

**PUBLIC SUPPORT FOR CLIMATE JUSTICE: A SURVEY OF BRITISH
COLUMBIA RESIDENTS**

by

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ABSTRACT

This study examines public support for climate justice and climate policies, based on results from an online survey given to 971 respondents in British Columbia, Canada in July 2010. The concept of climate justice is rooted in the recognition that segments of the population may be more or less vulnerable to the negative impacts of climate change, and that it is often the most vulnerable that are the least responsible for contributing to climate change. Climate justice is a growing area of research and the impetus for a burgeoning social movement worldwide; this study examines public perception of social aspects of climate change issues in British Columbia, providing insight into how individuals in a first world setting conceptualize vulnerability and responsibility to climate change on a provincial, national, and international level. The survey instrument for this study focused on climate change risk perception; fairness and responsibility in terms of climate action and climate impacts; levels of support for specific climate policy options; views on civic engagement and equality; and environmental attitudes. Findings show age to be the only socioeconomic demographic variable with significant effects on support for climate justice and climate policies, with older respondents more likely to show support. Respondents exhibiting greater support for civic engagement, greater support for equality, more proenvironmental attitudes, greater belief in climate action, and a belief in anthropogenic climate change are also more supportive. Recommendations for climate change decision-makers and communicators, as well as areas for future research, are also discussed.

PREFACE

In addition to myself, David Tindall, Shannon Daub, and other members of the CCPA Climate Justice Project communication and social change team played a leading role in designing the survey instrument used in this study. Environics Research Group conducted the survey, and David Tindall provided assistance with the data analysis. I conducted and wrote the literature review, and wrote up the methods, results and discussion. The ethics certificate for this study was obtained through the UBC Behavioural Research Ethics Board, and the certificate number is H10-01137.

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1 Introduction

1.1 Climate change

Impacts from climate change are increasingly recognized and experienced worldwide, and the need for climate action – at international, national, sub-national, and community levels – is apparent. In its Fourth Assessment Report, the Intergovernmental Panel on Climate Change (IPCC) firmly states, “Warming of the climate system is unequivocal, as is now evident from observations of changes in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level,” and also reports a probability of 90% or greater that most of the global average warming over the past 50 years is due to anthropogenic greenhouse gas (GHG) emission increases (2007, p. 72).

Projected effects from climate change are profound. Globally, predictions include more intense typhoons and hurricanes; more common fires, droughts, floods, disease outbreaks and food insecurity; increased rates of plant and animal extinction; reduced water availability and hydropower potential; and migration of people, animals, and plants as certain areas become unlivable (IPCC, 2007). More specifically, in British Columbia (BC) anticipated direct effects from climate change include from fisheries and agriculture degradation due to sea level rise; an increase in extreme weather events; glacial retreat and decreases in snowpack, hydropower productivity, and winter tourism; changes in migration patterns and species loss; and new diseases and extreme heat events (Byers and Rees, 2009). In addition, significant indirect effects have also been outlined, one of which is an influx of climate refugees due to climate impacts elsewhere (Byers and Rees, 2009).

All climate impacts will have potentially dramatic social, economic and ecological implications. However, both in BC and on a global scale, segments of the population will experience these impacts differently. Of critical importance for climate change mitigation and adaptation, the IPCC argues, are factors that determine the health of populations, such as health care, education, infrastructure, and economic development (IPCC, 2007). Consequently, poorer countries, which comprise 33 percent of the global population yet are responsible for only 7 percent of global CO₂ emissions, will bear a greater burden of climate impacts than their wealthier counterparts (Byers and Rees, 2009; Comim, 2008, p. 344). These wealthy countries, who in contrast make up 15 percent of the population yet are responsible for 45 percent of global CO₂ emissions, will likely be able to adapt more easily to decreases in food security, disease outbreaks, and climatic and economic volatility than the poor (Byers and Rees, 2009; Comim, 2008, p. 344).

The ratios of population to emissions described above, in combination with the discrepancy between groups in terms of capacity to adapt to climate impacts, raise questions of fairness and responsibility with regard to both climate impacts and climate solutions. This trend is captured in the notion of climate justice, an emerging topic in environmental sociology and the impetus for a burgeoning social movement worldwide. In a very general sense, climate justice is based in the recognition that some groups are more vulnerable to the serious effects of climate change, depending on their position in society, and that those most vulnerable are often least responsible for contributing to climate change.

This study examines public support for climate justice and support for specific climate policies at the provincial level, based on results from an online survey distributed to a sample of the BC public during the latter half of July 2010.¹ The project takes an in-depth look at how social and environmental values, attitudes, and beliefs, as well as socioeconomic demographic characteristics, influence support for climate justice and specific climate policies. The total number of respondents was 1006, and results show older age, support for civic engagement, support for equality, proenvironmental attitudes, belief in climate action, and belief in anthropogenic climate change to be predictors of greater support for climate justice and climate policies.

The remainder of this chapter details the potential significance of this study, presents an overview of the climate justice movement and a discussion on the conceptualization of ‘climate justice,’ and provides a literature review of three key areas of research: public attitudes towards climate change, social-psychological influences on environmental concern and behavior, and social movement participation and civic engagement. The chapter then concludes with the research questions and hypotheses for this study. Chapter 2 details research methodology, including research design, sample characteristics and data collection. Chapter 3 reviews the results, and Chapter 4 offers an in-depth discussion on the results, conclusions, areas for future research, and applied recommendations based on study results.

¹ Though the sample is representative in a socioeconomic demographic sense, it is not a probability sample in a statistical sense.

1.2 Significance

With the highest poverty level in Canada (Klein et al., 2008), using BC as a case study to examine public understanding of links between social justice and climate change issues is appropriate. In addition, evidence of climate change is already apparent in the province in the form of widespread forest fires, the mountain pine beetle epidemic, decreases in snowpack and glacial retreat (Byers and Rees, 2009). These factors combine with a strong international presence, proportionately large urban and suburban population, and a long history of natural resource industry importance in rural areas to make it a prime model for such a study.

As the most physically and biologically diverse province, consisting of 14 biogeoclimatic zones based on differences in latitude, elevation, climate, and distance from the coast (Byers and Rees, 2009), BC relies heavily on natural resource industries, agriculture, and tourism for its economic stability. In addition, over the last 50 years most of the province saw an increase in average temperatures greater than the global average, a trend that is predicted to continue into the next century (Byers and Rees, 2009). Though geographic, economic and social conditions make it less vulnerable and more able to adapt to certain climate impacts than many other parts of the world, the direct and indirect challenges the province will face as a result of climate change will still be significant.

However, even with the degree of scientific certainty outlined by the IPCC, global GHG emissions from human activities actually *increased* by 70% between 1970-2004 – most significantly from energy supply, transport, and industry – with the highest rate of carbon dioxide emissions from 1995-2004 (IPCC, 2007). Coupled with this increase in

emissions is an apparent *decrease* in public concern over climate change, specifically in the United States (Leiserowitz et al., 2010), and while poll results show almost half of Canadians believe Canada should be among the leading countries for climate action (Trudeau Foundation, 2007), considerably higher levels of support for voluntary actions rather than user pay options to address climate change have also been revealed (Canada West Foundation, 2008).

While the IPCC is highly confident that feasible adaptation options for sectors such as agriculture, heating and cooling energy demand, water resource management, and infrastructure can be implemented at low cost or high benefit-cost ratios, it emphasizes the importance of early implementation and cautions that adaptation alone will not be sufficient to cope with anticipated climate impacts (IPCC, 2007). Although Canadians appear to be supportive of government action and voluntary individual actions to combat climate change, substantial increases in emissions over time suggest such actions are either largely absent or providing a negligible impact. What remains to be accomplished, then, is a shift from a state of idle awareness to one of awareness accompanied by *substantial* action – on behalf of individuals, communities, industries, and governments.

An increase in public understanding, interest and engagement related to climate change issues is arguably an integral component of successful and substantial climate action. More specifically, a dialogue that seeks to point out links between climate change and social justice issues will help to promote fair, responsible, and effective choices by the public in terms of personal behavioral changes, policy recommendations to decision-makers, and community action plans. It is the ultimate aim of this study to provide insight into public understanding of social aspects of climate change, as well as to gauge levels

of support for climate policies – many of which would bring economic and social benefits in addition to achieving ecological goals – with the hope that such insight will be useful for key communicators in the climate change arena, both in BC and elsewhere.

1.3 Climate justice

1.3.1 History of the movement

Within the environmental community, the climate justice movement began in 2000, alongside the 6th Conference of the Parties (COP6) in the Hague, when approximately 500 grassroots activists from around the world – including a number from the environmental justice movement in the United States – convened for the first ever “Climate Justice Summit” (Karliner, 2000). Since then, additional meetings among international climate justice activists have followed, many alongside subsequent COPs, and the movement has grown to include countless grassroots environmental organizations with varying degrees of focus on climate justice. At least two organizations also exist that aim to bring together these many groups as part of a larger, transnational network dedicated to the climate justice movement: Climate Justice Action Network, formed during the lead-up to the COP15 in Copenhagen in 2009, and Climate Justice Now! formed in 2007 on the final day of the COP13 in Bali.

The climate justice movement finds its roots within the more general environmental justice movement, which came into the public eye in the United States in the early 1980s. The environmental justice movement is seen as a convergence of the social justice and environmental movements, and spawned the terms ‘environmental racism’ and ‘environmental classism,’ referring to the unequal burden of exposure to environmental pollution and degradation found in poor and/or minority communities,

often without their consent or knowledge (Bullard, accessed 31 Jan 2011). Initially focused on toxic dumping in such communities, the movement's landmark case came in 1982 in Warren County, North Carolina, where grassroots protests against a polychlorinated biphenyls (PCB) landfill saw national attention with over 500 arrests in the mostly African American county (Bullard, accessed 31 Jan 2011).

The movement gained further attention and cohesion with the 1991 First National People of Color Environmental Leadership Summit held in Washington D.C., out of which came 17 'Principles of Environmental Justice,' both a guide for involvement with the government and non-profit organizations and an expansion of the movement's focus to include issues of public health, worker safety, land use, transportation, housing, resource allocation, and community empowerment (Bullard, accessed 31 Jan 2011). Since then, many organizations dedicated to environmental justice have chosen to incorporate climate justice issues into their agenda, and some scholars insist that arguments for climate justice must be viewed more generally as claims for environmental justice (Comim, 2008).

1.3.2 Conceptualization in the environmental community

The idea of climate justice is rooted in the recognition that some groups are more vulnerable to the serious effects of climate change, based on their position in society, and that those most vulnerable are often least responsible for contributing to climate change. Climate justice concerns are increasingly found in climate policy discussions, as focal points for environmental and social organizations, and in academic research. While there is no one single definition of climate justice used in the majority of discussions, the basic motivation of the climate justice movement as explained by the previously mentioned

Climate Justice Action Network – that “the least privileged throughout the world are the most threatened by the economic, social, and ecological dangers of climate change” - provides a baseline from which to build a more in-depth understanding of the many facets of climate justice (“Organizations: the International Network,” accessed 31 Jan 2011). Similarly, the Climate Justice Programme – an organization seeking to encourage the enforcement of the law to address climate change – recognizes that while wealthier and more developed countries are most responsible for contributing to climate change, it is the lives and livelihoods of those in developing countries, particularly small island states, which will see the biggest impacts from climate change (“Climate justice: enforcing climate change law,” accessed 31 Jan 2011).

Perhaps the most thorough, yet least succinct, description of climate justice among the environmental community can be found in the “Bali Principles of Climate Justice,” a list of 26 “core” principles of the climate justice movement crafted by an international coalition in preparation for the 2002 Earth Summit in Bali (“Bali principles of climate justice,” 2002). Aiming to “redefine climate change from a human rights and environmental justice perspective,” the 26 principles were adopted based on those from the aforementioned 1991 People of Color Environmental Justice Leadership Summit in Washington, D.C. (“Bali principles of climate justice,” 2002).

Following a “preamble” that contains 18 items describing climate change impacts, threats, and necessary areas of change, the 26 principles speak to the many aspects of climate justice. These principles include, among others, a call for the rights of indigenous peoples and affected communities to speak for themselves and participate at all levels of decision-making; for the right for communities to be free from climate change impacts

and for solutions that do not externalize costs to the environment and affected communities; for the right of unborn generations to a stable climate and healthy planet; and for full compensation, restoration, and reparation to victims of climate change that experience a loss of land, livelihood, or other damages (“Bali principles of climate justice,” 2002).

Finally, while the above descriptions convey climate justice as an existing dilemma of injustice, other conceptualizations see climate justice as an end result. For example, Mobilization for Climate Justice, a non-profit organization based in the United States, suggests that climate justice, as a form of environmental justice, is “the fair treatment of all people and freedom from discrimination with the creation of policies and projects that address climate change, and the systems that create climate change and perpetuate discrimination” (“What is climate justice?” accessed 31 Jan 2011).

The conceptualizations of climate justice discussed above point to two common themes: responsibility and vulnerability. Though climate justice remains a relatively new term and area of research in the academic sphere, certain elements - in particular responsibility and vulnerability - have been examined in more depth and will be discussed below.

1.3.3 Conceptualization in the academic community

Similar to the environmental community, there is no one definition or conceptualization of climate justice that has been adopted by scholars. However, a number of scholars take the same approach as Mobilization for Climate Justice, viewing climate justice as an end result rather than an existing dilemma. For example, Comim (2008) asserts that climate justice refers to “states or actions in which individuals’ (and

nature's) basic entitlements are restored after the consequences of climate change have been taken into account" (p. 347). More specifically, in the context of international-level funding for adaptation, Grasso (2010) states that 'justice' is "the fair process, which involves all relevant parties, of raising adaptation funds according to responsibility for climate impacts, and of allocating raised funds putting the most vulnerable first" (p. 75).

The concept of vulnerability is central to most discussions on climate justice, and has been highlighted by many scholars when discussing this relationship. In a climate change context, vulnerability is seen as a function of "exposure, sensitivity, and adaptive capacity" (Adger, 2003), and is said to be central to climate justice because it links adaptation concerns with moral philosophy (Kasperson and Kasperson, 2001, as cited in Paavola and Adger, 2006). Scholars are careful to point out, however, that vulnerability should not be considered synonymous with poverty, and neither should increasing income levels be necessarily considered an indicator of decreased vulnerability as it relates to climate change (Paavola and Adger, 2006; Comim, 2008). Instead, the relationship between vulnerability and the ability to adapt to climate change is seen as the result of a combination of factors, namely, the availability of means and resources to invest in adaptation; the extent of dependence on 'risky' (within a climate change context) activities and sources of income, such as fishing or agriculture; and the condition of physical assets, such as health, education, man-made and natural capital, and institutions (Paavola and Adger, 2006, p. 605).

More specifically, research points to a number of subpopulations that are more vulnerable to climate impacts and likely to have greater difficulty adapting to climate change and/or bear a disproportionate burden of adverse impacts. These subpopulations

include, but are not limited to: women, particularly in rural areas of developing countries (Terry, 2009); children (Bunyavanich et al., 2003); geographically vulnerable communities in the Arctic (Trainor et al., 2007); small island states (Taplin, 2004); and Indigenous peoples (Salick and Ross, 2009). While challenges within these groups will undoubtedly vary according to case-by-case circumstances (for example, children in urban areas may be more prone to developing asthma due to air pollution than children in rural areas), looking at climate impacts and adaptation abilities at a more micro-level, such as regional or provincial, helps to highlight differences in vulnerability and adaptability among these smaller segments of the population.

In addition to vulnerability, another factor considered by scholars in relation to justice and adaptation is responsibility. In a discussion on applying notions of individual responsibility to larger entities, such as nations, Miller (2004) distinguishes between *moral* responsibility, where conduct must reveal a moral fault; *causal* responsibility, which simply refers to a causal chain and does not necessarily involve an individual or group's agency; and *outcome* responsibility, which, all other things being equal, calls for resulting benefits and/or burdens from an action to fall to the agent. "Our interest in outcome responsibility arises from our interest in the fair distribution of benefits and burdens between agents," Miller writes, placing emphasis on the desire to control benefits and burdens and also avoid intended and unintended "side effects" of others' actions (2004, p. 245).

Grasso (2010) uses Miller's distinction between these three types of responsibility to examine responsibility within a climate change framework. He argues, "the nature of the international adaptation funding problem demands that some subjects are

retrospectively responsible for climate impacts. Specifically, these subjects are ‘outcome responsible’ – that is, responsible for having made a situation bad intentionally but in a morally non-blameworthy way – and as such they should prima facie bear the burdens of their carbon depleting actions” (2010, p. 76). Grasso also suggests that, considering a lack of control often seen in poorer countries over behaviors that augment the seriousness of climate impacts, these countries cannot be held outcome responsible for their “climate-irresponsible” behaviors (2010, p. 76). Emphasizing the role of “rights” in a climate justice setting, he cites universal principles of justice as a basis for the argument that individuals have a moral right not to suffer from the adverse effects of climate change (2010).

In addition to vulnerability and responsibility, certain dimensions of justice are particularly salient in relation to climate change. Many scholars have focused on these dimensions, which include procedural, distributive, intragenerational, and intergenerational justice. A more thorough examination of these aspects of justice below.

1.3.4 Dimensions of justice

Extending beyond simple discussions of fairness, equality and equity, climate justice concerns are embedded in topics such as carbon taxes, transit improvements, and urban planning; responsibility to future generations, First Nations or developing countries; risk perception and vulnerability for different segments of the population; and rural and urban advantages and disadvantages when dealing with climate change mitigation and adaptation.

However, because “fairness” and “justice” are often used synonymously with each other in a climate policy context, it is useful to distinguish between them, as done by

Klinsky and Dowlatabadi (2009). The scholars note that there is “no consensus” on the difference between fairness and justice, and although they provide a distinction between the two, they also mention a framework in which *justice* – “the distributive elements of an allocation system in its entirety” (2009, p. 90) – depends on *fairness*, defined as “the subjective experience of division that respects individuals’ specific situations” (Finkel, 2001 as cited in Klinsky and Dowlatabadi, 2009, p. 90). In addition, the difference between equality and equity is also made clear, with *equality* referring to all parties having the same amount of a good or service and *equity* referring to the process of allocation and the impartial treatment of all in decision-making (Klinsky and Dowlatabadi, 2009).

Two of the most salient dimensions of justice in relation to climate change are procedural and distributive justice. In basic terms, *procedural* justice is concerned with the decision-making process, while *distributive* justice focuses on the distribution of costs and benefits as they relate to action. Commonly discussed in relation to adaptation, Paavola and Adger (2006) write, “all adaptation decisions (including omissions to act) have justice implications, both distributive and procedural,” (p. 597). They suggest four general guiding principles – three with a focus on distributive justice and one on procedural justice – for climate action. The first two, “avoiding dangerous climate change” and “forward-looking responsibility,” deal with addressing responsibility for climate change impacts, while the third principle, “putting the most vulnerable first” touches on how assistance should be distributed (2006, p. 602). Lastly, they call for “participation of all,” a procedural justice focus (2006, p. 602).

Procedural justice is cited as a way for affected parties to be able to express dissent or consent and to maintain dignity (Paavola and Adger, 2006), as well as an avenue to improve the legitimacy of decisions, irrespective of outcomes (Lind and Tyler, 1988 as cited in Paavola and Adger, 2006). Specific to climate change, procedural justice calls for all parties who have a stake in climate policy outcomes to be represented in the distribution and decision-making process (Klinsky and Dowlatabadi, 2009).

Distributive justice, on the other hand, reflects the relationship of burdens versus benefits in terms of adaptation, mitigation, or inaction and addresses questions of responsibility and vulnerability, though some scholars include procedural justice as a component of distributive justice. For example, Klinsky and Dowlatabadi (2009) present the following five principles of distributive justice: causal responsibility, preferential treatment based on need, equal entitlements, equal burdens, and, lastly, procedural justice.

Similarly, Comim (2008) combines aspects of both distributive and procedural justice into what he calls a “capability perspective” (p. 348). Purporting that “what is really at stake in the promotion of climate justice is an improvement in social and individual capabilities,” this perspective views “well-being” as a comprehensive concept and assumes it cannot be seen independently from “individuals’ exercise of their agency and autonomy” (Comim, 2008, p. 348). In other words, “procedural justice is an intrinsic part of distributional justice” (Comim, 2008, p. 348).

In addition to procedural and distributive justice, dimensions of justice also vary temporally and spatially; while *intergenerational* justice speaks to fairness to future generations, *intragenerational* justice speaks to fairness amongst different sectors of the

current population (Klinsky and Dowlatabadi, 2009). Considering the irreversible and cumulative impact of CO₂ emissions, Comim (2008) highlights the “loss of substantive freedom (or capabilities) that the current generation is imposing on (in particular, poor) individuals living today and on all (rich and poor) individuals who will have to cope with the impacts of climate change in the future,” viewing intra- and inter-generational aspects of climate change as the most “important” climate *injustice* (p. 345).

Lastly, *compensatory* justice is also relevant in a climate context, particularly with respect to relationships between developed and developing nations. Compensatory justice calls for compensation for parties “whose interests have been harmed by the actions of another, even if those actions occurred in the past” (Klinsky and Dowlatabadi, 2009, p. 90). The concept of compensatory justice may be used as an argument in favor of compensation for past actions, as well as an argument against such compensation.

Considering the many facets of climate justice described above – including conceptualizations in the environmental and academic communities and the many dimensions of justice – a concise definition of climate justice is not apt to encapsulate all of these numerous components. For the purposes of this study, however, providing a tighter picture is useful, and climate justice may be viewed as a larger topic, guided by the general recognition that those most vulnerable to climate impacts are often the least responsible for contributing to climate change and the least capable of adaptation to such impacts, that encompasses aspects of procedural, distributive, intergenerational and intragenerational justice as they relate to climate impacts and climate action.

Though substantial research efforts have been undertaken to gauge concern for, understanding of, and attitudes towards climate change on a general level, studies

incorporating these many dimensions of justice are largely absent. Nevertheless, a review of existing research informing different facets of the current study is useful to provide the context for this research. The following literature review focuses on three relevant areas of research: public attitudes towards climate change; social-psychological influences on environmental behavior; and social movement participation and civic engagement.

1.4 Literature review

1.4.1 Public attitudes towards climate change

While predictions of climate impacts are staggering and the need for immediate action apparent, climate change remains largely outside of public discourse and even continues to be disputed in some circles. In fact, concern over climate change has actually declined over 2009 amongst the American public (Leiserowitz et al., 2010), and studies have shown that for many residents of wealthy nations, climate change continues to be an issue that is considered temporally and spatially distant (Brechin, 2008; Bord et al., 1998; Norgaard, 2009).

Though concern over the issue of climate change began to gain prominence in science and policy circles as early as the 1950s, climate change was not thrust into the public eye until 1988, when Nasa Goddard Institute of Space Studies director Dr. James Hansen testified before Congress and declared that the greenhouse effect was already changing the climate (Leiserowitz, 2007). Since then, climate change and the greenhouse effect have been topics in countless public opinion polls, as well as evolving areas of academic research. Given the amount of attention that has been paid to gauging public understanding of, concern for, and action against climate change, however, there is a surprising lack of cohesion amongst research findings.

Early research tended to focus on levels of knowledge and concern among the general public regarding climate change. Numerous studies found the general public to be largely misinformed about climate change, with confusion surrounding differences between the ozone hole and climate change, weather and climate, and the causes of climate change (Bord et al., 2000; Dunlap, 1998; Bostrom et al., 1994). One study done more recently found that even among highly educated graduate students at the Massachusetts Institute of Technology (MIT), knowledge of climate change was minimal (Sterman and Sweeney, 2007), and scholars have argued that this trend of misunderstanding is a contributing factor to the lack of public action surrounding climate change (Bostrom et al., 1994). While Bord and others (2000) recognized the influence that general environmental beliefs have on personal actions to address climate change, they argue, “a general pro-environmental stance is insufficient to ensure responsible decision-making [... it] requires at least some minimal knowledge of cause and effect” (p. 216).

The research described above supports the so-called “knowledge-deficit model,” which draws a direct association between levels of information and individual behavioral intentions to address climate change (Bord et al., 2000). However, an increasing number of studies have produced results that challenge this model and instead suggest that in addition to scientific information, many psychological and social factors interact to influence attitudes towards climate change and climate action.

In Australia, research findings point to an interplay between scientific information, local knowledge, values, and moral responsibilities as the determinant of peoples’ understanding of climate change (Bulkeley, 2000). Similarly, a study in the

United States found that personal experience with weather and scientific information shaped beliefs as to whether climate change is a problem, while perceptions regarding climate change risks and consequences were shaped by general attitudes and beliefs, along with knowledge (Krosnic et al., 2006). What these studies also suggested was that a higher degree of knowledge and understanding of climate change might, in fact, cause individuals to *avoid* thinking about or acting on behalf of climate change threats, once they realize there is no easy solution and consequently feel frustrated and apathetic (Krosnic et al., 2006; Immerwahr, 1999). Finally, scholars have pointed to an inverse association between information and feelings of personal responsibility, where more informed individuals feel less personally responsible and therefore less concerned about climate change (Kellstedt et al., 2008).

Similar to the findings described above, climate change denial is an emerging research area. Denial literature describes denial in environmental conflict as a product of denial of outcome severity, stakeholder inclusion, and self-involvement (Opatow and Weiss, 2000). Applying this concept to climate change, research in both Norway and the United States has pointed to the social organization of denial due to the negative emotions associated with climate change, the need for emotion management, and social and cultural norms (Norgaard, 2009). More specifically, results showed that individuals actively held climate change information at a distance in order to avoid feeling helpless; guilty; and threatened in both their ontological security and individual and collective identity (Norgaard, 2009).

Another area of focus for climate change research is that of risk perception. Building on risk perception literature that suggests women and racial minorities maintain

higher levels of environmental concern and environmental hardship due to traditional divisions of labour and greater environmental hardship due to living and working locations, Kellstedt and others (2008) assert, “with regard to demographic variables, research consistently shows that women and racial minorities are more fearful of the risks of climate change” (p. 114). In addition, studies have suggested that a higher socioeconomic status and greater levels of knowledge regarding the causes and effects of climate change are associated with lower levels of risk perception (Kellstedt et al., 2008), while support for government initiatives and voluntary actions has been shown to be stronger among individuals who anticipate negative climate change consequences, as long as these initiatives are not seen as a threat to their personal economic livelihoods (O’Connor et al., 2002).

From many studies focusing on climate change, it has become apparent that climate change continues to be a ‘back-burner’ issue of concern, particularly in Northern countries where citizens do not feel locally threatened and climate change effects seem both temporally and spatially distant (Brechin, 2008; Bord et al., 2000; Norgaard, 2009). A substantial research effort by the Yale Project on Climate Change and George Mason University Center for Climate Change Communication describes “six Americas” in terms of climate change attitudes and concern, based on an in-depth survey given to a nationally representative sample in the United States. The report outlines six “unique audiences” within the general public that respond to the issue of climate change differently, ranging from the Alarmed (18% of the population), who are completely convinced climate change is real and serious and are already taking action to combat it, to the Dismissive (7%), who feel climate change is not real and does not pose a threat or

require a national response (Leiserowitz et al., 2009, p. 1). The largest audience is the Concerned (33% of the population), who believe climate change is real and serious but have yet to take personal actions to address it, while the Cautious (19%), the Disengaged (12%), and the Doubtful (11%) all fall somewhere in the middle (Leiserowitz et al., 2009).

The “Six Americas” study also examined the influence of values on attitudes towards climate change. Findings showed egalitarian values, such as favoring government intervention to ensure everyone’s basic needs are met, and environmental values tended to be strongest among the Alarmed, while those in the Dismissive segment strongly endorsed individualistic values, opposed government intervention of any kind, and were very unlikely to exhibit environmental values (Leiserowitz et al., 2009). The Alarmed were also less likely to demonstrate traditional religious beliefs and more likely to favor a scientific perspective, as opposed to a religious one, in terms of issues such as evolution versus creation; on the other end of the spectrum, the Dismissive held the strongest traditional religious beliefs of any segment and were the most likely to identify as “born again” or Evangelical Christian (Leiserowitz et al., 2009).

The six segments also displayed distinct socioeconomic demographic characteristics. The Alarmed were more likely to be politically liberal, female, middle-aged, well-educated and earning slightly higher incomes than the national average; comparatively, the Dismissive tended to be politically conservative, male, white, well-educated and high income individuals (Leiserowitz et al., 2009). Falling between these two groups in terms of climate change attitudes, the Concerned are fairly representative of general American public in terms of gender, age, income, education and ethnicity,

though are more likely than average to be moderately politically liberal (Leiserowitz et al., 2009). Finally, the Cautious are evenly divided between moderately politically liberal and moderately politically conservative, and tend to represent national averages in terms of socioeconomic demographic characteristics, while the Disengaged are more likely than the national average to be lower income, less educated, minority women who are moderately politically liberal (Leiserowitz et al., 2009).

Other studies focused on the effect of socioeconomic demographic characteristics have suggested climate policy support is stronger among high income individuals, older individuals, and politically left-wing individuals (Dietz et al., 2007), though findings also point to older respondents showing more trust in industry, which is a predictor of weaker support for climate change policies (O'Connor et al., 2002). Younger respondents, on the other hand, were found to indicate a stronger willingness to take voluntary actions, as opposed to supporting government initiatives (O'Connor, 2002). In addition, policy support among those on the political left was indirectly linked as a result of more trust in environmentalists, a more altruistic worldview, less traditional values associated with the politically left, and a higher score on the New Ecological Paradigm (NEP) scale (Dietz et al., 2007). The NEP scale, originally developed in 1978 by sociologists Riley Dunlap and Kent Van Liere and later revised in 2000 (Dunlap et al., 2000), has become increasingly prominent in survey research for environmental sociology and is used to examine individual views on the relationship between humans and the environment. Higher NEP scores indicate more “proenvironmental” attitudes, which can be described as greater general concern for the environment and non-human communities via a more “ecological worldview” (Dunlap et al., 2000, p. 427).

Education has been found to hold independent explanatory power in terms of willingness to reduce greenhouse gas emissions, particularly with respect to support for government programs (O'Connor et al., 2002), yet has also been suggested to have no direct impact on policy support (Dietz et al., 2007). Similarly, the effect of gender on support for climate change policies in the United States has been shown to align with past research that found no gender effects for environmental issues that are not seen as posing a great personal risk to respondents (Bord & O'Connor, 1997; O'Connor et al., 2002), yet women are also suggested to have greater trust in environmentalists and a more altruistic worldview, which are two factors associated with greater climate change policy support (Dietz et al., 2007). Lastly, women are seen as more likely to think climate change is happening, yet are also more likely to identify false causes, such as pesticides and nuclear power (O'Connor et al., 2002).

1.4.2 Social-psychological influences on environmental concern and behavior

Prior to the appearance of public views on climate change as a topic of social research, many studies focused more generally on motivators and barriers to environmental concern, proenvironmental behavior, and participation in the environmental movement. These studies have produced a broad range of research findings on the relationship between environmental attitudes and values, worldviews, and socioeconomic demographic characteristics. Though some studies have found certain values, worldviews, and socioeconomic demographic characteristics to hold independent explanatory power in terms of environmental attitudes, many studies have suggested that it is their combined influence that shapes environmental attitudes, as well as environmental behavior.

For example, a theory put forth by scholars Paul Stern, Thomas Dietz and others called the Values-Beliefs-Norms Theory, or VBN theory, suggests a hierarchical model leading to environmental behavior, where values are “casually antecedent to worldviews, more specific beliefs and attitudes, and, ultimately, behavior” (Poortinga et al., 2004, p. 72; Stern et al., 1995; Dietz et al., 1999). Poortinga (2004) summarizes the theory, writing, “values and worldviews act as filters for new information so that congruent attitudes and beliefs (i.e. concern about specific environmental problems or attitudes toward certain behaviors) are more likely to emerge [... and also] determine environmental behavior” (p. 72). These scholars found that, consistent with earlier research, environmental concern and different types of environmental behavior are related to basic human values, with concern “not only related to the extent one values this public good, [the environment], per se, but is also negatively influenced by the extent one thinks that personal prosperity is important” (2004, p. 88).

An examination by Shultz (2000) of results from four studies involving diverse samples points to a 3-factor model of environmental concern, where concern is directly influenced by values that fall into 3 categories exhibiting varying degrees of perceived interconnectedness between themselves and other people or themselves and nature: egoistic concern (valuing self), altruistic concern (valuing other people), and biospheric concern (valuing the whole biosphere). Shultz (2000) found egoistic concern to be associated with weaker concerns regarding the harmful consequences of environmental damage, while biospheric concerns led to stronger environmental concerns. Altruistic concerns were also associated with stronger concern for the environment, though less so

than biospheric concerns, representing an intermediate level of inclusion of ‘others’ in the notion of self (2000, p. 336).

While values and environmental concern were found to be particularly relevant in explaining variance for intent-oriented measures of environmental behavior, such as policy support or acceptance of energy-saving measures, the impact of contextual factors on environmental behavior, such as individual opportunities and abilities related to socioeconomic demographic variables like social class or level of education, was also emphasized (Poortinga et al., 2004). Scholars have noted a positive association between social class and environmental concern (Van Liere and Dunlap, 1980; Dietz et al., 1999; Dunlap et al., 2000), where concern is seen as increasing along with social class as a result of the ability of the upper and middle classes to “indulge” in environmental concern because their basic material needs are covered, and because their exposure to more pleasant living, working, and recreating environments cultivates a concern with the deterioration with those environments (Van Liere and Dunlap, 1980). In addition, concern over environmental issues is suggested to be a logical extension of more general political activism, which tends to be most prominent in upper and middle classes (Van Liere and Dunlap, 1980).

On the other hand, however, some research has pointed to an inverse relationship between social class and concern for environmental problems, arguing that the lower and working classes may actually be *more* concerned with environmental issues, but that their voice remains underrepresented in studies (Buttel and Flinn 1978b as cited in Van Liere and Dunlap, 1980). Research in rural communities in the western United States, for example, found that, contrary to popular belief and representations in the media,

environmentalists exist in rural areas but express their environmentalism in the context of their culture, region, and own experiences (McBeth and Foster, 1994; Smith and Krannich, 2000). While findings in McBeth and Foster's (1994) study showed upper-middle class newcomers in these communities to hold the *strongest* proenvironmental attitudes, these residents were only a small percentage of those expressing proenvironmental attitudes within the community. In fact, the most noteworthy group, said to be equally or more likely to express proenvironmental attitudes compared to the rest of the community, was what they coined "local environmentally aware older non-elites" – those residents with a household income less than \$40,000 per year; older than 40 years old; without a college education; and in a nonprofessional occupation, such as a small farmer or small business owner (1994).

Similarly, Smith and Krannich (2000) assert that "newcomers and longer-term residents actually occupy substantially more 'common ground' than might be experienced or perceived by either group" and that while these groups differ significantly in terms of socioeconomic demographics, they do not diverge when it comes to environmental concern (p. 418). In terms of views on population growth and economic development, however, longer-term residents were more supportive of placing limitations on these two areas in order to preserve existing values and ways of life in the community, a trend attributed to the likelihood that newcomers were employed in the burgeoning outdoor recreation and tourism industries in many rural western communities, where low-wages and part-time work may encourage welcoming attitudes towards population growth and economic development (Smith and Krannich, 2000).

Finally, studies have suggested that individuals who have access to proenvironmental services, such as recycling and transit, are more likely to hold proenvironmental attitudes (Guagnano, 1995; Derksen and Gartell, 1993, as cited in Barr, 2003). Due to the tendency for services such as these to be largely concentrated in urban areas, this may help to explain environmental attitude differences between urban and rural residents, a trend supported by results from Dunlap and others (2000), who found that individuals raised in an urban area scored higher on the NEP scale than their rural counterparts.

Other socioeconomic demographic characteristics have also been shown to influence environmental attitudes and behavior, though studies have produced varying results. Level of education is positively associated with proenvironmental behavior (Dietz et al., 1998; Scott, 1994), proenvironmental attitudes (Jones and Dunlap, 1992), and endorsement of the NEP scale (Dunlap et al., 2000), yet is also suggested to be negatively associated with a belief in the fragility of nature (Dietz et al., 1998). While some studies point to a negative association between age and proenvironmental attitudes (Jones and Dunlap, 1992) or endorsement of the NEP scale (Dunlap et al., 2000), others point to a less clear association (Dietz et al., 1998) or suggest a positive association between age and certain aspects of environmental behavior (Scott, 1994). Similarly, research on the relationship between gender and environmental attitudes and behavior has produced varying results, both supporting (Dietz et al., 1998; Dietz et al., 2002) and challenging (Scott, 1994) the commonly held view that women exhibit more proenvironmental beliefs via a stronger commitment to altruism, and also suggesting that men are more likely to engage in political proenvironmental behavior (Scott, 1994), while women are more

likely to exhibit proenvironmental consumer behavior (Scott, 1994; Dietz et al., 1998). Finally, political liberalism is significantly associated with endorsement of the NEP scale (Jones and Dunlap, 1992; Dunlap et al., 2000; Scott, 1994), as well as with proenvironmental consumer behavior (Scott, 1994).

1.4.3 Social movement participation and civic engagement

Also important in a discussion of environmental values and concern is literature on general civic engagement and participation in the environmental movement. Public support for any social movement is seen as transpiring from a conjunction of values, beliefs, and personal norms (Dietz et al., 1999).² More specifically, the ability of committed movement activists and organizations to reshape personal norms of the general public to cultivate feelings of obligation may help to steer individuals to action that supports the movement (Dietz et al., 1999). Scholars suggest that these norm-based actions come as the result of an individual accepting a particular personal value and believing both that something important to that value is threatened and that actions undertaken by the individual can help to address the threat (Dietz et al., 1999).

For the environmental movement, the previously mentioned VBN theory can be applied to examine public support for the movement. The VBN theory links personal norms and values with the NEP scale. It suggests that support for the environmental movement is likely for an individual who holds altruistic values, maintains a worldview that sees human actions as negatively affecting a fragile biosphere, and whose personal norms call for proenvironmental actions based on a belief in their ability to make a difference (Dietz et al., 1999).

² It should be noted that social movement scholars have criticized this exclusive focus on values, beliefs and norms. See, for example, Klandermans and Oegema (1987).

In addition, based on their research findings these scholars suggest that non-activist support for the environmental movement is best understood in three categories: consumer behavior, environmental citizenship, and policy support or acceptance (Dietz et al., 1999). The only social-psychological factor shown to be common to all three categories was personal proenvironmental norms, and results pointed to a large influence on environmental citizenship from social-structural variables that help determine an individual's access to resources needed to be an agent of social change, such as income and race, as well as general beliefs about how society should be organized (Dietz et al., 1999). Finally, scholars suggested that further studies distinguish between different types of environmental activism and environmental behavior in order to better understand the relationship between social-psychological variables and environmental concern.

Related to social movement participation are the broader areas of research of civic engagement and social capital. Civic engagement, defined by Grillo and others (2010) as “a set of actions and efforts, a feeling of belonging, and an experience of investment and ownership in local, regional, national, or international communities,” (p. 452), is seen as a *manifestation* of social capital, a concept defined by Putnam (1995) as “features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit” (p. 66).

Scholars in this field have identified both macro and micro level factors that affect levels of civic engagement. At the macro level, Putnam (1995) makes the case that technological changes – such as television and the Internet – along with an increasing number of women in the workforce and a decline in community-based enterprises, has led to decreasing levels of civic engagement in the United States in recent decades, a

trend that is likely found in other industrialized nations as well. In addition, corporate delocalization has also been cited as a cause of declining civic engagement, due to the decrease in place-based development and, consequently, a decrease in incentives to elites for community mobilization (Warren et al., 1999, as cited in Grillo et al., 2010).

At a micro level, some studies highlight social-psychological factors, suggesting that civic engagement is a product of social and political trust; “in” group and “out” group dynamics; and the ratio of “real” social activities to “ersatz”³ social activities (Green and Brock, 1998; Grillo et al., 2010). Green and Brock (1998) found that individuals with low trust in others would choose real versus ersatz activities based on situational factors, such as mood, while high-trust individuals would almost always choose real social activities over ersatz activities.

Other research has focused on socioeconomic influences at a micro-level, contending that poorer individuals have less social capital, along with less interest in creating civic networks, due to lower levels of education, less social mobility, and a greater preoccupation with economic survival than their wealthier counterparts (Knack, 2002, as cited in Grillo et al., 2010). Results from one study in the United States found poor, young, male minorities with low levels of education as the *least* likely to engage with the political process (Lerner, 2004, as cited in Grillo et al., 2010), and another study found higher levels of political interest among older individuals, more educated individuals and males, along with higher levels of exposure to political content and

³ Social activities that are substitutes for true social interaction; these activities involve interaction with media or media characters in place of other individuals (Green and Brock, 1998).

engagement in civic activities among older respondents and females (Scheufele and Shah, 2000).

Additionally, the Six Americas study described earlier found levels of civic engagement to be highest among those in the Alarmed or Dismissive segments, where individuals demonstrated the most conviction with respect to their (albeit opposing) beliefs about climate change, while the lowest levels of civic engagement were linked to the Disengaged segment (Leiserowitz et al., 2009). Drawing connections to socioeconomic demographic characteristics of these segments points to higher levels of engagement among middle-aged, college-educated, politically liberal females (general trends of the Alarmed) as well as well-educated, high income, religious, politically conservative males (general trends of the Dismissive), versus lower levels of civic engagement among less-educated, lower income, religious, moderately politically liberal, minority women (general trends of the Disengaged) (Leiserowitz et al., 2009).

The role of elites has also been highlighted in micro-level studies, likening well-informed elites to storytellers able to frame arguments about social and economic issues in a way their community can relate to and thus increasing citizens' levels of civic engagement (Gibbs et al., 2004, as cited in Grillo et al., 2010). Grillo and others (2010) examined the relationship between resident satisfaction and civic engagement, pointing to a positive association between satisfaction with social offerings in one's community and their level of civic engagement, as well as between self-esteem and the likelihood of engagement with others.

Finally, of particular relevance to this study are links between social capital and sustainable development.⁴ Recognizing that declining levels of civic engagement presents a significant obstacle to addressing the increasing need for substantial sustainable development efforts, Dale (2005) argues, “It is only through the mobilization of social capital [...] that we will be able to collectively ‘see’ the problems, and the critical actions necessary in human behaviours and values locally, nationally, and globally” (p. 18). What is needed, according to Dale, is dialogue that builds “collective norms, values, and governance among diverse sectors,” providing a long-term, open-ended and inclusive venue for public participation in decision-making (2005, p. 18). “For people to be able to act,” Dale writes, “they must be engaged either intellectually or emotionally or, even better, intellectually *and* emotionally” (2005, p. 23). Considering this assertion, relatively low levels of public concern and action related to climate change shown in past research (Leiserowitz et al., 2009; Brechin 2008; Bord et al., 2000; Norgaard, 2009) may be reflective of a lack of intellectual and emotional engagement, a possibility that will be explored further in the discussion section.

Considering the variance in research findings and the apparent decline in both public concern for climate change and levels of civic engagement described above, it is evident that there is need for additional research focusing on public understanding of climate change issues. More specifically, a study seeking to understand public perception of climate justice issues – which embody many social, environmental, and economic dimensions not often associated with climate change – will provide significant and useful

⁴ Sustainable development is defined here as the process of reconciliation of ecological, social, and economic imperatives (Dale and Onyx, 2005).

insight into how to effectively engage the public in dialogue and gain support for climate action.

1.5 Research questions and hypotheses

As described earlier, the primary goal of this study is to examine public understanding of the social aspects of climate change and to gauge public support for climate policies. Though the sample for this study is exclusively from British Columbia and many of the issues and policies focused on are specific to the province, the broader concepts and issues are not exclusive to BC.

For this study, ‘support for climate justice’ is measured by a nine-item index that touches on many of the aspects of climate justice described in Chapter 1. For a full description of the index and its construction process, see page 45. ‘Support for climate policies’ is measured in this study by a seven-item index that contains a number of climate policies at the provincial level. For a complete description of the index, see page 48.

1.5.1 Research questions

1. How does support for climate justice vary according to values, beliefs, and socioeconomic demographic characteristics?
2. How does support for climate *policies* vary according to values, beliefs, and socioeconomic demographic characteristics?

1.5.2 Hypotheses

My general guiding hypothesis is that support for climate justice and climate policies will vary by socioeconomic demographic characteristics; general environmental attitudes; views on civic responsibility and equality; and beliefs about climate change.

Considering past research, I expect there to be effects for age; gender; level of education; civic responsibility; and general environmental attitudes. The effect of personal annual income and location of residence will also be examined, and five additional variables will be controlled for, though not hypothesized: whether there are children in the home, whether the respondent works full-time, belief in anthropogenic climate change, belief in the benefits of climate action, and concern about the economic costs of climate change.

Figure 1.1 illustrates the predicted relationships among variables.

This guiding hypothesis is based on both a review of relevant literature and recognition of the unique characteristics of climate change and climate justice, as both are increasingly prominent issues of public concern, both locally and globally, yet continue to be hotly debated and highly contested by a select group of powerful global actors. Though the growing climate justice movement can be compared to the environmental justice movement in many respects – both are concerned with the unequal burden of environmental problems and consequences borne by vulnerable populations, both are global in scale, and both highlight links between environmental and social issues – it is also set apart due to the magnitude of its scale in terms of potential climate change consequences. Finally, the climate justice movement has only recently gained momentum and still remains relatively small and largely outside of the mass media, which are important characteristics to consider for this study. With this in mind, a more detailed explanation of each facet of this general hypothesis follows:

Age and support for climate justice/policies

Consistent with studies showing age to be negatively associated with proenvironmental attitudes (Jones and Dunlap, 1992; Dunlap et al., 2000) and voluntary proenvironmental behavior (O'Connor, 2002), I hypothesize:

H.1.a: Age will be negatively associated with support for climate justice, and

H.1.b: Age will be negatively associated with support for climate policies.

Gender and support for climate justice/policies

Based on previous studies that suggest women rank altruism – a value closely related to proenvironmental attitudes – as more important than men (Dietz et al., 2002) and that women are also more likely to think climate change is happening (O'Connor et al., 2002); more likely to be fearful of risks associated with climate change (Kellstedt et al., 2008); and more likely to support climate change policies (Dietz et al., 2007), I hypothesize:

H.2.a: Women will demonstrate higher levels of support for climate justice, and

H.2.b: Women will demonstrate higher levels of support for climate policies.

Level of education and support for climate justice/policies

Research has shown level of education to be both positively associated with climate change policy support (O'Connor, 2002), to exhibit no effect on such support (Dietz et al., 2007), and to be positively associated with climate change denial (Leiserowitz et al., 2009). Though these results are varied, when

considered in combination with past research that points to a greater likelihood of more educated individuals to engage in proenvironmental behavior (Dietz et al., 1998) and to score highly on the NEP scale (Jones and Dunlap, 1992; Scott, 1994; Dunlap et al., 2000) I anticipate:

H.3.a: Level of education will be positively associated with support for climate justice, and

H.3.b: Level of education will be positively associated with support for climate policies.

Income and support for climate justice/policies

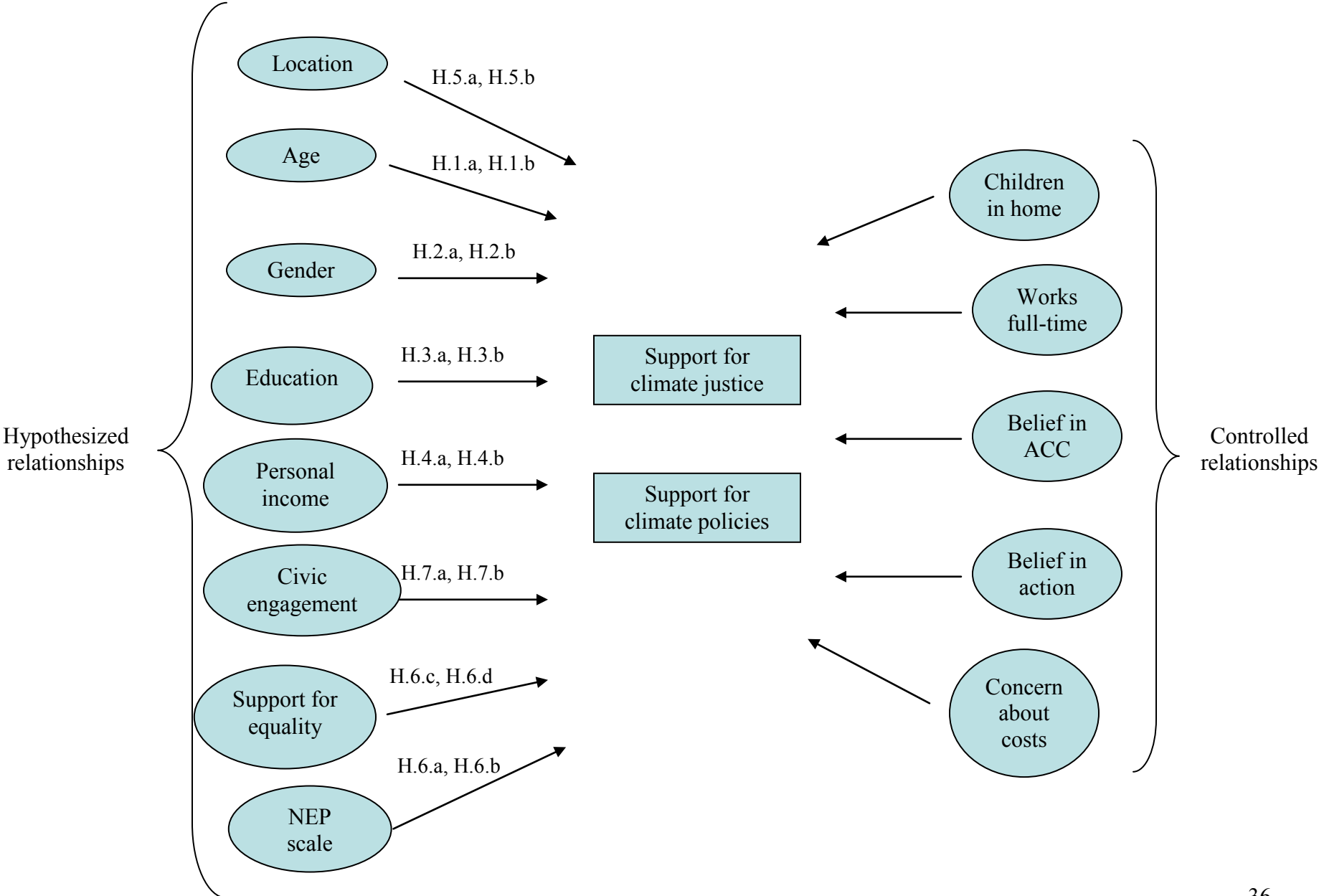
While a number of past studies have suggested a positive association between income and support for climate change policies (Dietz et al., 2007); income and environmental concern (VanLiere and Dunlap, 1980; Dietz et al., 1999; Dunlap et al., 2000); and income and proenvironmental behavior (Scott, 1994), others have pointed to a decrease in risk perception associated with climate change as an individual's socioeconomic status increases (Kellstedt et al., 2008). Similarly, scholars have also suggested that lower income individuals may be equally, or even more likely, than their higher income counterparts to exhibit environmental concern (McBeth and Foster, 1994; Smith and Krannich, 2000).

In contrast to a number of studies, I argue that:

H.4.a: Income will be negatively associated with support for climate justice, and

H.4.b: Income will be negatively associated with support for climate policies.

Figure 1.1. Diagram illustrating variable relationships



As described in the introduction, on a global scale poorer countries are likely to be less able to climate impacts such as decreases in food security, disease outbreaks, and climatic and economic volatility than wealthier countries (Byer and Rees, 2009; Comim, 2008). Applying this relationship to a provincial level, I expect low-income respondents will be more likely to emphasize the importance of fairness in climate action and to perceive themselves to be at a disadvantage in terms of climate action burdens. As income increases, I predict respondents will show less support for aggressive climate action when asked about specific policy options, particularly in cases where substantive changes in lifestyle aspects associated with the middle and upper classes are called for and with regard to policies and general views that weight responsibility of citizens based on income.

Location of residence and support for climate justice/policies

In BC, physical evidence of climate change (such as the mountain pine beetle epidemic) is becoming increasingly apparent across the province, and many rural communities are still heavily economically dependent on natural resource industries that are threatened by climate impacts. In addition to these threats from climate change, discrepancies often exist between urban and rural areas in terms of public services that are lauded as avenues to help combat climate change and rising energy costs (such as transit options or high-density housing), presenting many rural communities with both acute economic hardship from climate impacts and distinct challenges in terms of climate action.

This study is divided into “Vancouver Metropolitan” respondents and “Non-Metropolitan” respondents. Though a finely tuned “rural” and “urban”

comparison is not possible due to the many larger communities that exist within the Non-Metropolitan grouping – such as Victoria and Kelowna – examining differences between these two groups is still useful in the context of this study and can be viewed as a loose extension of an urban/rural comparison.

Considering the unique issues facing rural communities in BC, in combination with past research on rural and urban attitudes that challenges the commonly asserted belief that urban residents hold more proenvironmental attitudes than rural residents (McBeth and Foster, 1994; Smith and Krannich, 2000), I hypothesize that:

H.5.a: Non-Metropolitan individuals will exhibit higher levels of support for climate justice, and

H.5.b: Non-Metropolitan individuals will exhibit higher levels of support for climate policies.

Values and support for climate justice/policies

Past research has shown substantial associations between key values (such as those relating to the environment, and political ideology) and environmental concern (Dunlap, 1980; Dietz et al., 1998; Dietz et al., 1999; Shultz, 2000; Dietz et al., 2002; Poortinga et al., 2004). I expect this study to support previous findings with respect to the relationship between values and support for climate justice and climate policies. Considering that both of these areas have an inherent connection with general environmental issues and with general social justice concerns, I predict the following relationships between values and support for climate justice and climate policies.:

H.6.a: Respondents with a stronger endorsement of the NEP scale, indicating more proenvironmental attitudes, will demonstrate stronger support for climate justice,

H.6.b: Respondents with a stronger endorsement of the NEP scale will demonstrate stronger support for climate policies,

H.6.c: Respondents scoring higher on the equality index, indicating more egalitarian views, will show stronger support for climate justice, and

H.6.d: Respondents scoring higher on the equality index will show stronger support for climate policies.

Civic engagement and support for climate justice/policies

Findings from research on civic engagement suggest that socioeconomic, social-psychological, and community satisfaction factors all influence levels of civic engagement in individuals (Grillo et al., 2010; Lerner, 2004, as cited. in Grillo et al., 2010). Consistent with previous studies, I hypothesize that respondents indicating higher levels of support for civic engagement are likely to be more educated; more affluent in terms of income; female, and older than those with lower levels of support for civic engagement, and that these respondents will also exhibit greater support for climate justice and climate policies, with civic engagement a possibly significant predictor of support. I anticipate:

H.7.a: Civic engagement will be positively associated with support for climate justice, and

H.7.b: Civic engagement will be positively associated with support for climate policies.

2 Methods

2.1 Research design

This quantitative study seeks to examine the relationship of values, attitudes, and socioeconomic demographic characteristics (independent variables) with support for climate justice (dependent variable) and support for climate policies (dependent variable). The data for this study were obtained from an online survey given to a panel of the BC public regarding their views on the social aspects of climate change issues. The survey was completed in the latter half of July 2010 and engaged respondents on topics such as social and environmental values, attitudes, and beliefs; levels of support for specific policies related to climate change; perceptions of justice dimensions and fairness surrounding climate change and climate action; and interpretations of various frames coming from within the climate change debate, such as green jobs or quality of life. The survey instrument also asked respondents for detailed socioeconomic demographic information (for the complete questionnaire, refer to the Appendix). Though several items were borrowed from previous surveys, such as the NEP scale (Dunlap et al. 2000) and the value of equality index (Leiserowitz et al. 2009), the research team crafted the vast majority of questionnaire items.

The survey design is cross-sectional, which uses data collected at one point in time from a sample population to explain relationships between variables at the time of the study (Babbie, 1990)⁵. A cross-sectional design is advantageous due to its relatively short time frame and small budget, while a longitudinal design – which analyzes data

⁵ As this is not a probability sample, results do not allow for generalization of the larger population in a statistical sense.

over a period of time – allows for an examination of causal processes and changes over time (Babbie, 2008). For this survey, both budget and time constraints made a cross-sectional design the most appropriate.

2.2 Sampling

All respondents were adults, ranging from 19 to 85 years of age, whom were recruited through e-mail marketing and banner ads to be volunteer members of a panel maintained by the survey company Environics. The panel consists of a wide cross section of adults – Environics maintains tens of thousands of names in the overarching sample – which has previously committed to participating in several surveys per year. Though the panel is not representative in the normal statistical sense, as it is not based on probability sampling, samples using these procedures are often representative in a socio-demographic sense.

There were a number of reasons for choosing the online avenue for this study. First, budget constraints allowed for a greater number of questions to be asked from a larger panel of respondents using the online method rather than a telephone survey. Given the many facets of climate justice that were appealing to include in the survey instrument, this was a large factor in the decision. Second, conducting a telephone survey can present the obstacle of a low response rate and difficulty accessing certain parts of the population due to high cell phone usage, while online participants choose when to complete the survey and thus may be more likely to provide thoughtful and honest answers, as compared to a telephone survey that serves as an unexpected interruption. Though the online method presents challenges in terms of tests of significance, the advantages were considerable in the context of this study.

2.3 Data analysis

2.3.1 Project and survey instrument development

The data collection process began with a literature review of past research on climate justice, public attitudes towards climate change, and social and psychological influences on environmental behavior. An array of the survey instruments used in past studies in these areas also informed the development of this project's questionnaire (Dunlap et al., 2000; Leiserowitz et al., 2009; Dietz et al., 1999).

The CJP is a multi-disciplinary project with the overarching goal of identifying and developing economic and social policy options that lead to aggressive action on climate change with broad-based public support. Led by the Canadian Centre for Policy Alternatives (CCPA) and the University of British Columbia (UBC), other research partners for the CJP include academics from two additional BC universities, researchers and advisors from BC trade unions, environmental non-government organizations, First Nations and social justice groups, and other research institutes. The Social Sciences and Humanities Research Council of Canada (SSHRC) and the Vancity and Vancouver Foundation provide funding for the project.

As one of four “streams” of the CJP, the Communication and Social Change team's focus is on defining climate justice, public understanding of links between climate change and social justice issues, and media depictions of related issues. An important goal of both the CJP and the Communication and Social Change stream is to develop communication strategies for the climate change and climate justice arenas in order to increase public understanding and support; as this study is in part motivated by the CJP

and its goals, a discussion that draws from findings to suggest possible strategies for climate change communication is included in Chapter 4.

Using the literature review as a foundation, the survey instrument was developed by Dr. David Tindall and Shannon Daub – co-investigators for the survey project – and myself, with a significant amount of input from others involved in the Communications and Social Change stream and the larger CJP. In designing the questionnaire, the research team took into account relevant and prominent research areas related to climate change attitudes – such as media consumption, risk perception and political affiliation influence – and also considered key issues from both a Canadian and British Columbian perspective.

The final survey instrument used for this study is divided into 6 sections. Though the term climate change is used throughout this thesis, the research team felt that global warming was a more commonly used term among the general public and thus it was used in the questionnaire. Part 1 asks respondents to identify the province they live in and their postal code, both in order to make sure only BC residents were included in the data analysis and to gain a more detailed picture of where respondents were located in the province. Part 2 asks about interest, behavior, and views related to public policy issues and quality of life aspects, and also includes indexes measuring attitudes towards equality and environmental attitudes. Part 3 includes questions about whether the respondent believes climate change is happening, where they get their information on climate change, and what sort of impact they feel climate change is likely to have on different parts of the population. Part 4 asks about responsibility and trade-offs related to climate change issues, using a number of indexes to measure respondents' views on government,

industry, and consumer responsibility, and Part 5 touches on perceptions of fairness regarding climate action and levels of support for specific climate policies. Lastly, Part 6 consists of a detailed demographics section.

During the survey development process Environics was selected as the polling firm to be used for the study and offered suggestions about formatting and wording. Environics also provided input about the relative advantages and disadvantages of the online survey method versus the telephone survey method, and the decision to use the online survey method was finalized. Lastly, the survey instrument was submitted to the UBC Ethics Board and received approval. Environics then conducted the online survey in the second half of July 2010.

2.3.2 Statistical analysis

Environics converted the data into an SPSS file, which was transferred to Dr. David Tindall⁶ along with Excel tables illustrating basic frequencies. Though 1006 questionnaires were started, the final number of cases analyzed was $N = 971$ for support for climate justice and $N = 969$ for support for climate policies. This was due to ‘missing’ data, or questionnaire items that remained unanswered by a respondent. Dr. Tindall and I used SPSS Version 18 to perform descriptive (mean, standard deviation, percentages), validity (factor analysis), reliability (Cronbach’s alpha), and inferential (multiple regression) statistics. In addition, these data were weighted to be more representative of the population in terms of socioeconomic demographics. A summary of descriptive statistics for each variable can be found in Table 3.1 in the results chapter, and a

⁶ Dr. Tindall is an associate professor in the Department of Sociology and the Department of Forest Resources Management at the University of British Columbia, and also my thesis supervisor. I met with Dr. Tindall five times for data analysis purposes.

summary of descriptive statistics for each item in the support for climate justice index and support for climate policies index can be found in Table 3.2 and Table 3.3, respectively. In this section, we provide details about the construction of index variables, with a focus on factor and reliability analyses.

Factor and reliability analyses provide a system through which the most appropriate items for a given composite variable are determined. Factor analysis is used to reveal dimensions, or factors, of a set of variables. In this case, a type of factor analysis called ‘principle components analysis’ was used to reduce a larger set of items to a smaller number of underlying latent dimensions by identifying which items are most highly correlated with a given dimension, or factor. Correlations are measured by a factor loading, which represents the percent of variance in an indicator variable explained by the factor. To make it as easy as possible to identify which variables are correlated with a factor and also aid with the interpretation of factors, a varimax rotation – an orthogonal rotation method used to more easily identify each variable with only one or two factors – is performed on the factor axes (Garson, 2011). For this study, items with a factor loading of .4 or above were considered significantly correlated with a given factor (Garson, 2011).

Reliability is the correlation of an item, scale, or instrument with a hypothetical one that truly measures what it is supposed to (Garson, 2011). A reliability analysis measures the extent to which respondents generally answer the same way across a set of items that are intended to measure the same thing. Reliability for this study was measured by Cronbach’s alpha, which represents internal consistency based on the average correlation among items (Garson, 2011). Inter-item reliability was considered acceptable

with a Cronbach alpha value of 0.7 or higher on a 0-1 scale, where 1 indicates all items measure exactly what they are intended to. A description of the construction of this study's composite variables is below.

2.3.2.a Dependent variable: support for climate justice

Table 2.1 presents the questionnaire items used in the support for climate justice index, and also reports the factor loading, based on varimax rotation, and Cronbach's alpha value for each item. The set of items used to indicate support for climate justice were drawn from Question 16 (Q16), found in Part 4 of the survey instrument, "Questions about responsibility and tradeoffs," and Question 20 (Q20) within Part 5, "Questions about fairness and specific policies/frames."

The process for the development of Q16 and Q20 spanned several weeks and saw input from various scholars as well as staff members of the CCPA. With a focus on responsibility and tradeoffs, items included in Q16 asked about views on personal sacrifice, in terms of actions already undertaken, willingness to pay and belief in the effectiveness of individual action; and the relationship between the government, industry and individuals in terms of responsibility.

For Q20, the research team built upon an understanding of the concept of climate justice as depicted within the academic community to craft questionnaire items that incorporate its main tenets. As described previously, these aspects include responsibility (Grasso, 2010); vulnerability (Adger, 2003; Kasperson and Kasperson, 2001, as cited in Paavola and Adger, 2006); procedural, distributive, intergenerational, and intragenerational dimensions of justice (Klinsky and Dowlatabadi, 2009; Paavola and Adger, 2006; Comim, 2008); and an overarching theme of fairness.

The final set of items asked respondents to indicate their level of agreement with each item on a 4-point interval scale which includes (1) Strongly disagree, (2) Somewhat disagree, (3) Somewhat agree, and (4) Strongly agree. The items include statements centered around responsibility and fairness related to climate action and dimensions of justice, such as “People with low incomes should pay the costs of dealing with global warming just like everyone else” (Q16_9), “We need to reduce greenhouse gas emissions today so that future generations don’t pay the price of global warming” (Q20_6), and “Policies to combat global warming must consider the differences between urban and rural areas” (Q20_5).⁷ For the complete set of items in Q16 and Q20, see the Appendix.

After completion of the data collection process, a factor analysis of all Q20 items, as well as the four Q16 items determined to be relevant to climate justice (Q16_4; Q16_5; Q16_7; Q16_9), revealed 4 factors with notably associated clusters of two or more items. Further examination led the research team to label the factors as follows, based on an interpretation of each factor’s overarching theme: (1) “Climate justice is fairness,” (2) “Treat everyone equally,” (3) “Don’t limit freedom,” and (4) “Support for limits.”

Though all of these factors contain elements of interest for an analysis on more general attitudes towards climate change and climate action, based on the conceptualization of climate justice developed by the research team it was decided that support for climate justice would be measured by the first factor, “Climate justice is fairness.” This factor consists of nine items, with 25.96% of the variance in the nine items

⁷ Though the Cronbach alpha value for this variable would increase to $\alpha = .812$ if Q20_5 was removed, due to the attention paid to urban and rural differences in past studies, as well as distinct differences in urban and rural areas in BC, it remained a component of the variable.

Table 2.1. Support for climate justice index construction

Questionnaire item	Factor loading for 'Fairness' factor	Cronbach's Alpha if deleted (α)
Q20_1. Governments should make sure people with high incomes pay their fair share of the costs of global warming.	.63	.786
Q20_2. Everyone has to sacrifice equally to solve global warming.	.44	.798
Q20_3. People who are responsible for the most greenhouse gas emissions should also make the biggest reductions in their emissions.	.75	.767
Q20_5. Policies to combat global warming must consider the differences between urban and rural areas.	.45	.812
Q20_6. We need to reduce greenhouse gas emissions today so that future generations don't pay the price for global warming.	.66	.753
Q20_8. It is unfair that some people try to reduce their greenhouse gas emissions, while others do nothing.	.66	.769
Q20_9. There should be a maximum cap on everyone's greenhouse gas emissions.	.59	.764
Q20_11. Governments need to set clear environmental rules that apply equally to everyone.	.63	.769
Q16_4. The government should impose laws to limit greenhouse gas emissions by people and corporations.	.45	.771
Total variance explained by factor	25.96%	–
Model summary	–	.797

Notes: (1) Respondents were asked to indicate whether they strongly agree, somewhat agree, somewhat disagree or strongly disagree with each statement. (2) "Cronbach's alpha if deleted" represents the alpha if the given item were removed from the model. If "alpha if deleted" for an item is higher than the overall alpha, it is often desirable to drop that item. (3) Factor loadings are based on the varimax rotation method.

accounted for in the single factor and an acceptable value for inter-item reliability ($\alpha = .797$) (See Table 2.1). For the computation of this variable during data analysis, values for each index item were summed together and then divided by the number of items to be reflective of the original 4-point scale.

2.3.2.b Dependent variable: support for climate policies

Table 2.2 provides the questionnaire items, as well as factor loadings based on varimax rotation and Cronbach's alpha for each item, used in the index for the second dependent variable for this study, support for climate change policy. The support for climate change policy index was constructed in a similar fashion as the support for climate justice index, with a focus on Question 18 in the survey instrument.

Question 18 (Q18) in the survey instrument asked respondents to indicate their level of support for a number of different policies and actions that the provincial government could bring in that address various aspects of climate change. The specific policies chosen to be included in Q18, ranging from "Use agricultural polices to reduce BC's dependence on imported foods" to "Allow private companies to generate 'run of river' hydropower for export," were chosen by the research team based on their varying degrees of salience, feasibility, and controversy they bring to ecological, economic, and social realms of the provincial climate action debate (See the Appendix for a complete list of items). Respondents were asked to indicate their level of support for the provincial government bringing in each of the policies on the following 4-point interval scale: (1) Strongly oppose; (2) Somewhat oppose; (3) Somewhat support; (4) Strongly support.

Table 2.2. Support for climate policies index construction

Questionnaire item	Factor loading	Cronbach's alpha if deleted (α)
Q18_1. Subsidize home and building retrofits to increase energy efficiency.	.65	.723
Q18_2. Create job retraining for workers in fossil fuel industries that will be affected by global warming policies.	.66	.716
Q18_4. Invest in reforestation efforts because forests prevent greenhouse gases from polluting the atmosphere.	.69	.731
Q18_5. Stop subsidizing oil and gas industries.	.61	.755
Q18_6. Use agricultural policies to reduce BC's dependence on imported food.	.75	.720
Q18_8. Invest in mass transit.	.55	.736
Q18_9. Create a "citizens assembly on global warming."	.49	.745
Total variance explained by factor	34.20%	–
Model summary	–	.761

Notes: (1) Respondents were asked to indicate whether they would strongly support, somewhat support, somewhat oppose or strongly oppose the provincial government bringing in each of the policies. (2) "Cronbach's alpha if deleted" represents the alpha if the given item were removed from the model. If "alpha if deleted" for an item is higher than the overall alpha, it is often desirable to drop that item. (3) Factor loadings are based on the varimax rotation method.

A factor analysis of Q18 items revealed two different factors. Seven of the nine items in Q18 were correlated with the first factor, and the other two showed a correlation with a second factor. The seven items in the first factor were largely focused around policies that would lead to either emissions reductions or efforts to develop ‘green’ industries and increase provincial self-sufficiency. The two items that did not load on the first factor were Q18_3 (“Invest technologies to store greenhouse gases underground, so that they can’t pollute the atmosphere”) and Q18_7 (“Allow private companies to generate ‘run of river’ hydropower for export”), both without a focus on emissions reductions, and were excluded from the support for policies variable. The final variable, then, consists of seven items that explain 31.88% of the variance accounted for in the factor and show acceptable inter-item reliability ($\alpha = .761$). Again, during data analysis this variable was computed by summing together the values for each index item and then dividing by the number of items to be reflective of the original 4-point scale.

2.3.2.c Independent and control variables: composite variables

Three independent variables aside from socioeconomic demographic variables were included in the analysis as hypothesized composite variables: “NEP scale index,” “Value of equality index” and “Civic engagement index.” In addition, two additional composite variables were included as control variables in the regression: “Belief in [climate] action index” and “Concern about costs [of climate action] index.” These two variables are not a main focus of this study, but were included due to their emphasis on

Table 2.3. Civic engagement index construction

Questionnaire item	Factor loading for 'Civic responsibility' factor	Cronbach's alpha if deleted (α)
Q5_1. People have a civic duty to vote in elections.	.73	.647
Q5_3. It is important to participate in community life.	.81	.524
Q5_5. People who care about a social, political or environmental issue have a responsibility to get involved.	.79	.590
Total variance explained by factor	40.03%	–
Model summary	–	.679

Notes: (1) Respondents were asked to indicate whether they strongly agreed, somewhat agreed, somewhat disagreed or strongly disagreed with each statement. (2) "Cronbach's alpha if deleted" represents the alpha if the given item were removed from the model. If "alpha if deleted" for an item is higher than the overall alpha, it is often desirable to drop that item. (3) Factor loadings are based on the varimax rotation method.

attitudes towards climate action and the subsequent expectation that they may be significantly associated with support for climate justice and support for climate policies. Through factor and reliability analyses, the appropriate items for each of these variables were revealed and are detailed below.

Table 2.3 presents the questionnaire items, factor loadings, and Cronbach's alpha values for the civic engagement index. Respondents' views on civic engagement were measured by a factor with three items explaining 40.03% of the variance in the factor and demonstrating acceptable inter-item reliability ($\alpha = .679$). A factor analysis of Question 5, which was in Part 2 of the questionnaire – focused on social, political, and environmental values – revealed two factors. The first was interpreted as “Views on civic engagement,” and the second “Trust in government.” Views on civic engagement were of more interest to this study, and thus the factor's three items make up the final civic engagement variable. By summing together the scores for each item and then dividing by the number of items (3), to be reflective of the original 4-point scale, this variable is computed.

Table 2.4 describes the value of equality index, including questionnaire items, factor loadings, and Cronbach's alpha values. Question 10 of the survey instrument was centered around views on equality, and a factor analysis revealed two factors, interpreted by the research team as “Support for equality” and “Beliefs about inequality.” The three items focused on equality were borrowed from the questionnaire used in the “Six Americas” project described in the literature review (Leiserowitz et al. 2009), and were chosen to be included in the analysis because of their emphasis on what should be done to achieve equality, as opposed to beliefs about why inequality persists. The value of equality variable thus consists of three items that explain 34.16% of the variance

Table 2.4. Value of equality index construction

Questionnaire item	Factor loading for 'Support for equality' factor	Cronbach's alpha if deleted (α)
Q10_1. The world would be a more peaceful place if its wealth were divided more equally among nations.	.80	.588
Q10_2. In my idea society, all basic needs (food, housing, health care, education) would be guaranteed by the government for everyone.	.80	.521
Q10_3. I support government programs to get rid of poverty (even if it means paying more tax).	.72	.653
Total variance explained by factor	34.16%	–
Model summary	–	.685

Notes: (1) Respondents were asked to indicate whether they strongly agreed, somewhat agreed, somewhat disagreed or strongly disagreed with each statement. (2) "Cronbach's alpha if deleted" represents the alpha if the given item were removed from the model. If "alpha if deleted" for an item is higher than the overall alpha, it is often desirable to drop that item. (3) Factor loadings are based on the varimax rotation method.

Table 2.5. NEP scale index construction

Questionnaire item	Factor loading for 'NEP scale' factors 1 & 2	Cronbach's alpha if deleted (α)
Q11_1. We are approaching the limit of the number of people the earth can support. (Factor 2)	.73	.676
Q11_2 (reverse coded). Humans have the right to modify the natural environment to suit their needs. (Factor 1)	.74	.639
Q11_3 (reverse coded). The earth has plenty of natural resources if we just learn how to develop them. (Factor 1)	.65	.676
Q11_4. Plants and animals have as much right as humans to exist. (Factor 2)	.67	.676
Q11_5 (reverse coded). The so-called 'ecological crisis' facing humankind has been greatly exaggerated. (Factor 1)	.57	.613
Q11_6 (reverse coded). Humans will eventually learn enough about how nature works to be able to control it. (Factor 1)	.74	.678
Q11_7. If things continue on their present course, we will soon experience a major ecological catastrophe. (Factor 2)	.80	.637
Total variance explained by factor 1	35.43%	—
Total variance explained by factor 2	18.04%	—
Total variance factors 1 & 2 combined	53.47%	—
Model summary	—	.688

Notes: (1) Respondents told that the statements referred to the relationship between humans and the environment, and were asked to indicate whether they strongly agreed, somewhat agreed, somewhat disagreed, or strongly disagreed with each statement. (2) Items Q11_2, Q11_3 and Q11_5 were reverse coded so that high scores represented more proenvironmental attitudes. (3) "Cronbach's alpha if deleted" represents the alpha if the given item were removed from the model. If "alpha if deleted" for an item is higher than the overall alpha, it is often desirable to drop that item. (3) Factor loadings are based on the varimax rotation method.

accounted for in the factor and show acceptable inter-item reliability ($\alpha = .685$). By summing together the scores for each item and then dividing by three to be reflective of the original 4-point scale, this variable is computed.

Table 2.5 reports the questionnaire items, factor loadings, and Cronbach's alpha values for the NEP scale index. To measure general views on the relationship between humans and the environment, items from the previously mentioned NEP scale (Dunlap et al., 2000) were used in the survey instrument. Four items were reverse coded (Q11_2, Q11_3, Q11_5, and Q11_6) so that high scores would indicate more proenvironmental attitudes, consistent with the other items. The seven items that comprise the NEP scale index were revealed to load on two separate factors, the first containing more anthropocentrically-oriented items and the other more biocentrically-oriented items, yet all were included in the final index. Combined, the seven items explain 53.47% of the variance in the two factors, with a Cronbach alpha value of $\alpha = .688$. Summing together the values for each item and then dividing by the total number of items in the index, producing an end score that is reflective of the original 4-point scale, compute the variable.

Tables 2.6 and 2.7 describe the belief in action index and concern about costs index, respectively. These indexes materialized from Question 17, which focused on fairness and responsibility for climate action. A factor analysis revealed one factor containing items focused on proactive climate action (i.e. "Governments should subsidize green industries and create green collar jobs"), and another factor containing items concerned with economic costs of climate action (i.e. "Policies to combat global warming will harm the economy and cost jobs").

Questionnaire item	Factor loading for 'Belief in climate action' factor	Cronbach's alpha if deleted (α)
Q17_1. Canadians as a whole will be better off if we can be less dependent on fossil fuels – regardless of whether or not global warming is a threat.	.66	.616
Q12_2. If we are going to solve global warming, we as a society have to give up the idea that everyone should own their own car.	.65	.641
Q17_5. Government should subsidize 'green Industries' and create 'green collar jobs.'	.70	.603
Q17_6. Even if global warming turns out to be less serious than scientists believe, many of the policies to combat it have economic and social benefits that are worth pursuing anyways.	.77	.543
Total variance explained by factor	33.01%	–
Model summary	–	.667

Notes: (1) Respondents were asked to indicate whether they strongly agreed, somewhat agreed, somewhat disagreed or strongly disagreed with each statement about policies related to global warming. (2) "Cronbach's alpha if deleted" represents the alpha if the given item were removed from the model. If "alpha if deleted" for an item is higher than the overall alpha, it is often desirable to drop that item. (3) Factor loadings are based on the varimax rotation method.

Table 2.7. Concern about costs index construction

Questionnaire item	Factor loading for 'Concern about costs' factor	Cronbach's alpha if deleted (α)
Q17_3. In a recession, policies to deal with global warming have to take a back seat to economic policies.	.69	.273
Q17_4. Policies to combat global warming will harm the economy and cost jobs.	.78	.043
Total variance explained by factor	18.50%	–
Model summary	–	.403

Notes: (1) Respondents were asked to indicate whether they strongly agreed, somewhat agreed, somewhat disagreed or strongly disagreed with each statement about policies related to global warming. (2) "Cronbach's alpha if deleted" represents the alpha if the given item were removed from the model. If "alpha if deleted" for an item is higher than the overall alpha, it is often desirable to drop that item. (3) Factor loadings are based on the varimax rotation method.

Table 2.6 provides the belief in action index's items and the associated factor loading and Cronbach's alpha values. This index consists of four items, with 33.01% of the variance in the four items accounted for in the single factor and an acceptable value for inter-item reliability, $\alpha = .667$ (See Table 1). One item of particular interest in terms of climate change communication asks respondents to indicate their level of agreement with the statement "Even if global warming turns out to be less serious than scientists believe, many of the policies to combat it have economic and social benefits that are worth pursuing anyway" (Q17_6). This item had the highest factor loading for the belief in action index (.77) and will be examined in the results and discussion sections.

Lastly, Table 2.7 describes the questionnaire items, factor loadings, and Cronbach's alpha values for the concern about costs index. This index is composed of two items: Q17_3, "In a recession, policies to combat global warming have to take a back seat to economic policies," and Q17_4, "Policies to combat global warming will harm the economy and cost jobs." These two items explain 18.50% of the variance in the second factor for Question 17, with a Cronbach alpha value of $\alpha = .403$, and the variable is computed by summing together scores for the two items and dividing by two. Although the Cronbach's alpha value for this index is relatively small compared to the other indices, this tends to be the trend for indices with a small number of items. This variable was considered to be potentially important conceptually for this study, and thus was included as an independent variable for data analysis.

2.3.2.d Independent variables: socioeconomic demographics⁸

A detailed socioeconomic demographics section was included in the questionnaire, and the following variables were chosen to be included in the data analysis: “Age,” “Gender,” “Children in home,” “Education,” “Works full-time,” and “Personal [annual] income.” “Location” was also included as a variable in data analysis, and Environics provided location sub-groupings based on the panel database. Though respondents were asked about both personal and household annual income, the association with the main dependent variables was slightly stronger with personal income; to include both raised the possibility of making the regression unstable, as they were substantially correlated with each other.

Dummy variables were created for location (1= Vancouver metropolitan area, 0 = Southern Interior, Northern Interior, or Vancouver Island); gender (1 = women, 0 = men); children in home (1 = yes, 0 = no); and works full –time (1 = yes, 0 = no). A dummy variable for the “Belief in ACC” (anthropogenic climate change) was created, where 1 indicated the respondent either believed global warming is happening and is caused mostly by human activity or believed global warming was happening but wasn’t sure it was caused by human activity, and 0 indicated the respondent did not believe the science was conclusive that global warming is happening.

Similar to the belief in action and concern about costs variables described above, whether there were children in the home of the respondent, whether they worked full-

⁸ Whether individuals identify with the political ‘left’ or ‘right’ has shown to be a significant predictor of environmental attitudes and views on climate change in past studies. Including political orientation as an independent variable in this study, however, would have reduced the sample size by $N = 281$ due to incomplete or skipped items in the questionnaire, and was thus excluded from the analysis.

time, and whether they believed in ACC were included in the analysis as control variables rather than hypothesized variables. Though these three variables are not a central focus of this study, they were included as control variables based on theoretical rationale along with exploratory analyses that showed significant associations between these two variables and the main dependent variables.

2.4 Ethics

This study was unobtrusive in nature, allowing respondents to complete the survey at the location of their convenience where there is a computer with an Internet connection. In addition, the topics covered in the survey are not likely to be sensitive to individual respondents and are void of any potentially embarrassing subjects or information about illegal activities. As a result, there are limited ethical considerations for this study, though a number of steps have been taken to ensure that the study remains as ethically sound as possible.

As mentioned earlier, the respondents were all members of a pre-existing survey panel run by Environics. The respondents all received an email from Environics inviting them to participate in the web survey, and were given two weeks from then forward to participate in the study. If they chose to do so, the main cost to them was fifteen minutes of their time to complete the survey, and in return they received “points” from Environics towards a reward based on the accumulation of a certain amount of points per survey completed. It is estimated that the “points” for participation were equivalent to between \$2.00 and \$10.00 cash.

The respondents were greeted by an initial introduction that includes information about the survey with respect to consent, anonymity, and confidentiality. The respondents

were informed that they could refuse to answer any question, at any time, and could leave an answer blank and move to the next question. It was emphasized that their participation in the study was voluntary, that their answers will remain anonymous and their identity confidential. The introduction also included a button the respondent could choose to click that took them to a page with additional information about the background of the study. At the end of the survey, respondents were advised that they were giving their consent to participate in the study through the submission of the completed survey.

During the data collection process, the data was temporarily stored in the United Kingdom, in a server used by Environics for online surveys. During this time, the data was accessible only by staff members of Environics, or staff members of Confirmit (the company that supports the server), and after data collection was complete it was transferred to Dr. Tindall at UBC and is currently stored in a password-protected computer inside a locked office at UBC. For the purposes of this study, Dr. Tindall and the I are the sole researchers accessing the data.

3 Results

The research questions for this study are:

- How does support for climate justice vary according to values, beliefs, and socioeconomic demographic characteristics?
- How does support for climate *policies* vary according to values, beliefs, and socioeconomic demographic characteristics?

Support for climate justice and climate policies was expected to vary by socioeconomic demographic characteristics, values and beliefs, with the largest effects from age; gender; level of education; civic engagement, and environmental attitudes.

3.1 Sample overview and descriptive results

Table 3.1 provides a description of each variable and its descriptive statistics (mean or percentage and standard deviation). The sample is weighted by location, gender and age and is thus consistent with census data according to these three variables.⁹ The sample is approximately 49% male and 51% female (SD = .50), with an average age of 47 (SD = 15.59, range = 19-85). About half of respondents (approximately 53%) live in the Vancouver Metropolitan area, while the other half (approximately 47%) live in the southern Interior, northern Interior, or on Vancouver Island (“Non-Metropolitan”) (SD = .50).

In the weighted sample, the remaining socioeconomic demographic variables - years of education, whether children are in the home, whether the respondent works full-

⁹ The sample is weighted in terms of gender, age and region. Though it is possible there are biases in terms of other variables, this weighting allows the sample to be representative in a socioeconomic demographic sense in terms of these three key variables.

Table 3.1. Means/frequencies and standard deviations for variables

Variable	Mean/% (S.D.)	Description
Independent variables		
Location	53% (.50) ^a	Dummy variable. Inner/outer Vancouver (“Metropolitan residents”) = 1, S. Interior/N. Interior/Vancouver Island (“Non-metropolitan residents”) = 0.
Age	46.91 (15.59) ^a	Chronological age at the time of the survey.
Gender	51% (.50) ^a	Dummy variable. Female = 1, Male = 0.
Children in home	30% (.46) ^a	Dummy variable. Yes children = 1, No = 0.
Education	13.84 (2.08) ^a	Years of education.
Works full-time	37% (.48) ^a	Dummy variable. Works full-time = 1, Not full-time = 0.
Personal income	46477.08 (37018.67) ^a	Annual personal income in dollars.
Civic engagement index	3.28 (.56) ^a	Composite variable measuring views on civic responsibility using a 4-point Likert scale. Summing together the variable’s three items created an index.
Value of equality index	2.80 (.70) ^a	Composite variable measuring views on equality using a 4-point Likert scale. Summing together the variable’s three items created index.
Belief in ACC	.52 (.50) ^a	Dummy variable. Belief in anthropogenic climate change = 1, Non-belief = 0.
NEP scale index	2.86 (.50) ^a	Composite variable measuring general environmental attitudes using a 4-point Likert scale. Summing together the variable’s seven items created an index.
Belief in action index	2.98 (.56) ^a	Composite variable measuring degree of belief in climate action, using a 4-point Likert scale. Summing together the variable’s four items created an index.
Concern about costs index	2.39 (.68) ^a	Composite variable measuring concern about costs of climate action, using a 4-point Likert scale. The variable’s two items were summed together to create an index.
Dependent variables		
Support for climate justice index	3.17 (.48) ^a	Composite variable of 9 items summed together in an index, with 4-point Likert scales.
Support for climate policies index	3.18 (.47) ^b	Composite variable of 7 items summed together in an index, with 4-point Likert scales.

Notes: ^a *N* = 971; ^b *N* = 969

time and personal annual income – are analyzed and further describe the sample. About a quarter (approximately 23%) of respondents have a high school education or less; almost half (approximately 48%) a partially or fully completed college or trade degree; approximately 17% a partially or fully completed university degree; and approximately 10% at least some postgraduate training (mean = 13.84, SD = 2.08). Over two-thirds (approximately 70%) of respondents do *not* have children living in the home with them (SD = .46), and approximately 37% of the sample reported working full-time (SD = .48). The average personal annual income is CAD \$46, 477 (SD = 37, 18.67).

In terms of climate change, approximately 84% of respondents believe the science is conclusive that global warming is happening; of that 84%, a very slight majority (approximately 51%) of respondents believe that the science is conclusive that global warming is happening *and* caused mostly by human activity, while approximately 33% believe the science is conclusive that global warming is happening, though not yet conclusive it is caused by human activity. Approximately 15% of respondents do not believe the science is conclusive that global warming is happening (mean = .52, SD = .50).

As shown in Table 3.1, the average level of support for climate justice is 3.17 (SD = .48, range = 1-4). Table 3.2 presents the percentage distribution, mean and standard deviation for each item included in the climate justice index. An examination of the percentage distributions for each item reveals a strong majority of respondents indicated they either ‘somewhat’ agreed or ‘strongly’ agreed with the index items, and means for all items hover around 3.00 on a 1.00 – 4.00 scale, indicating a significant degree of

Table 3.2. Percentage distributions, means, SD and N for the items comprising the support for climate justice index

Statement	Strongly disagree (1)	Somewhat disagree (2)	Somewhat agree (3)	Strongly agree (4)	Mean	SD	N
Q20_1. Governments should make sure people with high incomes pay their fair share of the costs of dealing with global warming.	3.6	8.2	36.7	51.5	3.36	.782	1002
Q20_2. Everyone has to sacrifice equally to solve global warming.	5.8	23.6	46.0	24.6	2.89	.839	1002
Q20_3. People who are responsible for the most greenhouse gas emissions should also make the biggest reductions in their emissions.	1.3	5.6	37.4	55.8	3.48	.663	1003
Q20_5. Policies to combat global warming must consider the differences between urban and rural areas.	3.2	13.0	59.0	24.8	3.05	.709	1000
Q20_6. We need to reduce greenhouse gas emissions today so that future generations don't pay the price of global warming.	2.8	10.2	42.4	44.6	3.29	.760	1003
Q20_8. It is unfair that some people try to reduce their greenhouse gas emissions, while others do nothing.	3.5	11.5	46.6	38.4	3.20	.773	1002
Q20_9. There should be a maximum cap on everyone's greenhouse gas emissions.	6.0	18.6	50.7	24.7	2.94	.818	1001
Q20_11. Governments need to set clear environmental rules that apply equally to everyone.	2.5	9.5	48.8	39.3	3.25	.724	1001
Q16_4. The government should impose laws to limit greenhouse gas emissions by people and corporations.	6.5	12.9	49.8	30.8	3.05	.834	1003

agreement with the items among respondents. Notably, the item where the largest majority of respondents indicate agreement is Q20_3, “People who are responsible for the most greenhouse gas emissions should also make the biggest reductions in their emissions,” with 93.2% of respondents either ‘somewhat’ in agreement or ‘strongly’ in agreement with the statement. In contrast, the item where the smallest majority demonstrates agreement is Q20_2, “Everyone has to sacrifice equally to solve global warming,” with 70.6% of respondents either ‘somewhat’ or ‘strongly’ in agreement.

A large majority called for people with high incomes to pay their fair share of the costs of dealing with global warming (88.2% for Q20_1), yet a similar percentage (87.3%) also agreed with the statement “Governments need to set clear environmental rules that apply equally to everyone” (Q20_11). Though these two statements may seem contradictory, to a respondent each statement may represent an aspect of fairness; in other words, respondents may feel that ensuring people with high incomes pay their fair share and ensuring the government sets rules that apply equally to everyone are both climate action strategies that are rooted in a principle of fairness.

Table 3.3 presents the percentage distribution, mean and standard deviation for each item in the support for climate policies index. As shown earlier in Table 3.1, overall, the average level of support for climate policies is 3.18 (SD = .47, range = 1-4), and an examination of each individual index item reveals a majority demonstrating support for the provincial government implementing the climate policies. The policy of “Invest in reforestation efforts because forests prevent greenhouse gases from polluting the atmosphere” (Q18_4) received the largest majority in support (94.4%), which is logical in a BC context due to the strong presence of the forestry industry. A heavy majority

Table 3.3. Percentage distributions, means, SD and N for the items comprising the support for climate policies index

Statement	Strongly disagree (1)	Somewhat disagree (2)	Somewhat agree (3)	Strongly agree (4)	Mean	SD	N
Q18_1. Subsidize home and building retrofits to increase energy efficiency.	3.1	8.0	58.7	30.2	3.16	.695	1004
Q18_2. Create job retraining for workers in fossil fuel industries that will be affected by global warming.	2.2	10.4	58.6	28.9	3.14	.678	1004
Q18_4. Invest in reforestation efforts because forests prevent greenhouse gases from polluting the atmosphere.	1.5	4.1	42.2	52.2	3.45	.649	1005
Q18_5. Stop subsidizing oil and gas industries.	2.4	14.2	38.1	45.3	3.26	.790	1003
Q18_6. Use agricultural policies to reduce BC's dependence on imported foods.	1.9	7.2	46.6	44.2	3.33	.694	1002
Q18_8. Invest in mass transit.	2.9	12.9	49.0	35.2	3.17	.755	1003
Q18_9. Create a citizen's assembly on global warming.	8.3	25.4	50.8	15.6	2.74	.820	996

supported other policies as well, however, such as “Subsidize home and building retrofits to increase energy efficiency” (88.9% for Q18_1); “Create job retraining for workers in fossil fuel industries that will be affected by global warming” (87.5% for Q18_2); and “Use agricultural policies to reduce BC’s dependence on imported foods” (90.8% for Q18_6). A slightly smaller majority demonstrated support for stopping oil and gas industry subsidies (83.4% for Q18_5), and the smallest majority in support was found in Q18_9, “Create a citizen’s assembly on global warming” (66.4%).

3.2 Statistical results: multivariate analyses

3.2.1 Support for climate justice regression analysis

Table 3.4 shows a series of multiple regression analyses that statistically describe support for climate justice. Using a hierarchical regression method, effects for variables were explored through a series of regression models that began with a single independent variable in the first model and then introduced additional conceptually related variables in blocks in subsequent models. An association between the dependent variable and a given independent variable was considered significant if $p \leq .05$.¹⁰ The tables also explain the proportion of variation in the dependent variable that is explained by the set of independent variables, indicated by the R^2 and the adjusted R^2 values.¹¹ Each regression model is explored in further detail below.

¹⁰ In this thesis significance is used for heuristic purposes but cannot be strictly interpreted in terms of the probability of results being due to sampling error alone, as it is not a probability sample.

¹¹ Adjusted R^2 values take into account the number of variables and the number of cases. In studies with a small N , the adjusted R^2 may be less than the R^2 ; here, values did not differ by more than .01 for any given model.

Table 3.4. Multiple regression analyses explaining support for climate justice using socioeconomic, demographic variables, and values, attitudes and beliefs as independent variables. (Using standardized regression coefficients.)

Independent Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Socioeconomic Demographics							
Location (Metropolitan residents = 1)	.01	.06	.07*	.05	.03	.05	.03
Age	–	.14***	.08*	.11***	.14***	.12***	.13***
Gender (Female = 1)	–	.10***	.10***	.08***	.06*	.04	.02
Children in home (Yes = 1)	–	.04	.03	.01	.01	.03	.00
Education	–	-.02	-.06	-.05	-.05	-.04	-.04
Works full-time (Yes = 1)	–	-.04	-.02	-.02	-.02	-.03	.00
Personal income	–	-.08*	-.07*	-.03	-.03	-.01	-.01
Values, Attitudes and Beliefs							
Civic engagement	–	–	.29***	.21***	.19***	.18***	.11***
Value Equality	–	–	–	.31***	.27***	.21***	.09***
Belief in ACC (Yes = 1)	–	–	–	–	.24***	.12***	.06*
NEP scale	–	–	–	–	–	.35***	.18***
Belief in climate action	–	–	–	–	–	–	.51***
Concern about costs	–	–	–	–	–	–	-.01
R²	.00	.04***	.11***	.20***	.25***	.35***	.53***
Adjusted R²	-.00	.03***	.11***	.19***	.25***	.35***	.53***
N	971	971	971	971	971	971	971

Notes: – Variable not included in equation; * $p \leq .05$; ** $p \leq .01$; * $p \leq .005$**

In Model 1, only the dummy variable location is controlled for, and location shows no effect on support for climate justice. With an R^2 of .00, this model shows that location of residence alone does not explain variation in support for climate justice.

In Model 2, the remaining socioeconomic demographic variables – age, gender, children in the home, education, works full-time, and personal annual income – are entered into the equation as independent variables. Results show that positive associations between age and support for climate justice, as well as gender and support for climate justice, are significant ($p \leq .005$). Personal annual income is shown to be significantly ($p \leq .05$) negatively associated with support for climate justice, and other socioeconomic demographic variables show no effects. Thus, Model 2 explains that older respondents, females, and those who have less personal annual income are more likely to show support for climate justice. Regression coefficients show a weaker effect for personal income ($\beta = -.08$) than for age ($\beta = .14$) and gender ($\beta = .10$). The R^2 for this model is .04, representing an additional 4% of variation in support for climate justice explained when all socioeconomic demographic variables are entered as independent variables into the regression equation in Model 2, as compared to Model 1.

Model 3 includes the civic engagement index, the first of the composite variables measuring values, attitudes, and beliefs. Of the variables significantly associated with support for climate justice in this model, the civic engagement index ($\beta = .29, p \leq .005$) shows the strongest effect, yet gender ($\beta = .10, p \leq .005$), location ($\beta = .07, p \leq .05$), age ($\beta = .08, p \leq .05$) and personal annual income ($\beta = -.07, p \leq .05$) also show significant effects. Specifically, according to this model an individual is more likely to support climate justice if they are female, older, located in the Vancouver metropolitan area, earn

less personal annual income, and indicate support for civic engagement. Adding civic engagement into the regression equation increases the proportion of variation explained in the dependent variable by 7% compared to Model 2, with an R^2 of .11.

In Model 4, the value of equality index is added and is also shown to have a significant ($p \leq .005$), relatively strong association with support for climate justice ($\beta = .31$), meaning respondents more supportive of equality were more likely to show support for climate justice. Effects for age ($\beta = .11, p \leq .005$), gender ($\beta = .08, p \leq .005$), and civic engagement ($\beta = .21, p \leq .005$) remained significant in this model, though personal annual income showed no effect. An R^2 of .20 showed that adding the value of equality variable into the equation for Model 4 explains 20% of the variation in the dependent variable, an additional 9% as compared to Model 3.

The dummy variable for belief in anthropogenic climate change is included in Model 5 and shows a relatively strong, significant, positive association with support for climate justice ($\beta = .24, p \leq .005$), with those respondents who believe in ACC more likely to show support for climate justice. Significant associations for other variables remained the same as in Model 4, with similar regression coefficients, and the R^2 showed an additional 5% of variation in support for climate justice explained is by Model 5.

In Model 6, the NEP scale index is added and is also shown to have a relatively strong ($\beta = .35$) and significant ($p \leq .005$) effect on support for climate justice, meaning respondents demonstrating more proenvironmental attitudes were more likely to show support for climate justice. All composite variables in this equation, as well as belief in ACC, are significantly associated with support for climate justice ($p \leq .005$), yet there was no effect for gender and thus age was the only socioeconomic demographic variable

significantly associated with support for climate justice in this model. Model 6 explains an additional 10% of the variation in the dependent variable as compared to Model 5 and a total of 35%, with an R^2 of .35.

In Model 6, the regression coefficient for belief in ACC is substantially reduced ($\beta = .24$ in Model 5, $\beta = .12$ in Model 6), pointing to a decrease in the strength of its effect on support for climate justice. Decreases in an independent variable's regression coefficient from one model to the next likely signals an association between that variable and both the dependent variable and another independent variable. In this case, it is plausible that belief in ACC and the NEP scale index are both associated with support for climate justice, yet are also associated with each other; in other words, Model 6 suggests that some of the association between support for climate justice and belief in ACC is a result of an association that also exists between belief in ACC and the NEP scale index.

Finally, Model 7 introduces two additional variables into the equation: belief in action and concern about costs. While the regression coefficient for the belief in action index is the largest of any variable in the equation ($\beta = .51, p \leq .005$), showing the strongest association with support for climate justice relative to the other variables, the concern about costs index is not significantly associated with support for climate justice. Consistent with Model 6, civic engagement ($\beta = .11, p \leq .005$); value of equality ($\beta = .09, p \leq .005$); belief in ACC ($\beta = .06, p \leq .05$); the NEP scale ($\beta = .18, p \leq .005$) and age ($\beta = .13, p \leq .005$) are all significantly associated with support for climate justice, though regression coefficients point to relatively weaker effects compared to Model 6 for all except age. Thus, the final regression model with support for climate justice as the dependent variable shows support be more likely among respondents who are older; show

support for civic engagement; show support for equality; believe in anthropogenic climate change; exhibit proenvironmental attitudes; and indicate belief in climate action. The R^2 value for Model 7 was .53, indicating that 53% of the variation in support for climate justice is explained by this model, an additional 18% from Model 6.

As evidenced by the R^2 values for each model, the amount of variation that is statistically explained increases as variables are added to each, indicating each is a better explanatory model than the previous one. Model 7, the final model, explains 53% of the variation. These results support my hypotheses that the NEP scale (H.6.a), value of equality (H.6.c), and civic engagement (H.7.a) would all be positively associated with support for climate justice. However, age – the only socioeconomic demographic variable significantly associated with support for climate justice in the final model – was predicted to show significant effects, yet maintains a negative association, which contrasts my hypothesis (H.1.a). Results do not support hypothesized relationships for gender (H.2.a), education (H.3.a), income (H.4.a), or location (H.5.a), as these variables show no effects for support for climate justice in the final model. As for the controlled relationships – those not hypothesized – belief in ACC and belief in action both show significant associations with support for climate justice, and belief in action has a stronger effect on support than any other significantly associated variable.

3.2.2 Support for climate policies regression analyses

Table 3.5 presents a series of multiple regression analyses that describe support for climate policies. The process for these analyses was the same as that of the support for climate justice regressions, using a hierarchical regression model to explore effects for variables. An association was again considered significant if $p \leq .05$, and R^2 and

Table 3.5. Multiple regression analyses explaining support for climate policies using socioeconomic, demographic variables, and values, attitudes and beliefs as independent variables. (Using standardized regression coefficients.)

Independent Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Socioeconomic Demographics							
Location (Metropolitan residents = 1)	-.05	-.01	-.01	-.03	-.04	-.02	-.04
Age	–	.08*	.02	.06	.08*	.06*	.08***
Gender (Female = 1)	–	.07*	.07*	.04	.03	.01	-.00
Children in home (Yes = 1)	–	.06	.04	.03	.02	.04	.02
Education	–	.00	-.04	-.03	-.03	-.02	-.02
Works full-time (Yes = 1)	–	-.04	-.03	-.02	-.02	-.03	-.00
Personal income	–	-.07*	-.06	-.02	-.01	.00	.00
Values, Attitudes and Beliefs							
Civic engagement	–	–	.30***	.22***	.21***	.20***	.13***
Value Equality	–	–	–	.37***	.34***	.29***	.17***
Belief in ACC (Yes = 1)	–	–	–	–	.17***	.07*	.01
NEP scale	–	–	–	–	–	.30***	.14***
Belief in climate action	–	–	–	–	–	–	.49***
Concern about costs	–	–	–	–	–	–	-.01
R²	.00	.02***	.11***	.24***	.26***	.34***	.50***
Adjusted R²	.00	.02***	.10***	.23***	.25***	.33***	.49***
N	969	969	969	969	969	969	969

Notes: – Variable not included in equation; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .005$

adjusted R^2 values indicate the proportion of variation in support for climate policies that is explained by the independent variables in the equation. Results for support for climate policies largely mimic those for support for climate justice as the dependent variable; however, a number of differences exist.

Model 1 closely follows that of the first model of the support for climate justice regressions, with location showing no significant effect on support for climate policies and an R^2 of .00. Model 2, however, shows significant effects for age ($\beta = .08; p \leq .05$) and gender ($\beta = .07; p \leq .05$), no significant effect for works full-time, and a significant negative association between personal income and support for climate policies ($\beta = -.07, p \leq .05$). The R^2 for this model, while greater than the R^2 in Model 1, indicates that only 2% of the variation in support for climate policies is explained by this model.

Similar to the support for climate justice regression, Model 3 introduces the civic engagement index and reveals a relatively strong ($\beta = .30$), significant ($p \leq .005$), positive association with support for climate policies. In contrast to the support for climate justice regression, location, age and personal income were *not* significantly associated with support for climate policies in this model, though gender remained significantly and positively associated ($\beta = .07, p \leq .05$). An additional 9% of the variation in support for climate policies is explained by adding civic engagement into the equation, with an R^2 of .11. Model 3, then, describes support for climate policies as stronger among women and those who demonstrate greater levels of support for civic engagement.

In Model 4, the value of equality index is entered into the regression equation as an independent variable and is shown to have a relatively strong ($\beta = .37$), significant (p

$\leq .005$), positive association with support for climate policies, meaning those with higher levels of support for equality are more likely to show support for climate policies. Civic engagement remains significantly associated ($p \leq .005$) with the dependent variable, though its regression coefficient decreases slightly from Model 3 ($\beta = .22$), pointing to a weaker effect on support for climate policies relative to value of equality. Model 4 reports *no* associations between socioeconomic demographic variables and support for climate policies, whereas age and gender both showed significant effects on support for climate justice. The R^2 value is double that of Model 3 (.11 versus .24), with 24% of the variation in the dependent variable explained.

Belief in ACC is included in Model 5 as an independent variable, and is significantly and positively associated with support for climate policies ($\beta = .17, p \leq .005$), with those who believe in anthropogenic climate change more likely to show support for climate policies. Both civic engagement ($\beta = .34, p \leq .005$) and value of equality ($\beta = .34, p \leq .005$) retain their significant and positive associations with support for climate policies in this model, and the correlation coefficient for value of equality shows a slightly stronger effect on support for climate policies than support for climate justice ($\beta = .34$ versus $\beta = .27$). Age reenters as a significant indicator in this model ($\beta = .08, p \leq .05$), though no other socioeconomic demographic variables show effects. The R^2 for Model 5 is .26, explaining 26% of the variation in support for climate policies and only slightly greater than the R^2 of Model 4.

In Model 6, the NEP scale index is entered into the equation, showing a significant, positive association with support for climate policies ($\beta = .30, p \leq .005$), similar in strength to the effect for value of equality ($\beta = .29, p \leq .005$). Compared to

Model 6 in the regression analyses for support for climate justice, age holds a relatively weaker association with support for climate policies ($\beta = .06$ versus $\beta = .12$; $p \leq .05$ versus $p \leq .005$), and a similar pattern is revealed for belief in ACC ($\beta = .07$ versus $\beta = .12$; $p \leq .05$ versus $p \leq .005$). However, the general story told by this model remains the same: older respondents, those who show support for civic engagement, those who show support for equality, those who believe in anthropogenic climate change, and those who exhibit proenvironmental attitudes are all more likely to show support for climate policies. Model 6 explains an additional 8% of the variation in support for climate policies than the previous model, with an R^2 of .34.

The last model explaining support for climate policies introduces both the belief in action index and the concern about costs index into the regression equation. Similar to support for climate justice, concern about costs exhibits no significant effect on support for climate policies, while belief in action shows a positive, significant association with support for climate policies ($\beta = .49$, $p \leq .005$). In addition, the regression coefficient for belief in action is the largest of any variable in the regression, showing a strong association with support for climate policies. The other composite indices in this model all have smaller coefficients than in the previous model (the NEP scale index coefficient is halved, from $\beta = .30$ to $\beta = .14$), pointing to relatively weaker associations when belief in action is included, and age remains the sole socioeconomic demographic variable significantly associated with support for climate policies ($\beta = .08$, $p \leq .005$). A notable contrast from the support for climate justice regression is found in the belief in ACC variable, which shows no significant effect in this model. The R^2 for this model increases substantially from Model 6, with an additional 16% of the variation in the dependent

variable explained when belief in action and concern about costs are included. This final model explaining support for climate policies shows support to be more likely among respondents who are older; exhibit support for civic engagement; show support for equality; indicate proenvironmental attitudes; and show belief in climate action.

Consistent with the regression explaining support for climate justice, the R^2 values show that the amount of variation statistically explained increases as variables are added; each is a better explanatory model than the previous one. Model 7, the final model, explains 50% of the variation, which is quite substantial by social science standards. These results support the hypotheses that the NEP scale (H.6.b), value of equality (H.6.d), and civic engagement (H.7.b) would all be positively associated with support for climate policies. My hypotheses about the effects of socioeconomic demographic variables are not supported, however, as age is the only socioeconomic demographic variable showing effects on support for climate policies in Model 7 and is positively associated with support (H.1.b). Notably, gender (H.2.b) and education (H.3.b) were anticipated to have significant effects on support for climate justice yet do not show any effects when controlling for all variables, and neither do income (H.4.b) or location (H.5.b). Aside from the hypothesized relationships, belief in action is significantly associated with support for climate policies and shows a stronger effect on support than any other significantly associated variable, yet belief in ACC is not a significant predictor of support when controlling for the other variables in Model 7. .

In sum, the two series of regression models explaining support for climate justice and support for climate policies present an array of results for interpretation. Each of the final models explains a substantial proportion of variance in the dependent variables

through the inclusion of 13 independent variables in the regression equation. Five of the six variables that show significant effects for support for climate justice also show effects for support for climate policies. Namely, these variables are age, civic engagement, value of equality, the NEP scale, and belief in action. The sixth variable significantly associated with support for climate justice, belief in ACC, was not a significant predictor of support for climate policies in the final regression model, and this finding will be explored further in the discussion section.

The final regression models suggest that respondents are more likely to show support for climate justice and for climate policies if they are older; show higher levels of support for civic engagement; show higher levels of support for equality; demonstrate more proenvironmental attitudes; and indicate a stronger belief in climate action. Respondents who believe in anthropogenic climate change are also more likely to show support for climate justice, though belief in ACC did not have a significant association with support for climate policies. The following chapter provides a more detailed analysis of these results, a discussion of possible implications for climate change communication, and suggestions for future research goals.

4 Discussion

The analytical framework for this study is rooted in three main underlying premises:

- Climate change is already happening and is primarily caused by human activities. Climate action is needed at all levels – such as through individual behavior and government policy – for both mitigation and adaptation efforts.
- Climate impacts will not affect all segments of the population equally, and those most vulnerable to the negative effects of climate change are often the least responsible for contributing to climate change.
- Communicating with the public about climate justice issues will encourage fair, effective climate change mitigation and adaptation by bringing awareness to links between social justice and climate change issues at the community, provincial, national, and international level. Based on findings from previous studies and opinion polls that show waning concern (Leiserowitz et al. 2010), avoidance (Krosnic et al., 2006; Immerwahr, 1999), and denial (Norgaard, 2009) regarding climate change on behalf the public – particularly in Northern countries like Canada and the United States, where contributions to climate change are disproportionately large compared to most other countries – it is evident that climate change communication has been insufficient to spur fair, collective action on a large scale.

Table 4.1. Summary of main findings for hypothesized variables.

Hypothesis	Independent variable	DV: Support for climate justice (CJ)	DV: Support for climate policies (CP)	Conclusion
H.1.a. Age will be negatively associated with support for climate justice.	Age	Significant (+)		H.1.a is not supported. Age is positively associated with support for CJ; older people are more supportive.
H.2.a. Women will be more supportive of climate justice.	Gender	Not significant		H.2.a is not supported; gender showed no effect on support for CJ.
H.3.a. Level of education will be positively associated with support for climate justice.	Education	Not significant		H.3.a is not supported; level of education showed no effect on support for CJ.
H.4.a. Income will be negatively associated with support for climate justice.	Income	Not significant		H.4.a is not supported; income showed no effect on support for CJ.
H.5.a. Rural individuals will show more support for climate justice.	Location	Not significant		H.5.a. is not supported; location showed no effect on support for CJ.
H.6.a. Respondents with more proenvironmental attitudes will show more support for climate justice.	NEP scale index	Significant (+)		H.6.a. is supported; those with more proenvironmental attitudes were more supportive of CJ.
H.6.c. Respondents with more egalitarian views will show more support for climate justice.	Value of equality index	Significant (+)		H.6.c is supported; those with more egalitarian views were more supportive of CJ.
H.7.a. Civic engagement will be positively associated with support for climate justice.	Civic engagement index	Significant (+)		H.7.a is supported; those showing stronger support for civic engagement were more supportive of CJ.
H.1.b. Age will be negatively associated with support for climate policies.	Age		Significant (+)	H.1.b is not supported. Age is positively associated with support for CP; older people are more supportive.
H.2.b. Women will show more support for climate policies.	Gender		Not significant	H.2.b. is not supported; gender showed no effect on support for CP.
H.3.b. Level of education will be positively associated with support for climate policies.	Education		Not significant	H.3.b is not supported; level of education showed no effect on support for CP.
H.4.b. Income will be negatively associated with support for climate policies.	Income		Not significant	H.4.b is not supported; income showed no effect on support for CP.
H.5.b. Rural individuals will show more support for climate policies.	Location		Not significant	H.5.b is not supported; location showed no effect on support for CP.
H.6.b. Respondents with more proenvironmental attitudes will show more support for climate policies.	NEP scale index		Significant (+)	H.6.b is supported; those with more proenvironmental attitudes showed more support for CP.
H.6.d. Respondents with more egalitarian views will be more supportive of climate policies.	Value of equality index		Significant (+)	H.6.d is supported; those with more egalitarian views were more supportive of CP.
H.7.b. Civic engagement will be positively associated with support for climate policies.	Civic engagement index		Significant (+)	H.7.b is supported; those showing stronger support for civic engagement were more supportive of CP.

Table 4.2. Summary of main findings for additional controlled variables.

Independent variable	DV: Support for climate justice (CJ)	DV: Support for climate policies (CP)	Conclusion
Children in home	Not significant		Whether there are children in the home is not significantly associated with support for climate justice.
Works full-time	Not significant		Whether a respondent works full-time is not significantly associated with support for climate justice.
Belief in ACC	Significant (+)		Belief in ACC is positively associated with support for climate justice; those who believe climate change is happening and human caused are more supportive.
Belief in climate action	Significant (+)		Belief in climate action is positively associated with support for climate justice; those who demonstrated stronger belief in climate action were more supportive.
Concern about costs	Not significant		Concern about the costs of climate action is not significantly associated with support for climate justice.
Children in home		Not significant	Whether there are children in the home is not significantly associated with support for climate policies.
Works full-time		Not significant	Whether a respondent works full-time is not significantly associated with support for climate policies.
Belief in ACC		Not significant	Whether a respondent believes in anthropogenic climate change is not significantly associated with support for climate policies.
Belief in climate action		Significant (+)	Belief in climate action is positively associated with support for climate policies; those who demonstrated stronger belief in climate action were more supportive.
Concern about costs		Not significant	Concern about the costs of climate action is not significantly associated with support for climate justice.

Table 4.1 provides a summary of the hypothesized relationships in this study, and Table 4.2 summarizes the results for the variables that were additionally controlled for. The major finding for this study suggests that values, attitudes and beliefs – specifically, views on civic engagement and equality, general environmental attitudes and belief in climate action – all play a significant role in explaining support for climate justice and support for climate policies, and age is also shown to be an important factor. Though belief in anthropogenic climate change was a significant predictor of support for climate justice, it was not found to be significantly associated with support for climate policies. These results are consistent with my hypotheses related to values, attitudes and beliefs; however, they do not support my hypotheses related to socioeconomic demographic factors. Below, a detailed discussion of the results is provided, followed by recommendations for future research areas and climate change communication.

4.1 Predictors of support for climate justice/policies

This study points to several factors that affect support for climate justice and support for climate policies. As mentioned above, results indicate the strongest influence from values, attitudes and beliefs. These findings are consistent with the Values-Beliefs-Norms Theory (VBN Theory), described in the literature review, which outlines a hierarchical model of environmental concern where values and worldviews shape beliefs, attitudes, and, ultimately, behavior (Stern et al., 1995; Dietz et al., 1999; Poortinga et al., 2004).

The VBN Theory suggests that support for the larger environmental movement stems from altruistic values, biocentrally-oriented worldviews, and personal norms that encourage proenvironmental behaviors based on feelings of personal efficacy (Dietz et

al., 1999). In this study, the value of equality index may be seen as a casual measure of altruism, and a higher score on the NEP scale index an indicator of a more biocentric perspective.

The NEP scale index is a significant predictor of support for climate justice and climate policies in this study; not surprisingly, respondents with more proenvironmental attitudes were more supportive of climate justice and climate policies. This was anticipated in my hypotheses and is consistent with past research that shows the widely used NEP scale to have an effect on climate policy support (Dietz et al., 2007).

Results are also consistent with the comprehensive Six Americas study described in the literature review. The Six Americas study did not focus specifically on climate justice issues, but did examine views on equality, environmental attitudes, civic engagement, climate policy support and many other areas. In fact, the value of equality index for this study is comprised of three out of the four items used in the “egalitarianism” index in the Six Americas study (Leiserowitz et al., 2009, p. 115), and results from both studies show similar trends. Specifically, egalitarian views were stronger among those in the Alarmed and Concerned segments in the Six Americas (Leiserowitz et al., 2009), and stronger endorsement of the value of equality index is a predictor of support for climate justice and climate policies in this study.

Though personal norms and feelings of efficacy were not tested explicitly in this study, a belief in the benefits of general climate action – which shows the strongest effect on support for climate justice and climate policies relative to other variables in this study – is arguably related to feelings of efficacy; that is, individuals who believe in the ability for general climate action to make a difference are likely to also believe in their ability to

make a difference through personal efforts. Belief in climate action is not a hypothesized variable in this study, yet stronger belief in the importance and merits of general climate action is a logical predictor of support for climate justice and specific climate policies. Due to the many economic and social benefits that would accompany climate policies, this finding suggests that drawing connections to social and economic benefits provided by policies may be another avenue through which to gain support for climate action.

Whether a respondent believes in anthropogenic climate change shows the weakest effect on support for climate justice relative to other significantly associated variables; while it shows significant and strong effects in earlier regression models, when the NEP scale and belief in climate action indices are included both the significance and the strength of the association substantially decreases. In addition, belief in ACC is *not* a significant predictor of support for climate *policies* when controlling for other variables. This finding, though fairly surprising and even seemingly illogical, may provide additional insight into the importance of emphasizing aspects of climate change and climate policies not typically associated with these two areas, such as economic and social aspects. It also adds to the body of research that challenges the “knowledge-deficit model” described in the literature review, which links levels of information about climate change to levels of concern (Kellstedt et al., 2008), and instead suggest that concern over climate change issues is not necessarily preceded by belief that climate change is happening and is human caused.

There are a number of possible explanations for this finding about the relationship between belief in climate action, belief in anthropogenic climate change, and other variables. First, many of the climate policies asked about in this study address social and

economic concerns in addition to environmental concerns, and this may signal that recognition of these policy characteristics is enough to warrant support regardless of beliefs about climate change. For example, while investments in mass transit aim to reduce greenhouse gas emissions, respondents may view such investments as a means to help to decrease traffic congestion, reduce commuter time and cut costs of transportation for individuals. Such recognition may also indicate a degree of consistency with risk perception literature that suggests individuals in Northern countries still see climate change effects as both temporally and spatially distant (Brechrin, 2008; Bord et al., 2000; Norgaard, 2009), as this trend could lead to support for climate justice and climate policies originating outside of climate change concerns.

Second, the climate justice index focuses on views about the social aspects of climate change, many of which may be applied to other issues. It is possible that these views may be more salient for individuals than belief in anthropogenic climate change; for example, an individual's views on government responsibility versus individual responsibility for climate change issues may be determined by more general views about government involvement. Furthermore, that belief in anthropogenic climate change is a significant predictor of support for climate justice but *not* of support for climate policies may reflect the nature of the focus of each index. Respondents may have been able to form opinions outside of an exclusive 'climate change' context for the specific policies in the climate policies index, while items in the climate justice index were more abstract and explicitly focused on climate change, possibly encouraging respondents to consider the items from a solely 'climate change' perspective.

Additionally, where an individual looks for information about climate change issues may be heavily influenced by both political orientation and religious beliefs, neither of which was tested for in this study. Past research suggests political views and religious beliefs have an effect on both belief in anthropogenic climate change and climate policy support. For example, the Six Americas study found those belonging to the Doubtful or Dismissive segment of the population more likely to be on the political right and also more likely to hold traditional religious beliefs and be “born again” or evangelical Christian (Leiserowitz et al., 2009). On the other hand, the Concerned and Alarmed segments were more likely to be on the political left and to favor scientific perspectives over religious ones (Leiserowitz et al., 2009).

Other findings have shown politically left individuals to be more supportive of climate policy as a result of greater trust in environmentalists, a more altruistic worldview, less traditional values and more proenvironmental values (Dietz et al., 2007). Political liberalism has shown to be a predictor of endorsement of the NEP scale as well (Jones and Dunlap, 1992; Dunlap et al., 2000; Scott, 1994). Considering these past findings, it is likely that both political orientation and religious beliefs have at least a minimal indirect effect on the dependent variables in this study via values and attitudes measured by the NEP scale index, value of equality index and civic engagement index.

In addition to views on climate change and climate action, equality, and the relationship between humans and the environment, views on civic engagement are also shown to have an effect on support. As described in the literature review, civic engagement refers in a general sense to actions related to investment and ownership in local, regional, national or international communities (Grillo et al., 2010). In the Six

Americas study, those in the Alarmed segment (who most strongly believed climate change is happening and were also most concerned about climate change) and those in the Dismissive segment (those who were least likely to believe in, or show concern for, climate change) showed higher levels of civic engagement relative to all other segments, while the Disengaged exhibited the lowest levels of civic engagement (Leiserowitz et al., 2009). The present study is consistent with these results in that it shows greater support for civic engagement to be predictive of support for climate justice and climate policies; however, examination of the role of the Dismissive as a potential driving force against support for climate action and concern is a potential focus for future research.

Scholars have also suggested civic engagement is a manifestation of social capital (Putnam, 1995) and partly a product of social and political trust (Green and Brock, 1998). Dietz et al. (2007) found less trust in industry and greater trust in environmental scientists and environmental groups to be associated with climate policy support, though government agencies did not have an effect. Based on these results, the scholars emphasized the important role of environmental groups in enhancing support for climate policies. While trust in industry, environmental groups and government agencies was not specifically tested for here, considering social and political trust as a casual antecedent to general civic engagement suggests trust likely has an effect on support for climate justice and climate policies. Given the declining levels of civic engagement noted by many scholars (Putnam, 1995; Warren et al., 1999, as cited in Grillo et al., 2010; Grillo et al., 2010), however, increasing support for climate action is a formidable task facing environmental groups and other climate change communicators.

Aside from values, attitudes and beliefs, this study's socioeconomic demographic factors alone account for 4% of the variance in support for climate justice and 2% of the variance in support for climate policies. Age is the only socioeconomic demographic characteristic significantly associated with support for climate justice and climate policies when controlling for all variables, with older respondents more likely to show support. This is consistent with past studies that show older individuals more supportive of climate policy (Dietz et al., 2007; O'Connor, 2002) and more likely to engage in certain aspects of environmental behavior (Scott, 1994), yet challenges other research that suggests younger individuals are more likely to exhibit proenvironmental attitudes (Jones and Dunlap, 1992; Dunlap et al., 2000) or indicate a stronger willingness to take voluntary actions (O'Connor, 2002).

I anticipated younger individuals would show more support for climate justice and climate policies, reasoning that possible exposure to climate change information from a relatively young age would encourage greater concern or feelings of personal risk. Past research points to higher levels of general political interest and civic engagement among older individuals (Scheufele and Shah, 2000), however, and in light of the strong influence of views on civic engagement in this study – as well as the political nature of climate justice and climate policies in general – a positive association between age and support is in line with this past research.

Notable in the context of climate justice, personal annual income shows no significant association with the dependent variables in either of the final regression models, yet it does show a significant, negative association in Model 3 with support for climate justice and in Model 2 with support for climate policies. These findings indicate

that while there is no effect for personal annual income when controlling for values, attitudes, and beliefs in addition to socioeconomic demographics, those with lower income are more likely to show support for climate policies when controlling for only socioeconomic demographics (Model 2) and support for climate justice when controlling for socioeconomic demographics and civic engagement (Model 3). Past research has largely shown income to be positively associated with climate policy support (Dietz et al., 2007) and environmental concern (Dietz et al., 1999; Dunlap et al., 2000). However, these findings point to a possible recognition of the unique characteristics of climate justice and how they relate to income; namely, that because those with higher income are generally more responsible for contributing to climate change than those with lower income, they will also be required to make larger sacrifices and lifestyle changes to address climate change relative to those with lower income.

Lastly, although age is the only socioeconomic demographic factor that remains a significant predictor of support for climate justice and climate policies when all independent variables are controlled for, past research has shown socioeconomic demographic characteristics to be significantly associated with environmental attitudes, general views on equality and civic engagement. For example, studies have shown women to hold more altruistic attitudes (Dietz et al., 1998; Dietz et al., 2002), and NEP scale endorsement has been shown to be stronger among more educated individuals and those raised in an urban area (Dunlap et al., 2000). While indirect effects of variables were not tested for in this study, it is likely that socioeconomic demographic factors have some degree of influence on support due to their relationships with values, attitudes and beliefs.

In sum, climate justice and climate policies encompass issues that span across environmental, social, economic and political realms. Results indicate that values, attitudes and beliefs related to these four areas, as well as age, are significant predictors of support for climate justice and climate policies. Specifically, support for civic engagement, support for equality, proenvironmental attitudes and being older are all associated with support for climate justice and climate policies, and belief in the benefits of climate action shows the strongest effect on support. Belief in anthropogenic climate change is a significant predictor of support for climate justice in this study, though is *not* shown to be a significant predictor of support for climate policies. The discussion above highlights many important findings from this study and also identifies certain gaps in the research and areas for expansion in future studies. The following section provides a more comprehensive discussion of possible directions for future research.

4.2 Future research possibilities

Few studies on public attitudes towards climate change that incorporate climate justice issues exist, and further research is necessary to develop a more complete picture. First, more research is needed to explore the relationships among values, attitudes, beliefs and perceptions of climate justice and climate policies. In particular, gaining a more in-depth understanding of how belief in climate change, views on the benefits and costs of climate action, and support for climate justice and climate policies are related is appropriate considering the significant relationships shown in this study.

Though conducting quantitative studies will be important to monitor changes over time and consistency of results, employing the use of qualitative approaches will aid in

identifying underlying thought processes and motivations behind these relationships. For example, focus groups are desirable to help answer questions such as what criteria help determine an individual's degree of support for a particular climate policy, to what extent do individuals recognize social and economic benefits that would accompany many climate policies, and which benefits are most often recognized and important in determining support. Qualitative approaches may also be useful in exploring how risk perception of climate impacts influences views on climate justice and climate policies, as well as whether belief in anthropogenic climate change is, in fact, a necessary antecedent to support for climate policies and climate justice.

A significant strength of this study is that it may serve as a guiding baseline for following studies on climate justice issues, most notably by providing an index by which to measure public perceptions of important aspects of climate justice. The index measuring support for climate justice contains many items where conceptualizations of dimensions of justice within the academic community, such as procedural, distributive, intragenerational and intergenerational, were "translated" into layman's terms in order to gauge perceptions. The items included cover a broad range of aspects of climate justice, yet further examination and expansion is desirable in numerous areas.

First, the climate justice index did not specify whether items maintained a provincial, national or global focus; that is, wording contained an element of ambiguity that allowed for interpretation on any of these levels. For example, the statement "People who are responsible for the most greenhouse gas emissions should also make the biggest reductions in their emissions" could be read in terms of responsibility differences on a

provincial level or in terms of responsibility differences on a global level, with developed nations as those responsible for most greenhouse gas emissions.

As the general focus of the questionnaire was related to BC, it is likely most respondents approached the items with a provincial focus. However, future studies that are explicit about the level of focus will enhance the understanding of how individuals conceptualize climate justice issues and what individuals are most concerned about with respect to climate change. Again, a qualitative approach using focus groups may deepen the understanding of these issues, through dialogue that examines how individuals view their relationship within a climate change context to those in developing countries; to different segments of the population within their own nation and community; and to future generations and non-human species.

Similarly, statements that are seemingly contradictory in terms of fairness conceptualizations received almost identical distributions of support. For example, “Governments should make sure people with high incomes pay their fair share of the costs of dealing with global warming” (Q20_1) and “Governments need to set clear environmental rules that apply equally to everyone” (Q20_11) encompass different ideas of fairness, yet 88.2% of respondents ‘somewhat’ or ‘strongly’ agreed with Q20_1 and 88.1% of respondents ‘somewhat’ or ‘strongly’ agreed with Q20_11. On the other hand, though the statements “Everyone has to sacrifice equally to solve global warming” (Q20_2) and “Governments need to set clear environmental rules that apply equally to everyone” (Q20_11) appear to embody a very similar conceptualization of fairness, a relatively large difference was seen in the percentage of respondents who agreed with each item. While 70.6% of respondents ‘somewhat’ or ‘strongly’ agreed with Q20_2,

88.1% ‘somewhat’ or ‘strongly’ agreed with Q20_11. Both instances described here indicate additional areas of ambiguity to be examined in future research.

As an example, a series of focus groups conducted by Environics and the Canadian Centre for Policy Alternatives (CCPA) in 2008 which centered around understanding of climate change and social justice links revealed a sense of confusion from participants when asked to draw connections between policies designed to reduce climate change and policies that could promote social justice (Environics, 2008). However, even with this confusion participants were able to voice strong sentiments about climate justice issues, calling for climate action burdens to be borne by those who contribute the most to the problem and are most able to help pay the consequences and also expressing concern for vulnerable populations, the middle class, and rural populations in terms of climate change consequences (Environics, 2008). Understanding the meaning that climate justice holds for individuals and the various considerations that go into making decisions about climate justice and climate policy issues is limited in a quantitative setting, and employing both quantitative and qualitative approaches to examine climate justice perception will likely improve the scope of understanding in this area.

A number of socioeconomic demographic factors were not tested for in this study that will also be important to incorporate into future research. As described earlier, political affiliation has been shown in past studies to influence attitudes towards climate change and climate policies, and its effect on support for climate justice is likely significant. Religious beliefs have also been a significant predictor for belief in climate change, concern about climate impacts and views about climate action. In addition,

looking at the relationship between ethnicity or country of origin and support for climate justice and climate policies is desirable in a multicultural country such as Canada; exploring views on climate justice issues among immigrants, who may not have a strong sense of place or identity within Canada, as well as across different ethnic backgrounds, will increase the awareness of existing differences and similarities among the many distinct ethnic groups who reside in Canada.

Though this study showed no significant association between location and support for climate justice and climate policies, the grouping of respondents into only two categories – Vancouver Metropolitan and Non-Metropolitan – did not allow for an in-depth analysis of urban versus rural perceptions. A more specific distinction is recommended for future research, as urban and rural areas, as well as First Nations groups, are likely to face increasingly unique challenges as climate impacts become more recognized and severe. Continuing to gauge differences in attitudes, as well as differing needs in terms of mitigation and adaptation, will help to inform future climate change communication strategies.

Impact and adaptation capacity dichotomies will also likely be seen between upper and lower classes; men and women; and children and adults, and these relationships should be considered in future research. As described in Chapter 1, past research has suggested increased vulnerability to climate impacts is associated with certain socioeconomic demographic factors. For example, women (Terry, 2009), Indigenous communities (Salick and Ross, 2009), and children (Bunyavanich et al., 2003) are noted to be at higher risk for negative climate impacts in some parts of the world, relative to many other segments of the population.

Based on these studies, as well as the centrality of various aspects of vulnerability in climate justice research, many of the socioeconomic demographic factors associated with vulnerability were analyzed here in terms of their effect on support for climate justice and climate policies. No direct effects from any socioeconomic demographic factor except age was shown, however, and future research could be finer grained in exploring the possibility of non-linear effects in more detail.

Similarly, questions directly related to vulnerability were not included in the survey instrument, and incorporating such questions into future studies is also recommended. However, the strong effects from values, attitudes and beliefs on support for climate justice and climate policies in this study may indicate consistency with past research on risk perception and vulnerability related to climate change; namely, those studies suggesting climate change is an issue that remains temporally and spatially distant for many residents of wealthy nations (Brechin, 2008; Bord et al., 1998; Norgaard, 2009). In other words, one possible explanation for the lack of direct effects from socioeconomic demographic factors associated with vulnerability may be that perceptions of personal, provincial, or national vulnerability remain low in BC, even for respondents in so-called ‘vulnerable’ categories.

Related to risk perception, exposure to media surrounding climate change issues will also be an important area for future analysis. Given the vast array of sources and opinions on climate change available to the public, as well as a continued framing of climate change that depicts the issue as still being ‘debated’ by two opposing sides (particularly in mainstream American media that reaches both the United States and Canada), where individuals seek information about climate change issues is likely to help

shape views on climate justice and climate policies. In addition, conducting research that investigates climate justice perceptions and support for climate policies among different generations – whose exposure to certain world events at different times in their lives may create unique similarities within generations – will further enrich the understanding of influencing factors on attitudes towards climate justice issues.

Also interesting to consider in light of public access to overwhelming amounts of media content will be to what extent individuals simply seek out media sources to support what they already believe about climate change, regardless of the degree of fact to their beliefs. This trend has been identified by David Suzuki, one of Canada's leading environmentalists, as a symptom of an overabundance of information available to be public. "It turns out we don't ever have to change our minds because there's so much information that if you believe global warming is [not real] you can find dozens of websites saying it's junk science, it's not happening," he says in an interview, "It turns out we have too much information; you can believe any crazy idea you want without ever analyzing the information" (Roberts, 2011, p. 14). Exploring these relationships in relation to climate justice, which more clearly encompasses issues outside of the environmental realm of climate change concerns, will yield additional insight into the extent of 'conditioned' responses to climate change issues that may be shaped by media consumption choices.

Important from a climate justice perspective is further research into the areas of climate change denial and avoidance. Norgaard (2009) points to trends of socially organized denial in Norway and the United States in order to avoid guilt, manage emotions and abide by social norms, and these trends carry potentially drastic

implications for climate change consequences due to the vastly disproportionate contribution to climate change from developed countries. Studies that explore the underlying causes of these trends may reveal areas for communication improvements, complemented by research focusing on how the public connects climate change concerns with quality of life concerns (such as community, health, leisure and economic stability, among others). Building from the argument mentioned earlier that action is a result of intellectual or moral engagement (Dale, 2005), research that aids in expanding the understanding of the causes, effects and potential remedies for these trends is a desirable area for future studies.

Finally, this study did not examine the relationships between the two dependent variables, support for climate justice and climate policies. Exploring this relationship could help to reveal whether support for climate justice is most often rooted in more general support for climate action via support for climate policies, more general support for social justice, or a combination of the two areas. Similarly, future research that explores whether support for climate policies might be a reflection of awareness of the economic and social benefits likely arising from the policies will prove useful for scholars, policy-makers and other climate change communicators.

4.3 Suggestions for practical applications of findings

As described in earlier chapters, one aim for this study is to draw upon results to in order to provide insights for climate change communication strategies; this is motivated in part by this study's connection with the Climate Justice Project, which emphasizes improving climate change communication as an important step towards the project's ultimate goal of increasing support for economic and social policy options that

lead to aggressive action on climate change. Though exploring the effectiveness of various communication approaches was not a central focus of this study, findings nevertheless allow for a number of recommendations to be made in terms of possible strategies to increase public support for climate justice and for fair, effective climate policies.

First, to improve dialogue about climate impacts and solutions between the public and decision-makers, scientists and environmentalists, findings suggest it may be useful to focus on improving dialogue with those segments shown to be less supportive of climate justice and climate policies, and to continue to build rapport with those segments already showing support. Though using socioeconomic demographic characteristics to divide the population into smaller, more easily distinguishable groups is arguably more feasible than divisions based on values, attitudes and beliefs, results from this study suggest targeting segments based on the latter.

A warranted starting point based on the findings from this study would be segmentation by (1) engagement level, to encourage those less engaged to become involved and those already engaged to increase involvement; (2) environmental attitudes, to increase engagement of individuals holding more anthropocentric orientations by discussing aspects of climate change aside from ecological issues; (3) age, to target younger populations and utilize older populations to help communicate and increase awareness, involvement and, ultimately, support for climate justice and climate policies; and (4) belief in anthropogenic climate change, to increase concern among non-believers.

Identifying these segments may be achieved through various avenues, such as communicating with local city council members, meeting with environmental NGOs,

visiting local high schools, or building relationships with community groups across political lines. For example, as older individuals were more supportive of climate justice and climate policies in this study and have also shown higher levels of civic engagement in past research, continuing to engage older populations will likely help to sustain support among these segments. Additionally, past research points to poor, young, male minorities with low levels of education as the *least* likely to engage with the political process (Lerner, 2004, as cited in Grillo et al., 2010), and the Six Americas study shows those in the Disengaged segment are likely to be lower income, less educated, moderately politically liberal, minority females (Leiserowitz et al., 2009), suggesting that connecting with these segments may be an appropriate place to begin dialogue about climate justice and climate policies.

Facilitating communication within existing networks of community groups may help to build relationships across sectors that are typically at odds on environmental, social, economic or political issues by highlighting climate challenges, potential solutions and likely benefits at the local level. For example, findings in this study show a large majority feels that climate action should consider the differences between urban and rural areas. Transportation issues are often a central focus of discussions on climate action, yet urban and rural areas face distinct challenges in this area. Transportation was one area of discussion during the CCPA focus groups mentioned earlier, and participants in the focus groups expressed concern that people living in rural and/or interior communities might bear a greater burden of the consequences from climate policies and action because they are both more dependent on natural resources and without the transportation alternatives that urban dwellers often have (Envionics, 2008). It was noted that if a carbon tax were

implemented to discourage driving, a majority of individuals in the interior would simply have to swallow the cost increase and keep driving (Environics, 2008).

In combination with the findings from this study, these results point to an awareness of the disproportionate burdens likely to be borne among certain parts of the population as a result of climate action at the provincial level. In light of this, tailoring discussions to the unique the needs of different segments of the population will likely encourage public support for climate action that is both fair and effective. Similarly, as belief in the benefits of climate action is also a strong predictor of support for climate justice and climate policies in this study, increasing awareness of benefits in all realms – social, economic, environmental and political – may help to expand support by highlighting a diverse set of accompanying benefits that will invite individuals to draw connections between climate action and salient concerns unique to themselves and their community. As effects from climate change will ultimately be felt at the local level, beginning discussions at the community level that fuse together quality of life concerns and climate change concerns, perhaps led by highly engaged members, will likely encourage community involvement by making climate change more personally relevant to individuals.

Research showing climate change denial (Norgaard, 2009); avoidance (Krosnic et al., 2006; Immerwahr, 1999); apathy towards action (Kellstedt et al., 2008); and declining public concern (Leiserowitz et al., 2010) suggests there may be a conditioned response among some parts of the population to anything ‘climate change’ or ‘global warming’ related, likely due at least in part to media coverage that commonly portrays the authenticity of climate science as an issue still being debated among scientists.

Applauding efforts already being taken at the local level (whether they were intended as climate action efforts or not), as well as highlighting different strategies in communities across the world as models to follow, may decrease feelings of helplessness, guilt and apathy among individuals and also help to inspire collective action.

For example, the “Transition” movement is one effort that seeks to “mobilize community action and foster public empowerment and engagement around climate change” through envisioning “positive scenarios of a post-oil future” and then building the necessary infrastructure, shifting social norms and habits, and developing institutions to help achieve those scenarios (Haxeltine and Seyfang, 2009, p. 5). Initially developed in 2005 by permaculture teacher Rob Hopkins in Ireland, the Transition movement is gaining recognition as a successful model for citizen-led environmental action at the community level (Haxeltine and Seyfang, 2009). As a large majority in this study demonstrated support for climate policies at the provincial level, tracking progress of such action may help to sustain support and interest in climate action.

Finally, increasing awareness about differences in vulnerability and responsibility at the community and provincial levels – again highlighting climate change concerns that are more personally relevant to individuals – will likely encourage public support for climate justice and for fair, effective climate policies. Although past studies suggest climate change is not a daily topic of concern for much of the public, many quality of life factors that are inherent in climate change issues are. These include day-to-day aspects of life such as transit and food choices, as well as cornerstone aspects such as access to green space and leisure, healthy families and communities, and long-term stability of economic livelihoods. Drawing connections between climate change concerns and quality

of life aspects that reflect differences in vulnerability and responsibility among varying segments of the population may also assist climate change communicators in gaining support for climate justice and climate policies.

4.4 Conclusion

This study adds to the existing literature on climate change attitudes, yet is distinguishable due to its specific focus on aspects of climate justice. A significant strength of this study is the climate justice index that was developed by the research team, which may be used as a baseline for future research that explores public perceptions of the many aspects of climate justice. Results suggest that values, attitudes and beliefs are the strongest predictors of support for climate justice and climate policies, though age – the only socioeconomic demographic factor significantly associated with support – is also a predictor, with older individuals more likely to show support. Notably, support by a substantial majority of respondents was demonstrated for each of the individual items included in the support for climate justice index and support for climate policies index.

Findings also point to a number of important areas for further exploration, possibly utilizing more qualitative approaches such as focus groups that seek a more in-depth picture of individual understanding of climate justice. Additionally, a closer look at how certain socioeconomic demographic factors impact support for climate justice and climate policies is also warranted; in particular, those related to vulnerability (such as location) and those historically shown to have a significant effect on attitudes towards climate change (such as political orientation) should be examined in more detail than this study allowed.

Finally, as outlined in the literature review, Dale (2005) calls for a dialogue that builds “collective norms, values, and governance among diverse sectors,” providing a long-term, open-ended and inclusive venue for public participation in decision-making (2005, p. 18). The results from this study lend further credence to this argument, suggesting that values, attitudes and beliefs are significant predictors of support for climate justice and climate policies. Communication that connects with the public in these areas by highlighting the social aspects of climate change issues may be an effective avenue for increasing engagement and working towards support for, and realization of, substantive and fair climate action. In addition, expanding communication at the local level that examines climate justice concerns and climate action options unique to communities is recommended.

Works cited

- Adger, W.Neil. 2003. Social capital, collective action and adaptation to climate change. *Economic Geography* 79: 387–404.
- Babbie, Earl. 1990. *Survey Research Methods, 2nd edition*. Belmont, California: Wadsworth Publishing Company.
- Babbie, Earl. 2003. *The Basics of Social Research, 4th edition*. Belmont, California: Thomson Wadsworth.
- “Bali principles of climate justice.” 2002. *India Resource Center: building global links for justice*. India Resource Center.
<http://www.indiaresource.org/issues/energycc/2003/baliprinciples.html> (accessed 31 Jan. 2011).
- Barr, Stewart. 2003. Strategies for sustainability: Citizens and responsible environmental behavior. *Area*, 35(3): 227-240.
- Bord, Richard J. and Robert E. O’Connor. 1997. The gender gap in environmental attitudes: the case of perceived vulnerability to risk. *Social Science Quarterly*, 78(4): 830-840.
- Bord, Richard.J., O’Connor, Robert E. and Ann Fisher. 2000. In what sense does the public need to understand global climate change? *Public Understanding of Science* 9(3): 205-218.
- Bostrom, Ann, M. Granger Morgan, Baruch Fischhoff, and Daniel Read. 1994. What do people know about global climate change? I mental models. *Risk Analysis*, 14(6): 959-970.
- Brechin, Steven R. 2008. Ostriches and change: A response to ‘global warming and sociology.’ *Current Sociology* 56: 467-474.
- Bunyanavich, Supinda, Landrigan, Christopher P., McMichael, Anthony J., and Paul R. Epstein. 2003. The impact of climate change on child health. *Ambulatory Pediatrics*, 3(1): 44-52.
- Bulkeley, Harriet. 2000. Common knowledge? Public understanding of climate change in Newcastle, Australia. *Public Understanding of Science* 9: 313-333.
- Bullard, Robert D. “Environmental justice in the 21st century.” *Environmental Justice Resource Center*. Environmental Justice Resource Center.
<http://www.ejrc.cau.edu/ejinthe21century.htm> (accessed 31 Jan. 2011).

Byerss, Michael and William Rees. 2009. Achieving climate justice: Policy order from the chaos of climate change. Working paper for the Climate Justice Project.

“Climate justice: Enforcing climate change law.” *Climate justice: enforcing climate change law*. Climate Justice Programme, <http://www.climatelaw.org> (accessed 31 Jan. 2011).

Coleman, James S. 1988. Social capital in the creation of human capital. *American Journal of Sociology*, 94 (Suppl.): S95–S120.

Comim, Flavio. 2008. Climate injustice and development: A capability perspective. *Development*, 51: 344-349.

Dale, Ann. 2005. Social capital and sustainable community development: Is there a relationship? In *Social Capital and Sustainable Community Development*. Vancouver, BC: UBC Press.

Dale, Ann and J. Onyx. 2005. *A dynamic balance: Social capital and sustainable community development*. Vancouver, BC, Canada: UBC Press.

Dietz., Thomas, Stern, Paul C., and Gregory G. Guagnano. 1998. Social structural and social psychological bases of environmental concern. *Environment and Behavior* 30: 450-471.

Dietz, Thomas, Stern, Paul C., Abel, T., Guagnano, G., and Linda Kalof. 1999. A Value-Belief-Norm Theory of Support for Social Movements: The case of environmentalism. *Human Ecology Review* 6(2): 81-97.

Dietz, Thomas, Linda Kalof, and Paul C. Stern. 2002. Gender, values and environmentalism. *Social Science Quarterly* 83(1): 353-364.

Dietz, Thomas, Dan, Amy, and Rachael Shwom. 2007. Support for climate change policy: Social psychological and social structural influences. *Rural Sociology* 72(2): 185-214.

Dunlap, Riley E. 1998. Lay perceptions of global risk: Public views of global warming in cross-national context. *International Sociology* 13: 313-333.

Dunlap, Riley, VanLiere, Kent D., Mertig, Angela G., and Robert Emmet Jones. 2000. Measuring endorsement of the new ecological paradigm: A revised NEP scale. *Journal of Social Issues* 56(3): 425-442.

Environics Research Group. 2008. Focus group report to the Canadian centre for policy alternatives: British Columbians' attitudes towards climate change and social justice. Environics Research Group Limited.

- Garson, David. 2011. Factor analysis. In *Statnotes: Topics in multivariate analysis*. <http://faculty.chass.ncsu.edu/garson/PA765/factor.htm> (accessed 28 Feb. 2011).
- Garson, David. 2011. Reliability analysis. In *Statnotes: Topics in multivariate analysis*. <http://faculty.chass.ncsu.edu/garson/PA765/reliab.htm> (accessed 28 Feb. 2011).
- Gibbs, J.L., Ball-Rokeach, S.J., Jung, J.Y., and Kim, Y.C. 2004. The globalization of everyday life: Visions and reality. In *Technological visions: The hopes and fears that shape new technologies*, eds. S. Marita, D. Thomas, and S.J. Ball-Rokeach. Philadelphia: Temple University Press.
- Grasso, Marco. 2010. An ethical approach to climate adaptation finance. *Global Environmental Change* 20: 74-81.
- Green, Melanie C., and Timothy C. Brock. 1998. Trust, mood, and outcomes of friendship determine preferences for real versus ersatz social capital. *Political Psychology* 19(3): 527-544.
- Grillo, Michael C., Teixeira, Miguel A., and David C. Wilson. 2010. Residential satisfaction and civic engagement: Understanding the causes of community participation. *Social Indicators Research* 97(3): 451-466.
- Haxeltine, Alex and Gill Seyfang. 2009. Transitions for the people: theory and practice of 'transition' and 'resilience' in the UK's transition movement. Tyndall Centre for Climate Change Research, Working Paper 134.
- Immerwahr, John. 1999. Waiting for a signal: Public attitudes towards global warming, the environment and geophysical research. *Public Agenda/American Geophysical Union*.
- IPCC. 2007. Climate change 2007: Synthesis report. Contribution of Working Groups I, II, and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Intergovernmental Panel on Climate Change. http://www.ipcc.ch/publications_and_data/ar4/syr/en/contents.html (accessed 15 Feb. 2011).
- Jones, Robert Emmit, and Riley E. Dunlap. 1992. The social bases of environmental concern: Have they changed over time? *Rural Sociology* 57: 28-47.
- Karliner, Joshua. 2000. "Climate justice summit provides alternative vision." *CorpWatch: Holding corporations accountable*. CorpWatch, <http://www.corpwatch.org/article.php?id=977> (accessed 30 Jan 2011).
- Kasperson, Roger E., and Jeanne X. Kasperson. 2001. *Climate Change, Vulnerability and Social Justice*. Stockholm Environment Institute, Stockholm.

Kellstedt, Paul M., Zahran, Sammy, and Arnold Vedlitz. 2008. Personal efficacy, the information environment, and attitudes towards global warming and climate change in the United States. *Risk Analysis* 28:1.

Klandermans, Bert and Dirk Oegema. 1987. Potentials, networks, motivations, and barriers: steps towards participation in social movements. *American Sociological Review*, 52(4): 519-531.

Klein, Seth, Cohen, Marjorie G., Garner, T., Ivanova, Iglia, Lee, Marc, Wallace, Bruce, and Margot Young. 2008. A Poverty Reduction Plan for BC. Vancouver, BC: Canadian Centre for Policy Alternatives.

Klinsky, Sonja, and Hadi Dowlatabadi. 2009. Conceptualizations of justice in climate policy. *Climate Policy* 9: 88-108.

Knack, Stephen. 2002. Social capital, growth, and poverty: A survey of cross country evidence. The role of social capital in development: An empirical assessment. Cambridge: Cambridge University Press.

Krosnic, Jon A., Holbrook, Allyson L., Lowe, Laura, and Penny S. Visser. 2006. The origins and consequences of democratic citizen's policy agendas: A study of popular concern about global warming. *Climatic change* 77: 7-43.

Leiserowitz, Anthony, Maibach, Edward, and Connie Roser-Renouf. 2010. *Climate change in the American Mind: Americans' global warming beliefs and attitudes in January 2010*. Yale University and George Mason University. New Haven, CT: Yale Project on Climate Change.

Leiserowitz, Anthony, Maibach, Edward, and Connie Roser-Renouf. 2009. *Global Warming's Six Americas 2009: An audience segmentation analysis*. Yale University and George Mason University. New Haven, CT: Yale Project on Climate Change.

Leiserowitz, Anthony A. 2007. Communicating the risks of global warming: American risk perceptions, affective images and interpretive communities. In Suzanne C. Moser, and Lisa Dilling (Eds.), *Creating Climate for Change: Communicating climate change and facilitating social change* (pp. 44-63). New York: Cambridge University Press.

Lerner, Richard M. 2004. *Liberty: Thriving and civic engagement among America's youth*. London: Sage.

Lind, E. Allen, and Tom R. Tyler. 1988. *The Social Psychology of Procedural Justice*. Plenum Press, New York.

McBeth, Mark K., and Richard H. Foster. 1994. Rural environmental attitudes. *Environmental Management* 18(3): 401-411.

- Miller, David. 2004. Holding nations responsible. *Ethics* 114: 240-268.
- Norgaard, Kari M. 2009. Cognitive and behavioral challenges in responding to climate change. Background paper to the 2010 World Development Report, policy research working paper.
- O'Connor, Robert E., Bord, Richard J., Yarnal, Brent, and Nancy Wiefek. 2002. Who wants to reduce greenhouse gas emissions? *Social Science Quarterly* 83(1): 1-17.
- Opatow, Susan, and Leah Weiss. 2000. New ways of thinking about environmentalism: Denial and the process of moral exclusion in environmental conflict. *Journal of Social Issues* 56(3): 475-490.
- “Organizations: the international network.” *Climate Justice Action*. Climate Justice Action Network. <http://www.climate-justice-action.org/about/organizations/> (accessed 31 Jan. 2011).
- Paavola, Jouni and W. Neil Adger. 2006. Fair adaptation to climate change. *Ecological Economics*, 56: 594-609.
- Poortinga, Wouter, Steg, Linda, and Charles Vlek. 2004. Values, environmental concern, and environmental behavior: A study into household energy use. *Environment and Behavior* 36(1): 70-93.
- Putnam, Robert D. 1995. Bowling alone: America's declining social capital. *Journal of Democracy* 6(1): 65.
- Roberts, Joseph. 2011. Sustainable activism: A conversation with David Suzuki. In *Common Ground*, 236: 5.
- Salick, Jan and Nanci Ross. 2009. Traditional peoples and climate change. *Global Environmental Change* 19: 137-139.
- Scheufele, Dietram A., and Dhavan V Shah. 2000. Personality strength and social capital: The role of dispositional and informational variables in the production of civic participation. *Communication Research* 27(2): 107-131.
- Scott, David. 1994. Environmental attitudes and behavior: A Pennsylvania study. *Environment and Behavior* 26(2): 239-260.
- Shultz, Wesley P. 2000. The structure of environmental concern: Concern for self, other people, and the biosphere. *Journal of Environmental Psychology* 21(4): 327-339.

Smith, Michael D., and Richard S. Krannich. 2000. 'Culture clash' revisited: Newcomer and longer-term residents' attitudes toward land use, development, and environmental issues in rural communities in the Rocky Mountain West. *Rural Sociology* 65(3): 396-421.

Sterman, John D., and Linda B. Sweeney. 2007. Understanding public complacency about climate change: adults' mental models of climate change violate conservation of matter. *Climatic Change* 80(3): 213-238.

Stern, Paul C., Dietz., Thomas, Kalof, Linda, and Gregory G. Guagnano. 1995. Values, beliefs, and proenvironmental action: Attitude formation toward emergent attitude objects. *Journal of Applied Social Psychology* 25(18): 1611-1636.

Taplin, Ros. 2004. Climate change, vulnerability and ethics. *Social Alternatives* 23(4): 11-15.

Terry, Geraldine. 2009. No climate justice without gender justice: an overview of the issues. *Gender and Development*, 17(1): 5-18.

Trainor, Sarah F., Chapin, Stuart F., Huntington, Henry P., Natcher, David C. and Gary Kofinas. 2007. Arctic climate impacts: environmental injustice in Canada and the United States. *Local Environment* 12(6): 627-643.

Tyler, Tom R., Boeckmann, Robert J., and Heather J. Smith. 1997. *Social Justice in a Diverse Society*. Boulder, CO: Westview Press.

Van Liere, Kent D., and Riley E. Dunlap. 1980. The Social Bases of Environmental Concern: A review of hypotheses, explanations, and empirical evidence. *Public Opinion Quarterly* 44(2): 181-197.

Warren, M. R., Thompson, J. P., et al. 1999. Social capital and poor communities: A framework for analysis. Ford foundation conference: Social capital in poor communities: Building and utilizing social assets to combat poverty.

"What is climate justice?" *Mobilization for Climate Justice West*. Mobilization for Climate Justice West. <http://west.actforclimatejustice.org/about/what-is-climate-justice/> (accessed 31 Jan 2011).

APPENDIX: Questionnaire

PUBLIC PERCEPTIONS ABOUT GLOBAL WARMING IN BRITISH COLUMBIA

INTRODUCTION

This online survey is being conducted on behalf of a research team at the University of British Columbia.

The title of this survey project is “Public Perceptions about Global Warming in British Columbia”. This study is about people’s perceptions about social aspects of global warming in British Columbia. In addition to asking questions about your perceptions about global warming and related policy measures, the survey also includes some questions regarding your general social and political values and attitudes, and about your background.

The principal investigator for this survey project is Dr. David Tindall in the Department of Sociology at UBC, and the co-investigator is Dr. Penelope Gurstein in the School of Community and Regional Planning at UBC. This research is funded by the Social Sciences and Humanities Research Council, which is a federal government agency that provides support for academic research.

The survey will take approximately 15 minutes to complete the survey.

Please be advised that Environics, the company that is conducting this survey for the UBC research team, uses a server for online surveys that is located in the United Kingdom. The data will be stored temporarily on this server during the period during which data is being collected, and the data will be accessible only by staff members of Environics, or staff members of Confirmit (the company that supports the server). Once the data collection period is completed the data will be stored on a password protected computer in a secure office at UBC, and will be accessible only by the UBC research team members.

Please complete this survey if you are nineteen years of age or older.



THE UNIVERSITY OF BRITISH COLUMBIA
Department of Sociology
6303 N.W. Marine Drive
Vancouver, British Columbia
V6T 1Z1

CONSENT FORM

You have the right to refuse to answer any questions at any time. If you do not wish to answer a question you can just leave it blank and move on to the next question. Your participation in the survey is purely voluntary. The answers that you provide to the survey will be anonymous, and your identity will remain confidential.

After you have completed the survey you will be asked to submit the survey by clicking on a button. By submitting the survey it is assumed that you provide your consent to participate in the study.

Please print a copy of this consent information for your records.

Contact Information:

Dr. David Tindall's Sociology Office Telephone # is: 604-822-2363. You can call him directly to confirm who he is at 604-822-2363. You can also contact Dr. Tindall by e-mail at: tindall@interchange.ubc.ca

If you wish to contact someone outside of the research group you can call the Head of the Department of Sociology at UBC, Professor Neil Guppy, at 604-822-3670. His e-mail is neil.guppy@ubc.ca

If you have any concerns about your treatment or rights as a research subject, you may telephone the Research Subject Information Line in the UBC Office of Research Services at the University of British Columbia, at 604-822-8598, or if long distance e-mail to RSIL@ors.ubc.ca.

Please remember, you are free to agree or disagree with any statement or question, and may skip a question if you desire.

Use of Information.

The information will be analyzed and results will be used in producing academic journal articles, for reports that will be available to the general public in summary format on the Internet, and may be used by a student (Jodie Gates) for her Master's thesis.

[PART 1 : LOCATION]

1. **What province do you live in ?**
2. **What is your postal code ?**

[PART 2: SOCIAL, POLITICAL & ENVIRONMENTAL VALUES]

3. **Generally speaking, how interested are you in current affairs and public policy issues (i.e. political, social, environmental and economic issues etc,,)? Are you...?**
 - a) Very interested
 - b) Somewhat interested
 - c) Not very interested
 - d) Not at all interested

4. **In the past three months, which of the following activities have you engaged in with regard to a social, political or environmental issue: CHECK ALL THAT APPLY**
 - a) Sent a “letter to the editor” to a newspaper.
 - b) Shared information about an issue that matters to me using social media (such as Facebook or Twitter).
 - c) Attended a meeting or community event about a social or environmental issue.
 - d) Talked with family or friends about my views.
 - e) Communicated with an elected official.
 - f) None of these

5. Please indicate whether you strongly agree, somewhat agree, somewhat disagree or strongly disagree with the following statements:

	Strongly disagree (1)	Somewhat disagree (2)	Somewhat agree (3)	Strongly agree (4)
• People have a civic duty to vote in elections.				
• There is no point in contacting elected officials because the government (or “they”) doesn’t listen to what people have to say.				
• It is important to participate in community life.				
• Politics and government are too complicated for most people to understand.				
• People who care about a social, political or environmental issue have a responsibility to get involved.				

6. In the last federal election held in October 2008, which party did you vote for?

- a) Conservative
- b) Liberal
- c) NDP
- d) Green
- e) Other
- f) I did not vote

7. In the last BC provincial election held in May 2009, which party did you vote for?

- a) BC Liberal
- b) NDP
- c) Green
- d) BC Conservative
- e) Other
- f) I did not vote

8. In politics, people sometimes talk of ‘left’ and ‘right’. Where would you place yourself on a scale from 0 to 10, where ‘left=0’ and ‘right=10’? (Please check the appropriate column.)

Left										Right	Not Sure
0	1	2	3	4	5	6	7	8	9	10	99

9. How important are each of the following to your quality of life?

	Not important (1)	Somewhat important (2)	Very important (3)	Extremely important (4)
a) More time to spend with my family and friends				
b) Less time spent commuting to and from work				
c) A higher income (wage or salary)				
d) A more satisfying job				
e) Less stress in my life				
f) Better personal health				
g) Lower taxes				
h) More time for recreation or entertainment				
i) A cleaner environment				

10. Do you strongly agree, somewhat agree, somewhat disagree or strongly disagree with the following statements:

	Strongly disagree (1)	Somewhat disagree (2)	Somewhat agree (3)	Strongly agree (4)
• The world would be a more peaceful place if its wealth were divided more equally among nations.				
• In my ideal society, all basic needs (food, housing, health care, education) would be guaranteed by the government for everyone.				
• I support government programs to get rid of poverty (even if it means paying more tax).				
• There will always be rich and poor people in society, it is a fact of life.				
• If you work hard you will be financially secure.				
• Most poor people could get out of poverty if they would take initiative and work harder.				

11. The statements below refer to the relationship between humans and the environment. Please indicate whether you strongly agree, somewhat agree, somewhat disagree or strongly disagree with these statements:

	Strongly disagree (1)	Somewhat disagree (2)	Somewhat agree (3)	Strongly agree (4)
• We are approaching the limit of the number of people the earth can support.				
• Humans have the right to modify the natural environment to suit their needs.				
• The earth has plenty of natural resources if we just learn how to develop them.				
• Plants and animals have as much right as humans to exist.				
• The so-called “ecological crisis” facing humankind has been greatly exaggerated.				
• Humans will eventually learn enough about how nature works to be able to control it.				
• If things continue on their present course, we will soon experience a major ecological catastrophe.				

[PART 3: PERCEPTIONS ABOUT GLOBAL WARMING & SOCIAL JUSTICE]

12. Which one of the following best fits your own view about the latest scientific evidence about global warming::

- The science is conclusive that global warming is happening and caused mostly by human activity
- The science is conclusive that global warming is happening, but not yet conclusive that it is caused by human activity
- The science is not yet conclusive that global warming is happening.

13. What are your primary sources of information about global warming? PLEASE CHOOSE YOUR TOP TWO:

- Television news
- Radio news
- Newspapers
- Online news media
- Blogs
- Social media (ex, Twitter, Facebook)
- Talking with my friends, family or co-workers
- Organization(s) I belong or subscribe to
- Magazines
- Books

14. Experts have predicted that the changes required to deal with global warming over the next 50 years will require a shift to what is called a “low carbon” economy. This would mean dramatic changes to our society, in terms of the technology we use, the goods we consume and the way people live their lives.

Do you think these changes will have a positive or negative impact in the following areas:

	Very negative impact (1)	Somewhat negative impact (2)	No impact (3)	Somewhat positive impact (4)	Very positive impact (5)
• The quality of life we enjoy in Canada					
• Jobs and the economy					
• People living in poverty					
• My own standard of living					
• First Nations and Aboriginal people					

• Future generations					
• Communities that depend on natural resource industries					

[PART 4: QUESTIONS ABOUT RESPONSIBILITY & TRADEOFFS]

15. What is the most effective way to make serious progress on the global warming problem in Canada over the next few years? Please rank in order of importance from 1-3:

- Consumers adjust their lifestyles to reduce their impact on the environment.
- Industry and business make new investments and change their operations to reduce their impact on the environment.
- Governments implement new standards and regulations to require consumers and industry to make necessary changes.

16. Do you strongly agree, somewhat agree, somewhat disagree or strongly disagree with each of the following statements:

	Strongly disagree (1)	Somewhat disagree (2)	Somewhat agree (3)	Strongly agree (4)
a) I do a lot in my personal life to help the environment.				
b) I would do more to help the environment if more Canadians were will to make sacrifices too.				
c) I am willing to pay higher taxes if I know the money will be spent on effective policies to combat global warming.				
d) The government should impose laws to limit greenhouse gas emissions by people and corporations.				
e) People will have less individual freedom if governments take action on global warming.				
f) Global warming can be solved if people make green choices in their personal				

lives.				
g) I am not willing to significantly change the way I live as part of the effort to deal with global warming.				
h) I am willing to pay higher prices for goods and services as long as companies reduce their greenhouse gas emissions.				
i) People with low incomes should pay the costs of dealing with global warming just like everyone else.				

[PART 5: QUESTIONS ABOUT FAIRNESS & SPECIFIC POLICIES/FRAMES]

17. Below are some statements about policies related to global warming. Please indicate whether you strongly agree, somewhat agree, somewhat disagree or strongly disagree with the following:

	Strongly disagree (1)	Somewhat disagree (2)	Somewhat agree (3)	Strongly agree (4)
a) Canadians as a whole will be better off if we can be less dependent on fossil fuels – regardless of whether or not global warming is a threat.				
b) If we are going to solve global warming, we as a society have to give up the idea that everyone should own their own car.				
c) In a recession, policies to deal with global warming have to take a back seat to economic policies.				
d) Policies to combat global warming will harm the economy and cost jobs.				
e) Governments should subsidize “green industries” and create “green collar jobs.”				
f) Even if global warming turns out to be less serious than scientists believe, many of the policies to combat it have economic and social benefits that are worth pursuing anyways.				
g) It is unlikely that we will find solutions to global warming in time to prevent a				

major catastrophe.				
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18. Would you strongly support, somewhat support, somewhat oppose or strongly oppose the provincial government bringing in each of the following policies?

	Strongly oppose (1)	Somewhat oppose (2)	Somewhat support (3)	Strongly support (4)
a) Subsidize home and building retrofits to increase energy efficiency.				
b) Create job retraining for workers in fossil fuel industries that will be affected by global warming policies.				
c) Invest in technologies to store greenhouse gases underground, so that they can't pollute the atmosphere.				
d) Invest in reforestation efforts because forests prevent greenhouse gases from polluting the atmosphere.				
e) Stop subsidizing oil and gas industries.				
f) Use agricultural policies to reduce BC's dependence on imported foods.				
g) Allow private companies to generate "run of river" hydropower for export.				
h) Invest in mass transit.				
i) Create a "citizens assembly on global warming."				

19. British Columbia has a “carbon tax” on fossil fuels that will raise more than \$500 million this year. How do you think the revenues from the carbon tax should be used? Please rank the following:

- a) Cut income taxes
- b) A tax-credit for low-income earners
- c) Public investments in “green infrastructure” such as mass transit, energy efficiency building retrofits, and developing renewable energy sources

20. Below are some statements about policies related to global warming. Please indicate whether you strongly agree, somewhat agree, somewhat disagree or strongly disagree with the following:

	Strongly disagree (1)	Somewhat disagree (2)	Somewhat agree (3)	Strongly agree (4)
a) Governments should make sure people with high incomes pay their fair share of the costs of dealing with global warming.				
b) Everyone has to sacrifice equally to solve global warming.				
c) People who are responsible for the most greenhouse gas emissions should also make the biggest reductions in their emissions.				
d) People living in poverty should not have to pay the costs of environmental policies like the carbon tax.				
e) Policies to combat global warming must consider the differences between urban and rural areas.				
f) We need to reduce greenhouse gas emissions today so that future generations don't pay the price of global warming.				
g) We cannot afford to worry about whether policies to combat global warming are fair.				
h) It is unfair that some people try to reduce their greenhouse gas emissions, while others do nothing.				
i) There should be a maximum cap on everyone's greenhouse gas emissions.				
j) We should not limit anyone's freedom to consume whatever they want to, even if there are environmental consequences to their actions.				
k) Governments need to set clear environmental rules that apply equally to everyone.				
l) If governments take dramatic actions to deal with global warming, the impact on me personally will be unfair compared to other people.				

[PART 6: DEMOGRAPHIC QUESTIONS]

21. In what year were you born?

22. What is your gender?

- a) Male
- b) Female

23. While many people in Canada think of themselves as “Canadians,” what would you say is the main ethnic background or nationality of your ancestors? (ex, Scottish, First Nations, Chinese, Korean, etc.)

24. What is your marital status?

- a) Married
- b) Living with a common law partner
- c) In a relationship but not living together
- d) Single and never married
- e) Separated or divorced
- f) Widowed

25. Do you have children who live in the home with you?

- a) Yes
- b) No

26. What is the highest level of education you completed?

- a) Part of elementary school
- b) Completed elementary school
- c) Part of high school
- d) Completed high school
- e) Some college or university
- f) Received a college or technical school certificate
- g) Received a university bachelor's degree
- h) Some postgraduate training
- i) Received a postgraduate university degree

27. Which of the following best describes your own present employment status?

- 01 - Working full-time
- 02 - Working part-time
- 03 - Unemployed or looking for a job
- 04 - Self-employed
- 05 - Stay at home full-time
- 06 - Student, or
- 07 - Retired
- 08- Disability pension

28. [IF EMPLOYED] What sector of the economy do you work in?

- a) Accommodation and food services
- b) Agriculture
- c) Arts, entertainment and recreation
- d) Construction
- e) Education
- f) Finance, insurance, real estate
- g) Fishing
- h) Forestry
- i) Government - Federal
- j) Government - Provincial
- k) Government - Local
- l) Health care and social assistance
- m) Hydropower
- n) Industrial production
- o) Information and communication technology
- p) Legal
- q) Manufacturing
- r) Mining
- s) Non-profit
- t) Oil and gas
- u) Professional, scientific and technical services
- v) Public administration
- w) Retail trade
- x) Transportation and warehousing
- y) Utilities
- z) Waste management and remediation services
- aa) Wholesale trade
- bb) Other

29. What is your occupation?

30. What is your personal gross annual income (before taxes and other deductions, and not including any income from your spouse or other household earners)?

- a) Less than \$10,000
- b) \$10,000 to \$19,999
- c) \$20,000 to \$29,999
- d) \$30,000 to \$39,999
- e) \$40,000 to \$49,999
- f) \$50,000 to \$59,999
- g) \$60,000 to \$69,999
- h) \$70,000 to \$79,999
- i) \$80,000 to \$89,999
- j) \$90,000 to \$99,999
- k) \$100,000 to \$150,000
- l) \$150,000 to \$200,000
- m) More than \$200,000

31. What is your household's gross annual income (income from you and any other earners in your household, before taxes and other deductions)?

- a) Less than \$10,000
- b) \$10,000 to \$19,999
- c) \$20,000 to \$29,999
- d) \$30,000 to \$39,999
- e) \$40,000 to \$49,999
- f) \$50,000 to \$59,999
- g) \$60,000 to \$69,999
- h) \$70,000 to \$79,999
- i) \$80,000 to \$89,999
- j) \$90,000 to \$99,999
- k) \$100,000 to \$150,000
- l) \$150,000 to \$200,000
- m) More than \$200,000

32. How often, if at all, do you attend religious services

- 01 - More than once a week
- 02 - Once a week
- 03 - About every two or three weeks
- 04 - About once a month or less
- 05 - Special services only (for example Christmas, Easter, Yom Kippur)
- 06 - Never, or almost never

33. Are you, or is any member of your household, a member of any of the following:

- a) Labour union
- b) Environmental organization
- c) Social justice organization
- d) Community or neighbourhood association
- e) Political party
- f) Ethnic or cultural association
- g) Arts organization

[PART 7: FUTURE CONTACT]

We may invite respondents to participate in a follow-up survey.

Would you be willing to participate in a follow-up survey with the researchers in the future? (This interview would be conducted by the researchers, not by the polling firm.)

- a) Yes
- b) No

If yes, tell us how we can contact you (note: your contact information will be held in strict confidence by the researchers, and will only be used for the purpose of contacting you for a follow-up interview):

Name:

Email address:

Tel:

Thank you very much for your time.

By clicking on the “YES” button below you will submit your responses to the questionnaire. By clicking on “YES” and submitting your responses you are providing your consent to participate in this study.

Submit your questionnaire?

YES

NO