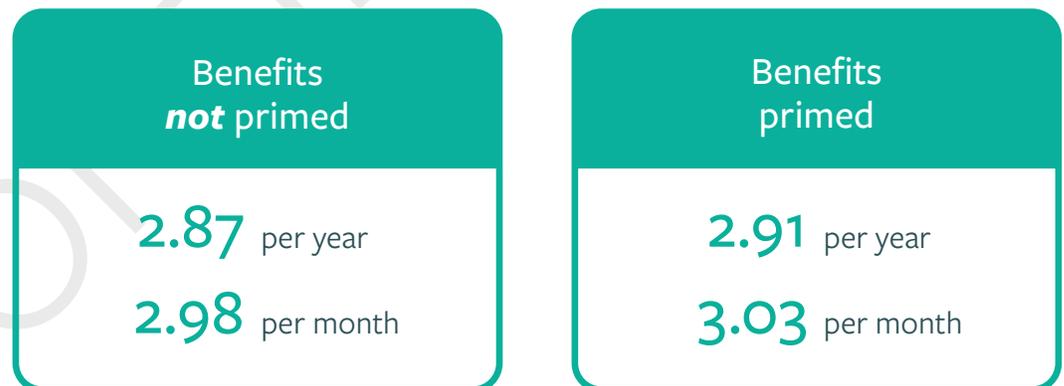
Another way of getting at the intensity of support in Canada for an energy transition is to look at willingness to incur some costs. As noted above, self-reported measures of behavioural intention are notorious for exaggerating the extent to which individuals are actually prepared to change their behaviour. On this score, willingness to pay (WTP) measures can be more valid. Though such measures are sometimes controversial, notably in Economic contingent valuation studies, willingness to pay measures are often used in studies of climate change attitudes to get a more realistic estimate of the proportion of respondents actually willing to “put their money where their mouth is.” Though clean energy is increasingly less expensive, and while it offers important benefits, transitioning the energy system to low carbon energy sources necessarily involves some cost (e.g. behavioural, financial). This cost frame is persistent, and constitutes an important barrier to public support for the clean energy transition.

Past research has generally found that Canadians are not willing to pay much for more clean energy to be produced in Canada (Lachapelle et al. 2015). Of course, framing the question solely in terms of costs does not much help this situation. The 2016 Climate of Change survey included a 2 × 2 experimental design that attempts to offset the cost frame in two ways. First, we randomly manipulated the question order so that, for the experimental group, the WTP question was preceded (for half of the respondents) by a question priming the benefits of clean energy (see Table 28 in crosstabs). For the other half of respondents, the benefits question was

asked after the question on WTP. With this design we sought to test how priming the benefits of clean energy before asking the question on WTP might increase the amount individuals are willing to pay. Second, we randomized the question wording of the WTP question so that 50% of the sample was asked how much they would be willing to pay per year while the other half were asked how much they would be willing to pay per month for more clean energy to be produced in Canada. This component of our design involves an equivalency framing experiment (Tversky & Kahneman, 1987) where response options in both instances are roughly identical (e.g. one to five dollars per month is roughly equivalent to one to 50 dollars per year), but the lower monthly cost frame is expected to increase one’s willingness to pay more.

The WTP measure asked respondents how much more they are willing to pay for more clean energy to be produced in Canada. The question was asked in a closed ended format, with six categories ranging from “Nothing” to “over 500 dollars per year [40 dollars per month].” As shown in Figure 8, the experiment produced nearly identical mean scores on the WTP categorical variable (range 1–6). Regardless of treatment, the mean score is roughly 3, corresponding to the “50 to 100 dollars per

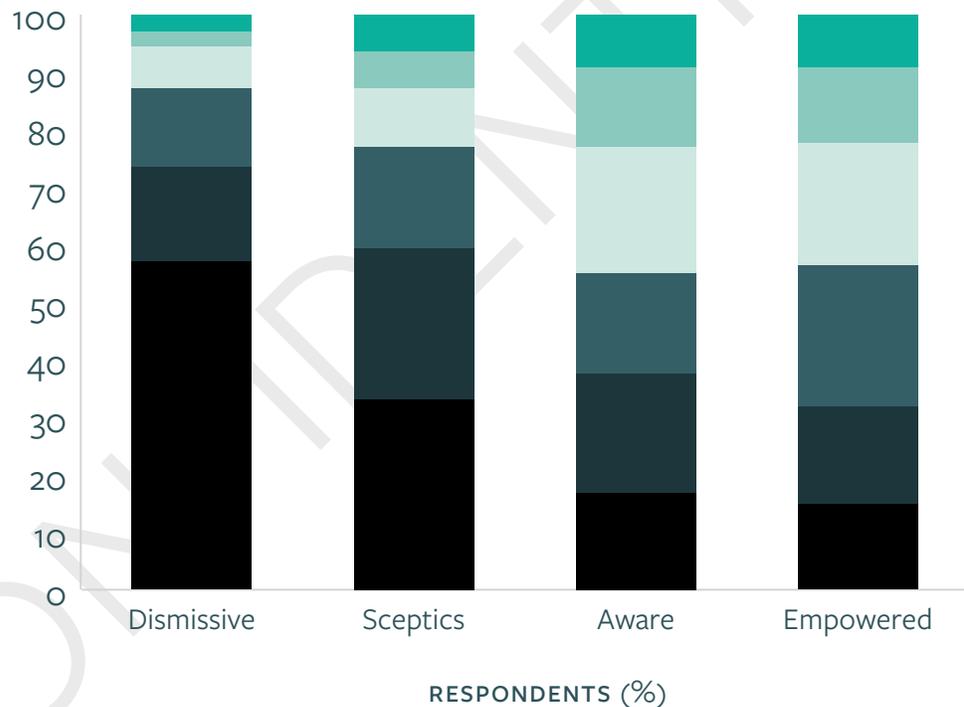
Figure 8: Experiment on willingness to pay for more clean energy



year (5 to 10 dollars per month)” response categories. While the difference in mean scores across each experimental group is small and statistically insignificant (tests not shown), the differences are in the expected direction. The mean WTP score for respondents in the “monthly” condition (3) is modestly higher than the WTP score for respondents in the “yearly” condition (2.89). The highest mean score on this variable is found among those respondents who received the “per month” question wording, and for whom benefits of clean energy was “primed” before asking the

question on WTP. Part of the reason for these small differences lies in the closed ended nature of this question. If repeated, researchers should probably ask the same questions, but in open-ended format to maximize variation and minimize the effect of imposed closed-ended response categories. Overall, the null results point to the power of the cost frame, relative to benefits, when thinking about moving toward more renewable energy. More work is required to dispel the myth that clean energy is more expensive, and to develop frames that activate benefits of clean energy in people’s minds, to counteract the powerful cost frame.

Figure 9: Willingness to pay for more clean energy by level of engagement



- 1 = Nothing per year / month
- 2 = 1-50 dollars per year / 1-5 dollars per month
- 3 = 50-100 dollars per year / 5-10 dollars per month
- 4 = 100-250 dollars per year / 10-20 dollars per month
- 5 = 250-500 dollars per year / 20-40 dollars per month
- 6 = over 500 dollars per year / over 40 dollars per month

Note: $\chi^2 = 164.75$;
 $df = 15$; $p = 0.000$

The insignificant differences found in Figure 8, combined with the equal variances in each condition (tests not shown), allow us to pool results and analyze the WTP question as a single variable for analysis purposes. We do this in Figure 9, and show the relationship between WTP and where individuals are on the ladder of engagement. Here we find a robust, statistically significant pattern, with the Dismissive about four times more likely to say they are willing to pay nothing than the Empowered. Conversely, the Empowered are about three times more likely to state being willing to pay over 500 dollars per year (40 dollars per month). Note, however, that even among the Empowered, WTP meaningful amounts for more clean energy to be produced in Canada is rather low.

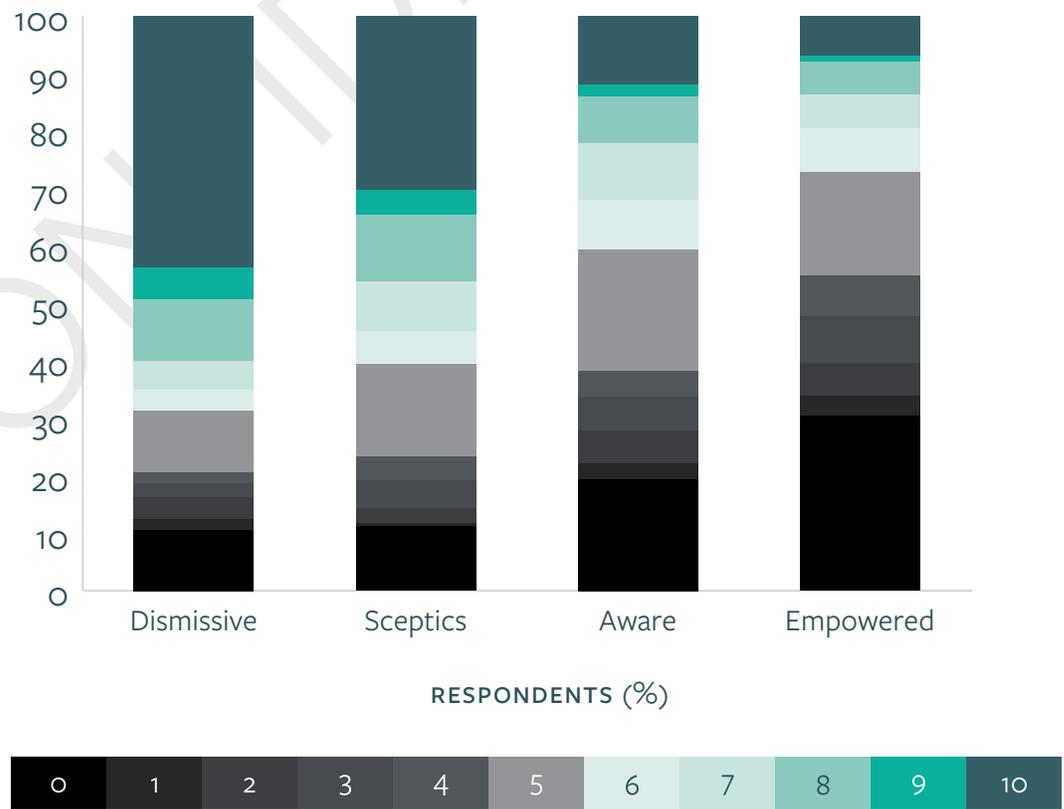
Opposition to pipelines

As part of a broader research project on framing strategies around pipelines (Lachapelle et al. 2016), the 2016 Climate of Change survey included another experiment designed to test the efficacy of different frames for influencing public opinion on the construction of new pipelines in Canada. Theoretically, this research developed a model to suggest that arguments priming concentrated and local benefits and risks (e.g. Accidents and spills) were more powerful than arguments priming risks and benefits that are more abstract and diffuse (e.g. greenhouse gases and climate change). Examining results from one-sided framing experiments, past research has found that “Safer than by train” and “Risk of contamination and spills” are significantly more likely to increase and decrease support for the Energy East project, respectively. Conversely, arguments around creating jobs and reducing greenhouse gas emissions were found to have no effect (Lachapelle et al. 2016). The 2016 Climate of Change survey replicated these experiments, this time pitting different arguments against one another, to explore whether the framing effects found in past research were conditioned by the presence of counter-frames. This counter-framing experiment is a better test of real world framing strategies, as individuals are exposed to competing frames on contested issues like pipelines. Analysis of this experiment found null results, suggesting that framing effects are not robust to the presence of counter frames, a finding that is consistent with similar research (e.g. Aklin and Urpelainen, 2013). The take home message here: the most powerful frame available to pipeline proponents (among those we tested) is the “Safer than by train” frame; the most powerful frame available to pipeline opponents (among those we tested) is the “Risk of contamination and spills” frame. Groups interested in counter-acting the framing of pipeline proponents should consider developing

frames that counter the “Safety” frame espoused by proponents.

As was the case with the experiment on WTP, the insignificant result of the framing experiment, combined with the equal variances within each experimental group, allow us to pool results and explore the level of support/opposition to Energy East by individual placement on the ladder of engagement. After being read a pair of arguments for/against the Energy East pipeline, individuals were asked to rate their level of support or opposition to the pipeline on a 0 to 10 scale, where 0 means strongly opposed, and 10 means strongly support. As shown in Figure 9, Canadians are sharply divided on this issue. Looking at only those who answered the question (n=1,158) we find plurality support—more people supporting (44%) than opposing (38%)—for the Energy East pipeline at the aggregate level (18% ranked their support at 5, which is neutral). However, across categories of engagement, significant differences arise (Figure 9). For instance, the Empowered are three times more likely than the Dismissive to strongly oppose Energy East, while the Dismissive are

Figure 10: Support/opposition for Energy East by level of engagement



Note: $\chi^2 = 194.50$; $df = 30$; $p = 0.000$

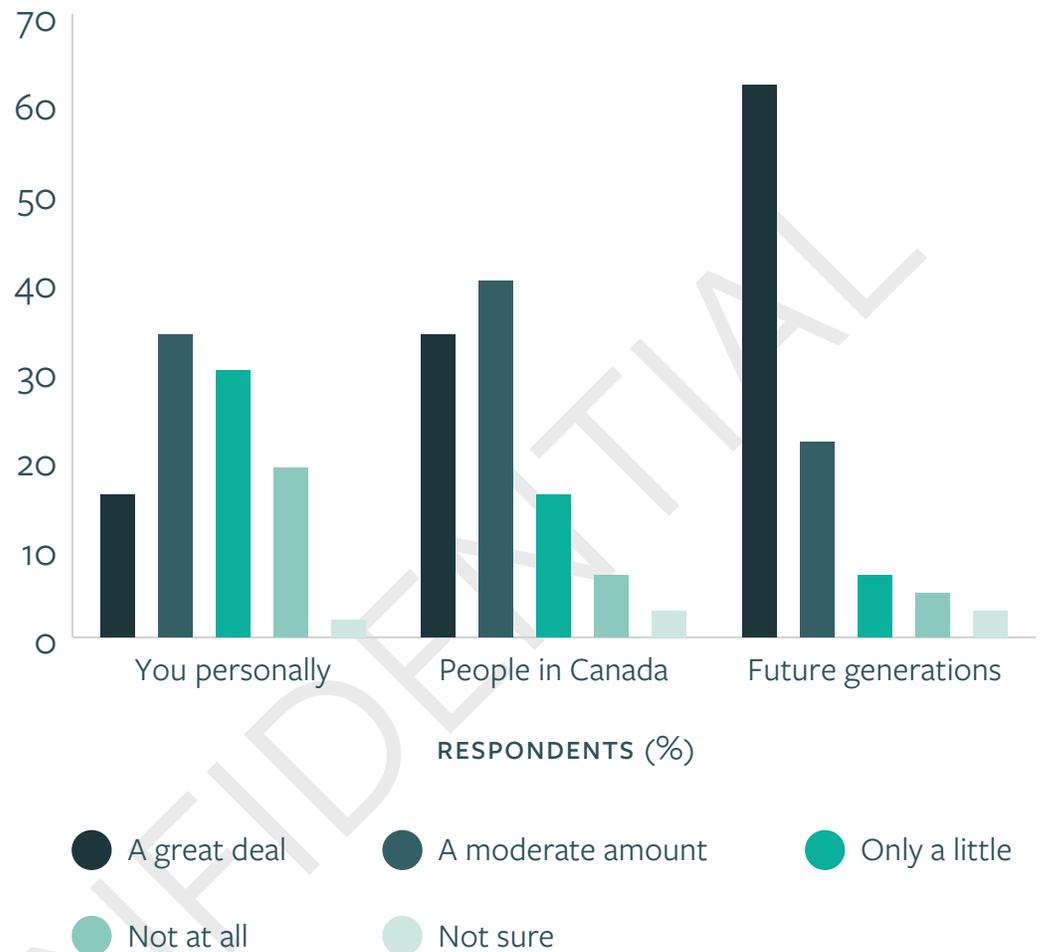
over six times more likely to give Energy East strong support. The Empowered are more likely to be engaged in opposition to Energy East, and likely other pipeline projects in Canada.

Are Canadians feeling the heat?

In 2015, members of this research team published a study showing that, while an overwhelming majority of Canadians was aware that climate change was happening, very few felt personally at risk (Lachapelle et al. 2015). Comparing results between 2015 and 2016 shows a similar pattern, with about 15% of Canadians saying they are likely to be harmed “a great deal” in both surveys. These threat perceptions are important, as they constitute a key driver motivating attitudinal and behavioural change, and engagement on the climate change issue (O’Connor et al. 1999). Analyzing data from the 2016 Climate of Change survey, we found that, relative to other groups, those who feel climate change will pose a great deal of personal harm are 25 percentage points more likely to support further government action and 20 percentage points more likely to call for citizens to do more. Because threat perceptions can be so motivating, many have called for information campaigns to make climate change more personal (Moser and Dilling, 2004), implying that groups might try and illustrate negative climate change impacts in order to motivate citizens into action (note there is some debate on this, as mentioned below).

Further analysis of the 2016 data shows that, while the intensity of threat perception has not changed much since 2015, the distribution has changed slightly. In just a year, the percentage of Canadians feeling they are likely to be harmed at least moderately increased from 44% to 50% between 2015 and 2016. Digging deeper, we can also see in the 2016 data that threat perception depends on how the issue of harm is framed (Figure 11). Indeed, comparing across questions that were asked in a random order in the 2016 survey, we find that threat perceptions increase moving from “harm to you personally” to “harm people living in Canada” and finally to “harm future generations”. This is consistent with some of the work in the United States (Leiserowitz et al. 2015: p. 14) that shows how climate change is perceived as spatially and temporally distant threat. Further, it suggests that the climate change issue is perceived by Canadians as a collective, rather than an individual problem, and a distant, rather than imminent one. In this light, collective frames alluding to a moral responsibility to care for others and our children may gain more traction, as climate change is already perceived to be a threat to these groups.

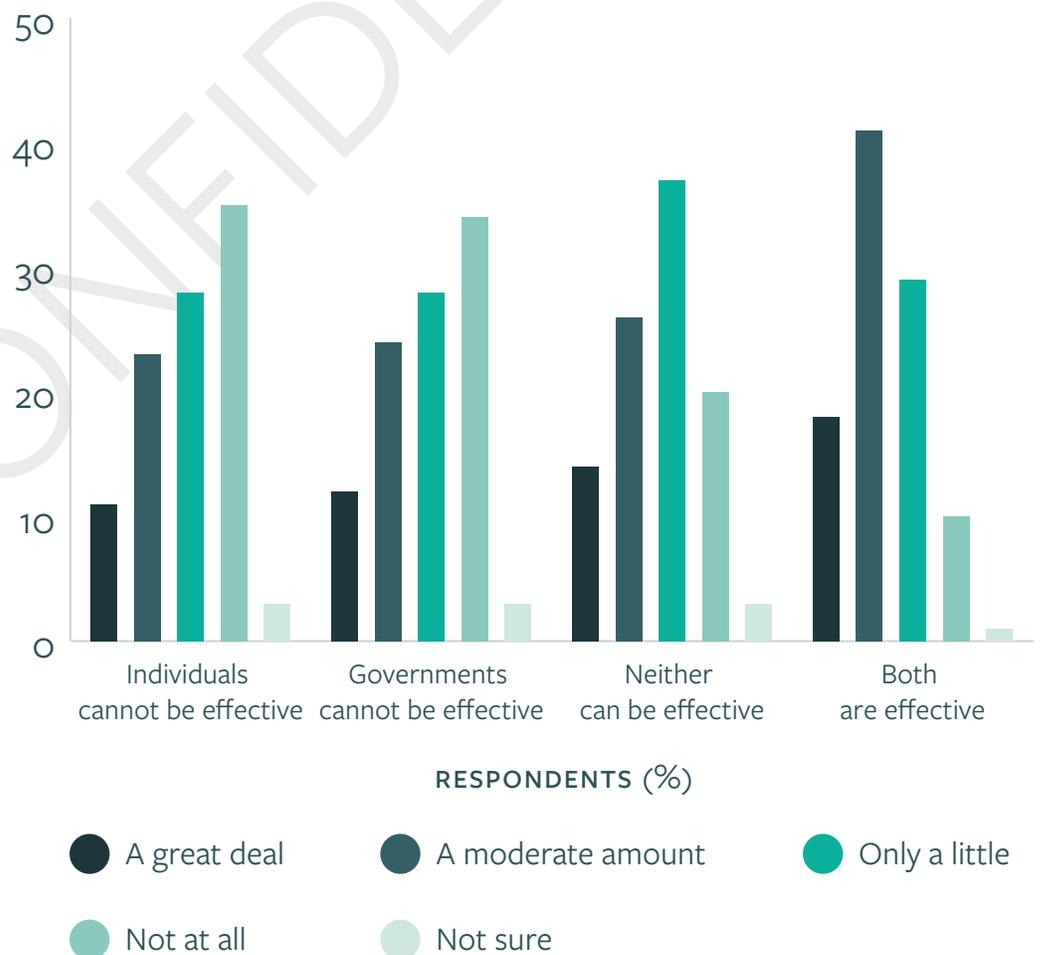
Figure 11: Risk perceptions by question wording



Limited threat perceptions are of course only half of the story. If individuals feel there is nothing we can do to prevent climate change from happening, then threat perceptions can potentially become paralyzing, making fear messages counter-productive (O’Neil and Nicholson-Cole, 2009). This is especially true if people feel they cannot change a situation, and thus retreat to apathy and resignation (Moser and Dilling, 2004). One concept for measuring this powerlessness is locus of control, or sense of efficacy, which describes the degree to which individuals sense they can personally change a situation. People with an internal locus of control believe they can effect change through their own individual actions, whereas those with an external locus of control feel powerless, and attribute outcomes to powerful actors other than themselves (Kollmuss and Agyeman, 2002).

In these lights, perhaps the worst form of climate denial is the fatalistic sentiment that climate change is a real threat, but there is nothing humans can do. This kind of fatalism must be avoided at all costs. As shown in Figure 12, of those who believe neither government nor individual action can be effective, relatively few (14%) believe they are personally facing a great deal of harm. In fact, if we group the data by perceived degree of personal harm, we see that pluralities of both “a great deal” and “a moderate amount” response categories are associated with those who believe both governments and individuals can be effective. Conversely, those who believe individuals cannot be effective, or governments cannot be effective, tend to feel they are not at risk from climate change (Figure 12). In other words, heightened risk perceptions in Canada do not seem to be paralyzing. This finding suggests that environmental organizations have some room, and can potentially work notions of harm and threat into some of their communication campaigns without these campaigns backfiring into an apathetic public. But it is crucial that groups continue

Figure 12: Threat perceptions by internal and external efficacy



to grow the sense of internal and external efficacy among Canadians, as the impacts of climate change will continue to grow. It is crucial that groups do what they can to help Canadians avoid falling into the fatalist trap. Overall, nourishing and increasing Canadian's feelings of efficacy should be a fundamental priority for environmental groups in Canada as these feelings look like they empower Canadians and pave the way for a more active population on the issue of climate action in the short term, and crucially, guard against a sense of fatalism, which should be avoided, in the medium to longer term.

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Conclusion

This report provides a snapshot of Canadians' knowledge and opinions about climate change, as well as their willingness to support actions to address this challenge, providing a benchmark for future work. Since the research team began polling on this issue in 2011, we can now observe, coinciding with the Trudeau era, a spike in climate change awareness, belief certainty, greater convergence with the scientific consensus and perceptions that climate change is already harming Canadians. Tracking these changes over time will be important to see how Canadians perceive the changing environment, the threat this poses, and how they chose to react to these perceived threats. This provides a fertile context for groups to engage Canadians, and EcoAnalytics can help by pre-testing which messages and messengers resonate most with target groups identified by partners, as well as evaluate the effectiveness of Executive Partner communication campaigns (i.e. the extent to which strategic frames have penetrated their intended audiences).

By way of conclusion, it is important to note some of the limits of the present research. First, this survey was intended to develop a better understanding of Canadians' current opinions and knowledge. This is an important first step before testing strategic messages. Second, readers should interpret results with caution, keeping in mind the likely acquiescence bias in the results, and the self-reported nature of the questions, which may inflate the number of Canadians that appear to be engaged on the issue. Third, and in a similar vein, we collapsed categories into support/oppose and likely/unlikely. While making analysis easier, it masks the intensity of opinion, and may suggest there is stronger support for some policies and behaviours than actually exists. Finally we note that this is a nationally representative survey. For this report, we only point out regional differences when they are statistically different from others. This does not mean that the absence of a difference in the data indicates that no none actually exists. For some regions, such as the Maritimes, the samples are much smaller, making it difficult to find any significant differences. The upcoming EcoAnalytics Panoramic Survey will offer larger sample sizes in all major Canadian regions. With this in mind, we now highlight a few take-home messages and opportunities for further research.

Behind the large and impressive numbers indicating overwhelming support in Canada for more climate action at the collective and individual level lie important differences across segments of the Canadian population. Based on a deductive

approach, this report has identified four segments of the Canadian population, 30% of which fail to see a problem (i.e. the Dismissive and the Sceptics), 40% who see a problem but few solutions (i.e. the Aware) and another 30% that see both the problem and solutions at hand (i.e. the Empowered). Using market intelligence provided by future EcoAnalytics research, the primary objective of groups working to engage Canadians on climate should aim towards changing this distribution so that the Dismissive and Sceptics accept the problem, the Aware become empowered with knowledge of effective solutions, and the Empowered become committed to climate policy action. This work will involve campaigns that EcoAnalytics can help inform. Future surveys can test different framing strategies (messages and messengers) for targeted groups that are identified by Executive Partners, as well as assess progress by evaluating the extent to which these strategic frames engage Canadians, and how the distribution on the ladder of engagement changes over time.

A single poll does not provide all the answers. However, several key ideas emerge from this work and will inform discussion moving forward. These include framing positive messages around solutions and empowerment, using examples of citizen, government and other actions in Canada—and also around the world—to nourish and enhance the sense of individual and collective efficacy that already exists. Such an emphasis on Canadian and international efforts being taken now can also work to counteract free-rider frames, by illustrating concretely that things are being done in Canada and abroad, and that every Canadian—including citizens, governments and business—has a role to play. There may also be a role for emphasizing the effects of climate change, as many perceive the effects are already harming people in Canada. At the same time, the feeling of optimism and empowerment identified in the *Climate of Change* survey needs to be fed and nourished so that Canadians are not overwhelmed by the problem and fall into the fatalist trap. Whether framing around solutions or avoided harm, framing messages in the collective sense will be important, as for most Canadians climate change activates collective as opposed to individual frames in thought. There is also a potential for making climate change a more personal issue—not framed in terms of sacrifice, but using the self-interest frame to motivate actions that will insure individuals against harm. At present, the self-interest frame is owned by perceptions of cost, and groups will need to find an effective neutralizer. Finally, if this is a valence issue, then a clear benchmark needs to be articulated (along the lines of other valence issues like “economic growth” or “less corruption”). This will allow for political actors to be judged by citizens against their capacity to deliver on this vision. Whether this is the “clean growth” framing

currently being tried, or something else, an emphasis on the ends is required so that Canadians can evaluate the performance of themselves, political parties, corporations, and their peers, against this commonly desired, and clearly visible benchmark.

On targeting specific groups and behaviours, it is important to note that no single communication campaign can change deeply entrenched habits and social practices (Hooghe et al. 2010). Despite pressure to mobilize action now, groups should also adopt a long-term view and recognize that effective frames are not mere words, but actual cognitive circuits in the brain that need to be built up over time through repetition in communication (Lakoff, 2010). Multiple and continuous efforts will be necessary, and consistency in this messaging over time is key. EcoAnalytics may help in the endeavour, by outlining the strategic vision and language that can be used to help engage Canadians, and keep them engaged, over the long term.

To support these efforts, it is also important to develop communication that speaks to the values of different target audiences, and to identify spokespeople who are easily recognizable as in-group peers for members of a targeted segment. More research should thus be directed at understanding which cues different segments in Canada use, and which sources they trust to form opinions on the climate change issue. To this end, the segmentation done here, and that which will be developed in future work, gives a sense of the profiles of different groups—information that can be used to develop targeted communication campaigns, and tested in future EcoAnalytics studies. While the Empowered do represent a segment that has the highest mobilization potential, and should be regarded as a target to maximize the efficiency of short-term campaigns, it would be a mistake to ignore the rest of the population that needs to be brought inside given the size of the problem of climate change. As argued by Kahan (2010), an evidence-based approach to communication should avoid just “preaching to the choir” as in many respects these people have already been converted. It is also a mistake to ignore the Dismissive and Sceptics. In some cases, individuals in these segments have reasons to be Sceptical, and understanding these reasons offers important insight into key stumbling blocks encountered in the process of engagement. As much as possible, these groups need to be convinced that alternatives exist that make sense in their context, that these alternatives are supported by their peers, and that making healthy lifestyle choices and changing habits has numerous benefits at the individual and community level that are consistent with their worldview. Framing messages around things people value, and providing messages from trusted sources can go a long way in this regard.

One target group that may be worth thinking about, in light of the results of this study, is youth. Though it is still unclear whether the distinctiveness of this group is the product of generational or life-cycle dynamics (something we could test in future work), we know from socialization studies that learning habits at an early age increases the chance that these habits persist through life, so education campaigns that start early in school have the greatest potential impact. The role of young Canadians as “agents of change” should not be underestimated. In fact, several studies have found that children can influence their parents’ behaviours (Dahlgaard 2016; McDevitt and Chaffee 2002). In that sense, there is room for young people to set new environmental norms in society and to socialize their parents to be accepting of these norms. Overall, the group of “core supporters” of the environmental cause should not be taken for granted and should continue to be encouraged to become more committed. Conducting studies on the impact of information campaigns in different contexts (such as school and the workplace) and with different groups of citizens (such as youth, people from different regions, and under-privileged citizens) would help ascertain how messages can be most effectively conveyed, and can ultimately have the greatest impact on the development of pro-environmental attitudes and behaviours.

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Methodology

Interviews were conducted from October 5th 2016 to October 18 2016 in English and French. A random digit dialling (RDD) live interviewer telephone survey was used to administer the questionnaire to a randomly drawn stratified sample of 1,200 Canadians aged 18 years and older. To maximize coverage, an overlapping dual-frame (landline and cell phone) sample was used, with 481 surveys completed via cell phone (40%) and 719 completed with landline listings (60%). Based on a sample of this size, the results can be considered accurate to within $\pm 2.83\%$, 19 times out of 20 (i.e. at a 95% level of confidence). Note that the margin of error will be different for each sub-group.

The AAPOR RR3 response rate for this survey is 10%. This is currently the norm: in 2012, the typical response rate for a Pew RDD telephone survey was 9% (Kohut et al. 2012). Research in response rates has also found limited evidence of non-response bias resulting from this decline in response rates from between 30% and 40% (Groves, 2006; Keeter et al., 2006). The dual-frame sample methodology (combining landline and cell phone surveys) has become a standard methodology in the survey research industry for minimizing non-coverage bias and maximizing sample representativeness (Fahimi, 2014; Levine and Harter, 2015). To ensure that the data collected are representative of the Canadian population, a weighting factor based on region, age and gender was used in all analyses.

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