Public understanding of

Nature-based Climate Solutions

A MIXED-METHOD STUDY

Dr. Louise Comeau for Nature Canada and the David Suzuki Foundation

June 2021

Nature CANADA

Focus group participants share their thoughts about what they love about nature.

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Introduction

Recent research by Erick Lachapelle[1] for EcoAnalytics found strong support among Canadians for nature-based solutions to climate change. When ranked against other solutions like renewable energy, nature-based solutions ranked first, with 75 percent of respondents supporting or strongly supporting protecting forest, grassland, and wetlands as a means of addressing climate change.

Lachapelle (2021) called for a deeper dive into public understanding of NBCS via trade-off questions and experimental framing to assess limits to this apparent support. Environics, also on behalf of EcoAnalytics, built on Lachapelle's work with 2021 omnibus polling to assess public understanding of NBCS terms (e.g., natural solutions, green infrastructure, or natural assets), and to explore preferences for protecting nature in urban or more remote settings.

Environics (2021)[2] found almost a quarter of respondents were not sure any of the terms best reflected the idea of protecting, restoring and expanding nature so it continues to provide essential benefits and services to people, biodiversity and the climate. Another quarter of respondents opted for green infrastructure or nature-based solutions, particularly older Canadians and Conservative party supporters.

Building on that previous research, Nature Canada and the David Suzuki Foundation undertook the current research to dig deeper into public understanding of and support for NBCS via focus group and surveys methods.

CURRENT RESEARCH

Nature Canada and the David Suzuki Foundation (DSF) are in the early stages of launching a five-year campaign in support of nature-based climate solutions (NBCS). Nature Canada and the David Suzuki Foundation want to:

- Establish a baseline regarding public understanding and support for nature-based climate solutions.
- Effectively define NBCS in the public domain.

1 Lachapelle (2021). Which Canadians support nature-based solutions to the climate emergency? EcoAnalytics
2 Environics (2021). Environmental Attitudes and Covid 19: Report on Round 2 Omnibus questions. EcoAnalytics

- Establish the value proposition for NBCS (e.g., “Make the case”).
- Develop communications materials and social media campaigns targeted to specific audiences that effectively increase public understanding of NBCS and engagement in behaviours in support of NBCS.
- Broaden engagement and collaboration among nature and climate change non-government organizations in support of NBCS (“How do we have a good conversation about NBCS?”).
- Develop events series (workshops, webinars) for Nature Canada and DSF staff, partners, and existing and potential funders.

To support these goals, we set out to answer the following research questions:

1. Do Canadians define nature-based climate solutions the way conservation groups do?
2. Do Canadians think NBCS are an effective solution to climate change?
3. Do Canadians support NBCS even if there are restrictions on the land they access or own?
4. Can strategic narrative framing affect NBCS effectiveness beliefs and willingness to engage in behaviours in support of NBCS?
5. Do demographics and strength of motivation toward environmental goals influence support for NBCS?

To answer these research questions, we used qualitative and quantitative methods to engage 125 people in a focus group and to survey 1,504 everyday Canadians (online panel, general population), and 1,844 nature allies recruited by Nature Canada through cause-aligned metrics on Facebook. The survey measured knowledge, motivation toward the environment, beliefs, norms and behaviours. The survey included a strategic framing experiment to test willingness to engage in NBCS behaviours.

Highlights

Five lessons we learned about communicating nature-based climate solutions (NBCS)

Nature Canada and the David Suzuki Foundation are on solid ground in promoting NBCS that defend nature and reduce species loss. There are opportunities to better engage allies and the public in NBCS supportive behaviours. To effectively achieve Nature Canada and David Suzuki Foundation goals, however, requires thoughtful attention to the lessons we learned from answering our five research questions, and a focus on audience needs.

> For a summary of the demographic variables associated with answers to some of our questions, see Table 2; further demographic detail is the main body of the report.

Research question #1. Do Canadians define nature-based climate solutions the way conservation groups do?

Not all Canadians define nature-based climate solutions the way conservation groups do.

We tested whether people understand NBCS as:

- Efforts to defend and restore natural areas, like forests and wetlands, to remove carbon dioxide, protect us from climate change impacts, and help reverse wildlife decline

OR

- Actions we take on behalf of the environment (protecting nature using natural products, recycling, composting, eating less meat, using less plastic, and renewable energy like wind and solar)

The first definition emerged from Nature Canada discussions and represents the way that conservation groups define NBCS. The second definition emerged from focus group participants who had not heard of NBCS and guessed answers focused on doing something FOR the environment.

In our survey, when given the choice between the two definitions, almost half (46%) of the general population sample define NBCS the way conservation groups do, as did 67 percent of the cause-aligned sample (i.e., the nature-allies). Almost four in 10 of the general population sample (39%), however, think NBCS relate to actions like using natural products and recycling; almost one-third of the cause-aligned sample (29%) think the same. Fourteen percent and six percent, respectively, are not sure.

CAUSE-ALIGNED SAMPLE:

Defend and Restore Nature	Recycle, Use less Plastic
✓	✗
67%	29%

GENERAL POPULATION SAMPLE:

Defend and Restore Nature	Recycle, Use less Plastic
✓	✗
46%	40%

Lesson #1

Don't assume Canadians will understand NBCS the same way as conservation groups do. All communications should define NBCS especially when aiming to engage older, lower income and less educated Canadians, including within cause-aligned audiences.

Research question #2. Do Canadians think NBCS are an effective solution to climate change?

Canadians believe NBCS are an effective solution to climate change regardless of how they define it. Overall, 71 percent of general population respondents believed NBCS are effective (41%) or very effective (30%) at the beginning of the survey, as did 86 percent of cause-aligned respondents (34% effective, 52%, very effective).

We also tested belief in the effectiveness of NBCS after exposure to experimental narratives. We can compare these initial results with the same question asked at the end of the survey when we measured the influence of experimental narratives on NBCS are effective beliefs. Any differences between results early in the survey and the control group can be attributed to a survey effect.

Compared to the beginning of the survey, 78 percent of the general population sample's control group felt NBCS are very effective or effective, an increase of seven percent by the end of the survey. The shift is the result of an increase in "effective" beliefs, with scores increasing eight percent (minus a 1% decline for "very effective"). There is also a survey effect for the cause-aligned respondents, with NBCS "effective" scores increasing six percent to 40 percent for the control group, compared to the beginning of the survey (34%). **These increases in effectiveness beliefs in the control groups are exciting in that they show how influential simply exposing people to information about NBCS can be in increasing confidence in their effectiveness.**

There also are positive effects on NBCS effective beliefs from the experimental narratives, which we report below in Lesson #3.

Lesson #2

Explain how NBCS works and why it is effective. This is especially important for general population audiences and especially when aiming to engage lower income, less educated, and minority Canadians, including within cause-aligned audiences. Don't ignore rural populations.

Research question #3. Do Canadians support NBCS even if there are restrictions on land they access or own?

All respondents were asked to rate their agreement with the following statement:

> **"I support nature-based climate solutions to protect forests, grasslands, or wetlands even if that means some restrictions on how I use land that I own, or land that I access like parks."**

Seventy-four percent of general population respondents strongly agree or agree with this statement (45% agree, 29% strongly agree, 2% are not sure), as do 84 percent of cause-aligned respondents (35% agree, 51% strongly agree, 4% are not sure).

Lesson #3

Be confident about Canadians' support of NBCS, especially among younger, more educated, and higher-income Canadians. We see a pattern in the demographic results where political parties most aligned with climate action (e.g., Greens and NDP) strongly support NBCS. These results suggest, demographics alone are not driving results and that values/identity is also playing a role.

Research question #4: Can strategic narrative framing affect NBCS effectiveness beliefs and willingness to engage in behaviours in support of NBCS?

We tested two narratives: one focused on the effectiveness of NBCS (the How NBCS Works narrative), the other highlighting connectedness to nature values (the Biocentric* narrative).

*A Biocentric worldview sees humans as one part of nature, with nature's needs and rights being just as important as humanity's needs and rights. Seeing the human-nature relationship as interconnected and interdependent is common among people with a Biocentric worldview. A worldview refers to the package of values and beliefs that inform how a person interprets the world around them.

How NBCS Works Narrative

Nature-based climate solutions work because living beings use sunlight to turn carbon dioxide into sugars to grow. The more we protect and restore forests, grasslands, wetlands, and oceans, the more carbon we store. At the same time, nurturing green landscapes protects us from the effects of climate change by holding or slowing water, an important ecological service as weather becomes extreme. We can, combined with renewable energy, work with nature to grow our chances of solving climate change and reverse species loss. We can protect a third of Canada's land, plant trees and expand local, provincial and national parks, restore wetlands and diverse forests, protect shorelines on our rivers, lakes and coasts, and grow food in ways that protect the soil. Rebuilding the natural environment means, we all thrive.

Biocentric Narrative

Nature in our neighbourhoods relaxes and restores our well-being. We enjoy fresh air, the smell of spring flowers, and listening to birds. Nature's beauty recharges us. We appreciate nature but our relationship with nature has become unbalanced causing climate change and loss of wildlife. We can renew our relationship with nature. We can, combined with renewable energy, work with nature to grow our chances of solving climate change and reverse species loss. We can protect a third of Canada's land, plant trees, expand local, provincial and national parks, restore wetlands and diverse forests, protect shorelines on our rivers, lakes and coasts, and grow food in ways that protects soil. We can restore nature to help solve climate change, protect plants and animals, and make nature accessible for all.

We wanted to know whether the narratives positively influence peoples' belief in the effectiveness of NBCS and willingness to engage in behaviours in support of NBCS (e.g., donate, contact politician, sign petition).

Post-experimental NBCS effectiveness beliefs

Post-experimental beliefs in the effectiveness of NBCS shift from effective to very effective in the general population sample.

- The "How NBCS Works" narrative increased respondents' NBCS beliefs 10 percent, compared to the control group (very effective, 29% for the control group, increasing to 39% after exposure).
- The "Biocentric" narrative had a modest influence, with the number of respondents ranking NBCS as very effective increasing slightly (to 31%), compared to the control group (29%).
- As a result of these shifts upward to "very effective", respondents rating NBCS as "effective" drops. "Effective" rankings fell from 49 percent in the control group to 41 percent after exposure to the "How NBCS Works" narrative, and to 46 percent after exposure to the "Biocentric" narrative.

The pattern is similar for the cause-aligned respondents.

- The "How NBCS Works" narrative increased belief that NBCS are "very effective" by eight percent (55%), compared to the control group (47%)
- The Biocentric narrative increased belief that NBCS are very effective five percent (52%), compared to the control group.
- Scores for "effective" fall five percent (35%), compared to the control group (40%) after exposure to both narratives.

We also explored the experimental results through probabilistic clusters analysis (assignment of respondents based on defining attributes):

Passive Supporters cluster: *These respondents are somewhat more conservative than Nature-Committed respondents (Figure 2), earn less money and are younger and more urban. They identify with environment and nature values, but these values are not as integrated into their identity as it is for Nature-Committed respondents.*

Nature-Committed cluster: *These respondents have stronger environmental identities and believe that taking care of the environment is a fundamental part of who they are and the way they have chosen to live their life. They consider taking care of themselves and the environment as inseparable.*

These two clusters are a subset of the combined sample, comprising about one-third of total respondents. These clusters represent the least and most engaged respondents on environmental issues.

The "Biocentric" and "How NBCS Works" narratives had a positive influence on the Passive Supporters, with the "How NBCS Works" and "Biocentric" narratives both increasing NBCS effectiveness beliefs.

The “How NBCS Works” narrative had little positive effect on the Nature-Committed respondents. The Biocentric narrative *decreased* effectiveness beliefs among this group of respondents.

Post-experimental: NBCS supportive behaviours

After respondents read their experimental narrative, or at the end of the survey for the control group, we asked respondents to indicate if they were more or less willing to engage in a list of pro-social behaviours focused on NBCS (For example, “do you feel more or less willing to...donate financially to an organization working on nature-based climate solutions.”). As noted, we used this list of general pro-social behaviours earlier in the survey to measure pro-social engagement. Level of pro-social engagement is an important predictor of our statistical analysis (e.g., cluster analysis and regressions).

Behaviours are hard to change and a survey is only a moment in time. As a result, we don’t expect to change the world with narrative experiments. We see only slight variations due to the experiments, compared to the control group.

Neither experimental narrative had a positive influence on the more engaged Nature-Committed cluster in terms of willingness to act in support of NBCS. Passive Supporters, on the other hand, show modest positive gains after exposure to both narratives, shifting slightly from neutral to more willing (e.g., donate, attend a meeting or contact a politician).

Lesson #4

Don’t assume NBCS narratives will work the same way for people less and more engaged on environmental issues. To avoid backfire effects, communicate and engage in ways that meet the needs of differentially engaged audiences. Continuous testing of narratives may identify opportunities to communicate with different audiences using one narrative, and it may be the case that different tactics and frames may be required to effectively communicate NBCS.

How we communicate, or the values we prioritize, can activate external values and extrinsic motivation (e.g., money, rewards and status), or intrinsic values and motivation (love, relationships, compassion). The goal is to nurture environmental motivation (e.g., biocentric” connectedness to and love of and respect for nature, empathy) and motivation towards environmental practice by increasing people’s environmental autonomy, competence and relatedness to others like them.

Table 1 summarizes communication and engagement opportunities that are based on the level of environmental motivation of different audiences.

Table 1. Communication and engagement tactics for Nature-Committed and Passive Supporter Audiences*

	Nature-Committed Audience	Passive Supporter Audience
Communication and engagement considerations	**Goal:** Have firm Biocentric values	**Goal:** Need Biocentric values nurtured
	Objective: Sustain motivation/ self-determination	**Objective:** Increase intrinsic motivation/self-determination
	Messaging: Don't overemphasize money and rewards, instead celebrate community feeling, caring, compassion, love of nature, feedback on how actions increase justice, restoration, reduction of harm	**Messaging:** Activate feelings of connection, caring, empathy, wonder, love of nature, gratitude, respect for nature, moral values (justice, restoration, do no harm)
	How to resonate and engage: Enjoys mastering environmental challenges, recognize pleasure protecting the environment, fun, joy, alignment of interests, to express their identity, perseverance	**How to resonate and engage:** Build competence (knowledge, how to), provide opportunities to engage in activities that build environmental identity, nurture perseverance
	Nurture feeling of belonging to a community that cares about them and they care about	Profile role models, people like them doing valued behavior, profile others endorsing the idea, activity
	Provide opportunities to express environmental identity, to be who they are	Provide opportunity to try new things, see others act, know actions please others
	Set goals, provide feedback on effectiveness of their efforts	Highlight why action is sensible, a good idea, a good or important thing to do, something they can do
	Wants to make their own choices about how to express themselves	Needs structure, options to make choices

* Based on this research and insights from Deci, E. L. & Ryan, R. M. (Eds.). (2002). *Handbook of self-determination theory.* Rochester, NY: University of Rochester Press.; Comeau, L. A. (2014). *Exploring the ethical orientations of environmental lifestyle practitioners: A mixed-method study.* Dissertation. Forestry and Environmental Management. University of New Brunswick. Fredericton, NB.; Mission Models Money and Common Cause. (2013). The art of life: Understanding how participating in arts and culture can affect our values. In (pp. 41). UK: Common Cause.

Table 1 suggests messaging tactics to reach audience segments more or less engaged on environmental issues. Nature-Committed people, for example, want to live their Biocentric values. They need engagement that sustains their self-determination, which means not overemphasizing money and rewards. Nature-Committed people enjoy mastering environmental challenges so give them opportunities to learn and master new activities in support of environmental protection, recognize that they feel pleasure protecting the environment, and emphasize the fun and joy of an activity. Align engagement with this group's interests and help them express their "Biocentric" identity. Nurture feelings of belonging to a community that cares about them and that they care about. Provide opportunities to express environmental identity, to be who they are. Set goals, provide feedback on effectiveness of their efforts, and ensure programs allow for making choices about how to express themselves.

Passive Supporters, on the other hand, require nurturing of "Biocentric" values and engagement that helps them to increase their motivation toward environmental goals. That means starting with incentives and rewards that, over time, fade away in favour of activities that nurture environmental identity. Engagement efforts need to build competence (knowledge, how-to), and provide opportunities to engage in activities that build environmental identity. Profiling role models, people like them demonstrating valued behavior, and showing others endorsing the idea, activity will help them identify with "Biocentric" worldviews. Providing opportunities to try new activities, to see others act, to feel their actions will please others, and to be recognized for their efforts will help increase their motivation. Messaging for Passive Supporters should highlight why an action is a sensible, good idea, a good or important thing to do, or something they can do themselves. Provide structure, and options to make choices.

Research question #5: Do demographics and strength of motivation toward environmental goals influence support for NBCS?

The strength of a person's environmental identity (e.g. motivation toward environmental goals) is a more important predictor of results than demographics (based on regression model analysis). However, that is not to say that demographics are not important to guiding future NBCS communications work. In fact, results show that generally speaking, younger, more educated and wealthier people are more supportive of NBCS. Regionally, geography has little influence on results except for questions related to climate change. Table 2 summarizes the demographic variables significantly associated with some of our questions. Additional demographic detail is provided in the main body of the report.

Table 2. Demographic highlights

		Define NBCS efforts to defend nature	NBCS Very effective	NBCS support with restrictions
Gender	Gen pop		Female **32%**	
	Cause-aligned			
Age	Gen pop			55+ **33%**
	Cause-aligned	18-34 years **74%**		18-34 **57%**
Income	Gen pop		<$20k **38%**	$80k-$99.9k **53%**
	Cause-aligned	$100k **76%**	<$20k **55%**	

		Define NBCS efforts to defend nature"	NBCS Very effective	NBCS support with restrictions
Education	Gen pop	Grad **49%**	Grad **44%**	
	Cause-aligned		Grad **52%**	Grad **54%**
Region Community type	Gen pop	Rural **53%**	City **38%**	
	Cause-aligned			
Vote intention	Gen pop	Green **52%**	Bloc **47%**	Bloc **39%**
	Cause-aligned	NDP **75%**		Green **66%**

Key take-aways from the demographics analysis:

In the case of climate change, results from the Prairie provinces are significantly different, compared to people living in Quebec, British Columbia, Ontario and the Atlantic.

- Rural residents support NBCS more than urban and suburban residents do. Travelling less than one kilometre to access nature is also associated with greater support for nature-based solutions.
- Females rank higher on normative questions (moral reasons to take responsibility for greenhouse gases, care more about nature).
- Political party affiliation influences results. Left-leaning respondents (Greens, New Democratic Party and Bloc supporters) are generally more environmentally engaged than centre and right-leaning respondents (Conservatives and Liberals). However, Conservatives are strongly supportive of NBCS (even with restrictions on land they own or access), believe that the benefit of NBCS is important to defending nature, and that it is morally correct for countries to take full responsibility for their greenhouse gas emissions.

These demographic insights suggest values are an important driver of results. Strength of environmental identity (a person's motivation toward environmental goals) is the critical factor behind our survey results, according to statistical analysis. Generally speaking, general population survey respondents are less environmentally engaged than cause-aligned survey respondents. Essentially, these two groups differ in terms of internal or external locus of control and this insight can help guide communications about NBCS.

Statistical analysis also shows that within each of our samples (e.g., general population and cause-aligned), there are people who are more or less environmentally engaged. We are better served thinking about overarching orientations within the combined samples to learn lessons about how to communicate and engage as indicated in Table 3.

Table 3. Nature-Committed, Passive Supporter sample distribution

	General Population sample	Cause-aligned sample
Nature-Committed	36%	74%
Passive Supporter	65%	26%

As we can see in Table 3, almost over one-third of general population respondents have strong environmental identities, while that number jumps to almost three-quarters in the cause-aligned sample. These identities are as measured by our motivation toward the environment scale (Appendix 2 provides additional detail on the motivation theory (self-determination) underpinning this analysis).

Figures 1 and 2 summarize attributes associated with people who are more or less engaged on environmental issues.

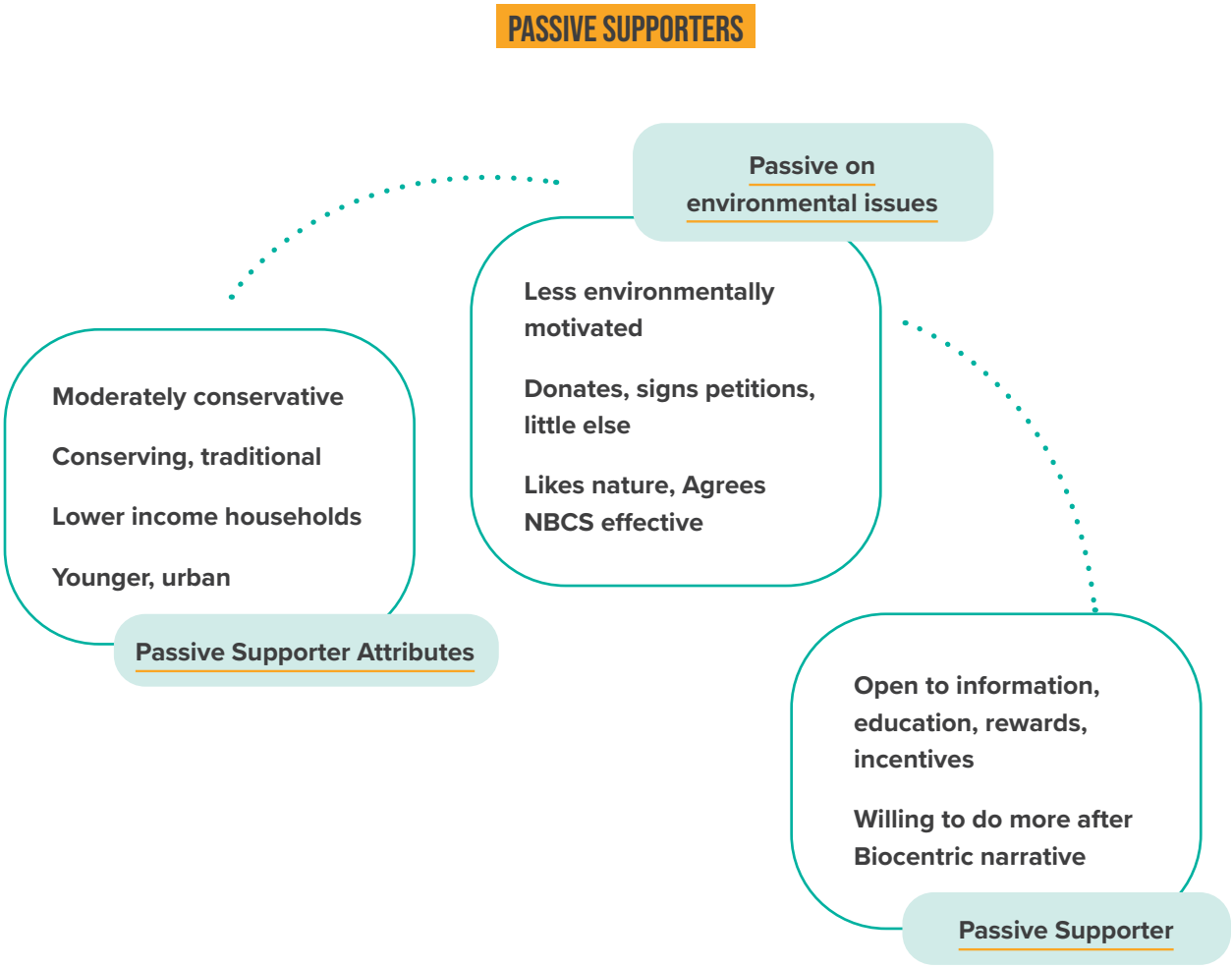


Figure 1. Passive Supporters attributes

Passive supporters are somewhat more conservative than Nature-Committed respondents (Figure 2). They earn less money and tend to be younger and more urban. They identify with environment and nature values, but these values are not as integrated into their identity as it is for Nature-Committed respondents.

While for Passive Supporters, environmental values are less integrated with their identity, they support NBCS and believe they are effective. These respondents react well to new information and to narratives that activate moral dimensions. **Nurturing "Biocentric" values in this audience is a way to strengthen engagement in NBCS.**

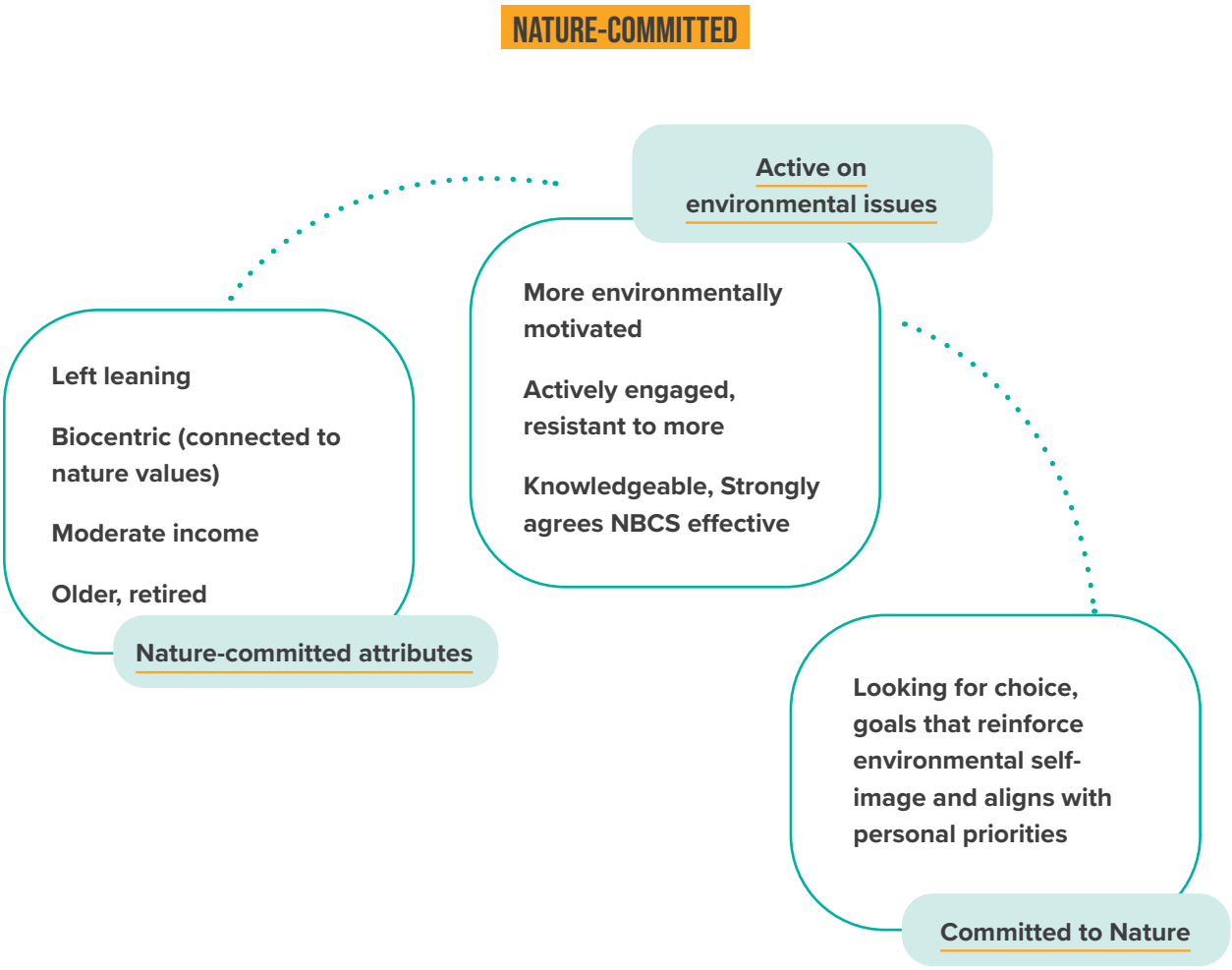


Figure 2. Nature-Committed attributes

Nature-Committed respondents, on the other hand, have stronger environmental identities and believe that taking care of the environment is a fundamental part of who they are, how they have chosen to live their life, and that they consider taking care of themselves and the environment as inseparable.

Nature-Committed respondents are left-leaning, hold strong "Biocentric" values, earn somewhat more than Passive Supporters do, are somewhat older and retired, but are more motivated toward environmental outcomes as environmental values are more integrated with their identity. **These respondents are more knowledgeable about environmental issues and strongly agree that NBCS are effective.**

These results suggest communications on NBCS should ensure Nature-Committed audiences receive concrete, actionable, goal-oriented messages structured around the recommendations summarized in Table 1.

Lesson #5

Communications framing and narratives need to consider the environmental identity of target audiences. We can undermine motivation in allies if we use the same narratives and engagement approaches that work with people less engaged. These different audiences may need their own narrative framing and engagement. The approach need not be complicated.

Testing is required, but could involve simple choice architecture and narratives could evolve that work well for all audiences.

Thinking this way meets people where they are. Role models and education are important for Passive Supporters. Nature-Committed personalities, on the other hand, are characterized by climate change concerns and need goal-oriented activities that make them feel good, increase their sense of mastery and community belonging. We risk undermining motivation in Nature-Committed audiences if we do not adjust our engagement approach.

Hazards ahead?

Nature Canada and the David Suzuki Foundation are on solid ground in promoting NBCS, but also in engaging the public in NBCS supportive behaviours. There are, however, potential risks to manage.

Challenge: Our results show a strong connection between effectiveness beliefs and support for NBCS, including supportive behaviours. A potential risk to effectiveness beliefs exists due to concerns climate activists can have about overstating NBCS contributions and conservation groups feeling NBCS are undervalued. Public messaging undermining effectiveness beliefs could potentially lower support for NBCS.

Solution: One way to manage this risk is for Nature Canada and the David Suzuki Foundation to convene and facilitate processes that facilitate dialogue among climate and conservation groups. Future communications research could also test the effect on support for NBCS of these critical narratives (we did not do that in this current research).

Challenge: A second challenge relates to trust in government. Nature-Committed respondents tend to trust the government less than Passive Supporters do.

Solution: Environment and nature-focused campaign communications often challenge governments to do more on environment and nature issues, calling into question government competence or commitment. Additional exploration is required, including investigating existing research in the area, to better understand the influence of government trust on willingness to engage in NBCS-supporting behaviours.

Recommendations

- Disseminate these results, as appropriate among allies, including nature-focused networks, funders, and governments.
- Focus communications messaging on defining NBCS, explaining its effectiveness toward particular goals, whether lowering biodiversity loss, increasing protected spaces in remote and urban environments, deploying NBCS to keep greenhouse gases out of the air, and climate change adaptation.
    - Guide definition work by the observation that the public confuses the idea of people doing something FOR nature, versus people leaving or facilitating nature to DO something itself (a question of nature's agency)

Field test communications and engagement approaches identified in Table 1. Bring arts and culture into the work to nurture "Biocentric" (connected to nature) and intrinsic values (care, compassion, community)

Field test NBCS frames suggested by survey respondents' answers to open-ended questions ("Other" or "Why do you feel this way?", and "Any final comments"). These terms suggest ideas and words to create NBCS frames for social media testing, or overarching campaign frames like "It's Our Nature"; "Heal Nature, Heal Ourselves". Terms used by focus group participants that could be tested, include:

- Through workshops and webinars, further refine the interpretation of these results to better inform communications and campaigning (e.g., implement recommendations in Table 1).

Background

Table 4 identifies metrics used to measure demographics, strength of environmental identity (motivation toward environmental goals), factual knowledge, beliefs and norms toward nature and nature-based climate solutions, engagement in social behaviours (donating, attending meetings about issues a person cares about), as well as willingness to engage in nature-based climate solutions.

Table 4. Research frame

DEMOGRAPHICS

Gender

Age

Province

Community

Community to age 18

BIPOC

Income

Education

Federal vote

Ideology

BEHAVIOURS

Pre and Post Experiment: Donate

Sign Petition

Purchase good or boycott based on ethics

Call, write, speak to politician

Attend webinar

Attend meeting, rally

STRENGTH OF ENVIRONMENTAL IDENTITY

SELF-DETERMINATION/ AGENCY

Intrinsic (Feel pleasure improving, Feel pleasure mastering)

Integrated (Who I am, Chosen to live my life, Environment/me inseparable)

Identified (Chosen to contribute myself, Sensible to care, Good idea to do something, Would regret not doing something)

External (Care to avoid criticism, Care because of family/friends, Others upset if I did not care)

FACTUAL KNOWLEDGE

Definition of NBCS

BELIEFS, NORMS

NBCS effective (pre and post-experiment)

Support NBCS even with restrictions

Climate change threat to nature

Climate Change threat to people

People should do more to care about nature than they do

Moral or competitive thing to do

Net Zero preferences:

Role of NBCS in preventing pollution

Role of NBCS in removing emissions from the air

Role of NBCS in protecting nature and people from extreme weather

Trust in government

Method

This is a mix-method study combining qualitative research using a large-focus-group and a survey of two population groups: the general population using an online panel, and nature-allies recruited via Facebook. The focus group informed the survey design and the Facebook sample serves as a cross check on general population results. The Facebook sample, which we describe as "cause-aligned" throughout this report, is critical to our understanding of ally and general population differences, but most importantly to test how framing narratives positively or negatively affect cause-aligned respondents, compared to general population respondents.

RECRUITMENT MEGAGROUP

We retained Narrative Research to recruit participants for an online Zoom-hosted MegaGroup, which is an online session with a large number of participants. Respondents participate by responding to closed ended polling questions and providing verbatim chat messages, resulting in a qualitative/quantitative approach. The session was led by two moderators (using webcam and computer audio), allowing for the explanation of the topics. Respondents did not have audio capabilities.

MegaGroup participants were recruited by Narrative Research through targeted Facebook advertising aimed at all demographics, interests, behaviours, genders, language, and ages between 18 to 65 years old generating a general population-like sample. Potential participants responded to a recruitment ad and then were screened for age, location (to ensure Greater Toronto Area and B.C. Lower Mainland participation), income, community type, education and political ideology. We also screened out people who believed climate change is a hoax.

A total of 515 respondents registered by providing their email address. After a duplication check, a short screener was sent to 493 respondents to collect demographic information, provide more information about the session, and confirm their availability to participate. Following screener completion, another duplication check was conducted, and a link to register to the session was provided via Zoom. A total of 168 completed the screener, and 145 registered for the session.

On the day of the MegaGroup, 125 people actually participated in the live, online session. The sample skewed female (77%). One-third of respondents were under 30 years of age, 46 percent aged 30 to 49 years old, 23 percent aged 50 to 69 years old, and 2 percent over 70. For community type, 54 percent were from urban centres, 33 percent from suburban communities, and 13 percent from small towns or rural communities. Fifty-eight percent were from Ontario, 12 percent from British Columbia, 11 percent from Quebec, nine percent from Alberta, five percent from Nova Scotia and two percent from Manitoba, New Brunswick and Saskatchewan.

We used the MegaGroup format because of its efficiency in capturing participant views through chat and online polls. This information guided survey design, survey question refinement, and helped define the experiment narratives and focus.

MegaGroup results, for example, suggested participants have different understandings of what nature-based climate solutions are, but also support for NBCS, with some decline when asked about support even if there are restrictions on land people own or access. Previous research by EcoAnalytics had also found high support levels for NBCS so in this investigation we chose to explore perceptions of effectiveness.

Chat text, in particular, guided the creation of the two experimental narratives used in the survey: a "How NBCS Works" narrative and a "Biocentric" narrative (responding to many statements expressing love and appreciation for nature).

RECRUITMENT OF GENERAL POPULATION SAMPLE

Narrative Research also recruited 1,504 survey respondents using Dynata's (formerly Research Now) nearly 1 million-person panel. The survey was conducted from March 16 to 24, 2021. The completion rate was 61 percent and took on average 12.3 minutes to complete. An online sample is a sample of convenience, and a margin of error cannot be applied. If this sample were a probability sample, the margin of error would be plus or minus 2.5 percentage points, 19 times in 20.

RECRUITMENT OF CAUSE-ALIGNED SAMPLE

We also recruited 1,844 people to complete the survey through Facebook with a 35 percent completion rate. The Facebook cause-aligned sample, determined by creating a lookalike audience with Nature Canada's Facebook followers, serves as a cross check with general population results.

The survey used for the general population and cause-aligned samples is in Appendix 3.

Total participants

- MegaGroup: 125
- Survey respondents: 3,348
  - Cause-aligned: 1,844
  - General population: 1504

NARRATIVE FRAMING

We conducted a strategic framing experiment using two narratives both of which emerged from focus group observations. The first emphasizes why NBCS are effective, and the second emphasizes connectedness to nature and love values (Biocentric values/worldview). Each narrative is nearly the same length and repeats general NBCS information in both. Both aspects are meant to reduce the risk of confounding effects on experimental results.

How NBCS Works Narrative

Nature-based climate solutions work because living beings use sunlight to turn carbon dioxide into sugars to grow. The more we protect and restore forests, grasslands, wetlands, and oceans, the more carbon we store. At the same time, nurturing green landscapes protects us from the effects of climate change by holding or slowing water, an important ecological service as weather becomes extreme. We can, combined with renewable energy, work with nature to grow our chances of solving climate change and reverse species loss. We can protect a third of Canada's land, plant trees and expand local, provincial and national parks, restore wetlands and diverse forests, protect shorelines on our rivers, lakes and coasts, and grow food in ways that protect the soil. Rebuilding the natural environment means we all thrive.

Biocentric Narrative

Nature in our neighbourhoods relaxes and restores our well-being. We enjoy fresh air, the smell of spring flowers, and listening to birds. Nature's beauty recharges us. We appreciate nature but our relationship with nature has become unbalanced causing climate change and loss of wildlife. We can renew our relationship with nature. We can, combined with renewable energy, work with nature to grow our chances of solving climate change and reverse species loss. We can protect a third of Canada's land, plant trees, expand local, provincial and national parks, restore wetlands and diverse forests, protect shorelines on our rivers, lakes and coasts, and grow food in ways that protect soil. We can restore nature to help solve climate change, protect plants and animals, and make nature accessible for all.

Three groups (for each sample) were created to conduct the experiment: a control group where participants were not exposed to a narrative, and two narrative groups, with each exposed to one of the narratives. After reading the narrative, or near the end of the survey for the control group, all respondents answered a repeat question on NBCS effectiveness and whether after completing the survey, respondents were less or more willing to engage in NBCS supportive behaviours.

SAMPLE DEMOGRAPHICS

Table 5 summarizes demographics for both samples. Regional quotas for the general population sample are in Appendix 3 and aimed to ensure a balance among regions so is somewhat oversampled in the Atlantic. The cause-aligned sample skews somewhat to Ontario (44% compared to 38% of Canadian population) and the general population underrepresents Ontario at 22 percent.

The samples are similar in age, education, and BIPOC representation, but differ in community type with cause-aligned respondents more city-rural and general population respondents more city-suburban. Twenty-four percent of cause-aligned respondents prefer not to report their 2020 household income.

The samples also differ in their politics:

- 30% of general population respondents say that if an election were held today they would vote Liberal, compared to 16% of cause-aligned respondents.
- 6% of general population respondents would vote Green, compared to 22% of cause-aligned sample
- 12% of the general population would vote New Democratic Party, compared to 20% of cause-aligned respondents.
- 21% of general population respondents would vote Conservative, compared to 7% of the cause-aligned sample.

Table 5. Sample demographics

Demographics	General population	Facebook
Female	52%	84%
Age		
18 to 24	6%	9%
25 to 34	15%	21%
35 to 44	11%	15%
45 to 44	14%	19%
55 to 64	24%	19%
65 to 74	21%	15%
75+	7%	5%
Province		
BC	20%	19%
AB	12%	13%
SK	6%	2%
MN	6%	5%
ON	22%	44%
QC	12%	6%
NB	10%	3%
NS	10%	5%
PEI	.3%	7%
NFLD	3%	1%
Access nature		
<1 km	47%	60%
1-4 km	21%	23%
5-9 km	20%	11%
10-15 km	6%	3%
>15km	7%	4%

Demographics	General population	Facebook
Community		
City	43%	42%
Suburb	32%	22%
Small town, rural	25%	34%
Community to 18		
City	41%	35%
Suburb	25%	22%
Small town, rural	32%	40%
Home		
Rent	32%	37%
Own	66%	60%
Education		
Some high school	4%	3%
Graduated High school	18%	12%
Some college / CEGEP	10%	12%
Graduated college / CEGEP graduate	22%	20%
Apprenticeship	2%	2%
Some university	8%	11%
Undergraduate university degree	24%	24%
Post-graduate university degree	11%	15%
Prefer not to say	.9%	3%
BIPOC		
Yes	10%	11%
No	90%	89%

Demographics	General population	Facebook
Household income 2020		
Under $20,000	8%	14%
$20,000 to $39,999	19%	23%
$40,000 to $59,999	19%	19%
$60,000 to $79,999	16%	15%
$80,000 to $99,999	14%	10%
$100,000 to $119,999	10%	8%
$120,000 to $159, 999	8%	5%
$160,000 to $199,999	4%	3%
$200,000 or more	2%	2%
Prefer not to say	8%	24%
Vote intention		
Liberal Party of Canada	30%	16%
Conservative Party of Canada	21%	7%
People's Party of Canada	2%	.3%
Bloc Québécois	3%	1%
Green Party of Canada	6%	22%
New Democratic Party	12%	20%
Undecided	21%	32%
I would not vote	5%	3%
Political ideology (0, left to 10, right)	M = 5.02	M = 3.36

Results

This report complements crosstab results provided separately for the cause-aligned and general population samples. In this section, we provide additional analysis both to summarize results but also to explore reasons for the results.

This results section starts with factual knowledge (define NBCS), then summarizes results for beliefs and norms (trust in government, support of NBCS even with restrictions, effectiveness of NBCS, climate change, approaches to net zero and reasons and benefits associated with NBCS), and closes with behaviours.

FACTUAL KNOWLEDGE

Not all Canadians define nature-based climate solutions the way conservation groups do. We tested whether people understand NBCS as:

- Efforts to defend and restore natural areas, like forests and wetlands, to remove carbon dioxide, protect us from climate change impacts, and help reverse wildlife decline, or
- Actions we take on behalf of the environment (protecting nature using natural products, recycling, composting, eating less meat, using less plastic, and renewable energy like wind and solar.

The first definition emerged from discussions within Nature Canada. The second definition emerged from focus group participants who had not heard of NBCS and guessed answers focused on doing something FOR the environment.

When asked to choose among these two options (Table 6):

- under half, 46%, of general population respondents chose the first NBCS definition (same as conservation groups)
- 67% of cause-aligned respondents chose the first NBCS definition (same as conservation groups)
- More than a third, 39%, of general population respondents chose the second NBCS definition (general pro-environmental behaviours)
- 27% of the cause-aligned respondents chose the second NBCS definition (general pro-environmental behaviours)

  Demographics: NBCS Definition, ***general population sample:***

  In the general population sample, rural residents were significantly more likely to choose the first, “defend and restore nature” definition for NBCS (53%), compared to urban (43%) and suburban (46%) respondents. People with some college or university (47%) or with college or university diplomas or degrees (49%) also chose that definition, compared to 40 percent of people with high school (39% with less than high school). New Democratic Party (NDP) and Green Party of Canada respondents (50% and 52%, respectively) opted for the first definition, compared to 32 percent of Bloc Quebecois respondents, 49 percent of Liberals and 45 percent of Conservatives.

  Demographics: NBCS definition, ***cause-aligned sample:***

  In the cause-aligned sample, younger respondents (18 to 34 years old) were significantly more likely (74%) to choose the first, “defend and restore nature” definition for NBCS compared to 35 to 64 year olds (66%) and those over 55 years of age (64%). Over three-quarters of high-income cause-aligned respondents (over $100k) opted for the first definition, compared to lower-income respondents (<$20k, 58%), as did three-quarters of Greens and NDP respondents.

Table 6. Definition of NBCS

Definition of NBCS	General population	Cause-aligned
Actions we take to protect nature like using natural products, recycling, composting, eating less meat, using less plastic, and renewable energy like wind and solar.	40%	27%
Efforts to defend and restore natural areas, like forests and wetlands, to remove carbon dioxide, protect us from climate change impacts, and help reverse wildlife decline.	46%	67%
Not sure	14%	6%

BELIEFS, NORMS

NBCS effectiveness

Overall, 71 percent of general population respondents believed NBCS are effective (41%) or very effective (30%) at the beginning of the survey, as did 86 percent of cause-aligned respondents (34% effective, 52%, very effective). We can compare these starting results with control group responses to the same question at the end of the survey. Any differences can be attributed to a "survey effect", where completing the survey itself influences results.

Compared to the beginning of the survey, 78 percent of the general population sample's control group feel NBCS are very effective or effective, an increase of seven percent from the beginning of the survey. The shift is the result of an increase in "effective" beliefs, with scores increasing eight percent, with a one percent decline for "effective". There also is a survey effect for the cause-aligned respondents, with belief in NBCS being "effective" increasing six percent to 40 percent for the control group, compared to the beginning of the survey (34%). These are exciting results showing how influential exposing people to information about NBCS can be in increasing confidence in their effectiveness.

Simply completing the survey considerably increased belief in the effectiveness of NBCS

Demographics: NBCS effectiveness, **general population sample:**

In the general population sample, females are more likely to say that NBCS are very effective (32%) than males (27%), while more rural residents (50%) say NBCS are effective (26% say very effective), compared to urban respondents (38% effective, 33% very effective) and suburban respondents (40% effective, 28% very effective). College and university graduates rank NBCS as effective (44%, 31%, very effective), compared to people with less than high school (25%, 34% very effective). Bloc Quebecois supporters like NBCS, with 47 percent ranking it very effective, compared to 33 percent

of Liberal, 22 percent of Conservative, 31 percent of NDP, and 37 percent of Green supporters. People with household income of less than $20,000 rank NBCS very effective (38%), compared to 21 percent of people with household income of more than $120,000 a year.

Demographics: NBCS effectiveness, **cause-aligned sample**:

In the cause-aligned sample, lower-income respondents (<$20,000) also rank NBCS very effective (55%), compared to people with household income of $100,000 to $119,900 (40%). People with graduate degrees or diplomas say NBCS are very effective (52%), compared to people with less than high school (40%). 43 percent of those who identify as minorities say NBCS are very effective, compared to 53 percent of non-minority respondents. Greens (65%) say NBCS are effective, compared to 33 percent of Conservative, 51 percent of NDP, and 52 percent of Liberal supporters.

Support for NBCS even with restrictions

Support for NBCS to protect forests, grasslands, or wetlands even if that means some restrictions on how people use land that they own or they access like parks. More than seven in 10 of general population respondents agree (45%) or strongly agree (29%) with this statement. Eighty-six percent of cause-aligned respondents feel the same (35% agree, 51% strongly agree).

A large majority of respondents from both samples support NBCS even if it means restrictions on land they own or access.

Demographics: NBCS support, **general population sample:**

In the general population sample, younger respondents were less likely to strongly agree that they support NBCS even if there are restrictions on land they access or own (25%), compared to people over 55 years of age (33%). Thirty-five percent of households with income of less than $20,000 agree with this statement, compared to 53% of households earning $80,000 to $99,000. Bloc supporters (39%) were most likely to strongly agree, compared to 37 percent of Green supporters, 36 percent of NDP, 33 percent of Liberal and 22 percent of Conservative.

Demographics: NBCS support, **cause-aligned sample:**

In the cause-aligned sample, 57 percent of younger (18 to 34-years old) respondents strongly agree that they support NBCS even with restrictions, compared to 45 percent of people aged 35 to 54 (45%), and those over the age of 55 (51%). Again, the more educated a respondent is, the more supportive they are (54% of college or university graduates strongly agree, compared to 45% of those with less than high school). Sixty-six percent of Green, 60 percent of NDP, 52 percent of Liberal and 28 percent of Conservative supporters strongly agree that they support NBCS even with restrictions.

Climate change

All respondents strongly agree or agree that people should care more about nature than they do, and that climate change is a threat to nature and to people. Eighty percent of cause-aligned respondents strongly agree and 12 percent agree; 50 percent of the general population strongly agree, and 33 percent agree (Table 7).

Table 7. Climate change and normative environmental beliefs

	General population		Cause-aligned	
	Agree	Strongly agree	Agree	Strongly agree
Climate change is a serious threat to nature	33%	50%	12%	79%
Climate change is a serious threat to people	35%	45%	15%	76%
People should care more about nature than they do	37%	51%	13%	81%

Demographics: Climate change is a threat to nature, ***general population sample:*** Regional polarization is obvious for belief that climate change is a threat to nature, with Alberta (39%) and Manitoba and Saskatchewan (38%) least inclined to strongly agree, compared to Quebec (56%), Ontario (55%), Atlantic (51%), and British Columbia (50%).

Demographics: Climate change is a threat to people, ***general population:*** Regional polarization is also present in response to the question on whether climate change is a threat to people, with Manitoba and Saskatchewan least likely to strongly agree (39%), followed by Alberta, British Columbia (45%), Atlantic (46%), and Ontario (48%). Conservative supporters are least likely to strongly agree (30%), followed by Liberal (52%), NDP (55%), Green (67%) and Bloc (71%) supporters. Females more strongly agree (50%), than males do (44%), as do people with graduate degrees (52%), compared to people with high school diplomas (37%).

Demographics: People should care more about nature than they do, ***general population sample:*** This question is normative, meaning it focuses on reasons why we should do something and is similar to the moral dimensions we saw with the most important reason to take responsibility for our greenhouse gas emissions. As is often the case, with moral or normative questions, Females most strongly agree (56%), compared to males (49%). Rural residents again lean this way with 58 percent strongly agreeing, compared to urban (51%) and suburban (52%) residents. Green (68%) followed by Bloc (66%), NDP (59%), Liberal (53%) and Conservative (41%) supporters strongly agree.

Demographics: Climate change is a threat to nature, ***cause-aligned sample:*** Highlighting that region itself is not the sole predictor of results, 72 percent of cause-aligned Alberta residents, and 77 percent of Manitoba and Saskatchewan residents, strongly agree climate change is a threat to nature (compared to Quebec, 83%; Ontario, 82%; Atlantic, 79%). Strengthening the argument that values are a bigger driver of results, 86 percent of NDP, 85 percent of Liberal, 75 percent of Green, and 45 percent of Conservative supporters strongly agree nature is threatened by climate change.

Demographics: Climate change is a threat to people, ***cause-aligned sample:*** Consistent with a values-based analysis, 83 percent of Liberals strongly agree climate change is a threat to people, compared to Conservatives (40%). Green (86%) and NDP (85%) strongly agree. By region, 63 percent of Alberta respondents strongly agree, as do 67 percent of Manitoba and Saskatchewan cause-aligned respondents. Respondents from Quebec most strongly agree (84%), followed by Ontario (78%), British Columbia (78%), and Atlantic (74%). Seventy-nine percent of respondents with graduate degrees strongly agree, compared to 57 percent of respondents with less than a high school diploma (and 69% of high school graduates).

Demographics: People should care more about nature than they do, ***cause-aligned sample:*** The only significant demographic influence on whether people should care more about nature in the cause-aligned sample is political party affiliation, with 62 percent of Conservatives strongly agreeing, compared to over 80 percent for all other party supporters. These results again show that nature-based engagement is a cross-cutting entry point and that entry point may benefit from no to little focus on climate change.

Reasons to Act

Table 8 summarizes results for reasons to act on climate change and to use NBCS. We asked survey respondents a number of either/or questions to explore beliefs about the most important reason for countries to take full responsibility for their carbon dioxide emissions, the most important reason to use nature-based climate solutions, and the most important benefit from Canada protecting, restoring and expanding natural spaces.

Most important reason: Moral or competitive reasons (norms)

A strong majority of respondents (82% for both samples) believe that doing the right thing (moral) is the most important reason for countries to take full responsibility for their emissions, rather than the competitive (economic) thing to do (Table 8). Opening conversations to NBCS through moral framing is a strong point of connection with people's instincts and another reminder that values-based communications is a stronger foundation to build from than starting from economic arguments.

Resonate with the majority by framing NBCS as a moral, values-based issue rather than an economic one.

Demographics: Most important reason, ***general population sample:*** Males are somewhat more likely to say the most important reason to take full responsibility for greenhouse gas emissions is economic/competitive (17%), compared to Females (12%) as are younger respondents (17% of those 18 to 34 years old, compared to 11% of those 55+ years of age). The same holds true for city dwellers (18%), compared to rural (10%) and suburban residents (13%). Minorities also rank competitiveness higher (18%), compared to non minorities (13%). Regardless, all respondents strongly favour moral reasons. From a political party perspective, Green and NDP supporters lean most toward moral reasons (88% and 80%, respectively), followed by the Bloc (79%), and Liberal and Conservative supporters tied at 66 percent.

Demographics: Most important reason, ***cause-aligned sample:*** Only location and political affiliation stand out with city residents less likely (76%) to say we should act for moral reasons, compared to 83 percent of suburban and 80 percent of rural residents. Liberals and Greens rank moral reasons highest at 81 percent, compared to 75 percent of Conservatives and 76 percent of NDP supporters.

Moral motivations, like willingness to defend nature, and believing that people should care more about nature than they do stand out as cross-cutting, widely held Canadian moral values.

Most important reasons to use NBCS: Adapt or remove carbon dioxide from the air

Cause-aligned respondents lean more toward using NBCS to adapt to climate change (43%), compared to general population respondents (37%). General population respondents lean instead toward using NBCS to remove carbon dioxide from the air (e.g., in forests, 44%), compared to cause-aligned respondents (38%).

Demographics: Reasons to use NBCS, ***general population sample:*** People over 55 years of age are least inclined toward using NBCS to adapt to climate change (31%), compared to respondents aged 18 to 34 years old (44%), and those 35 to 54 years old (40%). Minorities also favour adaptation (49%), compared to non minorities (36%). Higher-income respondents ($100,000 to $119,900) are more inclined toward adaptation (48%), compared to 30 percent of those with household income between $20,000 and $39,000.

Demographics: Reasons to use NBCS, ***cause-aligned sample:*** There are no significant differences among demographic segments.

Most important benefit: Defend nature, or protect human health and well-being

People are more split on the most important benefit of protecting, restoring, and expanding natural places, with all respondents leaning toward defending nature, reducing species loss (53% of the general population; 73% of cause-aligned). General population respondents are more balanced with 40 percent saying the most important benefit is to protect human health and well-being.

53 percent of the general population respondents say environmental benefits are most important and 40 percent saying human health and well-being is more important.

Demographics: Most important benefit, ***general population sample:*** Within the general population sample, females are more inclined to say the most important benefit of NBCS is to defend nature (57%), compared to males (50%). Younger people are evenly split (49% say defend nature), compared to 58% of those 35 to 54 years old and 52% of those over 55. Over half of Conservatives say the most important benefit is to defend nature (53%), compared to 55 percent of Liberal, 62 percent of NDP, 45 percent of Bloc, and 57 percent of Green supporters.

Demographics: Most important benefit, ***cause-aligned sample:*** The broad political consensus from the general population sample extends to the cause-aligned sample, with 70 percent of

Conservative, 76 percent of Liberal, 73 percent of NDP and 76 percent of Green supporters saying the most important benefit of NBCS is to defend nature and reduce species loss. Again, more rural residents (76%) feel this way, compared to 69 percent of city dwellers and 73 percent of suburban residents. Minority respondents lean slightly more toward health benefits but 70 percent still rank defending nature and reducing species loss as the most important benefit, compared to 74 percent of non minority respondents.

Table 8. Reasons to act

	General population	Cause-aligned
Most important reason for countries to take full responsibility for their emissions (right (moral) thing to do or the competitive (economic) thing to do	**Moral** 82% **Economic** 9%	**Moral** 82% **Economic** 14%
Most important reason to use NBCS (remove CO_2 or Adapt)	**Adapt** 37% **Remove** 44%	**Adapt** 43% **Remove** 38%
Most important benefit from Canada protecting, restoring, and expanding natural places (human health and well-being or defends nature, reduces species loss)	**Defends nature** 53% **Health** 40%	**Defends nature** 73% **Health** 18%

BEHAVIOURS

We asked survey respondents to indicate at the beginning of the survey if they had or had not participated in the following over the past 12 months (yes or no question:

- donated financially to a cause or organization they cared about
- signed an online petition
- purchased or boycotted goods or services based on ethical considerations
- commented on news stories online
- called, wrote or spoke to a politician about an issue that concerns them
- attended a webinar or talk on an issue they cared about
- attended or volunteered at a meeting or rally on an issue they cared about (in person or online).

These pro-social behaviours measure the respondent's level of general social engagement.

Table 9 summarizes the results for our general population and cause-aligned samples showing cause-aligned respondents are very active, compared to the general population. The only behaviour where more than half the general population has participated is donating to a cause or organization they care about. Less than four in 10 have signed a petition, and three in 10 have commented on news stories online. Fewer than two in 10 have called, wrote or spoken to a politician about an issue that concerns them, compared to 53 percent of cause-aligned respondents.

Somewhat surprisingly, attending a webinar or talk on an issue you care about is relatively low for both the general population (18%) and cause-aligned respondents (44%).

Table 9. Pro-social behaviours past 12 months

	General population		Cause-aligned	
	Yes	No	Yes	No
Donated financially to a cause or organization you care about	54%	44%	70%	29%
Signed an online petition	39%	59%	84%	15%
Purchased or boycotted goods or services based on ethical considerations	25%	70%	69%	23%
Comment on news stories online	30%	67%	56%	40%
Called, wrote or spoke to a politician about an issue that concerns you	19%	79%	53%	45%
Attended a webinar or talk on an issue you care about	18%	80%	44%	54%
Attended or volunteered at a meeting or rally on an issue you care about (in person or online)	14%	84%	30%	68%

These results are important as answering yes or no to these behaviours, along with environmental identity were key predictors in determining respondent cluster assignment (e.g., to Nature-Committed people indicating yes, compared to Passive Supporters indicating no).

TRUST IN GOVERNMENT

Overall, belief that governments can be trusted to deliver nature-based climate solutions is low, with general population respondents more trusting of government than cause-aligned respondents. Thirty-four percent of general population respondents strongly disagree (11%) or disagree (23%) with this statement, while 21 percent of cause-aligned respondents strongly disagree and 41 percent disagree.

Overall trust in governments to deliver NBCS is low but especially so in the cause-aligned sample with over 60 percent of respondents saying they don't trust the government to deliver.

These results are similar (as would be expected) when analysing through the cluster lens, with Nature-Committed respondents less trusting (Mean = 2.34, Max 5) and Passive Supporters more trusting (Mean = 2.94).

> *Demographics: Trust in government,* ***general population sample:*** Liberal supporters strongly agree or agree that governments can be trusted to deliver NBCS (44%), compared to 28 percent of Conservative, 22 percent of NDP, 23 percent of Green and 13 percent of Bloc supporters. Minority respondents are more trusting of the government (33% strongly agree or agree), compared to non-minority respondents (29%). Rural respondents least trust the government (22% strongly agree, agree), compared to city (32%) and suburban residents (33%). Low to middle-income respondents are least trusting of the government (25%, $20,000 to $39,900; 29%, $40,000 to $59,900), compared to higher income respondents (34%, $100,000 to $119,900 and 32% over $120,000).
>
> *Demographics: Trust in government,* ***cause-aligned sample:*** Trust (strongly agree, agree) is in the single digits across almost all demographics for the cause-aligned sample. Greens and Conservatives may not agree on much, but they do align on whether governments can be trusted to deliver nature-based solutions (each disagree or strongly disagree 70%), followed by 68 percent of NDP and 46 percent of Liberal supporters.

Environmental and nature-focused campaign communications often challenge governments to do more on environment and nature issues, calling into question government competence or commitment. Additional exploration is required, including investigating existing research in the area, to better understand the influence of government trust on willingness to engage in NBCS behaviours.

Experiment

The objective of the experimental narratives was to positively influence belief in NBCS effectiveness and willingness to take action in support of NBCS. The "How NBCS Works" narrative highlighted why NBCS are effective, while the second, "Biocentric" experimental narrative emphasizes biocentric worldview values. These narratives were developed in response to the MegaGroup event, which suggested a strong link between effectiveness beliefs and support for NBCS, as well as love-based and connectedness to nature motivations.

We conducted the narrative framing experiment near the end of the survey. We divided each of the general population and the cause-aligned samples into three groups, a control and then two experimental groups. The control groups were not exposed to the experimental narratives, while each experimental group was exposed to one narrative.

All respondents, regardless of assignment (control or one of the two experimental groups, were asked after exposure, or in the case of the control group just near the end of the survey, to indicate how effective they thought nature-based climate solutions are, as well as to indicate whether they were less or more willing to engage in behaviours actively supporting NBCS (e.g., donate to an organization working on NBCS, sign an online petition in support of NBCS, purchase or boycott goods or services based on ethical considerations, call, write or speak to a politician about NBCS, comments on news stories about NBCS, or attend webinar or meeting on NBCS).

EXPERIMENTAL RESULTS

We wanted to know whether the narratives positively influenced peoples' belief in NBCS effectiveness and willingness to engage in behaviours in support of NBCS (e.g., donate, contact politicians, sign petitions). Summary results suggested neither narrative had any significant influence on any of the survey respondents, compared to the control group. Closer examination, however, shows some interesting results.

Post-experimental beliefs in the effectiveness of NBCS shift from effective to very effective in the general population sample, with the "How NBCS Works" narrative moving NBCS beliefs 10 percent (very effective, 29% for the control group, increasing to 39% after exposure). The "Biocentric" narrative has a modest influence, with rankings of NBCS as very effective increasing slightly (to 31%), compared to the control group. As a result of these shifts, rating NBCS as "effective" (rather than "very effective") falls from 49 percent in the control group to 41 percent after exposure to the "How NBCS Works" narrative, and to 46 percent after exposure to the "Biocentric" narrative.

The pattern is similar for the cause-aligned respondents, with the "How NBCS Works" narrative increasing belief that NBCS are "very effective" by eight percent (55%), compared to the control group (47%); the "Biocentric" narrative increases belief that NBCS are very effective five percent (52%), compared to the control group. Scores for "effective" fall five percent (35%), compared to the control group (40%) after exposure to both narratives.

Table 10. Survey and experimental narrative effects

		General population:	Cause-aligned
Pre-experiment NBCS effective	Effective	41%	34%
	Very effective	30%	52%
Control	Effective	49%	40%
	Very effective	29%	47%
Post-experiment NBCS effective How NBCS Works	Effective	41%	35%
	Very effective	39%	55%
Post-experiment NBCS effective Biocentric	Effective	46%	35%
	Very effective	31%	52%

We also explored the experimental results through probabilistic clusters analysis (assignment of respondents based on defining attributes). These two groups, "Passive Supporters" and "Nature-Committed", are a subset of the combined sample, comprising about one-third of the total respondents. Think of these two groups as representing the least and most engaged on environmental issues.

The "Biocentric" and "How NBCS Works" narratives, however, had a positive influence on the group of respondents we call Passive Supporters (which also can be found in both samples, but with more assigned from the general population), with the "How NBCS Works" narrative shifting this group from more neutral to "effective" responses. The "Biocentric narrative" also increased belief in NBCS effectiveness (the Mean

scores in Table 11 are how the probability model reported results and are based on response rankings of 1 to 5 with 5 meaning “very effective”).

The “How NBCS Works” narrative had little positive effect on the respondents in the Nature-Committed cluster (people in this group can be found in both the general population and cause-aligned samples, but includes more cause-aligned respondents, see Figure 4, Appendix 2). The “Biocentric” narrative decreased effectiveness beliefs among this group of respondents.

Table 11. Experimental results: NBCS Effectiveness

		Nature-Committed: How NBCS Works	Passive Supporters: How NBCS Works	Nature-Committed: Biocentric	Passive Supporters: Biocentric
	Control group	*n* = 164	*n* = 211	*n* = 198	*n* = 195
Pre-NBCS Effectiveness beliefs (Mean, Max 5)	Nature-Committed: 4.55	4.51		4.13	
	Passive Supporter: 4.05		4.17		
Post-NBCS Effectiveness beliefs (Mean, Max 5)	Nature-Committed: 4.52	4.67		4.19	
	Passive Supporter: 4.05		4.36		4.66

INFLUENCE OF EXPERIMENTS ON WILLINGNESS TO ACT IN SUPPORT OF NBCS

After respondents read their experimental narrative or at the end of the survey for the control group, we asked respondents to indicate if they were more or less willing to engage in a list of pro-social behaviours focused on NBCS (For example, “do you feel more or less willing to...donate financially to an organization working on nature-based climate solutions”). As noted, we used this list of prosocial general behaviours earlier in the survey to measure prosocial engagement. Level of prosocial engagement is an important predictor of statistical results (e.g., cluster analysis and regressions).

Table 12 summarizes experimental narrative influences on willingness to engage in NBCS supportive behaviours. Behaviours are hard to change and a survey is only one moment in time. As a result, we don’t expect to change the world with narrative experiments. Rather we are looking for, and see, slight variations due to the experiments, compared to the control group. The “Biocentric” narrative, however, shows somewhat *negative effects* regarding willingness to comment on the news for general population respondents, and for signing an online petition for cause-aligned participants.

Table 12. Post-experiment willingness to engage in NBCS behaviours

	General population			Cause-aligned		
	Control	How NBCS Works	Biocentric	Control	How NBCS Works	Biocentric
	More willing			More willing		
Donated financially to a cause or organization working on nature-based climate solutions	31%	31%	27%	29%	29%	28%
Signed an online petition in support of nature-based climate solutions	35%	33%	37%	37%	38%	**31%**
Purchased or boycotted goods or services based on ethical considerations	31%	34%	33%	38%	39%	38%
Comment on news stories online about nature-based climate solutions	24%	25%	**19%**	34%	29%	30%
Called, wrote or spoke to a politician about nature-based climate solutions	25%	24%	23%	36%	35%	33%
Attended a webinar or talk on nature-based climate solutions	27%	28%	25%	38%	34%	34%
Attended or volunteered at a meeting or rally on nature-based climate solutions (in person or online)	25%	26%	26%	33%	31%	31%

Table 13 summarizes results for our more and less engaged sub-samples (Note that the probability cluster model shows results based on the Mean). Neither experiment had a positive influence on willingness to act in support of NBCS, and in some cases reduced support (e.g., the “Biocentric” narrative). Passive Supporters, on the other hand, show modest positive gains after exposure to both narratives, shifting slightly from neutral to more willing (e.g., donate, attend a meeting or contact a politician).

Table 13. Nature-Committed and Passive Supporters: Less or more willing NBCS behaviours

Less willing to more willing (Mean, max 5) Less than 3 = neutral to less willing; above 3 = more willing to much more willing (5)	Control group respondents in Nature-Committed and Passive Supporter segments Nature-Committed (*n* = 233) Passive Supporter (*n* = 191)	Nature-Committed: How NBCS Works *n* = 164	Passive Supporters: How NBCS Works *n* = 211	Nature-Committed: Biocentric *n* = 198	Passive Supporters: Biocentric *n* = 195
Donate	Committed: 3.70	3.66		3.45	
	Passive: 3.35		3.47		3.62
Comment on news	Committed: 3.91	3.90		3.92	
	Passive: 3.24		3.57		3.49
Ethical consumption	Committed: 4.12	4.15		3.55	
	Passive: 3.49		3.69		4.14
Attend webinar	Committed: 3.83	3.93		3.87	
	Passive: 3.33		3.52		3.47
Attend meeting, volunteer	Committed: 3.86	3.93		3.46	
	Passive: 3.27		3.51		3.89
Contact politician	Committed: 3.91	4.02		3.40	
	Passive: 3.11		3.35		3.96

Word cloud of MegaGroup discussion of NBCS effectiveness

Appendix 1: Cluster demographics summary

		Nature-Committed (*n* = 617)	Passive Supporters (*n* = 688)
Demographics (largest category, percent)	Female	78%	51%
	Undergrads	29%	26%
	Income	$40 to $59.9k: 22%	$20k to $39.9k, 19%
	Urban	44%	47%
	Age:	65 to 75 years, 19%	25 to 34 years, 23%
	Province	Ontario, 45%	Ontario, 27%
	BIPOC	91%, No	90%, No
	Federal vote	NDP, 29%	Liberals, 35%
	Political ideology (0 – 10)	2.72	5.09

		Nature-Committed (*n* = 617)	Passive Supporters (*n* = 688)
Self-determination (Mean, Max 7 where 1 is opposite of me, 4 is neutral and 7 is very much similar me)	Identified	6.63	5.60
	Intrinsic	6.41	5.23
	Integrated	6.26	5.07
	External	3.06	3.61
	Self-determination index	5.59	4.87
Behaviours: In the past 12 months... (Yes)*	Donated	81%, Yes	54%, Yes
	Signed petition	94%, Yes	61%, Yes
	Purchased, boycotted ethical	89%, Yes	24%, Yes
	Comment news	67%, Yes	36%, Yes
	Called, wrote, spoke politician	64%, Yes	17%, Yes
	Attended webinar	54%, Yes	18%, Yes
	Attend/volunteer meeting/rally	58%, No	12%, Yes
NBCS Behaviours: Post-Experiment (Less or More Willingness, Mean, Max 5, where 1 is less willing, 3 is neutral and 5 is more willing)	Donate	3.68	3.39
	Petition	4.24	3.75
	Purchase, boycott, ethical	4.15	3.55
	Comment news	3.91	3.42
	Call, write, speak politician	3.96	3.27
	Attend webinar	3.87	3.41
	Attend/volunteer meeting/rally	3.88	3.38

		Nature-Committed	Passive Supporter
Beliefs Nature-based Climate Solutions (NBCS): Pre-and Post-experiment (Mean, max 5), Definition (category)	Pre experiment: NBCS Effectiveness	4.58	4.08
	Post experiment: NBCS Effectiveness	4.61	4.19
	Definition NBCS: Actions to protect nature (recycle, eat less meat) or Efforts to defend and restore natural areas...	76% Correct	55% Correct
	Support NBCS with restrictions	4.61	4.04
Beliefs: With Restrictions, Net zero options (Mean, Max 5, for support; Max 7 for Net zero options)	Prevent pollution going into the air (1 = Renewables; 7 = NBCS	4.04	3.77
	Remove remaining emissions from the air (1 = Carbon capture, storage; 7 = NBCS to capture $C0_2$)	4.48	5.32
	Protect nature and people from extreme weather (1 = traditional infrastructure; 7 = NBCS solutions)	5.61	5.02
Beliefs: Reasons why to use NBCS, take responsibility for greenhouse gas emissions (2 categories)	Most important reason: Remove CO_2 from air or Adapt to a changing climate	47% Remove	54% Remove
	Most important reason to take responsibility: Moral thing to do; Competitive thing to do	81% Moral	82% Moral
	Most important benefit: Protects human health and well-being or Defends nature, reduces species loss	74% Defends	62% Defends

		Nature-Committed	Passive Supporter
Beliefs: Climate Change, Nature, Trust in Government (Mean, Max 5, where 1 is strongly disagree and 5 is strongly agree)	Climate change threat nature	4.90	4.23
	Climate change threat people	4.90	4.16
	People should care more nature	4.88	4.36
	Trust Government on NBCS	2.34	2.94

Appendix 2: Environmental identity (Agency, Motivation, self-determination)

Self-determination theory is a motivation-based understanding of peoples' universal psychological need to feel competent, connected to people, and to make their own choices. A person is intrinsically motivated toward something when they freely choose to engage in that activity (has agency), feel competent or effective in doing so, and feel connected to others they care for and that others care for them (Deci & Ryan, 2002).[3]

Figure 3 summarizes the basic principles of self-determination from an autonomy, competence and relatedness perspective. The key take away is that campaigners and communicators can improve the effectiveness of their efforts when they understand where people are in the self-determination continuum.

SELF-DETERMINATION EXPLAINER

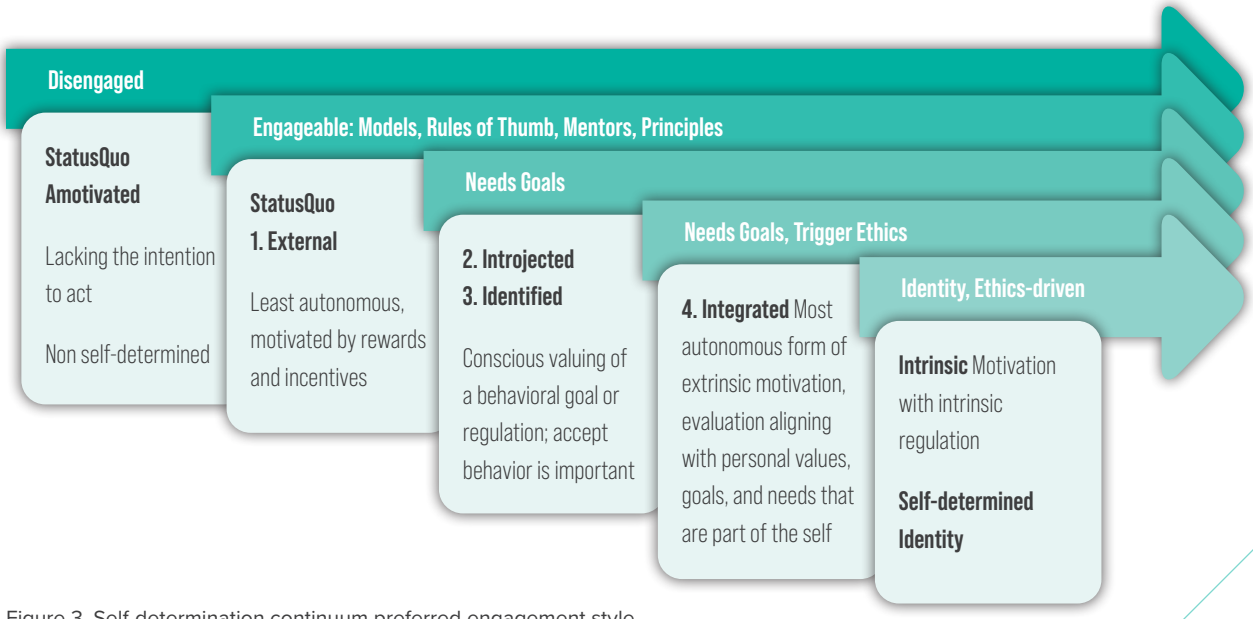


Figure 3. Self-determination continuum preferred engagement style

3 I draw heavily on Deci and Ryan (2002) for this section (p. 4 to 24)

Figure 3 shows a continuum of motivation from amotivated to intrinsic. A person can be amotivated about a goal, like dieting, or exercising and they can also be amotivated toward the environment meaning they just don't think about it or engage around environmental concerns in their day-to-day life. People, however, also are motivated to varying degrees toward an activity, whether dieting, exercising or the environment. Extrinsic motivation means people are not innately passionate about something, engaging in the activity for the sheer pleasure of it. Extrinsic motivation involves a continuum of motivation that increasingly aligns with a person's personal goals (described in Figure 3 as External, Introjected, Identified).

How we communicate, or the values we prioritize, can activate external values and extrinsic motivation (e.g., money, rewards and status), or intrinsic values and motivation (love, relationships, compassion). The goal is to nurture motivation toward environmental goals (e.g., biocentric" connectedness to and love of and respect for nature, empathy) and motivation towards environmental practice by increasing people's environmental autonomy, competence and relatedness to others like them.

Integrated-Intrinsic motivations are the most internalized meaning someone diets, exercises or engages with the environment because that is what gives them pleasure; there is agency, internal locus of control. People who are External-Identified are less motivated by their passion, and so profiling role models, creating incentives, and building a sense of competence through practice are helpful in sustaining engagement because they have a more external locus of control.

A person who voluntarily identifies with an issue or behaviour, believes they can effectively execute actions in line with their identity and desired behavioural goals, and who feels connected to others whom they care about and feel others cares about them, are more likely to persevere in the face of challenges or barriers to their goals. In other words, transformative action requires strengthening motivation towards environmental goals.

Some tactics, like overemphasizing money, can weaken intrinsic motivation. Financial incentives, for example, help engage people who more weakly motivated toward the environment. People further along the continuum, but not intrinsically motivated, respond best to goal setting or recognition, or opportunities to express their identities (i.e., volunteering, organizing) and to feel part of a community.

Our survey included an environmental motivation measuring self-determination toward environmental outcomes.

Figure 4 summarizes results by averaging levels of self-determination (Identified, Integrated and Intrinsic scores) for our general population and cause-aligned samples. Statistical analysis of the two combined samples show two clusters (that we call Nature-Committed and Passive Supporter) that fall within this External-Identified to Integrated-Intrinsic spectrum.

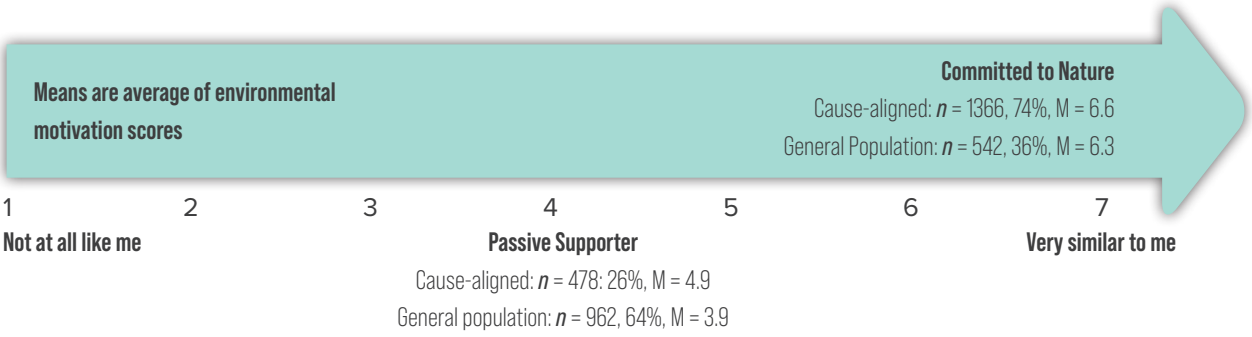


Figure 4. Environmental identity scores by cluster

Almost three-quarters (74%) of the cause-aligned (Facebook) sample is more strongly motivated toward the environment, as is 36 percent of the general population sample (as indicated in Figure 4). The group we call Nature-Committed is Integrated-Intrinsic. Passive Supporters, on the other hand, fall on the Identified-External end of the spectrum, with 26 percent of the cause-aligned sample in this group, and 64 percent of the general population sample.

Based on the combined scores (average for Identified, Integrated and Intrinsic), the Nature-Committed group is strongly environmentally motivated toward the environment (Identified, Mean = 6.6), and Intrinsic, Mean = 6.41), compared to Passive Supporters level of environmental motivation is generally weaker.

What's important about this analysis is that people who are more External-Identified in their motivation toward the environment require supports and incentives. External motivations, for example, "require attention to prompting behaviours by role models who demonstrate their valuing of the activity by performing it regularly). Motivating externals requires a significant other or group endorsing an action and in some way conveying their endorsement to the target individual. The individual, in turn, out of feeling related to the other person or the group, or out of desire for such relatedness, will likely engage in the behaviour with the expectation of gaining implicit or explicit approval for doing so. A sense of relatedness to others is centrally important for internalization" (Ryan and Deci, 2002, p. 19).

SELF-DETERMINATION MEASURES INFLUENCING RESULTS (Q8)

Eleven of the 18 items in the environmental motivation scale most strongly influenced results, with factor analysis showing a mix of Intrinsic, Integrated, Identified and Externa motivation. The survey items associated with these motivational orientations are:

- **Intrinsic (Cronbach's alpha, 81%[4])**
  - I feel pleasure in improving the quality of the environment
  - I feel pleasure in mastering new ways to protect the environment
- **Integrated (Cronbach's alpha, 87%)**
  - I consider taking care of myself and the environment as inseparable
  - Taking care of the environment has become a fundament part of who I am
  - Taking care of the environment has become a part of the way I have chosen to live my life
- **Identified (Cronbach's alpha, 83%)**
  - I think it is a sensible thing to try and care for the environment
  - I think it is a good idea to do something for the environment
  - I have chosen to contribute to a better environment by doing something myself
- **External (Cronbach's alpha, 64%)**
  - I care for the environment to avoid being criticized

4 A statistical measure of a scale's reliability

- I care for the environment because my family and friends think I should
- I think others would be upset if I did not care for the environment

TO SUMMARIZE:

The most environment motivated are those higher on the Integrated-Intrinsic spectrum. Definitions are:

- Intrinsic motivation is the state of doing an activity out of interest and inherent satisfaction. It is the prototype of autonomous or self-determined behaviour (gets pleasure from mastering environmental activities, or improving the environment).
- Integrated motivation is the most autonomous form of extrinsically motivated behaviour. Integrated extrinsic motivation shares many qualities with intrinsic motivation. People who identify with an issue like the environment are still considered extrinsic because they engage to achieve personally important outcomes, rather than for the inherent interest or pleasure. In other words, someone who is Integrated is motivated to engage in an instrumental way (means to an end goal). Achieving the goal is considered external to the person who does the action but this person does consider themselves inseparable from the environment, that caring for the environment is part of who they are, and a way of life.

The less environmentally motivated are on the External-Identified end of the spectrum. Definitions are:

- Identified motivation is a more self-determined than External because it involves a conscious valuing of a behavioural goal or regulation, an acceptance of the behaviour as personally important (sensible thing to do, a good idea, willing to do things for the environment). Identification represents an important aspect of the process of transforming external regulation into true self-regulation. When a person identifies with an action or the value it expresses, they, at least at a conscious level, are personally endorsing it, and thus identifications are accompanied with a high degree of perceived autonomy.
- External motivation: This is the least autonomous form of extrinsic motivation and includes being motivated to obtain rewards or avoid punishment. Extrinsic aspirations relate more to wealth, fame and image. So recognition, rewards, and awards are important for this group.

Table 13 summarizes self-determination means for our two samples (general population and cause-aligned). We see that the cause-aligned sample is more motivated toward environmental goals (has more agency) than general population respondents who are more weakly motivated toward environmental outcomes.

Table 14. Environmental motivation means

Max 7, Mean	General population	Cause-aligned
Intrinsic	5.05	6.08
Identified	4.91	5.94
Integrated	5.47	6.38
External	3.51	2.96

Appendix 3: Survey

QUOTAS:

Region	Sample size
NL and PE	50
NB	150
NS	150
Ontario	175
Ontario GTA	150
Quebec	175
Manitoba/Saskatchewan	175
British Columbia	175
British Columbia Lower Mainland oversample	125
Alberta	175
Total	**1500**

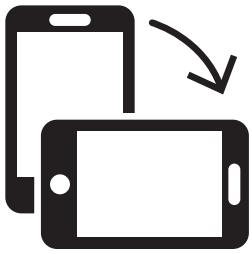
Introduction for General Population:

Thank you for taking the time to complete this survey. Completing the survey will take about 15 minutes of your time.

Introduction for Nature Canada:

Thank you for taking the time to complete this survey. Completing the survey will take about 15 minutes. The information you provide will be analyzed only at the group level. We appreciate your contribution to nature protection.

If you are completing this survey on a mobile device (smartphone or tablet), we recommend rotating your device while completing this survey.



To begin...

DEMOGRAPHICS

1. You identify as

    1. Male
    2. Female
    3. Other

2. In which year were you born? [**4 DIGIT NUMERIC**]

THANK AND TERMINATE IF UNDER 18

2a. [if 2003] Are you 18 years of age?

Yes

No **TERMINATE**

3. In which province or territory do you live?

Label	Item
British Columbia	BC
Alberta	AB
Saskatchewan	SK
Manitoba	MB
Ontario	ON
Quebec	QC
New Brunswick	NB
Nova Scotia	NS
Prince Edward Island	PE
Newfoundland and Labrador	NF
Territories (Northwest Territories, Yukon, Nunavut	NT/YK/NU

Do not currently live in Canada **TERMINATE**

3a. **ASK ON SAME SCREEN AS Q4**. To confirm we survey a range of people from across the province or territory, please provide the first three digits of your postal code.

_ _ _

Prefer not to say

3b. **[IF ONTARIO]** Do you live in...

1. The Greater Toronto Area
2. Elsewhere in Ontario

3c. **[IF BC]** Do you live in...

1. Lower Mainland BC
2. Elsewhere in BC

4. In politics, people sometimes talk about 'the Left' and 'the Right'. Where would you place yourself on the scale below? **PROVIDE SLIDING 11-POINT SCALE WITH TEXT MARKERS DO NOT INCLUDE NUMERIC MARKERS**

Left					Centre					Right	Not sure
0	1	2	3	4	5	6	7	8	9	10	98

5. How far do you need to travel from your home to access nature? **[SELECT ONE ONLY]**

1. Less than 1km
2. 1-4 km
3. 5-9 km
4. 10-15km
5. More than 15km

98. Not sure

6. In the past 12 months, have you taken part in any of the following activities?

	Yes	No	Not sure
Donated financially to a cause or organization you care about			
Signed an online petition			
Purchased or boycotted goods or services based on ethical considerations			
Commented on news stories online			
Called, wrote or spoke to a politician about an issue that concerns you			
Attended a webinar or talk on an issue you care about			
Attended or volunteered at a meeting or rally on an issue you care about (in person or online)			

7. To what extent do you agree or disagree with the following statements. **[ROTATE OPTIONS, ALLOW SINGLE RESPONSE]**

	1 Strongly disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly agree	98 Not sure
a. Climate Change is a serious threat to nature						
b. Climate Change is a serious threat to people						
c. People should care more about nature than they do						

8. Please indicate the degree to which the following statements are like you by placing yourself on the scale below [SLIDER SCALE: 1 is almost the opposite of me, 2, 3, 4 (neutral), 5, 6, 7 is very similar to me.] **[RANDOMIZE] [ALLOW SINGLE RESPONSE]**

a. I feel pleasure in improving the quality of the environment.

b. I feel pleasure in mastering new ways to protect the environment.

c. I like how I feel when doing things for the environment.

d. I consider taking care of myself and the environment as inseparable.

e. Taking care of the environment has become a fundamental part of who I am.

f. Taking care of the environment has become part of the way I have chosen to live my life.

g. I think it is a sensible thing to try and care for the environment.

h. I think it is a good idea to do something for the environment.

i. I have chosen to contribute to a better environment by doing something myself.

j. I would feel bad if I didn't do anything for the environment.

k. I think I would regret not doing something for the environment.

l. I care for the environment because I would feel guilty not doing it.

m. I care for the environment to avoid being criticized.

n. I care for the environment because my family and friends think I should.

o. I think others would be upset if I did not care for the environment.

p. I don't know why I should do something for the environment, I don't see how it helps.

q. I cannot see why I should do anything for the environment; I get the feeling that I am wasting my time.

r. I don't know why I should care for the environment. I can't see what I get out of it.

9. Which statement is closest to how you understand the term **nature-based climate solutions**? **[RANDOMIZE] [ALLOW SINGLE RESPONSE]**

1. Actions we take to protect nature like using natural products, recycling, composting, eating less meat, using less plastic, and renewable energy like wind and solar.

2. Efforts to defend and restore natural areas, like forests and wetlands, to remove carbon dioxide, protect us from climate change impacts, and help reverse wildlife decline.

98. Not sure

10. Please indicate how effective or ineffective you believe these climate solutions to be. **[ALLOW SINGLE RESPONSE PER OPTION] [RANDOMIZE]**

	1 Very ineffective	2 Ineffective	3 Neutral	4 Effective	5 Very effective	98 Not sure
Nature-based climate solutions						
Renewable energy like wind and solar						
Technologies that capture and store carbon dioxide						

11. Some countries like Canada have committed to taking as many carbon dioxide emissions out of the air as they put in, rather than leaving them there to trap heat and contribute to climate change. Achieving this balance requires three things: (1) Prevent pollution going into the air. We can do this using non-polluting energy sources like renewable energy and protecting natural places. (2) Remove remaining emissions from the air. We can do this using technology to capture carbon dioxide and store it or natural solutions like expanding or protecting forests, wetlands, and grasslands. (3) Protect nature and people from extreme weather due to climate changes we cannot avoid. We can do this using traditional infrastructure like larger storm water pipes and natural solutions to hold, slow or move water. Which is your preferred option for these three kinds of solutions to climate change?

a. Prevent pollution going into the air

END POINT 1 Using non-polluting energy sources like renewable energy

END POINT 7 Using nature-based climate solutions

Or do you have another solution? **[Specify:_____]**

98 Do not need to do this

b. Remove remaining emissions from the air

END POINT 1 Technology to capture and store carbon dioxide

END POINT 7 Nature to capture and store carbon dioxide

Or do you have another solution? [**Specify:_____**]

99 Do not need to do this

c. Protect nature and people from extreme weather

END POINT 1 Traditional infrastructure

END POINT 7 Natural solutions

Or do you have another solution? [**Specify:_____**]

100 Do not need to do this

12. Which of the following is the most important reason to use nature-based climate solutions? [**RANDOMIZE 1,2**] [**ALLOW SINGLE RESPONSE**]

1. Remove carbon dioxide from the air (e.g., in forests)
2. Adapt to a changing climate (e.g., protecting wetlands to manage water flow)
3. Other: **please describe:** _____
98. None of the above
99. Not sure

13. In your opinion, which of the following is the most important reason for countries to take full responsibility for their carbon dioxide emissions? [RANDOMIZE 1,2] [ALLOW SINGLE RESPONSE]

1. The right (moral) thing to do
2. The competitive (economic) thing to do
3. Other: **please describe:** _____
98 None of the above
99 Not sure

14. To what extent do you agree or disagree with the following statements. [**ALLOW SINGLE RESPONSE**]

I support nature-based climate solutions to protect forests, grasslands, or wetlands even if that means some restrictions on how I use land that I own, or land that I access like parks.

1. Strongly disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree
98. Not sure

15. In your opinion, which of the following is the most important benefit from Canada protecting, restoring, and expanding natural places? **[RANDOMIZE 1,2] [ALLOW SINGLE RESPONSE]**

1. Protects human health and well-being
2. Defends nature, reduces species loss
3. Other: Please describe
98. None of the above
99. Not sure

16. To what extent do you agree or disagree with the following statement. [ALLOW SINGLE RESPONSE]

Government can be trusted to deliver nature-based climate solutions.

1. Strongly disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree
98. Not sure

[FRAMING EXPERIMENT (Control, plus 2 experimental groups]

[Experiment #1]

Nature-based climate solutions work because living beings use sunlight to turn carbon dioxide into sugars to grow. The more we protect and restore forests, grasslands, wetlands, and oceans, the more carbon we store. At the same time, nurturing green landscapes protects us from the effects of climate change by holding or slowing water, an important ecological service as weather becomes extreme. We can, combined with renewable energy, work with nature to grow our chances of solving climate change and reverse species loss. We can protect a third of Canada's land, plant trees and expand local, provincial and national parks, restore wetlands and diverse forests, protect shorelines on our rivers, lakes and coasts, and grow food in ways that protect the soil. Rebuilding the natural environment means, we all thrive.

[Experiment #2]

Nature in our neighbourhoods relaxes and restores our well-being. We enjoy fresh air, the smell of spring flowers, and listening to birds. Nature's beauty recharges us. We appreciate nature but our relationship with nature has become unbalanced causing climate change and loss of wildlife. We can renew our relationship with nature. We can, combined with renewable energy, work with nature to grow our chances of solving climate change and reverse species loss. We can protect a third of Canada's land, plant trees, expand local, provincial and national parks, restore wetlands and diverse forests, protect shorelines on our rivers, lakes and coasts, and grow food in ways that protects soil. We can restore nature to help solve climate change, protect plants and animals, and make nature accessible for all.

POST EXPERIMENT QUESTIONS [control, plus 2 experimental groups]

17. Please indicate how effective or ineffective you believe these climate solutions to be. **[ALLOW SINGLE RESPONSE] [RANDOMIZE]**

	1 Very ineffective	2 Ineffective	3 Neutral	4 Effective	5 Very effective	98 Not sure
a. Nature-based climate solutions						
b. Renewable energy like wind and solar						
c. Technologies that capture and store carbon dioxide						

18. **[DO NOT ASK IF NOT SURE IN Q.17a]** Why do you feel the way you do about the effectiveness of nature-based climate solutions? **[OPEN ENDED]**

98 Not sure

19. After completing this survey, do you feel more or less willing to...

a.	Donate financially to an organization working on nature-based climate solutions
b.	Sign an online petition in support of nature-based climate solutions
c.	Purchase or boycott goods or services based on ethical considerations
d.	Comment on news stories online about nature-based climate solutions
e.	Call, write or speak to a politician about nature-based climate solutions
f.	Attend a webinar or talk on nature-based climate solutions
g.	Attend or volunteer at a meeting or rally on nature-based climate solutions (in person or online)

1. Much less willing
2. Less willing
3. Neutral
4. More willing
5. Much more willing

98. Not sure

Finally, a few questions to help us analyze the results of our survey.

20. In which type of community do you currently live? [**ALLOW ONE RESPONSE ONLY**]

1. A city (i.e., an urban population centre)
2. A suburb of a city
3. A small town or rural community
4. Other

98. Not sure

21. In what type of community did you spend the majority of your time up to the age of 18? [**ALLOW ONE RESPONSE ONLY**]

1. An urban population centre (i.e. a city)
2. A suburb of a city
3. A small town or rural community
4. Other

98 Not sure

22. Do you own or rent your home? [**ALLOW ONE RESPONSE ONLY**]

1. Rent
2. Own
98. Not sure

23. What is the highest level of education you have achieved?

1. Some high school
2. Graduated High school
3. Some college / CEGEP
4. Graduated college / CEGEP graduate
5. Apprenticeship
6. Some university
7. Undergraduate university degree
8. Post-graduate university degree
98. Not sure
99. Prefer not to say

24. Do you identify as Black, Indigenous (First Nations, Inuit, Métis), or a person of colour?

1. Yes
2. No
98. Prefer not to say

25. Which of the following best describes your gross family household income in 2020? [**ALLOW ONE RESPONSE ONLY**]

1. Under $20,000
2. $20,000 to $39,999
3. $40,000 to $59,999
4. $60,000 to $79,999
5. $80,000 to $99,999
6. $100,000 to $119,999
7. $120,000 to $159, 999
8. $160,000 to $199,999
9. $200,000 or more
98. Prefer not to say

26. If a federal election were held today, for which party would you vote? **[ALLOW ONE RESPONSE ONLY] RANDOMIZE 1-6**

1. Liberal Party of Canada
2. Conservative Party of Canada
3. People's Party of Canada
4. SHOW ONLY IF QUEBEC IN QSD3] Bloc Québécois
5. Green Party of Canada
6. New Democratic Party
7. Other (please specify: _____)
8. Undecided
9. I would not vote

27. Any final comments? **[OPEN-ENDED]**

98 No comment

NATURE CANADA SURVEY ONLY: Would you like to be entered into a draw? Please provide your email address below. Please note, email addresses will be provided to Nature Canada for the purpose of the draw, but will not be linked to individual survey responses.

_____

98 Do not wish to be entered into draw

THANK YOU FOR COMPLETING THIS SURVEY