CONFIDENTIAL: NOT FOR DISTRIBUTION

EcoAnalytics

Shared intelligence for Canada's environment

Shades of Green

Analysis of Canadian attitudes to a range of environmental issues, based on EcoAnalytics Panoramic Survey, May 2017

Erick Lachapelle, PhD
Jean-Philippe Gauvin, PhD
Marjolaine Martel-Morin, PhD Candidate

Université de Montréal
Department of Political Science

August 2017

Contents

Executive Summary

This report provides detailed analysis of data from the inaugural EcoAnalytics *Panoramic Survey* (2017) to offer partners a high-resolution picture of Canadian attitudes toward a broad range of environmental issues. The report will provide a benchmark for comparing where different segments of the Canadian population stand on the environment, with high quality data to be collected annually in the coming years. Knowing which Canadians are most concerned with the environmental cause, how they engage, and how these attitudes and behaviours change over time will provide partner organizations with the information required to identify target audiences, better engage them with tailored communication strategies, and to help assess the efficacy of their own work.

This report seeks to realize three main objectives. First, we provide a benchmark and analysis of Canadian attitudes toward a wide range of environmental issues. Top line results of this research are contained in this analytical report as well as in the detailed cross-tabs. Highlights here include the following:

- Nearly half (49%) of respondents believe the health of Canada's environment has worsened over the last decade.
- While a majority of respondents (64%) report that environmental protection is important to them personally, less than half of the sample (41%) reports having deliberately bought or boycotted certain products for environmental reasons.
- A majority feel that both the federal government (66%) and their provincial government (65%) is not doing enough to protect the environment.
- Larger majorities feel that corporations (81%) and citizens themselves (72%) are not doing enough in terms of environmental protection.
- A majority of Canadians (69%) believe that protecting the environment and growing the economy are at least somewhat compatible, and this view is partially mediated by trust in environmental groups.
- While environmental groups enjoy, on average, higher levels of trust than do federal and provincial governments and corporations, relatively few Canadians in the sample (about 10%) report being a current member, follower, donor or volunteer with an environmental organization.

Beyond tracking these sorts of items, a second key objective of the Panoramic Survey was to dig deeper into how different groups of individuals in Canada think, feel and act toward the environment. To this end, we develop an audience segmentation analysis to unpack the different socio-economic and demographic characteristics of groups of people in Canada who share similar views toward the environment. We find that Canadians' values, attitudes and behaviours toward the environment are heterogeneous, and can be grouped into 5 segments including **True Greens** (32%), **Potential Greens** (37%), **Reluctant Greens** (19%), **Eco-Indifferent** (2%), and **Skeptical Greens** (10%). This segmentation is used throughout the report as a lens with which we examine the Panoramic Survey data. Importantly, we find this segmentation to be a very powerful predictor of Canadians' environmental attitudes and behaviours. Though more research will be required, this segmentation also provides new insight into the potential efficacy of different communication strategies across the different audiences.

Finally, analysis of the Panoramic Survey data point to several strategies environmental organizations may use to engage more Canadians. For instance, we recommend that groups employ the synergy (i.e. economic and environmental compatibility) frame in their communication around environmental protection and the energy transition. Crucially, we demonstrate that the believability of the synergy frame is partially conditioned by level of trust in environmental groups. Generally speaking, greater trust in environmental groups makes the synergy frame more believable, across even the most skeptical segments. This implies that partner organizations have an important role to play in building and further disseminating this frame, though we caution that excessive use of this strategy may crowd-out intrinsic motives to protect the environment for its own sake. We further show how different messages are particularly powerful for reaching different audience segments. Potential Greens, for instance, are shown to be particularly sensitive to loss-aversion framing, and this segment is also likely to be receptive to messaging around failed corporate responsibility and accountability for environmental damage. Finally, using park visits and rural residence as a proxy, we show how contact with nature can help foster pro-environmental attitudes and behaviours, suggesting that efforts to encourage such contact can help further the goals of Canada's environmental movement.

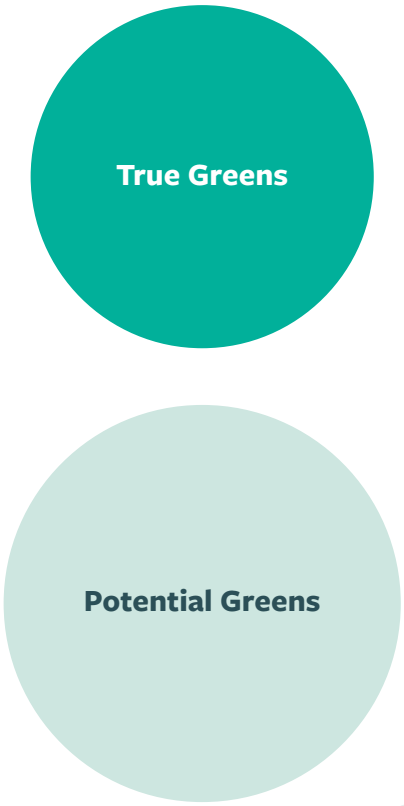
Introduction: The Panoramic Survey

The overarching goal of the Panoramic Survey is to provide a fine-grained image of Canadians' views about a broad-range of environmental issues, with sufficient sample size to be able to zoom in on key issues in six regions: British Columbia (n=502), Alberta (n=500), Manitoba and Saskatchewan (n=501), Ontario (n=501), Quebec (n=500) and the Atlantic provinces of New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland (n=501). The Panoramic Survey also aims to provide a benchmark against which changes in public opinion can be examined over time. To this end, EcoAnalytics Partners in collaboration with public opinion researchers at the Université de Montréal have developed a number of innovative questions to be asked year-over-year as attitudes evolve in a changing context defined by economic and environmental events, advocacy campaigns, media coverage, and government policy.

This report highlights key findings and a number of recommendations that stem from the inaugural 2017 Panoramic Survey. This covers the majority of questions asked in 2017, excluding the specific batteries of questions asked in each of the six regions listed above. Answers to these region-specific questions can be found in the detailed report, Panoramic Survey Cross-tabs Results, June 2017. A number of more detailed analytical briefings will follow, including "deep dives" on environmental sympathizer profiles and regional attitudes toward pipelines.

All data examined in this report come from the 2017 edition of the Panoramic Survey, which collected responses from 3005 adult Canadians using a hybrid (i.e. telephone- and web-) approach conducted in English and in French. Further methodological details, including sample composition and recruitment procedures, are provided in the methods section at the end of this report. Note that data presented may not always add to 100% due to rounding.

1. Shades of Green: Segmentation of the Canadian Public



As studies increasingly suggest, Canadians vary a great deal in their attitudes toward the environment (Lachapelle et al., 2012; Pickering 2016; Mildenberger et al. 2016). As a result, more attention should be devoted to assess how different segments of the Canadian population think and act toward environmental issues. While clustering methods have been used in the green marketing arena in other countries (Yimalzsoy et al. 2015; Gonzalez et al. 2015), governments and environmental groups that seek to engage citizens in taking action to preserve the environment in Canada lack such empirical information to focus their campaigns for specific audiences. In an attempt to fill this gap, we used the Panoramic Survey of 2017 and conducted a Latent Class Analysis (LCA) to derive segments that can be considered as potential targets for public engagement campaigns. This report first presents how Canadian public opinion can be classified into five potential groups sharing similar opinions and knowledge about a range of environmental issues. We called these groups the **True Greens** (32%), **Potential Greens** (37%), **Reluctant Greens** (19%), **Eco-Indifferent** (2%) and **Skeptical Greens** (10%). We then examine how these segments are distributed across a range of socio-demographic characteristics that may help partners to better understand with whom they are talking and how they may reach Potential Greens who are not yet fully engaged on these issues.

We find that the **True Greens** tend to be well-informed women who believe it is very important to protect the environment and have already taken steps to reduce their ecological footprint. For instance, about two thirds of women in this segment say they have boycotted certain products for environmental reasons over the last year. In contrast, **Potential Greens** are almost equally split between men and women. They are also supportive of environmental protection, but are generally less worried about the state of environment, discuss the issue less often, feel less informed about it and are not very likely to help protect the environment as they go about their daily lives. They might need to be further persuaded regarding the impact of humans on the environment, as only one third of them strongly agree that humans often produce disastrous consequences when interfering with nature. **Reluctant Greens** also say that protecting the environment is somewhat important to them, but they tend to think that the state of the environment has not changed in the last decade and most believe that governments are already doing

enough to protect the environment. For their part, the **Eco-Indifferent** are similar to the Reluctant Greens in terms of values, but they are very unsure about their beliefs and are not personally engaged at all when it comes to protecting the environment. Finally, the **Skeptical Greens** are mostly men on the right of the political spectrum, who feel very informed about environmental issues, but are not too worried about them. Nearly half of them think that the so-called ecological crisis has been greatly exaggerated and that governments are doing too much to protect the environment.

Shades of green—values, knowledge and behaviours

As mentioned, the five shades of green derived from our segmentation can be understood as distinct subgroups of individuals that share similar values on a set of observed indicators (Bakk et al. 2013). Early studies in the field of green marketing have used demographic indicators to profile green consumers (Kilbourne and Beckmann 1998), but as most of these studies led to inclusive results (Cleveland et al. 2005), scholars recently argued for a top-down approach, which consists of profiling the segments with psychographic factors such as environmental values, attitudes and behaviours (Mostafa 2007) and relating the latter to demographic measures afterwards. Based on this literature and after conducting several statistical tests, we selected 14 value, knowledge and behaviour variables that were used to generate our segmentation. These variables are presented in table I.

Table 1.1 Variables Used as Segmentation Criteria

Environmental values and attitudes
How important is protecting the environment to you?
How worried are you about climate change?
How much do you agree: Earth is like a spaceship with limited room and resources?
How worried are you about the pollution of rivers, lakes and reservoirs?
Is the federal government doing too much, about the right amount or not enough to protect the environment?
Are citizens doing too much, about the right amount or not enough to protect the environment?
How much do you agree: the so-called ecological crisis facing humankind has been greatly exaggerated?
How much do you agree: when humans interfere with nature, it often produces disastrous consequences?
How much do you agree: if things continue on their present course, we will soon experience a major ecological catastrophe?
How much do you agree: the balance of nature is very delicate and easily upset?
How much do you agree: plants and animals have as much right as humans to exist?
Environmental knowledge
How well informed would you say you are about environmental issues?
Environmental behaviours
Over the past 12 months, have you bought or boycotted certain products for environmental reasons?
How often do you discuss environmental issues with friends and family?

Several of these variables are taken from the New Environmental Paradigm, a value scale developed by Duncan and Van Liere (1978) and updated by Dunlap et al. (2000) that is premised on the idea that environmental consciousness is dependent first on our world-views related to the environment. Building upon this segmentation model, we can now provide a more precise portrait of the Canadian public that accounts for variation in the attitudes, knowledge and behaviours across the population.

We identify the first and most concerned segment as the **True Greens** (32%), because they score very high on almost every environmental criterion. They are very worried about climate change (87%) and say protecting the environment is very important to them (92%). People in this group hold strong environmental values, such as biospherism (i.e. concern for nature and the environment), and are very convinced about their beliefs regarding the state of the environment. What best distinguishes the True Greens from other segments is their level of involvement on the issue and that they are a lot more likely to have already engaged in concrete actions to protect the environment. For instance, they are much more likely to discuss environmental issues with their friends and family (56% of them say they often discuss environmental issues) and most say they feel very well (38%) or somewhat well (55%) informed about it. Compared to all other segments, they are much more likely (61%) to report environmentally friendly buying behaviours.

The Potential Greens represent the largest segment (37% of respondents) and are perhaps the most salient group for environmental organizations and policy-makers working towards developing environmental awareness in Canada. Although not as worried as the True Greens, most would still say that protecting the environment is very important to them (69%). Likewise, a very high proportion of these respondents believe that Canada's federal government (75%) as well as citizens (76%) are not doing enough to protect the environment. What is interesting about the Potential Greens is that, albeit inclined to the idea of doing more to protect the environment, they differ from the True Greens in their level of involvement towards the issue. They are about half as likely to discuss environmental issues with their friends and family on a frequent basis (26% versus 56%). Moreover, only 15% of them say they are very well informed on the issue. Most importantly, they are less likely (43%) than their more engaged counterparts (61%) to report some green consumption behaviours. Yet, convincing this group that we need to do more to protect the environment seems feasible: they already share pro-environmental values and they report high levels of trust towards environmental groups and university scientists on matters pertaining to environmental issues.

Respondents in the third cluster are called **Reluctant Greens** (19%) because, although they are less convinced about the importance of environmental protection and the negative impact of humans on nature, they still say that they are somewhat worried about the issue (60%) and say it is very (31%) or somewhat (64%) important to protect the environment. Though considered Greens, they are divided on environmental values and are the most likely of all groups to situate themselves in the middle of the scale when asked how much they agree on concerns related to the environment. In line with these moderate views, they tend to report opinions that suggest a preference for the status quo when it comes to environmental protection. For instance, they tend to think that the federal government (44%) and citizens (31%) are doing the right amount in terms of protecting the environment. About half also say that the state of the environment has not changed over the past ten years. As opposed to the two most skeptical groups we present below, the Reluctant Greens are somewhat inclined to consider environmental reasons when making consumption decisions; nearly a quarter (22%) said they have bought or boycotted certain products for environmental reasons in the past 12 months. Convincing them to engage further in protecting the environment is probably not an impossible endeavour, as they say they believe university scientists on matters pertaining to the environment. However, it is worth noting that they report considerably lower levels of trust when it comes to environmental groups.

The Eco-Indifferent (2%) do not strongly disagree about the seriousness of environmental concerns and tend to share similar environmental values to those of the Reluctant Greens. However, most of the time, they are very unsure about their beliefs. A plurality say they are not sure whether humans produce disastrous consequences when interfering with nature (48%) and most are unsure whether Earth has limited resources (64%) or whether the so-called ecological crisis facing humankind has been greatly exaggerated (69%). The Eco-Indifferent are not substantially more skeptical about climate change than are the Reluctant Greens, but they are considerably less likely to say that governments (20%) and citizens (28%) are not doing enough to protect the environment. It may be harder to reach the Eco-Indifferent when it comes to developing communication strategies, as they are the least knowledgeable of all groups (over half say they are not that informed, not informed at all about environmental issues, or refuse to answer the question). As a result, they are not likely (5%) to report having boycotted certain products for environmental reasons over the last year.

The last group of respondents are referred to as the **Skeptical Greens** (10%). They do say that protecting the environment is very (30%) or somewhat (45%) important to them, but most are not worried about the issue. For instance, most say they are not too worried (38%) or not worried at all (39%) about climate change. The Skeptical Greens are the only group to be strongly convinced that the ecological crisis has been greatly exaggerated (44%). Moreover, about one third of this group feel that the state of the environment in Canada has improved compared to ten years ago, while two thirds believe it stayed the same and very few say it worsened (5%). Nearly half of them believe that the federal government is doing too much to protect the environment, whereas very few (7%) would say the same about citizens' efforts to reduce their footprint on the environment. Convincing the Skeptical Greens that we should engage in action to protect the environment is likely to be difficult, as they seem very convinced of their beliefs and feel the most knowledgeable of all groups in this respect. In fact, the majority feel very (41%) or somewhat (48%) well informed about environmental issues. Besides, they strongly distrust environmental groups on matters pertaining to the environment (46%) and they are substantially more likely than any other group to somewhat (28%) or completely (16%) distrust university scientists on environmental problems and solutions.

Distribution of shades—who are we talking to?

Examining the distribution of the Canadian five segments across socio-demographic characteristics provides useful information to better understand who we are talking to when building pro-environmental communication strategies. When looking at those considered as sympathizers (being either a member, a follower, a donor or a volunteer) of environment groups, we find a majority of True Greens (55%) and about one third of Potential Greens (33%) to be sympathizers, while the share of Reluctant, Eco-Indifferent and Skeptical segments is very low. This suggests that, while Canada's environmental groups have good access to the True Green segment, they may wish to pursue the Potential Greens as a target audience. Moreover, it may be interesting in future research to further investigate how types of engagement differ between the True Greens and the Potential Greens. Based on these likely behaviours, environmental groups might tailor communication strategies designed to engage True Greens as volunteers, and Potential Greens as donors, for example.

Looking across gender, we find that women are more likely to be True Greens (37%) than men (26%), while we find no significant variation across genders when it comes to Potential Greens. On the other hand, men are about twice more likely than women to be Skeptical Greens. When it comes to education, we only find small variation across the True Greens. The proportion of True Greens is nearly 5% higher among the respondents who hold a university degree than it is among those who don't (34% versus 30%) while such variation is even smaller for other groups. This finding runs counter to some previous work that finds an association between higher education levels and concern for the environment (De Silva and Pownall 2012; Torgler and Garcia-Valinas 2007). However, we find substantial non-linear variation with respect to self-assessed knowledge between the different segments. Those who say they feel very well informed about environmental issues are almost three times more likely to be True Greens (48%) than those who don't feel informed at all (18%), whereas the proportion of Skeptical Greens is the same among the most and least informed groups (18%). These results pose important questions about the role of non-targeted information campaigns and which forms of knowledge might further the development of individuals' competence for taking action in relation to the environment. At a minimum, these findings suggest that the relationship between education, knowledge and behaviours may be more complex than expected.

Differences across age groups are also relatively small, although two things are worth noting. First, the share of Potential Greens is slightly higher among the youngest groups. About 41% of the respondents between 18 and 24 years old and 43% of those between 25 and 34 are Potential Greens, while these proportions fall by about 5 to 10 percentage points when we move up towards older groups. Second, we note a small but progressive linear pattern concerning the increase in the share of Skeptical Greens from the youngest (5%) to oldest (13%) group. Surprisingly, we do not observe any significant variation between people living in rural areas and those living in cities.

Other socio-demographic characteristics reveal some more obvious trends. For instance, the distribution of the segments across language presents interesting variation. In fact, results suggest that the share of True Greens is significantly higher among individuals having French as their mother tongue, while the share of Skeptical Greens is nearly three times larger among English speakers than among their French counterparts. Note also that the latter are slightly more likely to be Potential Greens (42%) than the former (36%).

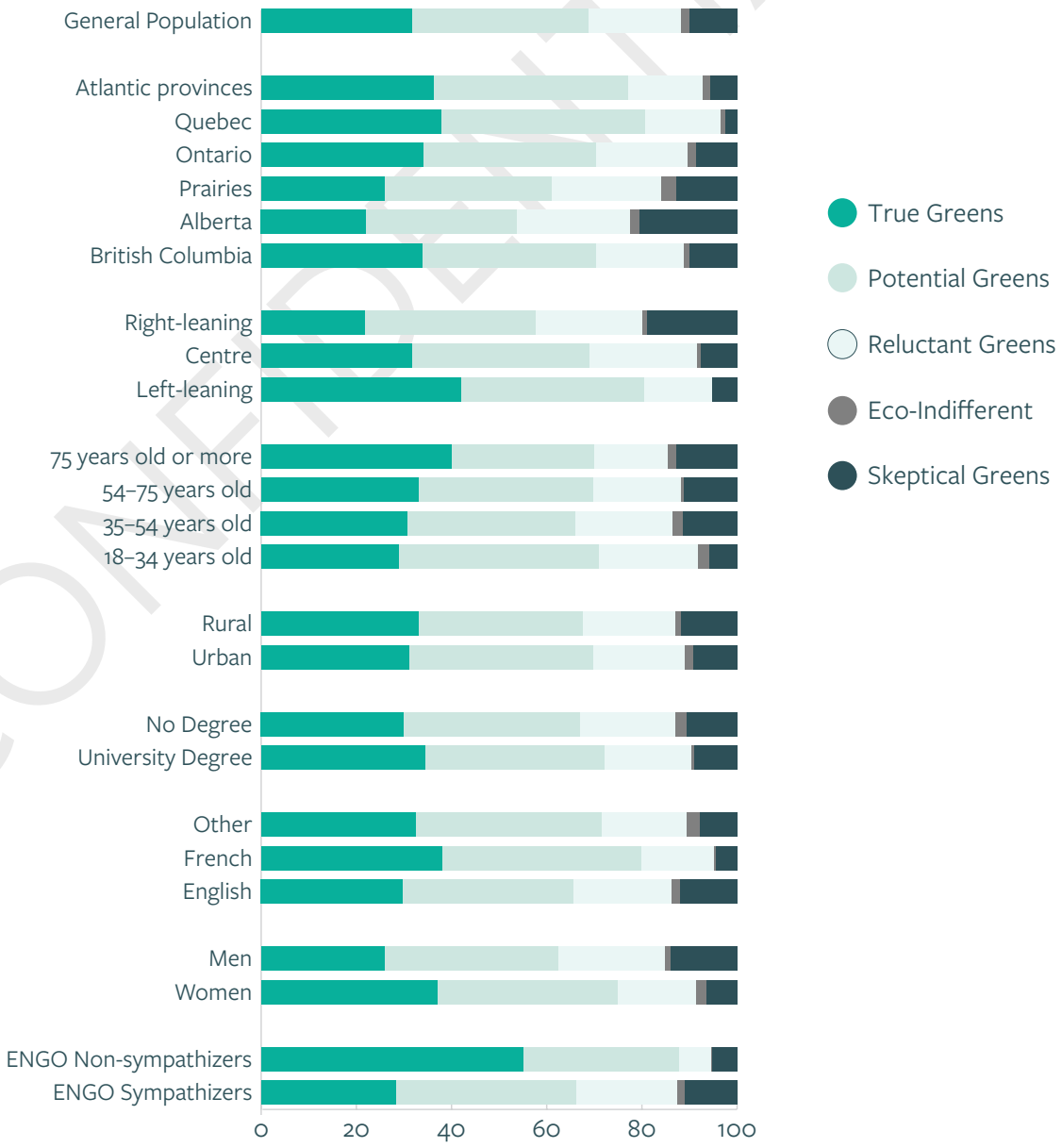
The five shades of green also reveal substantial regional differences across Canada. We note the highest share of True Greens in the province of Quebec (38%) and the smallest in Alberta (22%). This pattern is also true for the potential (43% in Quebec versus 32% in Alberta). On the other hand, the Skeptical Greens are mostly found in provinces of Alberta (21%), the Prairies (13%) and British Columbia (11%), while they are almost absent in Quebec (3%).

We also note a surprising pattern when looking at income. For instance, we observe that the share of True Greens substantially decreases as we move from the poorest (41%) to the richest group (26%), while respondents in the richest income category are more than twice as likely to be among the skeptics than their poorest counterparts (7% versus 16%). It is interesting that these linear patterns do not seem to hold when looking at the share of Potential Greens across the different income groups. In fact, we find slightly more Potential Greens as we climb the income scale from lowest income to middle one ($60,000-80,000), while the share of Potential Greens begins to decline as income increases over this point.

Turning to political ideology, it comes as no surprise that the more we move from left to right, the more we observe high proportions of Skeptical Greens (increasing from 5% to 19%). Those at the left of the political spectrum are also substantially more likely to be True Greens (42%) than those who are on the right (22%). In line

with the general picture, when looking at the distribution of Potential Greens across most socio-demographic variables, we find roughly the same number of people on the left, centre and right of the political spectrum. Interestingly, this finding suggests that when trying to communicate with the Potential Greens, one should not neglect to reach out to people on the right. Framing around conservation and the sanctity of nature may help groups reach this demographic, as more conventional framing around justice and equality is unlikely to appeal to all individuals in the Potential Greens segment.

Figure 1.1 Shades of Green



2. Canadians' Attitudes Towards the Environment

One of the key goals of the Panoramic Survey was to develop a battery of questions that can be used to track changes in environmental attitudes and behaviours over time. Working with partners, the research team identified a number of questions that were selected to help measure basic attitudes toward environmental protection.

Environmental protection

One of the first questions asked: "How important is protecting the environment to you personally?" The findings show that most Canadians believe in the importance of protecting the environment. Indeed, around 66% of respondents reported it was "very important" to them. As with any direct statement that can be polarizing, however, responses to such questions can sometimes be influenced by the respondent's willingness to provide satisfactory responses to the survey, otherwise known as *satisficing* (Lavrakas 2008, p.3). To correct for this sort of bias, researchers have used multiple survey distribution modes, using both phone interviews and web-based questionnaires.

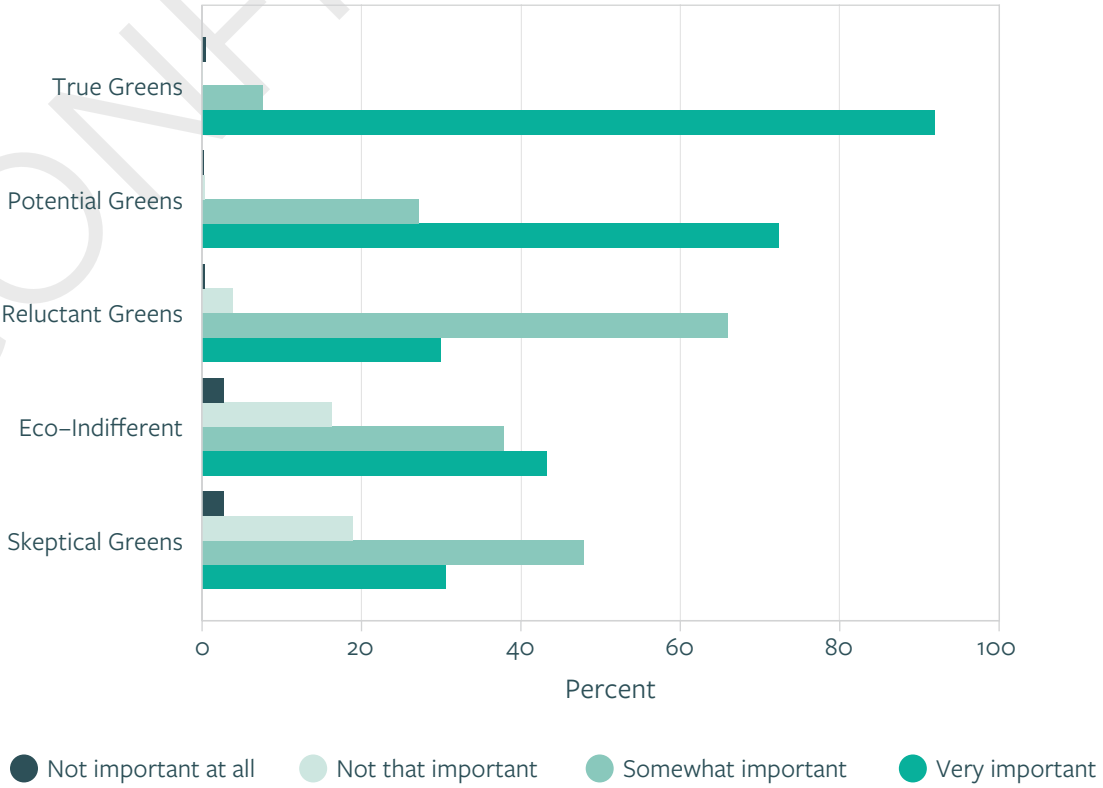
Table 2.1 Importance of Protecting the Environment by Survey Mode

Mode	Not important at all	Not that important	Somewhat important	Very important
Web	1%	5%	38%	56%
Phone	< 1%	2%	23%	75%
Total	1%	3%	30%	66%

Looking at Canadians' perception of environmental protection importance through different modes highlights discrepancies. For instance, while most respondents in both subsamples don't find protection to be lacking importance, phone respondents were much more likely to choose the "very important" category (75%) than those who answered the web questionnaire (56%).

However, such discrepancy should not be taken to suggest that the Internet sample is more credible. In fact, web-based surveys are prone to other biases, including non-probabilistic recruitment and other forms of *satisficing* (e.g. straightlining or randomly ticking boxes in the questionnaire). The beauty of the hybrid design is that multiple-modes should enhance the representativeness of the sample while limiting the particular biases generated by different modes of data collection. While providing socially desirable answers to a telephone-based survey surely calls for more carefulness in the interpretation of results, we observe similar tendencies between groups in the vast majority of questions. For instance, around half of Canadians reported thinking that the state of the environment got worse in the past ten years (web 53%, phone 49%), 35% that it stayed about the same (34% web, 36% phone) and 13% that it got better (13% web, 14% phone). Moreover, combining responses highlights that the strong majority of respondents find environmental protection to be at least somewhat important, whether they be phone interviewees (98%) or web respondents (94%). Nevertheless, every analysis conducted in this report takes into account these limited discrepancies and controls for mode in statistical models to produce the least biased estimates possible.

Figure 2.1 Perceived Importance of Environmental Protection by Shades of Green

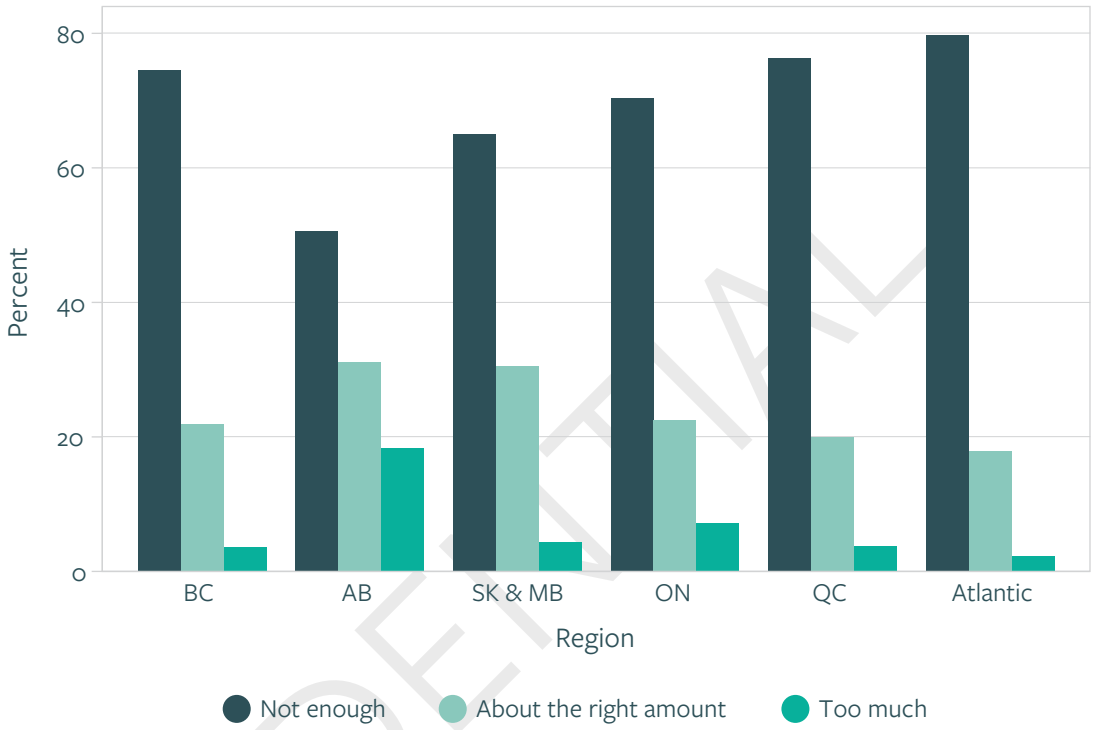


While Canadians strongly support protection, different segments of the population have very different opinions on the matter. Looking at these data through our "Shades of Green" lens is revealing.. As presented in Figure 2.1, environmental protection is most important for True Greens and Potential Greens. However, while 60% of Reluctant Greens report environmental protection to be somewhat important to them personally, the Eco-Indifferent and Skeptical Greens are even less interested, with about a fifth of individuals in these latter categories saying the environment is not that important or not important at all.

Government and corporate environmental performance

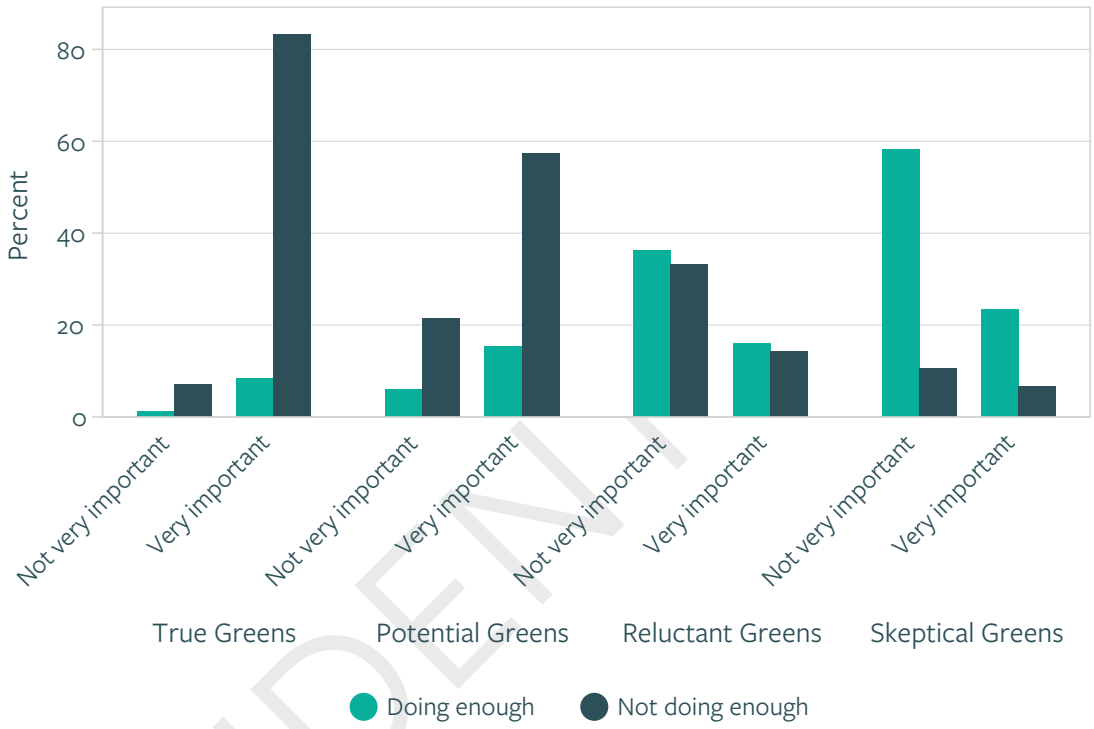
Canadians also report believing that federal and provincial governments are not doing enough to protect the environment. To the question "In your opinion, is each of the following currently doing too much, about the right amount, or not doing enough to protect the environment?", 66% of Canadians reported that the federal government was not doing enough, while 20% thought it did the right amount and less than 6% thought it was doing too much. Conversely, 65% of Canadians thought their provincial government was not doing enough, while 21% thought it was doing just enough and 6% thought it was doing too much. These results did not vary by survey mode, but vary somewhat by region. To be specific, the two regions most critical of the federal government were Quebec (81%) and the Atlantic provinces (78%) while the Prairies (63%) and Alberta (56%) were less critical. Figure 2.2 shows the same general pattern exists for the provincial government, as Quebec (76%) and the Maritimes (79%) are most critical of their government and Alberta (51%) and the Prairies (65%) are the least critical, at least when it comes to environmental protection. Albertans are also much more likely to find their provincial government to be either doing just right (31%) or too much (18%).

Figure 2.2 Provincial Government Performance by Region



We also find a relationship between evaluation of government performance and support for environmental protection conditional upon where one falls in our segmentation. For simplicity, we compare respondents who think protecting the environment is very important to those who feel it is either not important at all, not that important or somewhat important. We also exclude the Eco-Indifferent segment from this analysis for clarity and given their small sample size (n=50). As shown in Figure 2.3, more than 80% of True Greens believe that environmental protection is very important and think the federal government is not doing enough. In contrast, almost 60% of Skeptical Greens do not find environmental protection to be very important to them personally and at the same time find that the federal government is doing enough. Interestingly, among the Skeptical Greens who feel environmental protection is very important, most nevertheless provide a positive evaluation of federal government performance. Perhaps the most interesting category here is the Potential Greens. As with the True Greens, the majority of Potential Greens have a strong attachment to environmental protection, and most believe government is not doing enough.

Figure 2.3 Joint Probability of Reporting Environmental Protection is Very Important and Government Not Doing Enough, by Shades of Green

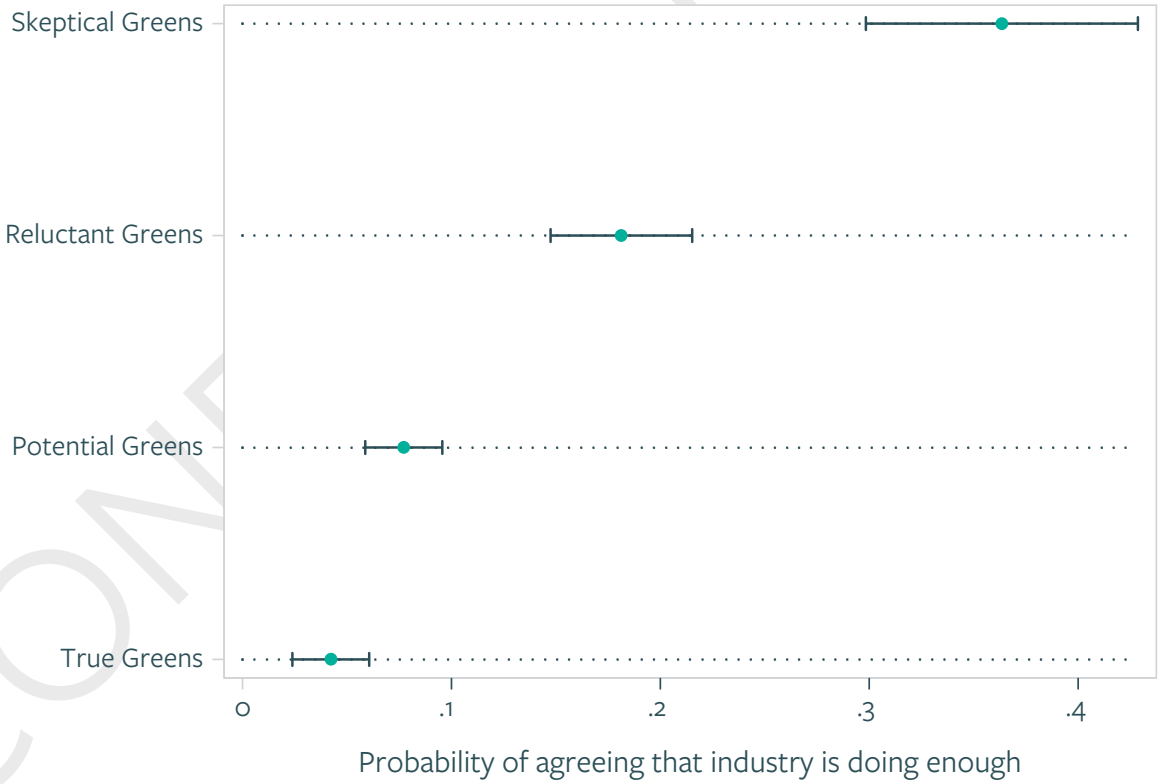


Canadians are also very critical of corporations and industry. No less than 85% of Canadians believe corporations are not doing enough to protect the environment, compared to 13% who think they doing the right amount and less than 2% who believe industries are doing too much. Again, these figures do not vary by survey mode. But as is the case for perceived performance of the federal and provincial governments, this varies by region. In decreasing order, the most critical regions are the Atlantic provinces (92%), Quebec (90%), Ontario (85%), British Columbia (85%), the Prairies (81%) and Alberta (75%). Alberta is also the most supportive of industry, as a quarter of its respondents reported corporations were doing about the right amount.

So what explains this variation? Statistical analyses reveal some interesting patterns. For instance, our models show that income, language, urban residence as well as region are non-significant predictors of perceived corporate environmental performance. While being a woman and educated (inversely related) and being conservative and trusting corporations (positively related) are all significantly associated with perceived corporate environmental performance, where one falls on the segmen-

tation analysis appears to be the most important factor explaining these views. As shown in Figure 2.4, Skeptical Greens are more than three times more likely than Reluctant Greens to believe that industry is doing enough. For their part, Potential Greens are less than half as likely to provide a positive evaluation of corporate performance than Reluctant Greens. These results are estimated in models that control for income, gender, education, ideology, urban residence, language, ENGO sympathizer, trust in industry and region of residence.

Figure 2.4 Predicted Probability of Positive Evaluation of Corporate Environmental Performance, Conditional on Shades of Green Segmentation



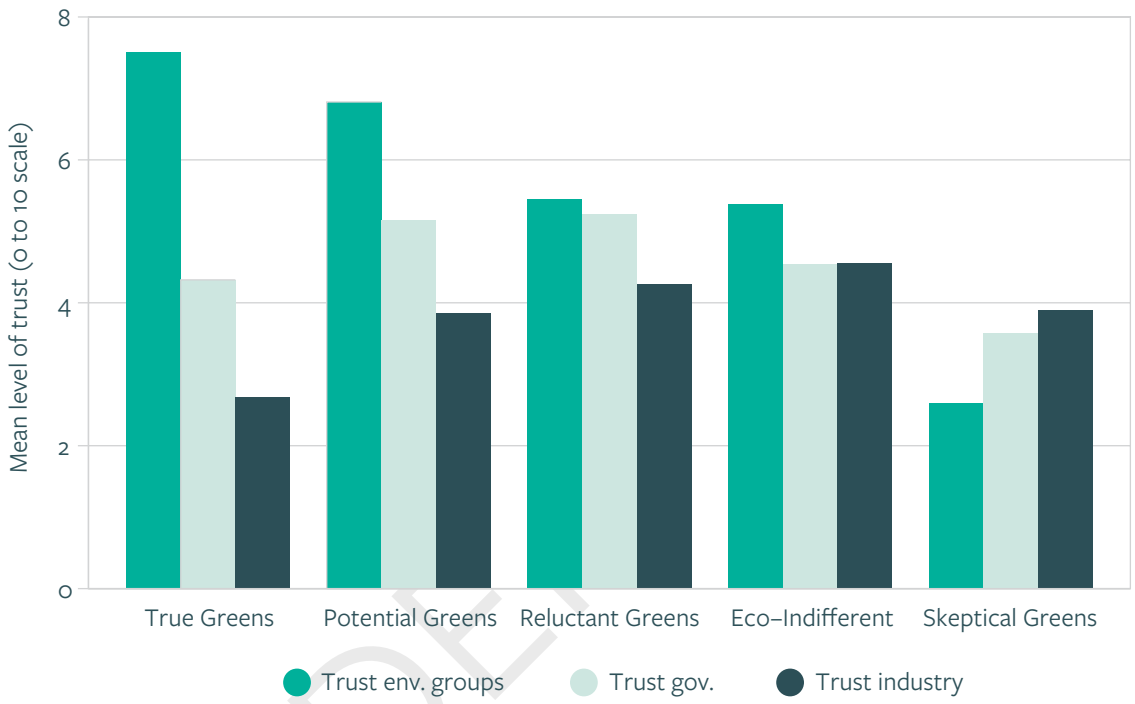
So what to make of these results? The fact that income, language, urban residence and region are non-significant in models that include our "Shades of Green" variable does not suggest that these other factors are unimportant, but rather, that including this segmentation in the model soaks up a large proportion of the observed variance in perceptions of corporate environmental performance. In practical terms, this analysis suggests that framing messages around failing cor-

porate responsibility or accountability may be an effective strategy for engaging the greener segments, and in particular, that such messaging has a good chance of resonating with Potential Greens.

Effects of trust

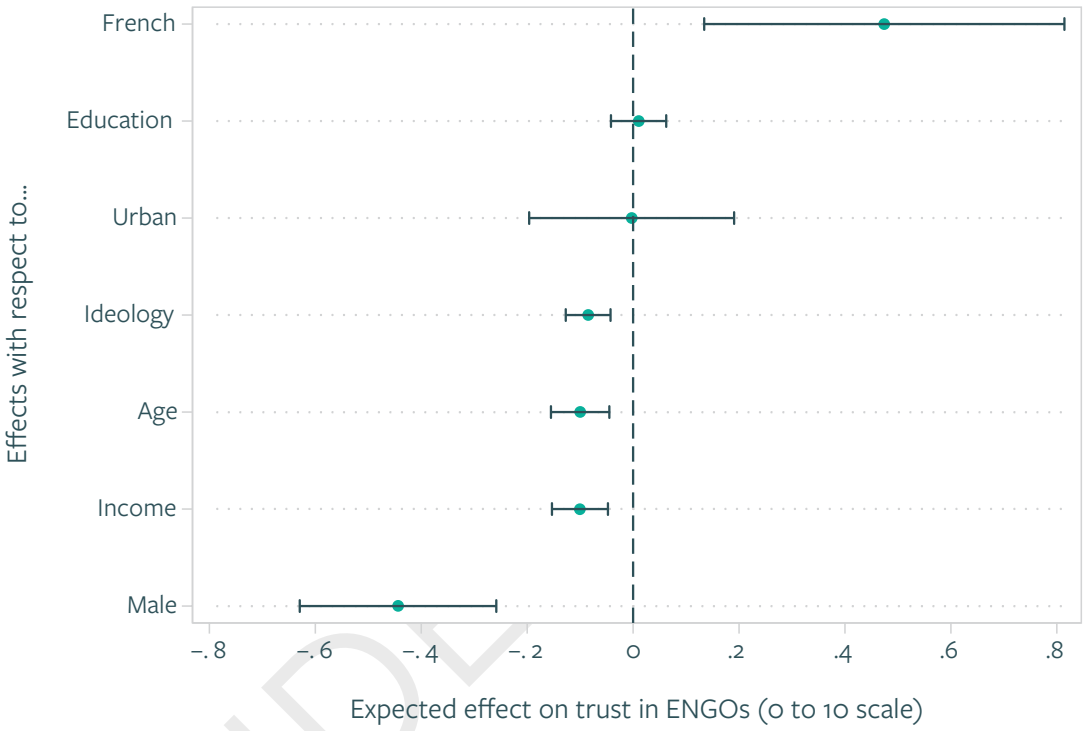
The Panoramic Survey also measured levels of trust in, inter alia, environmental groups, governments (federal and provincial) and corporations on matters pertaining to environmental problems and solutions. Trust was measured on a 0 to 10 scale, where 10 represented a great deal of trust. Nationwide, environmental groups enjoy higher levels of trust (mean=6.3) than do federal and provincial governments (mean=4.7) and corporations (mean=3.5). Figure 2.5 highlights differences in trust levels across the Shades of Green segments. As can be seen, trust in environmental groups is especially high for the True Greens, but also remains higher than trust in governments and corporations for the Potential Greens, Reluctant Greens and the Eco-Indifferent. Trust in governments is also higher among Potential and Reluctant Greens than for other segments of the population. Interestingly, the highest level of trust in corporations and industry does not lie with the Skeptical Greens but rather with the Eco-Indifferent and Reluctant Greens. Skeptical Greens seem to have among the lowest levels of trust overall, with the lowest observed level of trust in the environmental movement and in federal and provincial governments.

Figure 2.5 Trust in Various Environmental Actors by Shades of Green Segmentation



Another way to look at trust is to slice the data by region. Trust for environmental groups is lowest in Alberta (mean=5.24) and highest in Quebec. Contrary to what might be expected, Alberta is not the region most trusting of corporations. Rather, trust in corporations and industry is highest in Quebec (mean=3.9) followed by Alberta (mean=3.8) and lowest in Ontario (mean=3.3). Overall, Quebec is the most trustful province with regards to these three actors. It is the only province with a mean higher than 5 in terms of trusting governments in dealing with environmental issues (mean=5.04), followed by British Columbia (mean=4.83), Ontario (mean=4.8), the Prairies (mean=4.7), the Atlantic provinces (mean=4.66) and Alberta (mean=3.4).

Figure 2.6 Summary of Regression Model Examining the Effect of Predictors on Trust in ENGOs



We also analyzed what fosters trust in environmental groups. A regression model comprised of socio-demographics and controlling for the Shades of Green segments reveals which variables are most associated with trusting environmental groups in Canada. Figure 2.6 presents the relative effect of each predictor. In comparison to Anglophones and Allophones (Canadians whose first language is neither French nor English, for the purposes of this report) those whose mother tongue is French are about 5% more trustful of environmental groups, with a predicted increase of half a point on the 0 to 10 scale measuring trust in ENGOs. Level of education and residency in urban areas compared to rural areas is not associated with greater trust. However, ideology, age and income have significant (though modest) effects, with more conservative, older and richer respondents significantly less likely than less conservative, younger and less well off Canadians to trust environmental groups. Finally, men are on average about 5% less trustful of environmental groups than are women.

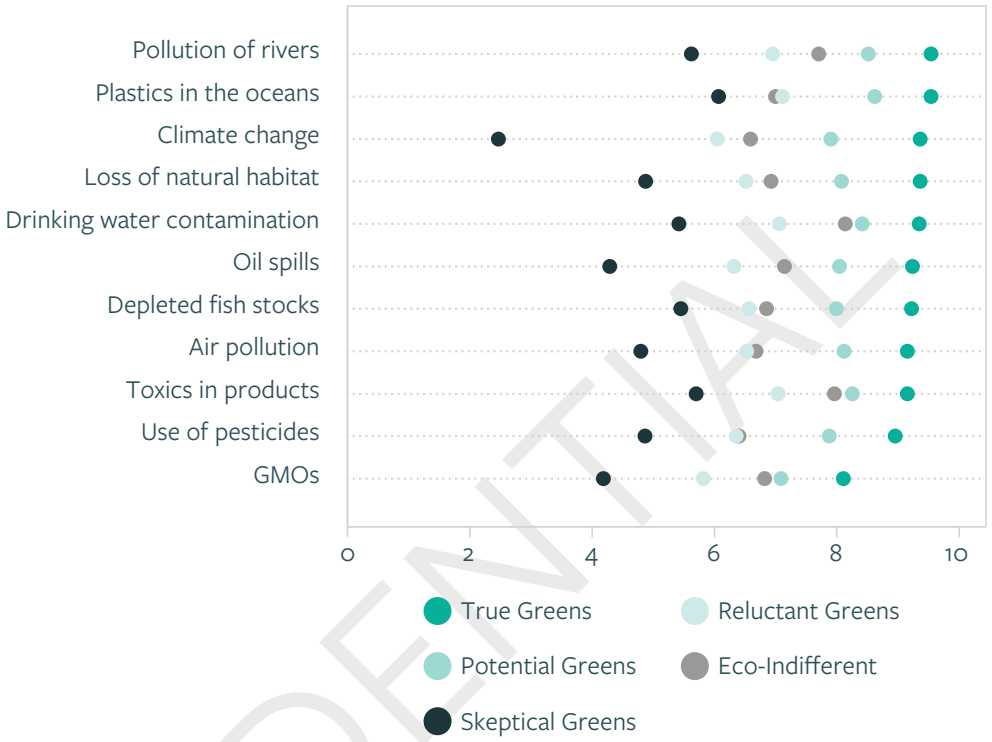
Worry

As part of EcoAnalytics tracking initiative, Partners selected a number of issues and asked researchers to develop a question to measure issue salience. Variation on these items over time could provide an indicator on the effectiveness of groups' capacity to raise awareness and concern about issues, as well as of how Canadians react to national and international environmental events, news, and politics. For simplicity and to facilitate the communication of our results, we use the terms "salience," "concern" and "worry" here interchangeably, referring to answers to questions about worry (or "worry battery of questions").

In 2017, the issue Canadians report being most worried about was the presence of plastics in the ocean (mean=8.3), followed by pollution of rivers (mean=8.2), the contamination of drinking water (mean=8.1) and the presence of toxics in consumer products (mean=8). That the three most worrisome issues in Canada relate to water quality corroborates other research that has found water to be particularly salient among Canadians (WWF, 2016; RBC, 2017). It is also interesting to note the salience of marine polymer pollution, which coincidentally has received considerable press in the mass and specialized media (Evans, 2017; Thompson, 2017).

At the other end of the spectrum, Canadians are much less worried about GMOs (mean=6.9) and climate change (mean=7.4). While these hazards are among the most technical and complex of the 11 issues polled, it is not surprising to see something like climate change at the bottom of the list. In fact, many reasons help explain why climate change fosters relatively little concern, including the abstractness and cognitive complexity of the issue, the uncertainty and spatial/temporal distance of its effects, the lack of a clearly identifiable villain, and the motivation to avoid guilt (Markowitz and Shariff, 2012).

Figure 2.7 Relative Issue Salience Across Segments

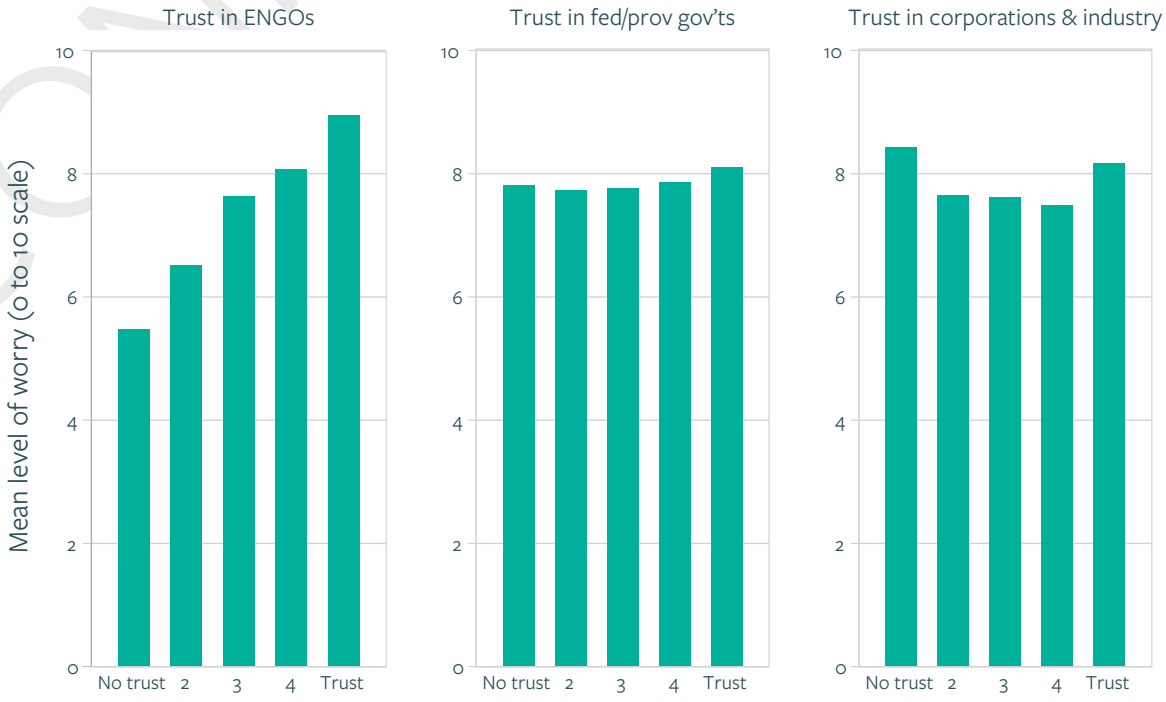


Beyond these aggregate differences, we observe substantial variation in issue concern across key population segments. Figure 2.7 presents the average concern of Canadians with regards to these issues, in decreasing order of concern among the True Greens. This approach to analyzing the data adds considerable nuance to the story. For instance, Figure 2.7 shows a great deal of variation on the issue of climate change, with Skeptical Greens considerably less worried than other segments, which contributes to the low mean score when looked at nationally. Consistent with prior work (c.f. Markowitz and Shariff, 2012), we also find that, among all the issues examined, climate change is the most strongly correlated with political ideology. In other words, right-leaning individuals are much less worried about climate change than other issues. This suggests that, because the issue has been very politicized in the previous years, those with a conservative ideology report being less worried about it. In this way, respondents might assess their level of concern with climate change not in terms of risk for the environment, but as a political choice, in line with their policy preferences. In other words, very politicized issues may become part of a political context detached from its original meaning, and at that point, policy cues may take over. This speaks directly to the danger of politicizing environmental

issues, and to the risk of alienating an important component of any winning environmental coalition, which should include the ideologically diverse Potential Greens segment.

The other finding in Figure 2.7 is that for the most part, different segments of the population are quite consistent as to how they report their level of worry about issues. For instance, apart from GMOs, True Greens average a 9-point score on the scale of 0 to 10 for each and every issue. Potential Greens seem more worried about issues that touch them personally as citizens and consumers, such as pollution of rivers, drinking water contamination and toxics in consumer products. Reluctant Greens are also less susceptible to worries about intangible issues, such as climate change. Interestingly, the Eco-Indifferent fall between the Potential and the Reluctant Greens. For tangible issues that face the consumer directly like GMOs, toxics in consumer products and drinking water contamination, they tend to align with Potential Greens. However, on less tangible issues, such as climate change, they tend to align with Reluctant Greens. Finally, Skeptical Greens show greater variability across items, with climate change at the bottom of the list, while they tend to worry more about toxics, depleted fish stocks and drinking water contamination than other issues.

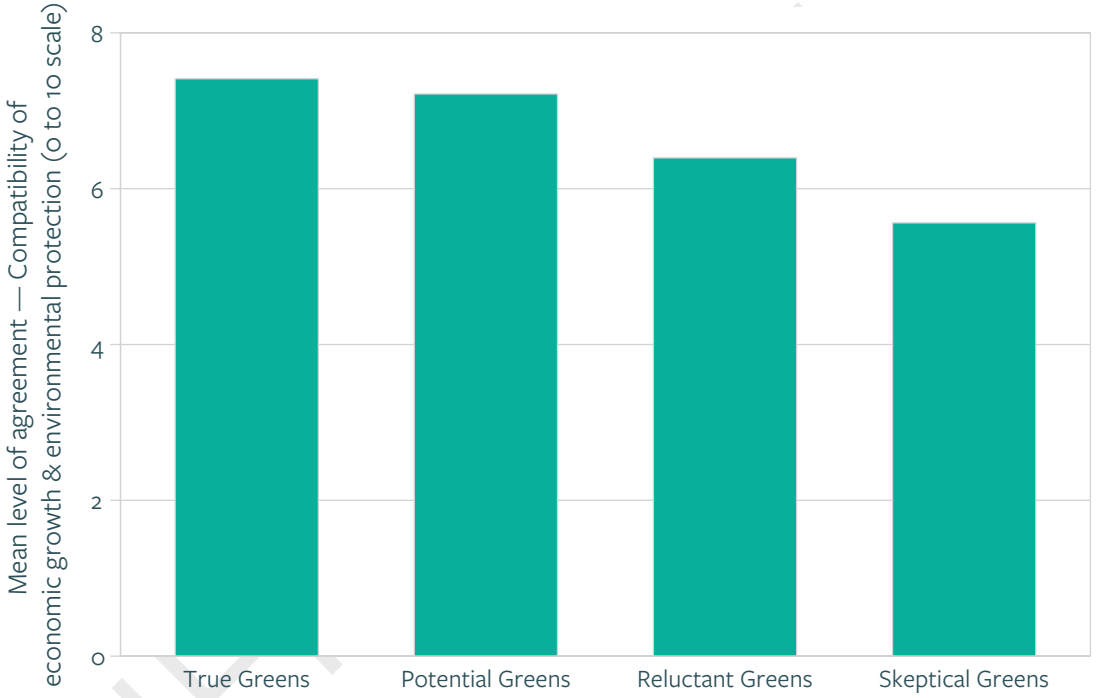
Figure 2.8 Mean Level of Worry (Across 11 Issues in Worry Battery), by Trust in Different Actors



Finally, we examine the relationship between trust and issue concern. Figure 2.8 presents the mean level of worry across all issues as a function of trust in certain actors. As can be observed in the middle and right-most panels, there is little variation in the level of worry across different levels of trust in federal and provincial governments (middle panel) and corporations and industry (right panel). This is somewhat surprising, as we might expect those with greater trust in the capacity of government and industry actors to deal with environmental hazards to worry less about them. As shown in the left panel, however, there is an evident relationship between trust in environmental groups and level of worry on environmental issues. The more individuals trust environmental groups, the more worried they are about the environment. Canadians that don't trust environmental groups only moderately worry about the environment (mean=5.6) while those that completely trust them worry a lot (mean=9.1). While we do not suggest this relationship is causal—i.e. that environmental NGOs cause anxiety—there does appear to be a relationship here that leads environmentally concerned people to trust ENGOs while they worry about environmental issues. More analysis will be required here to discern whether increased concern among those who trust environmental NGOs is attributable to the work of these organizations or to the characteristics of those who are inclined to support them.

Compatibility between the economy and environmental protection

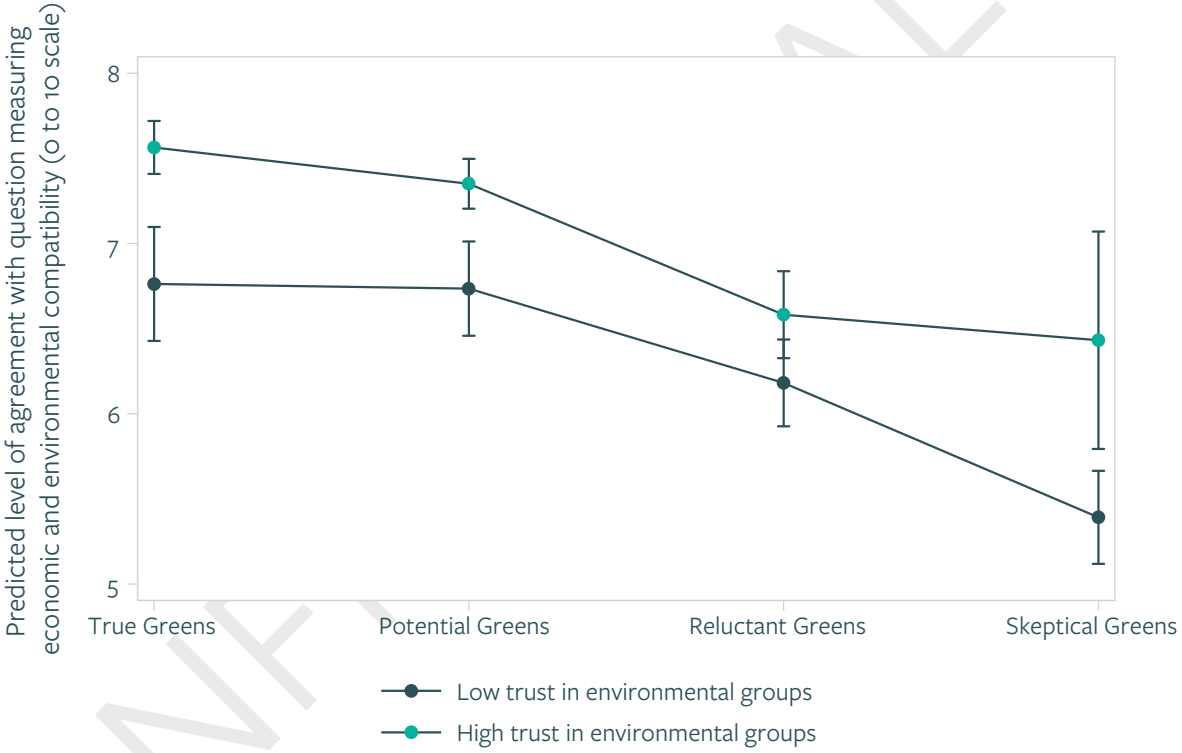
Figure 2.9 Perceived Compatibility of Economic Growth and Environmental Protection, by Shades of Green Segmentation



Can we protect the environment while at the same time promote economic growth? Or does protecting the environment necessarily hurt the economy? While many environmentalists reject this forced trade-off, communication around the economic benefits of environmental protection (or the synergy frame) depends on how believable this framing is. Rather than force people to chose between the economy and the environment, we asked respondents to tell us how compatible they feel these two goals really are. Results indicate that about 3 in 4 Canadians feel that economic development and environmental protection are compatible. To be precise, on our 0 to 10 scale, where 0 represented not compatible and 10 very compatible, we find a sample mean of 6.95, with three quarters of the sample scoring over 5. Figure 2.9 examines the mean score on this variable across segments, to isolate how different groups think. Interestingly, True Greens (mean=7.4) and Potential Greens (mean=7.2) are not that far off from each other, as the difference in mean score is not statistically significant. This suggests that Potential Greens, like True

Greens, believe that environmental protection does not always hurt the economy. As can be expected, Reluctant Greens (mean=6.4) and Skeptical Greens (mean=5.5) are considerably more skeptical, suggesting these groups are more worried about the potential effects of environmental protection for the economy.

Figure 2.10 Perceived Degree of Economic-Environment Compatibility by Shades of Green Segmentation, Conditional on Trust in ENGOs



Like level of worry about environmental issues, there seems to be an important relationship between trust in environmental groups and the perception that the benefits gained from environmental protection are compatible with economic prosperity. Figure 2.10 presents the results from an analysis of variance and its resulting predictions. The figure shows that differences across segments in terms of the believability of the synergy frame is partially conditioned by level of trust in environmental groups. Generally speaking, greater trust in environmental groups makes the synergy frame more believable, across all segments shown in Figure 2.10, save for the Reluctant Greens. For instance, True Greens that show higher levels of trust in environmental groups believe the environment to be much more compatible with economic growth than those who don't trust environmental groups. The same can

be said of Potential Greens. While the difference between Reluctant Greens who trust groups and those that don't is not statistically significant, the predicted score is still higher for the more trustful. More importantly, the difference is significant for Skeptical Greens that show high levels of trust in environmental groups. This suggests that environmental groups are in a good position to communicate the synergy frame, and that this strategy may be effective across different, even more skeptical audiences. Developing targeted communication to help communicate this frame across segments warrants more analysis, and the next Panoramic Survey might focus more on the issue of trust and its roots.

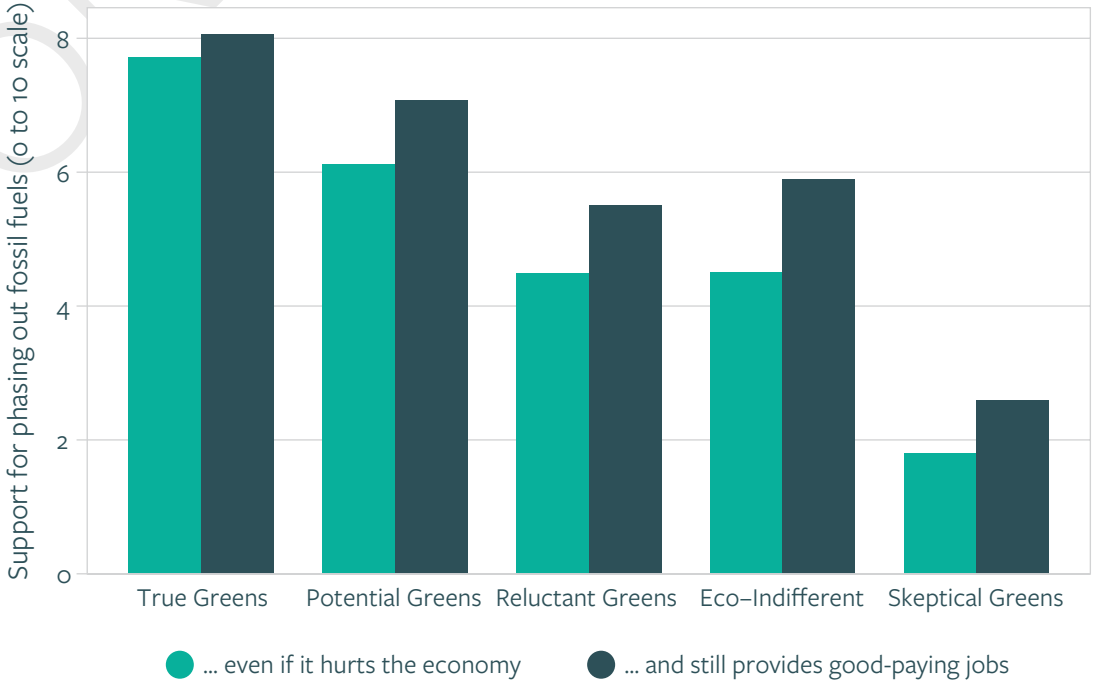
3. Current Issues in Canadian Environmental Politics

The Panoramic Survey also included several items related to hot button issues that are currently the subject of some debate, but that partners might not wish to track every year. One such issue concerns the phasing out of fossil fuels, made even more salient in the context of low oil and gas prices, controversy over pipelines, and the Trudeau government's decision to adopt a carbon price on emissions. Other issues examined relate to the concept of justice, such as the consultation of Aboriginal communities in Canada, the right of Canadians to a healthy environment, and the responsibility of industries and corporations with respect to environmental damages they cause.

Phasing out fossil fuels

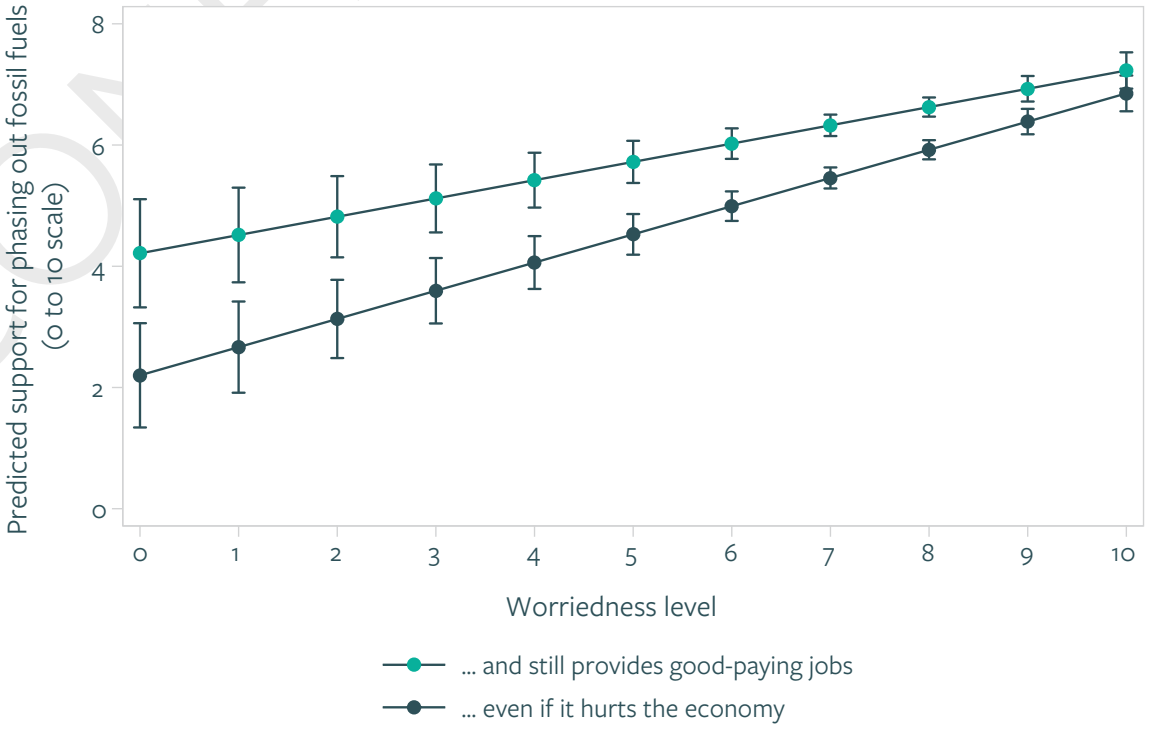
There is a some debate in Canada on what to do with fossil fuels. Some suggest phasing out fossil fuels entirely. But does support vary according to how the message is framed? And what segments are most likely to support such an idea?

Figure 3.1 Support for Phasing out Fossil Fuels by Shades of Green Segmentation, Conditional upon Question Framing



The question was asked on a 0 to 10 scale. Respondents were split into two groups. Both groups had to agree or disagree with a statement about energy. Half the sample received this statement: "Canada should begin phasing out fossil fuel production, even if it hurts the economy". For the other group, the statement was slightly altered: "Canada should begin phasing out fossil fuel production, and still provide good paying jobs". The respondents that received the "tradeoff" frame had lower support for phasing out fossil fuels (mean=5.8) while those that received the "synergy" frame had much higher support (mean=6.6). Figure 3.1 presents the average support for phasing out fossil fuels across our Shades of Green audience segmentation. As can be seen, the "synergy" frame garners more support across all segments of the population, even among the Eco-Indifferent and Skeptical Greens. In other words, most Canadians believe that limiting fossil fuel production is not incompatible with the creation of good jobs. While this framing is consistent with the Trudeau government's discourse, this research shows that the synergy frame is believable across segments. More importantly, as demonstrated in Figure 2.10 above, analysis of the Panoramic Survey data suggest environmental groups can play a role in building and disseminating this particular synergy frame as widely as possible.

Figure 3.2 Support for Phasing Out Fossil Fuels and Environmental Worriedness



Regression models were used to further investigate support for the phasing out of fossil fuel production. Controlling for a host of other factors, we find that support for the phasing out of fossil fuels is lower among more wealthy Canadians, irrespective of the framing of the survey question. For instance, a Canadian earning between $40,000 and $60,000 a year would have a predicted score of 6.5 (on a 0 to 10 scale), while a Canadian earning more than $100,000 would have a predicted score of 5.6. Living in urban areas, gender, language and education were not found to have an impact. Political ideology, however, was significant, as support decreased with right-leaning Canadians. While we find no differences in opinion regarding the phasing out of fossil fuels across BC, Ontario, Quebec, and the Atlantic provinces, residing in Alberta is associated with significantly lower support. More interesting is the interaction of worriedness. Figure 3.2 presents the results from this analysis. The more worried a Canadian is, the higher the support for the energy transition, but also, the smaller the distance between the two question wordings. In other words, the framing effect is more pronounced among Canadians that might be less worried about environmental issues than others who are more worried. Reassuring them that the environment and economy are indeed compatible by focusing the message on the possibility of good paying jobs, rather than testing messages on how the environment is important despite its impact on the economy, might help reassure less concerned segments of the Canadian population.

Evidently, a more thorough experiment would be needed to delve deeper into the mechanism that lies behind this finding and to test specific communication strategies. Before doing so, however, we provide one word of caution against the framing of environmental protection on extrinsic (i.e. non-environmental grounds). This strategy carries some risk, and has been criticized by some in the academic community. As Markowtiz and Shariff (2012: 246) point out, "Using economic incentives as a motivation creates a conflict between two values—materialism and environmentalism—that have been shown to be negatively related." These authors point to research showing how the promotion of extrinsic justification can inhibit the development of intrinsic (i.e. non-materialistic) values, and worse, may crowd out pre-existing intrinsic attachments to environmentally sensitive behaviour. As a result, when the extrinsic value is removed (e.g. if good jobs take time to materialize), there is no longer any motivation to maintain the behaviour or attitude (e.g. support for phasing out fossil fuels) for its own sake.

Justice, accountability and consent

The question of justice is often evoked in debates about the environment. Who should be held accountable? Do we have the right to a healthy environment? Should we consult all parties? Like other scholars (Boyd 2012), some of the partners are interested in this aspect of the environmental debate. As a result, we included a number of questions in the Panoramic Survey to gage Canadian attitudes toward these sorts of issues.

We included a small battery of questions on a handful of hot button issues, and randomized the order of appearance to avoid order effects. All questions were measured on the same 0-10 scale, and we report answers for three of the five hot button issues here (interested readers can refer to the cross-tab report for answers to questions on environmental charities and seafood labelling, which in the interest of space and time constraints are not examined here).

One of the questions asked respondents to agree or disagree with the idea that: "The right to a healthy environment should be enshrined in Canadian law". This statement received impressive support across respondents, with almost 40% of Canadians reporting they completely agreed with the statement (a 10 on the 0 to 10 scale). The average score across the population was 7.85, with a moderately low level of variation around that mean (sd=2.5). However, we find stronger support for the idea that "oil companies in Canada should be accountable for damages related to climate change". Exactly half of the respondents reported that they completely agreed with the statement, with a mean of 8.2 and smaller variability (sd=2.4). Another statement suggested that "major energy projects should require the consent of Aboriginal peoples when their traditional lands are affected". Again, support was strong, as roughly a third of the population reported complete agreement with the statement, though variability on this item is higher than with the previous statements, indicating that this statement is more controversial than the others (sd=3.1).

Figure 3.3 Support for Issue Statements by Shades of Green

Figure 3.3 displays mean levels of support for these three statements by the Shades of Green segmentation. As can be seen, the distribution is fairly consistent across and within segments. Within segments, a consistent pattern emerges, with oil company accountability receiving the highest, and Aboriginal consent for energy projects the lowest level of support, within each segment. Across segments, we see that True Greens tend to be more supportive of all statements, while the Skeptical Greens are least supportive. As was shown in the previous section, Skeptical Greens are associated with relatively lower levels of trust, which might suggest they are suspicious of some Aboriginals' grounds for refusing consent. As a matter of fact, one question in the survey asked whether Canadians trusted Aboriginal peoples on matters pertaining to environmental problems and solutions. While the overall sample's mean level of trust was of 6.04 (on a scale of 0 to 10), Skeptical Greens showed the lowest level of trust in Aboriginal groups (mean=3.38), far behind True Greens (mean=7.03), Potential Greens (mean=6.35), Reluctant Greens (mean=5.24) and the Eco-Indifferent (mean=4.88).

Further regression analyses reveal which socio-demographic variables are most associated with supporting these three statements, while controlling for audience

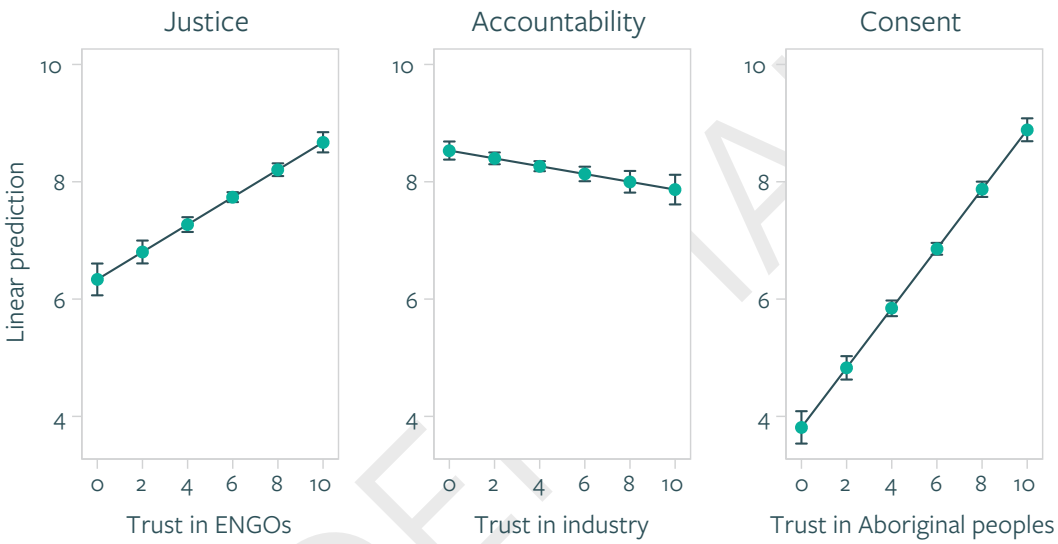
segments. In the case of the right to a healthy environment, the three most important predictors are gender, income and political ideology. Women are more likely to agree with enshrining the right to a healthy environment in Canadian law. However, the more wealthy a Canadian is, the less supportive she is of the idea. Likewise, the more right-leaning an individual is, the less likely she is to believe in codifying environmental rights. Here, education, language, and living in a rural or urban region did not have a statistically significant effect. Regions are also not statistically distinct from each other according to the model. However, residents in the Atlantic Provinces were among the strongest supporters, all else being equal, while residents of Alberta and the Prairie Provinces were among the least supportive.

In the case of oil companies being accountable, only gender and political ideology turned up significant, while income did not. Men are again less likely than women to support the idea, as are right-leaning individuals. Education, language, living in an urban or rural area does not help predict attitudes toward holding oil companies accountable for climate damages. Meanwhile, no significant differences were found across regions, although predicted scores were lowest for residents living in Alberta and the Prairies, while residents in the Atlantic Provinces are considerably more likely to report believing that oil companies should be held responsible for the damages they cause.

We also find interesting patterns on the question of whether energy projects should require the consent of Canada's Aboriginal peoples. As was the case with the previous items, women and left-leaning Canadians are more likely to support this statement. Income is also significant, as the wealthiest are less likely to agree to the idea that energy projects in Canada should require Aboriginal consent. However, education in this model turns up significant, suggesting that the more educated a Canadian is, the more she is sensitive to the question of Aboriginal rights. For instance, Canadians holding a university degree have a predicted score of 7.09, while those that don't hold a university degree have a predicted score of 6.75, a 0.35-point difference. Language and urban vs. rural is again, not significant. Regions also see little variation in these models, although Ontario shows the highest level of support, a predicted 7.27, which is statistically different from the two regions that show the lowest level of support, Manitoba/Saskatchewan (6.6) and the Atlantic provinces (6.66).

Effects of trust

Figure 3.4 Predicted Effect of Trust in Various Actors on Attitudes toward Environmental Rights, Corporate Accountability and Aboriginal Consent



Since citizens usually follow cues from groups they trust most, we might expect to find a relationship between trust in various groups and attitudes toward the three hot button issues examined above. Looking at the role of trust more explicitly can provide further explanations for the behaviour exposed in the previous paragraphs. When retesting the three models by adding trust as a covariate, it is significant in all three cases, but to varying degrees. This means that in the case of enshrining the right to a healthy environment in Canadian law, trust in environmental groups is positively correlated with supporting this idea. Inversely, the more Canadians trust corporations and their solutions for the environment, the less they believe they should be held accountable. But while trust is significant in those two models, the amplitude of its effect is not as strong as trust in Aboriginal peoples. This variable seems the most important predictor for believing Aboriginal peoples should give their consent when energy projects affect their communities. While the role of environmental groups in helping build Canadians' trust in Aboriginal groups on environmental issues is an open, strategic question, it is clear that environmental groups aligning with Aboriginals on key issues (e.g. pipelines) would benefit from enhanced public trust in Aboriginal groups.

4. Land Conservation: Who Supports Protection?

Each year, the Panoramic Survey delves deeper into a specific theme agreed to by partners, allowing for more in-depth analysis on a particular problem. This year, partners decided on delving deeper into the area of conservation and protected terrestrial areas. Many questions therefore focused on how Canadians perceive protected areas and the imperative of species and natural habitat conservation. While 10% of land is set aside for protection in Canada, only 1% of our oceans are. How aware are Canadians of this situation? Might contact with nature affect these views? And how do Canadians feel about the relative importance of environmental conservation for leisure as opposed to for its own sake? In this section, we delve into these questions.

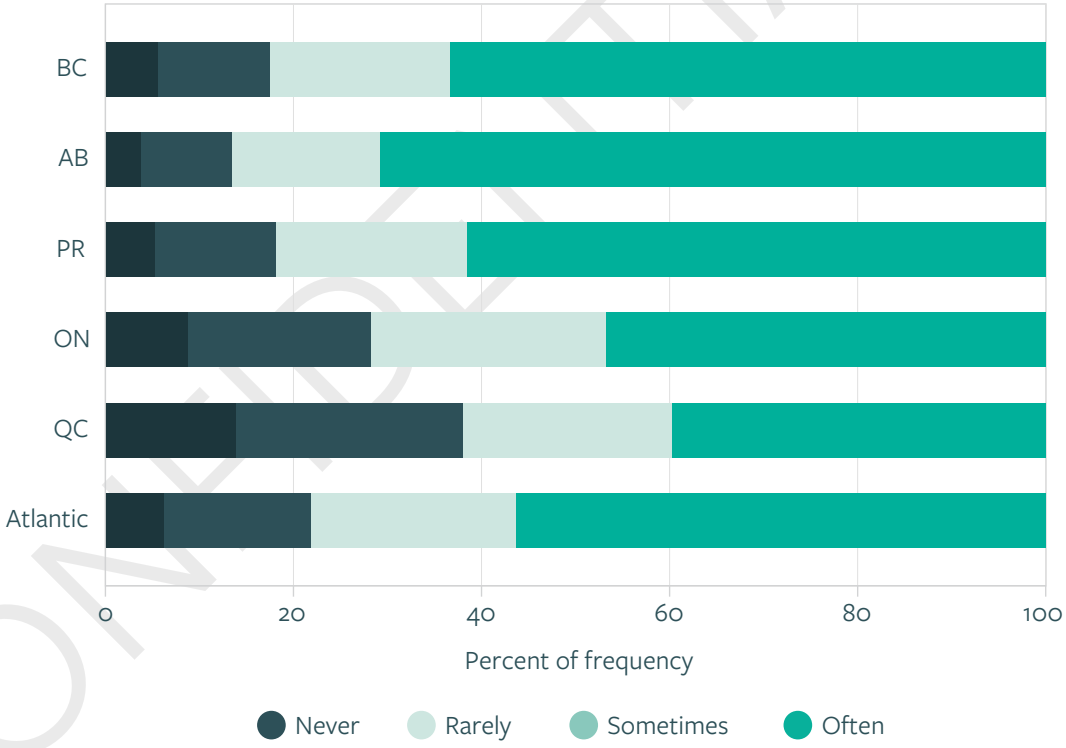
Park use as a policy feedback?

Policy feedbacks represent the idea that "new policies create new politics" (Schattschneider 1935) but also help shape citizen expectations (Pierson 1993). One question one might ask is therefore: are park users more likely to expect more conservation? The rationale behind this hypothesis is that park visitors have first-hand contact and knowledge of natural habitats set aside for protection and entertainment.

Results from the 2017 Panoramic Survey reveal that a surprising majority of respondents (56%) report visiting a national or provincial park at least one a year. Around 20% report visiting parks only sometimes, 16% rarely and 7% report never visiting such parks. Figure 4.1 shows that park use is far from evenly distributed across regions. Interestingly, the province where respondents report visiting parks most often is Alberta, with 70% of respondents in this province saying they visit national or provincial parks at least once a year, and 15% saying they visit once every few years. At the opposite end, Quebec is the province where respondents are the least likely to visit parks, as almost 40% report never or rarely visiting such parks. When looking at these data through the Shades of Green segmentation, the results are even more interesting: True Greens and Skeptical Greens have very similar patterns in visitor use, as in both cases, 60% report often visiting parks and only around

5% report never visiting parks. Patterns are also similar for Potential and Reluctant Greens, of which 53% report visiting often, 21% sometimes, 16% rarely and 8% never. The category that stands out most is the Eco-Indifferent, with nearly a third of respondents in this segment reporting never visiting national or provincial parks and a comparatively low 39% report visiting them often. Regression models like those presented in section 3 reveal that those who are more likely to visit parks are the more educated, wealthy and the more left-leaning. Gender, living in urban vs. rural areas and language did not play a statistically significant role.

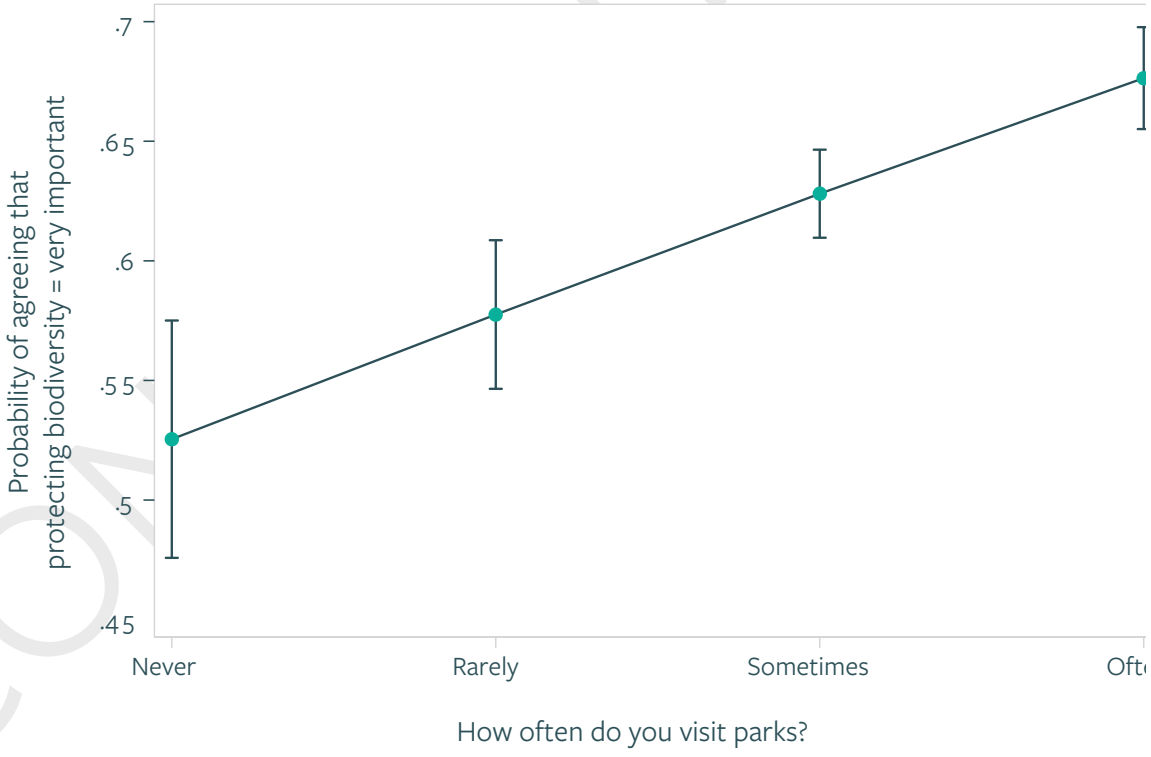
Figure 4.1 Park Visits by Region of Residence



Another question that was asked was whether Canadians thought protecting biodiversity was not important, not that important, somewhat important or very important. Almost 64% of respondents report that protecting the diversity of animals, plants and ecosystems is very important to them personally, while 31% think it is somewhat important, 3% not that important and only 3 respondents (0.37%) think it is not important at all. Contrary to park use, these results do not vary by region. They vary, however, by the Shades of Green segmentation. True Greens are most likely to think it is very important (92%), followed by Potential Greens (70%),

and the Eco-Indifferent (41%), while the Reluctant and Skeptical Greens are the least likely (30%) of all segments to report that the protection of biodiversity is very important to them personally. Moreover, contrary to park visitor profiles, regression models here reveal that only income has a statistically significant impact on the perceived importance of biodiversity protection, as wealthier Canadians are less likely to think it is important relative to the less well-off. However, the effect of living in an urban area is significant at the $p<0.1$ level, suggesting that 9 out of 10 times, we should find a difference between urban and rural, with people living in rural areas being more likely to think biodiversity protection is important. Gender, education, income, ideology and language are not statistically significant.

Figure 4.2 Effect of Park Use on Importance of Protecting Biodiversity



Using an ordered logistic regression model, we test these various controls, along with survey mode, region and segments against the effect of park visits. The results are presented in Figure 4.2, which plots the probability of thinking protecting biodiversity is very important (a category that comprised 64% of the population) relative to the frequency with which Canadians visit parks. Although we cannot rule out the possibility that environmentally predisposed Canadians are more likely to be

frequent park visitors and think the protection of biodiversity is very important, this lends some weight to the idea that citizens that make more contact with nature are more likely to expect governments to preserve and protect it.

Conservation and protected areas: a framing experiment

Partners were interested in testing messages for promoting conservation and protected areas. One solution suggested by the research team was to conduct an equivalency framing experiment in which two messages were tested. The idea was to test messages that were offering the same information in two opposing, symmetrical ways, with the expectation that, following the Nobel Prize winning work of Daniel Kahneman on prospect theory (Kahneman and Tversky, 1979), people will respond to information differently when presented as a loss than when they are presented with the same information as a gain. To this end, respondents were first asked to estimate what the percentage of protected land in Canada is. Then, the sample was randomly split in two, with 1,500 Canadians being exposed to frame A and 1,500 being exposed to frame B. The two frames manipulated the way in which the respondent received the "correct" answer to the previous question. In one group, respondents were exposed to a positive (or gain) frame: "Currently about 10% of Canada's terrestrial land and freshwater are set aside to protect wildlife and ecosystems." In the other group, respondents were exposed to the negative (or loss) frame: "Currently about 90% of Canada's terrestrial land and freshwater are not set aside to protect wildlife and ecosystems." Then, both groups were asked if they thought, "governments should do a lot more, somewhat more, a lot less, somewhat less, or about the same as now to protect terrestrial land and freshwater areas in Canada?"

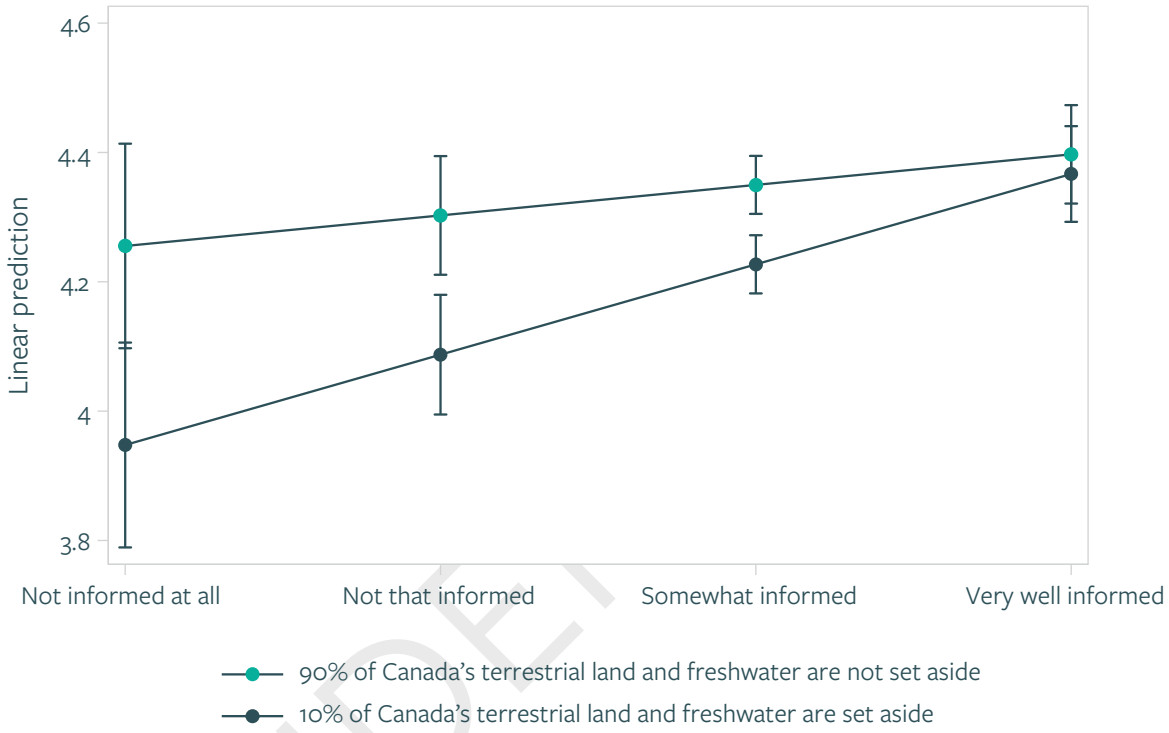
In the general population, Canadians estimated on average that 22% of the country's land and freshwater was conserved as a protected area. This figure varied very little by our Shades of Green segmentation, suggesting no relationship. The most optimistic were the Potential Greens, who on average estimated that 23.7% of the country's land and freshwater was set aside. They were followed by the Reluctant Greens (mean=21.78%) and the True Greens, while the most pessimistic were the Skeptical Greens (mean=12.65%). The Eco-Indifferent segment (n=50) was too small to be considered here. By taking the absolute distance between each respondent's answer and the true figure of 10%, it is possible to estimate that Canadians were, on average, off by around 15%. Through regression models, it is further possible to

determine which variables are associated with having a more accurate estimation of the percentage of protected areas. Most socio-demographic variables were found to have a statistical impact. The more education a respondent completed, the more accurate the answer. Men are also more likely than women to be closer to the correct response, as is also true for right-leaning individuals as opposed to those on the left. Citizens who speak another language than French or English as their mother tongue are also more accurate, but there are no differences between French and English. Meanwhile, Canadians living in urban areas are off by a greater number than those living in rural areas. As was the case for segments, no differences were found across regions.

Turning to the experiment, we find a significant framing effect, as expected. On the five-point scale used in the question following the "positive-10%" frame, the average response was 4.24. The mean answer following the "negative-90%" frame was higher at 4.35, a statistically significant increase of 0.11. This means that when the information about the amount of protected areas is expressed in terms of "what is not protected" (i.e. a potential loss) respondents are significantly more likely to believe that governments need to do more than when it is expressed in terms of "what is currently protected". To be sure, this finding is consistent with the well documented tendency of a negativity bias in people's attention (Meyerowitz and Chaiken, 1987). While we suggest loss framing may be useful for partners interested in engaging Canadians in environmental protection, this is not to advocate for more extreme, negatively focused fear framing, as this may be counter-productively interpreted as alarmist (Hulme, 2008). Moreover, some issues, like climate change, have been found to be less conducive to loss framing. However, we suggest here that properly crafted messages around the loss of Canada's natural ecosystems may be an effective strategy not just for the conservation of biodiversity, but for the framing of other highly tangible, short-term risks as well.

The second step of the analysis was to test whether the manipulation interacted with important variables, such as the Shades of Green segmentation. However, contrary to what might be expected, this interaction is not significant. The respondents who received the loss frame are systematically more likely to agree that governments should do more. However, this difference is only significant in the case of one group: Potential Greens. This means that this group is particularly susceptible to this type of messaging, which suggests that loss framing is a good strategy for partners aiming to engage Potential Greens. But it also means that another mechanism might be at play and provide a better understanding on the limits of this framing effect.

Figure 4.3 Effect of Loss Framing on Support for Biodiversity Protection, Conditional on Level of Knowledge



One such possible venue for testing the effect of the framing manipulation is to look at the level of environmental knowledge reported by respondents. This question asked, "How well informed would you say you are about environmental issues?" Possible answers were "very well informed" (25%), "somewhat informed" (63%), "not that informed" (10%) and "not informed at all" (1%). Knowledge is moderately correlated with segments, as half of the very well informed are True Greens and a quarter are Potential Greens. The not informed at all are distributed among Potential and Reluctant Greens (26% each), True and Skeptical Greens (17% each) and the Eco-Indifferent (12%). It is interesting to note that 45% of Skeptical Greens report being very well informed and 46% somewhat informed, meaning 90% of Skeptics report being informed. By comparison, only 38% of True Greens report being very informed and 55% somewhat informed.

When using self-reported environmental knowledge as an interaction, the effect of the framing experiment becomes that much more interesting. Figure 4.3 presents the results. As can be seen, the loss frame is more likely to push respondents to agree that governments should do more to protect biodiversity by setting aside

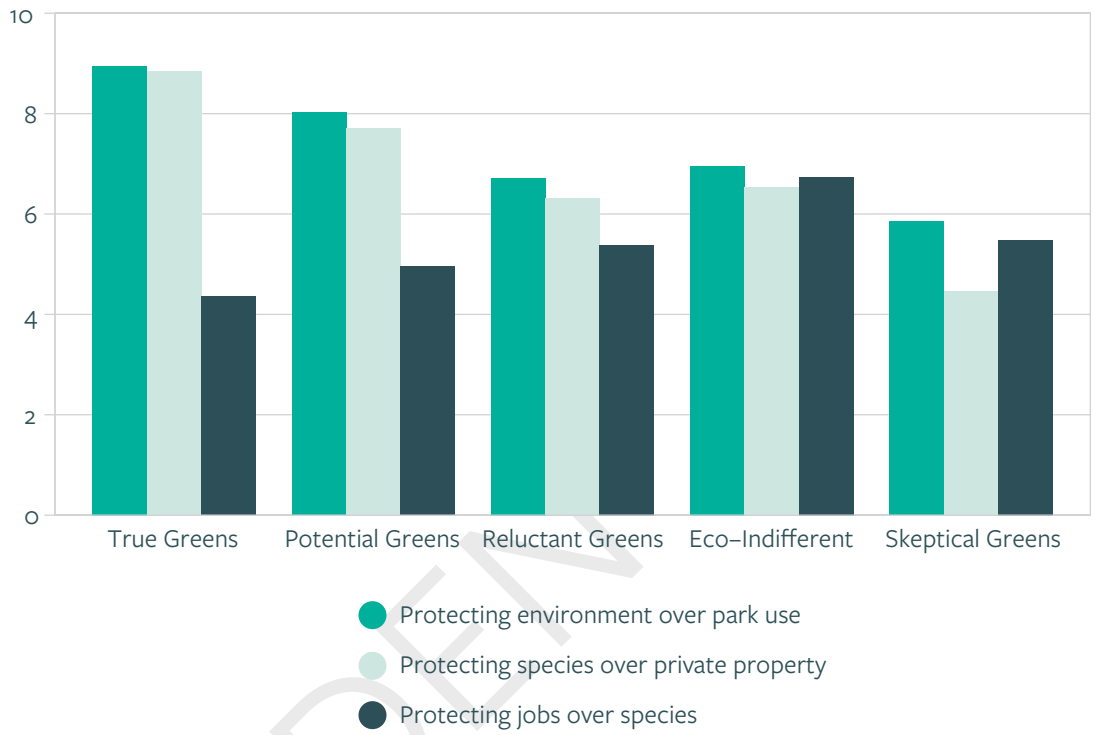
land and freshwater. But this effect is not systematic across respondents with different levels of knowledge. To be specific, it is much more pronounced the less knowledge Canadians have. The very well informed, however, are already more likely to wish for more government action. In other words, Canadians who are very well informed on matters pertaining to the environment are more likely to be already convinced. While increasing knowledge is a viable strategy, an alternative (or parallel) strategy could be to frame facts in terms of what is not protected, or what Canadians stand to lose, as it should have a stronger effect overall, but especially for the less informed, and for the Potential Green segment.

Trade-offs

The last set of questions in the conservation module specifically dealt with the issue of trade-offs. While asking respondents if they agree or disagree with statements can give us a lot of information about what they think, it can sometimes lead to acquiescence bias, meaning that they might overstate their agreement for the sake of providing what they feel is the socially desirable response. One useful method for guarding against this common form of measurement error is to frame questions around an explicit trade-off. These more tasking questions make it less inviting for respondents to simply acquiesce. We therefore set out to ask three questions that each highlighted an important trade-off between materialist and biospheric values. We also inverted the salience of the third item, so that agreement measured privileging the economy over the environment. The three statements were as follows:

- Protecting the natural environment, plants and animals in national or provincial parks is more important than visitor use.
- Governments should do more to protect threatened and endangered species from extinction, even if some people might not be able to develop their land or private property as a result.
- Government should do more to protect worker's jobs, even for activities that place some plant and animal species at risk.

Figure 4.4 Mean Level of Support for Trade-off Items by Shades of Green



Aggregate results suggest that most respondents believe protecting the environment is more important than visitor use.. Responses to this question are skewed with a mean score of 7.83 on a scale of 0 to 10. Responses to the second item are similarly skewed. Indeed, respondents in our sample highly agree (mean=7.47) that species should be protected even at the expense of private property.

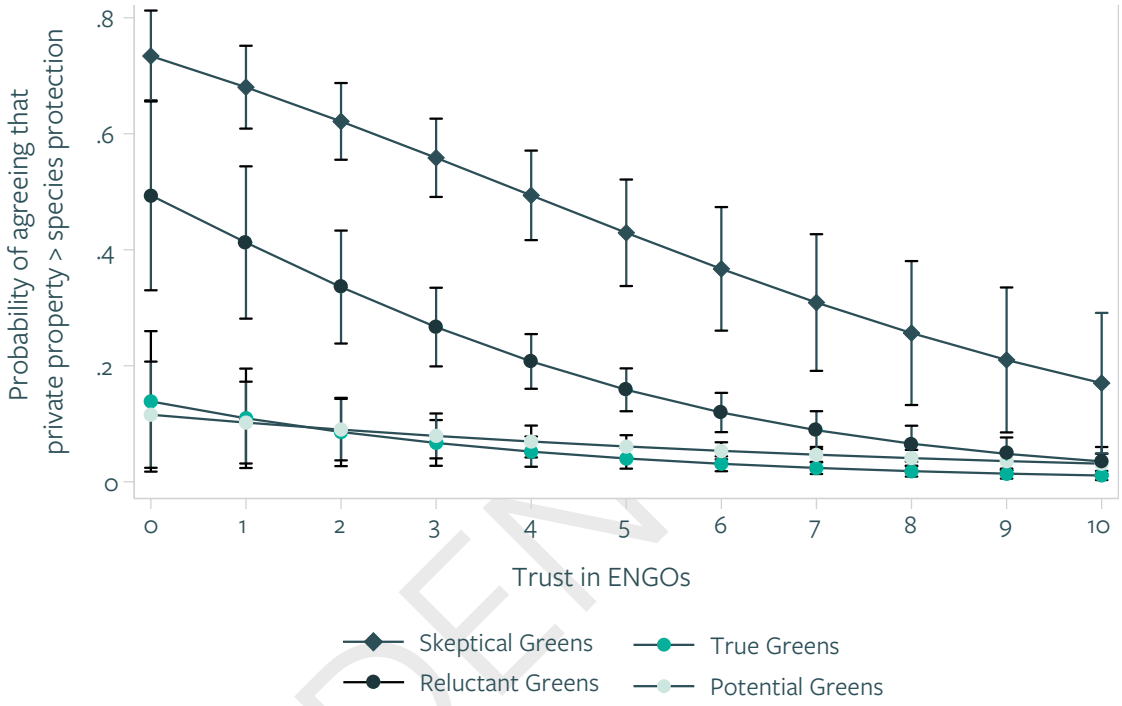
Responses for the third statement are much more balanced. When asked whether governments should protect workers' jobs at the risk of endangering plant and animal species, respondents gave an average score of 4.9. Responses to this question produced one of the most normally distributed (i.e. bell curve like) distributions, with a median of 5, and around 38% above and 40% below.

Figure 4.4 shows item means over the Shades of Green segmentation. As can be seen, except for the Eco-Indifferent (n=50), the segmentation generally shows a progressive decrease in support for putting the environment first going from True Greens to Skeptical Greens. Putting jobs first, however, doesn't garner as much support from the part of Skeptics as might be expected.

Taken individually, it is possible to analyse what predicts variation in responses within each of the three items. First, it could be hypothesized that the first statement is associated with park use, such that the more a respondent uses parks, the less likely he or she will be to privilege the conservation role of parks over recreational use. However, analyses do not support this idea, as the frequency of park visits appears to be unassociated with responses on this trade-off. It could be that two mechanisms are at play. Some respondents that use parks for recreational reasons (family vacation, canoeing, hiking, camping, etc.) might indeed think visitor use is important. But at the same time, contact with nature may also increase their sensitivity to conservation, leading to some induced noise in the results (we also have no information on the purpose of park visits by respondents). Regression analyses further reveal that the only socio-demographic to have a significant effect is income: the wealthier a respondent is, the more likely she is to believe visitor use is more important than protecting the natural environment. Education, gender, political ideology, language and living in an urban area did not have any statistically significant effect. However, the Shades of Green segmentation is a very strong predictor. True Greens are very likely to agree that protecting the environment is more important than park use with a predicted score of 8.84. Potential Greens follow with a predicted score of 8.07, followed by Reluctant Greens (6.71) and Skeptical Greens (5.72). We excluded the Eco-Indifferent from this and the following analyses due to the small size (n=50) of this segment.

Turning to the trade-off between protecting species and developing land and private property, regression models reveal that both income and ideology are statistically significant. Greater household income is associated with putting land and private property above protecting species. Likewise, right-leaning respondents are also more likely to think protecting species is less important. Language also has a statistically significant effect. Interestingly, English speakers are more likely to agree that protecting endangered and threatened species is more important than private property development, compared to French speakers in Canada. Again, the Shades of Green are a major predictor in the model. True Greens have a predicted score of 8.79, followed by Potential Greens (7.75), Reluctant Greens (6.31) and Skeptical Greens (4.57). Again, we exclude the Eco-Indifferent from this analysis given their small size in our sample (n=50). Based on these results, we decided to explore the relationship between trust and the Shades of Green segmentation.

Figure 4.5 Effect of Trust in ENGOs on Support for Protection of Private Property over Species across Shades of Green Segments

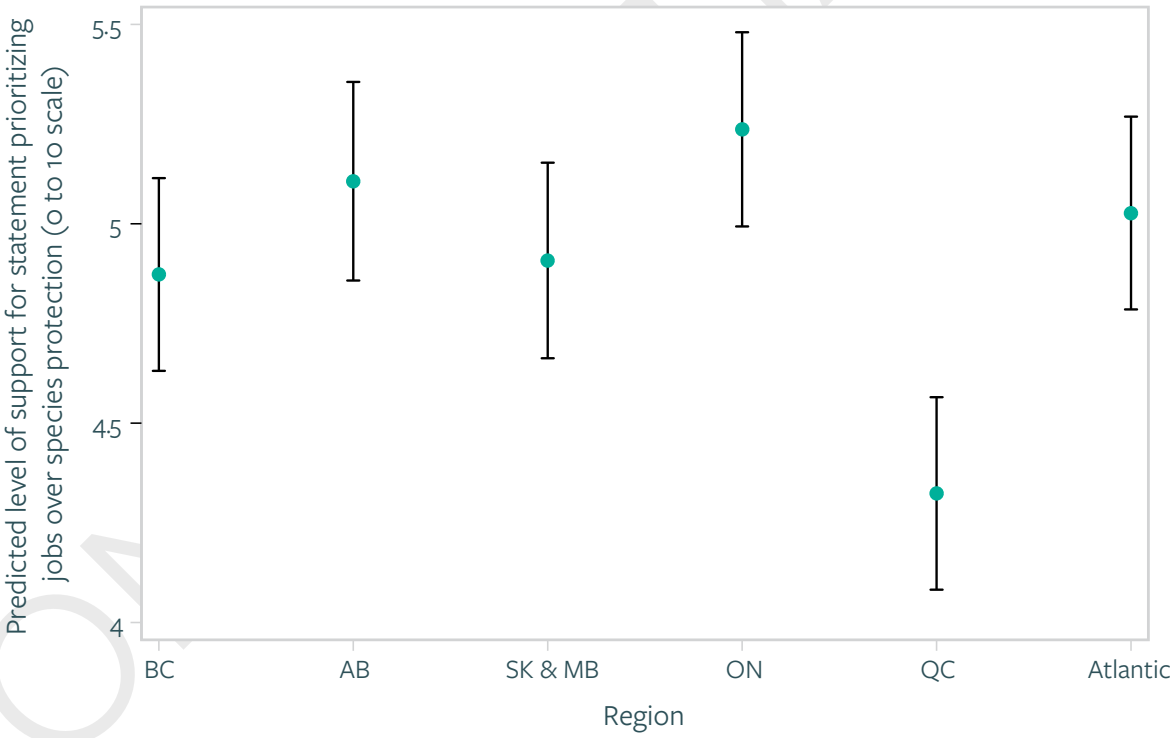


The variable at play was recoded from a 0 to 10 scale to a 2-point scale. Those that answered from 0 to 4, showing support for private property over protection of species were coded 1. Respondents that chose the middle ground 5 were dropped and those that answered between 6 and 10 were coded 0, indicating low support for privileging private land and property over environmental protection. A logistic regression then looked at the role of trust towards environmental groups to see how it interacted with the segmentation. Figure 4.5 presents the resulting graph. It can be observed that both True and Potential Greens are not at all likely to choose private property over the protection of species, regardless of their level of trust in ENGOs. On the other hand, Skeptical Greens are the most likely to privilege private property, above the Reluctant Greens. However, increased trust in environmental groups considerably lowers the probability of prioritizing private property over species protection.

Finally, the third trade-off opposed jobs and species protection. Regression analyses reveal that education and ideology are significant predictors. Specifically, the more educated a respondent is, the less likely she is to agree that jobs should be prioritized over species protection. Similarly, left-leaning individuals also put species

before jobs. Gender, income, living in an urban area and language had no effect. Shades of Green were significant, but differences were not as important as with previous statements. True Greens had a predicted score of 4.41, compared to 4.86 for Potential Greens. However, Reluctant and Skeptical Greens are not statistically different from each other, with predicted scores of 5.32 and 5.27, respectively. Again, we excluded the Eco-Indifferent from this analysis due to the small size in our sample (n=50), which complicates statistical estimation procedures.

Figure 4.6 Predicted Level of Support for Protecting Jobs over Protecting Species by Region of Residence



Model results suggest that something peculiar is linked to regions. Figure 4.6 plots the predicted scores for regions, along with their confidence intervals. As can be seen, Quebec is completely different from other regions. Indeed, even after controlling for political ideology, income and other covariates, Quebec residents are significantly less likely than respondents living in other provinces to prioritize the protection of jobs if it might put species at risk. What explains this difference?

Figure 4.7 Support for Question Privileging Jobs over Species Protection by Shades of Green Over Regions

Figure 4.7 compares responses to the jobs over species statement by the Shades of Green segmentation within each region. Here again, we exclude the small Eco-Indifferent segment (n=50) for the purpose of clarity. While the Shades of Green do seem to have an effect for each region, their effect is not systematic. For instance, Skeptical Greens in British Columbia, Ontario and the Atlantic provinces and less likely to prioritize jobs than Reluctant Greens. In Alberta, Potential and Reluctant Greens are as likely to choose jobs over species. In Manitoba and Saskatchewan, however, the logic holds, as the progression from True to Skeptical Greens is more linear. But the most important result has to do with Quebec. It is in this region that the segments are most different from each other. This specific dynamic might explain why Quebec is much less supportive of the statement than other provinces. Indeed, Quebec is the province with the most pro-environment citizens, as almost 38% of its respondents were identified as being True Green and 42% were identified as Potential Greens. Since True and Potential Greens in Quebec are more likely to prioritize the protection of species over workers jobs, the composition of green shades in the Quebec population might explain the results presented in Figure 4.5.

Conclusion

This report provides some detailed analysis of key themes that emerge from the inaugural Panoramic Survey conducted in May 2017. By way of conclusion, we offer a number of empirically-grounded recommendations for partner organizations. This should provide the initial basis for further discussion on how to implement lessons learned from the analyses developed here, debate the relative merits and drawbacks of alternative strategies, and highlight open questions to be answered in future work.

First, we recommend that partners focus their communication efforts and campaign strategies on the first two segments identified: True Greens (32% of the population) and Potential Greens (37% of the population). While partners are already talking to True Greens (22% of True Greens are currently engaged with environmental groups as members, followers, donors or volunteers), we suggest that there remains considerable opportunity to grow their membership by targeting this group (78% of which are currently non-sympathizers). We further suggest the Potential Greens segment (of which 9% are currently a member, follower, donor or volunteer with an ENGO) constitutes a second important audience that partner organizations might target to grow their base. This latter segment is younger, relatively well to do, and is equally made up of men and women with pro-environmental values. Though Potential Greens tend to be somewhat less informed and less engaged than True Greens with respect to environmental issues, they demonstrate a great deal of trust in environmental groups and university scientists, suggesting they can be reached by strategic campaigns. However, this segment is the most ideologically diverse, presenting partner organizations with both opportunities and challenges for engaging Canadians in this segment.

Second, we highlight a number of key findings that provide insight into the way partners may wish to frame messages to reach particular audiences. For instance, we show that the Potential Greens are less likely to evaluate corporate environmental performance positively, and suggest that messaging around corporate accountability for environmental damage may be especially effective for this group. Moreover, we suggest partners have an important role to play in building and disseminating the synergy frame, by highlighting the compatibility of economic and environmental goals (e.g. clean jobs). While we caution against an exclusive reliance on the synergy frame—which may crowd out intrinsic motivations for environmental

protection—data from the Panoramic Survey suggest that under certain conditions and for certain groups (e.g. the ideologically diverse Potential Greens), framing around economic and environmental compatibility may be particularly persuasive, helping reassure otherwise reluctant Canadians on the intrinsic and extrinsic benefits of environmental protection and environmentally friendly behaviours. Similarly, we suggest strategic use of motivating environmental action with loss framing—emphasizing where Canada lags in terms of environmental protection. While being careful not to sound alarmist or to politicize issues, small changes in the way information is presented can help increase the efficacy of messages, especially for certain groups (like the Potential Greens) who tend to be overly optimistic when it comes to perceptions of existing environmental protection. This latter point alludes to the importance of information and trust, and the role of environmental groups, in framing messages around the state of Canada's environment. As shown in this report, the efficacy of framing is conditioned by things like the public's level of information on issues (low information enhances framing effects) as well as their trust in environmental groups (high trust increases the believability of the synergy frame).

Finally, analysing the Panoramic Survey data provides considerable evidence to suggest that enhancing public trust and confidence in the credibility of environmental groups (and their Aboriginal allies) should be a crucial part of the environmental movement's strategy moving forward. This is important, given the many ways trust emerges as an important factor in the analyses provided in this report. To be sure, more research is required in order to unpack the specific relationship between things like trust and worry (a result of ENGO work or the characteristics of those attracted to ENGOs), or trust and believability in the synergy frame. More research is also required in order to dig deeper into the levers available that may help enhance public trust in environmental and other organizations. This may involve greater participation by groups in the analysis and dissemination of work conducted on environmental problems, or highlighting the expertise and role of Aboriginal knowledge in dealing with and adapting to environmental change. Future research will examine the role of contact with nature and other, more direct forms of environmental socialization in producing trust in environmental groups, and develop experiments to examine how different messages and messengers can help enhance public trust and confidence in Canada's environmental movement.

Methodology

Data examined in this report come from the 2017 Panoramic Survey, which collected responses from 3005 adult Canadians in English and French using a hybrid (i.e. Telephone and Web) approach to data collection.

A total of 1,503 interviews were administered by telephone to a random probability sample of adult Canadians between May 4th and May 30th 2017. This portion of the fieldwork used Computer Assisted Telephone Interviewing (CATI) technology to generate a dual-frame sample that included interviews with 774 individuals contacted on their land line and 728 individuals reached on their cell phone. The response rate for the telephone portion of this fieldwork was 6.1%. This is a low but acceptable response rate that is partially explained by the importation of a large number of cell phones in the sampling frame, the length of the telephone survey (median completion time of 19 minutes) and the fact that people on their cell phones are less willing to participate in such a long survey.

An additional 1,502 interviews were completed on-line using a self-administered Computer Assisted Web Interface (CAWI) between May 5th and May 25th, 2017. Respondents recruited to the web portion of this survey were randomly selected via Leger's Internet panel, which includes more than 400,000 individuals, of which 61% were recruited randomly over the telephone. The participation rate for the web portion of this fieldwork was over 80%, and the median completion time for the web-based survey was 12 minutes.

To maintain randomness, no specific quotas were set for the sample. However, the sampling procedure included regional stratification, such that we obtained a minimum of 500 respondents from British Columbia (n=502), Alberta (n=500), Manitoba and Saskatchewan (n=501), Ontario (n=501), Quebec (n=500) and the Atlantic provinces of New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland (n=501).

Researchers then applied weighting procedures to the data, using the latest population estimates from Statistics Canada. Given the high quality of the multi-mode approach to data collection used, very minimal weighting was required in order for the sample to match national population characteristics. All data presented in this report are weighted to gender, age, language, education and region of residence. The following table presents the sample composition, highlighting unweighted and weighted results.

Panoramic Survey sample composition, with weighting

	TOTAL		Telephone		Web	
	Unweighted	*Weighted*	Unweighted	*Weighted*	Unweighted	*Weighted*
Province						
British Columbia	17%	**13%**	17%	**13%**	17%	**13%**
Alberta	17%	**11%**	17%	**11%**	17%	**11%**
Saskatchewan	7%	**3%**	7%	**3%**	7%	**3%**
Manitoba	10%	**4%**	10%	**4%**	9%	**4%**
Ontario	17%	**39%**	17%	**39%**	17%	**38%**
Quebec	17%	**24%**	17%	**23%**	17%	**24%**
New Brunswick	5%	**2%**	5%	**2%**	5%	**2%**
Nova Scotia	8%	**3%**	9%	**3%**	7%	**2%**
Prince Edward Island	1%	**1%**	1%	**1%**	1%	**0%**
Newfoundland	3%	**1%**	2%	**1%**	3%	**2%**
Northwest Territories	0%	**0%**	0%	**0%**	0%	**0%**
Yukon	0%	**0%**	0%	**0%**	0%	**0%**
Nunavut	0%	**0%**	0%	**0%**	0%	**0%**
Gender						
Male	48%	**48%**	48%	**49%**	49%	**48%**
Female	52%	**52%**	52%	**51%**	51%	**52%**
Age						
Between 18 and 24	9%	**12%**	8%	**11%**	11%	**12%**
Between 25 and 34	15%	**16%**	14%	**15%**	17%	**18%**
Between 35 and 44	16%	**17%**	14%	**15%**	18%	**18%**
Between 45 and 54	18%	**20%**	16%	**18%**	19%	**22%**
Between 55 and 64	20%	**17%**	23%	**19%**	17%	**14%**
Between 65 and 74	16%	**13%**	18%	**15%**	15%	**12%**
75 or older	5%	**5%**	7%	**7%**	4%	**3%**
Language						
French	19%	**21%**	18%	**21%**	20%	**22%**
English	71%	**67%**	69%	**64%**	73%	**70%**
Other	10%	**11%**	13%	**14%**	8%	**8%**
Highest level of education						
No schooling	0%	**0%**	0%	**0%**	0%	**0%**
Some elementary school	0%	**0%**	1%	**1%**	0%	**0%**
Completed elementary school	1%	**1%**	1%	**1%**	0%	**0%**
Some secondary / high school	5%	**8%**	5%	**9%**	5%	**7%**

Completed secondary / high school	16%	**24%**	18%	**26%**	15%	**22%**
Some technical, community college, cegep, college classique	8%	**8%**	6%	**5%**	11%	**11%**
Completed technical, community college, cegep, college classique	21%	**21%**	19%	**19%**	23%	**23%**
Some university	10%	**7%**	8%	**5%**	12%	**8%**
Bachelor's degree	25%	**20%**	27%	**21%**	24%	**18%**
Master's degree	9%	**7%**	10%	**8%**	7%	**6%**
Professional degree or doctorate	4%	**3%**	5%	**4%**	3%	**3%**
Don't know	0%	**1%**	0%	**0%**	0%	**1%**
Refused	0%	**1%**	0%	**1%**	1%	**1%**
Household income						
Under $20,000	7%	**9%**	6%	**7%**	8%	**10%**
$20,000-$39,999	14%	**15%**	13%	**14%**	15%	**16%**
$40,000-$59,999	16%	**17%**	15%	**16%**	16%	**17%**
$60,000-$79,999	14%	**13%**	13%	**13%**	14%	**14%**
$80,000-$99,999	13%	**13%**	13%	**12%**	13%	**14%**
$100,000-$119,999	8%	**7%**	7%	**6%**	8%	**8%**
More than $120,000	14%	**13%**	16%	**15%**	12%	**11%**
Don't know	4%	**4%**	5%	**6%**	3%	**3%**
Refused	11%	**10%**	11%	**11%**	10%	**8%**

To identify the audience segments, 14 variables representing values, knowledge and behaviours were selected and subjected to Latent Class Analysis (LCA) using Latent Gold 5.1 software. LCA is a mixture model that posits that there is an underlying unobserved categorical variable dividing a population into mutually exclusive and exhaustive latent classes sharing similar characteristics. The cases are assigned into clusters using model-based posterior membership probabilities estimated by maximum likelihood methods.

To make sure of the validity and stability of the findings, the analyses were conducted using 5,000 random sets of start values and each solution was replicated ten times. Four, five and six segment solutions were constructed. The five-segment solution provided the best fit and strongest face validity.

References

Bakk, Zsuzsa, Fetene Tekle and Joeron Vermunt. 2013. Estimating the Association between Latent Class Membership and External Variables Using Bias–adjusted Three–step Approaches. *Sociological Methodology* 43 (1): 272–311.

Boyd, David. 2012. *The Right to a Healthy Environment: Revitalizing Canada's Constitution*. Vancouver: UBC Press.

Cleveland, Mark, Maria Kalamas and Michel Laroche. 2005. Shades of green: linking environmental locus of control and pro–environmental behaviours. *Journal of Consumer Marketing* 22 (4): 198–212.

De Silva, Dakshina and Rachel Pownall. 2012. Going green: does it depend on education, gender or income? *Applied economics* 46 (5): 573–586.

Dunlap, Riley E. and Kent D. Van Liere. 1978. The 'New Environmental Paradigm', *The Journal of Environmental Education*, 9(4): 10–19.

Dunlap, Riley E., Kent D. Van Liere, A. G. Mertig and R. E. Jones. 2000. New trends in measuring environmental attitudes: Measuring endorsement of the New Ecological Paradigm: A revised NEP scale. *Journal of Social Issues,* 56: 425–442.

Evans, Allan. 2017. "If you drop plastic in the ocean, where does it end up?", *The Guardian*, 29 June 2017.

González, Eva, Reto Felix, Lorena Carrete, Edgar Centeno and Raquel Castaño. 2015. Green shades: a segmentation approach based on ecological consumer behaviour in an emerging economy. *Journal of Marketing Theory and Practice* 23 (3): 287–302.

Hulme, Mike. 2008. The conquering of climate: Discourses of fear and their dissolution. *The Geographical Journal,* 174: 5–16.

Khaneman, Daniel and Amos Tversky. Prospect Theory: An analysis of decision under risk. *Econometrica* 47(2): 263–292.

Kilbourne, William and Suzanne Beckmann. 1998. Review and critical assessment of research on marketing and the environment. *Journal of Marketing Management* 14 (6): 513–532.

Lachapelle, Erick, Christopher Borick and Barry G. Rabe. 2012. Public attitudes toward climate science and climate policy in federal systems: Canada and the United States compared. *Review of Policy Research,* 29(3): 334–357.

Lavrakas, P. J. 2008. *Encyclopedia of survey research methods.* Thousand Oaks, CA: SAGE Publications Ltd.

Markowitz, Ezra M. and Azim F. Shariff. 2012. Climate change and moral judgement. *Nature Climate Change.* 2: 243–247.

Meyerowitz, Beth E. and Shelly Chaiken. 1987. The effect of message framing on breast self–examination attitudes, intentions, and behaviour. *Journal of Personality and Social Psychology,* 52(3): 500–510.

Mildenberger, Matto, Peter Howe, Erick Lachapelle, Leah Stokes, Jennifer Marlon and Timothy Gravelle. 2016. The Distribution of Climate Change Public Opinion in Canada. *PLoS ONE* 11 (8): 1–14.

Mostafa, Mohamed. 2007. A hierarchical analysis of the green consciousness of the Egyptian consumer. *Psychology and Marketing* 24 (5): 445–473.

Pickering, Gary J. 2016. Barriers to Change: Climate Change Scepticism and Uncertainty in Canada. Brock University. Hamilton: Environmental Sustainability Research Centre.

Pierson, Paul. 1993. "When Effect Becomes Cause: Policy Feedback and Political Change." *World Politics* 45, no. 4: 595–628.

RBC. 2017. RBC Canadian water attitudes study. Royal Bank of Canada: Blue Water Project.

Schattschneider, E. E. 1935. Politics, Pressure, and the Tariff. New York: Prentice Hall.

Thompson, Richard. 2017. A journey on plastic seas. *Nature* 547: 278–279.

Torgler, Benno and Maria Garcia–Valina. 2007. The determinants of individuals' attitudes towards preventing environmental damage. *Ecologicial economics* 63: 536–552.

WWF. 2017. Public Opinion on Marine Protected Areas. World Wildlife Fund Canada.

Yilmazsoy, Baris, Harald Schmidbauer and Angi Rösch. 2015. Green segmentation: a cross–national study. *Marketing Intelligence & Planning* 33 (7): 981–1003.