Environmental concern and environmental action in Canada, a cross-time analysis of the Canadian Environmental Monitor (1987-2007)

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ABSTRACT

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Environmental policy has recently taken on greater salience in Canadian politics. However we know very little about Canadians' concern for the environment. Exactly, how concerned are Canadians about the environment? And more importantly what specifically are they concerned about? Has the degree of Canadians' environmental concern shifted over time? And where do concerns about climate change and green house gas emissions rank among Canadians various attitudes on the environment? In this thesis, I will use cross-time data from the *Canadian Environmental Monitor* (1987-2007) to conduct a systematic analysis of Canadians' concern for the environment and explore the ways in which is rationalized. For instance, has concern about climate change and green house gas emissions actually grow? And what accounts for Canadians' environmental concerns? Do concerns over climate change have implications for Canadians' willingness to protect the natural environment? If so, what is the nature of this association?

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Introduction

The issue of environmental degradation and climate change in particular appears to have taken on greater salience the world over. The 2007 G8 summit report acknowledges that "combating climate change is one of the major challenges for mankind and it has the potential to seriously damage our natural environment and the global economy" (G8-Summit, 2007). The same year, Asian-Pacific leaders agreed to the "long-term aspirational goal" (Jalil, 2007) of reducing greenhouse gas emissions. International public opinion polls consistently report an increase in the levels of environmental concern. For example, an analysis recently available by World Public Opinion of 11 international polls specialized in climate change indicates that there is "widespread and growing concern about climate change" (World Public Opinion, 2007). A 2006 survey of 30 countries, including Canada, indicates that the majority of people in each country "believe that climate change or global warming is a serious problem" (World Public Opinion, 2006)[1]. Another poll from 2007 indicates that the majority of people around the world consider it necessary for "individuals to make changes in their lifestyle and behaviour in order to reduce the amount of climate changing gases they produce". Moreover, Canadians, more than other citizens, consider such changes to be definitely necessary (BBC, PIPA, & GlobeScan, 2007).

There may be several reasons on to why that climate change has become the top priority for general states and publics in the recent years. The available scientific knowledge suggests that global temperatures could increase by up to 6 degree Celsius by

[1] Canada 90%, USA 76%, Nicaragua 99%, El Salvador 97%, Chile 96%, Guatemala 95%, Costa Rica 95%, Panama 95%, Brazil 93%, Argentina 94%, Mexico 88%, Honduras 81%, France 94%, Italy 94%, Germany 93% ,Poland 92%, Great Britain 91%, Finland 89%, Russia 88%, Turkey 98%, Saudi Arabia 96%, Nigeria 80%, South Africa 72%, Kenya 65%, Japan 98%, South Korea 94%, India 90%, Philippines 86%, Indonesia 81% and China 80%.

the end of the century (IPCC, 2007). This could have devastator effects such as a rise in sea levels due to the melting of the glaciers and other ice masses, and changing vegetation and biodiversity patterns (UNEP, 2007). Also, the priorities of mass publics in advanced industrial states have shifted from the Materialist emphasis toward a Post-Materialist one - from giving top priority to physical sustenance and safety, towards heavier emphasis on belonging, self expression and the quality of life; such as to protecting the environment (Inglehart, 1995). And there are suggestions that citizens have lost faith in the abilities of governments, private industry and others citizens to contend with this problem. In Canada, however, it is not clear whether of these factors are the most relevant. Also, it is not clear whether concerns about climate change have any significant effects on action.

For example, in Canada the evidence suggests that global warming has increased average temperatures by about 1°C since 1950, with six of the warmest years on record occurring during the last decade (Statistics Canada, 2007a). Still data from Statistics Canada demonstrate that although Canadian households have responded to a number of environmental concerns, many still engage in many practices that can have a negative impact on the environment. Canadians are still heavy consumers of energy and fuels[2]. More important perhaps is the finding that Canada is one of the highest per capita emitters in the world, reaching 24 tonnes of emissions per person in 2004. Canada's share of global greenhouse gas emissions is approximately 2% (Statistics Canada, 2007b), due to Canadians' production and consumption of the energy sector, which accounted for most (82%) of the total greenhouse gas emissions in 2004. And Greenhouse gas emissions from the oil, gas and coal industries increased by 49% from 1990 to 2004. And

[2] Households and the environment, Statistics Canada, 2007a & 2007b

despite being some of the most vocal in expressing their desire for change when it comes to the environment, the 2006 Households and environment survey report highlights that almost one third of Canadians drank bottled water in 2003, regardless of the widely available tap water (Statistics Canada, 2007b).

The purpose of this study is to probe a little deeper into Canadians' environmental orientations by investigating new evidence that has recently been publicly released. More specifically, this analysis examines cross-time data from the Canadian Environmental Monitor (1987-2007) to investigate three sets of questions. First, how concerned are Canadians about the environment? And more importantly what specifically are they concerned about? Do concerns about the environment vary depending on the type of degradation being addressed? And where do concerns about climate change and green house gas emissions rank among Canadians various attitudes on the environment? Second, is there any evidence to suggest that Canadians' concerns about the environment have shifted over time? For instance, has concern about climate change and green house gas emissions actually grow? And what accounts for Canadians' environmental concerns? Third, do concerns over climate change have implications for Canadians' willingness to protect the natural environment?[3] If so, what is the nature of this association?

[3] The use of the word environment in this paper will refer to the natural environment as conceptualized by Franklin, Ursula 1999.

Chapter 1 - Literature Review

1. Environmental concern

Based on broad gauged survey research conducted worldwide, it would appear that concern for the environment has became a bigger public policy priority over the last decades (Franzen, 2003);(Brechin & Kempton, 1997; Inglehart, 1995);(Abramson, 1997; Lee & Kidd, 1997);(Wall, 1995), (Pierce, Steger, Steel, & Lovrich, 1992), (Nevitte & Kanji, 1995), (R. Dunlap, 1992), (R. Dunlap & Van Liere, 1977), (Hoeberg, 2002), (R. J. Dalton, 2005), and that environmental concern in Canada is among the highest around the world. For example, Franzen's (Franzen, 2003) analysis of the 1993 and 2000 surveys of the International Social Survey Program found Canada to be among the most preoccupied with environmental concerns.

Similarly, Brenchin and Kemptons's (Brechin & Kempton, 1997) analysis of the Gallup survey data also found that Canada is among the most concerned countries around the world; at least, based on the level of concern that respondents showed toward environmental problems. Olofsson and Öhman's (Olofsson & Öhman 2006) study of general beliefs and environmental concern in North America and in Scandinavia also found Canada to be more preoccupied by the environment than the United States of the America, and slightly more than Norway. However, previous research suggests that the concept of environmental concern is not straightforward; there may be different dimensions of environmental concern (R. E. Dunlap & Michelson, 2002), (Klineberg, McKeever, & Rothenbach, 1998), (Carman, 1998). Similarly, Dunlap (R. E. Dunlap & Michelson, 2002) and Olofsson & Öhman (Olofsson & Öhman 2006) refer to the

importance in defining environmental concern by types of environmental issues and/ or by the different expressions of environmental concern.

1.1. Dimensions of Environmental concern

There are good reasons to expect that environmental concern is likely not uni-dimensional (Blake, Guppy, & Urmetzer, 1996), (Blake, Guppy, & Urmetzer, 1997); (Carman, 1998), (R. Dalton, 1994); (R. Dunlap, 1992), (McAllister & Studlar, 1999), (Paehlke, 1992); (Rohrscheneider, 1988); (Jan Pakulski & Tranter, 1998);(Rootes, 2004), (Wall, 1995), (Grove-White, 1997), (Worcester, 1997), (Franzen, 2003). Rohrschneider's (Rohrscheneider, 1988) analysis of the rise of environmentalism in Western Europe, for example, indicates that people distinguish between ecological problems relating to local conditions and those relating to the nation as a whole (pp.351). Local conditions reflect more self-interested concerns over the purity of drinking water, local noise and air pollution, and damage done to landscape. Issues pertaining to the nation as a whole, on the other hand, reflect more generalized concerns over the damage done to rivers and lakes, oil spills, air pollution, chemical waste and nuclear waste (pp. 354).

Similar to Rohrscheneider's analysis, Worcester's study (Worcester, 1997) of public opinion and the environment in Great Britain from 1986 to 1993 refers to the difference between people's concern about specific versus global issues. In his study, Worcester claims that environmental concern about specific issues, such as urban smog and losing green belts increased over time. On the contrary, concern about global issues, such as ozone layer depletion, global warming and acid rain did actually decreased.

Likewise, McAllister (McAllister, 1994) argues that the Australian public conceptualizes the environment in at least three different ways (pp. 22). The first is what

he refers to as the cosmopolitan dimension. This dimension includes broader, more global concerns: depletion of the world's forests, greenhouse effect, destruction of the ozone layer, extinction of plants and animals, logging on native forests, dumping toxic waste at sea, disposal of industrial waste, pollution of rivers and lakes, and land degradation. The second dimension, local, includes concerns about air pollution, noise, lack of open spaces, quality of drinking water, and rubbish disposal. Finally, concerns about damage to landscape and the loss of farmland constitute a third and separate dimension (pp.28).

Then, there is the issue of variation in cross-national results. Frazen's (Franzen, 2003) study of the international Gallup survey in 1992 refers to various types of environmental issues and the diversity of results due to national geography. For example, he highlights that citizens in West Germany and Norway are more concerned about forests than other environmental problems. He also finds higher levels of concern about ozone layer depletion in countries nearer the Antarctic Circle, such as Chile and Uruguay (p. 260).

Furthermore, in the United States of America, Dunlap and Mertig's (R. Dunlap & E. Mertig, 1997) analysis of trends of environmentalism from 1964 till 1997 suggests that not only is environmental concern multidimensional but also that concern have shifted over time. In a more recent analysis, Dunlap and Michelson claim (R. E. Dunlap & Michelson, 2002) that many environmental attitude surveys in the 1960s and early 1970s "focused on specific and readily identifiable attitude objects, such as local air and water pollution, with which individuals often had firsthand experiences" (pp. 484). A wide range of environmental issues, such as toxic waste, urban sprawl, energy and other resource shortages, acid rain, nuclear power and other hazardous technologies, emerged

in the 1970s and 1980s. During the 1990s, the relevance of concerns grew to include deforestation, loss of biodiversity, ozone depletion and climate change (R. E. Dunlap & Michelson, 2002).

In Australia, Pakulski and Tranter's (J. Pakulski & Tranter, 2004) extensive research of environmental concern claimed that there are three main clusters of environmental concern: brown, green and white concern. Environmental issues related to waste disposal, pollution, and overpopulation are part of the brown concern. On the other hand, issues such as logging of forests, destruction of wildlife, soil erosion, uranium mining, and green house effect are considered green concerns. And issues related to genetic modification and cloning are part of the white concern (p.229).

Similarly, Rootes (Rootes, 2004) claims that brown concern issues are related to pollution and environmental hazards, and green concerns are related to the preservation of relatively pristine natural environments. Furthermore, Rootes (Rootes, 2004) argues that a brown concern responds to a personal worry about one's health and welfare, which is not the case for global green concerns more related to complex environmental issues or to a broader ecological worldview (pp. 618).

Most of the preliminary evidence presented to date suggests that the structure and dynamics of Canadians' environmental attitudes may not be that different from the more general findings described above. That is, there are also reasons to suppose that Canadians' concerns about the environment may vary and that some concerns may be more relevant than others. For example, the Human Activity and the Environment report (Statistics Canada, 1994) suggests that, in 1992, Canadians were more concerned about

water pollution, air pollution and ozone depletion, and less concerned about acid rain, which was more prominent in 1982.

In the same vein, Paehlke (Paehlke, 1992) documents at least two distinct waves of environmentalism based on different environmental issues. He argues that the first wave – from 1968 to 1976 - was characterized by a preoccupation with pollution, the energy crisis, offshore oil drilling, tanker spills, nuclear power, population, resource depletion (especially oil) and urban neighbourhood preservation (pp.22). The second wave – from 1985 to 1992 - was characterized by the re-emergence of "preservationist issues" and globalized concerns (pp. 21). The more salient issues were global warming, ozone depletion, new wilderness, habitat concern, old growth forests, tropical rainforest, animal rights, waste reduction, hazard wastes, carcinogens, pollution, resource depletion (especially forests, fisheries and biodiversity), oil tanker spills, urban planning, automobiles, land use, and indoor air quality (pp. 22).

Similarly, Wall's (Wall, 1995) investigation of Edmontonians provides additional evidence to suggest that Canadians may differentiate their more general concerns from their concerns about specific local issues. General concern, in Wall's analysis, is measured by respondents' ratings of the state of earth's environment. Local concerns refer specifically to pulp mill operations in northern Alberta and the economic trade-offs associated with this issue (pp.303).

Likewise, in British Columbia, Blake and his colleagues (Blake et al., 1996) have also noted what they perceive to be a distinction between local environmental concerns, and more global concerns (pp. 466). The former, according to Blake et al. is captured by respondents' ratings of the quality of the environment in their local areas, whereas the

latter are represented by respondents' reactions to a series of broad and abstract statements[4], such as: "when people interfere with nature it often produces disastrous consequences", "people must live in harmony with nature in order to survive", and "there are limits to growth beyond which our industrialized society cannot expand" (pp.6).

Previous research also makes reference to newly rising global concerns, issues such as climate change due to the green house gas effect and global warming are easily found in the literature. For example, Ivanova and Tranter (Ivanova & Tranter, 2008) highlight the increasing significance of global warming as an international environmental concern over the past two decades. Likewise, Lamont refers to the high stake and global visibility of the green house gas emissions debate on the international scientific and political arena (Lamont, 1993). Selin and Vandeveer (Selin & VanDeveer, 2005) refer to the growing importance of climate change action across the Canada-US border's relationships between provinces and states. And in Canada, Agriculture and Agrifood Canada conducted an awareness study of climate change and green house gas emissions in the agricultural sector (Aubin, Auger, & Perreault, 2003). These are examples of the recent increasing concern on climate change, which responds to Dunlap's and O'Connor's claim that climate change is a problematic particular phenomena threatening the publics at large (R. E. Dunlap & Michelson, 2002), (Olofsson & Öhman 2006).

Chapter II of this study builds on these preliminary investigations by looking more systematically at Canadians' environmental orientations. The Canadian Environmental Monitor (1997-2007) surveys make it possible to examine how concerned Canadians are about the environment and whether there is any empirical evidence to

[4] Those statements are based on a set developed by Dunlap and Van Liere (1978), which is called the New Ecological Paradigm.

suggest that they differentiate their environmental concerns. If so, is there any evidence to indicate that Canadians are more concerned about some aspects of the environment than others, such as climate change and green house gas emissions?

1.2. Dynamics of environmental concern

While it would appear that environmental degradation has become a more important priority for Canadians, it remains unclear whether Canadians' concern for the environment has shifted over time and whether it will remain salient over the long-term. It is also possible that, to the extent that environmental concerns vary, not all concerns about the environment have developed in the same ways. Some concerns may be less stable than others. Based on Downs's (Downs, 1972)"issue-attention-cycle" theory of environmentalism, it is difficult to know what to expect. It is possible, for instance, that although specific catalysts may spark increased enthusiasm for protecting the environment for a short period of time, such enthusiasm may decline after the costs of solving the problem become increasingly apparent. However, Downs concedes that certain environmental problems may have inherent characteristics that keep them salient for publics for longer periods of time. In particular, environmental problems that threaten the public at large and have potentially ambiguous effects can be uncharacteristically resilient. The threat of climate change and excessive green house gas emissions certainly fall into this category.

Still, the main argument advanced by Downs is that the state of the economy can have an important effect on public concern for the environment. Periods of economic prosperity enable people to be less preoccupied with their financial concerns and more concerned about the environment, whereas when economic conditions are less favourable, the opposite is true (Hoeberg, 2002);(Bakvis & Nevitte, 1992);(Elliot, Regens, & Seldon, 1995), (Kanji & Nevitte, 1997), (R. Dunlap, 1992), (Carman, 1998). For example, during the Reagan era, when the threat of nuclear war was still very salient,

public attention in North America turned to unemployment and inflation because of the depressed economy and shifted away from the environment. Conversely, Elliot and his colleagues (Elliot et al., 1995) have found that support for environmental expenditures by the public is influenced by favourable economic conditions (pp.50). Likewise, Hoeberg claims that long periods of economic prosperity will result in high levels of salience and (Hoeberg, 2002) support from the public on environmental issues (pp.180). Even in Canada the same principle it seems would apply. Bakvis and Nevitte (Bakvis & Nevitte, 1992) warn that any sense of environmentalism on the part of Canadians' electorate would likely be limited by the state of the economy.

At the same time, these there are also reasons to suppose that any recent elevation in environmental concern may be more stable than Downs's "issue-attention cycle" theory would suggest. Pakulski and Tranter (J. Pakulski & Tranter, 2004) refer the mid-1990s, when a *routinization* process made environmental concerns relatively immune to the vicissitudes of public attention, and to the declining sense of salience (p.227). Pakulski et al. (J. Pakulski, Tranter, & Crook, 1998) claim that when an environmental issue is publicized and institutionalized by media, it becomes an everyday issue integrated in the political system with wider audiences sharing a popular worldview. In 2004, they found that not only did environmental concern's salience in Australia not decline, but there was proliferation of new "white issues", and a routinization and social diffusion by the media of "brown" and "green" issues. Their analysis would suggest that the environment will remain an ongoing concern.

Furthermore, Dunlap and Van Liere (R. Dunlap & Van Liere, 1977) argue that since the 1970s, there has been a gradual transformation in the predominant social

paradigm in advanced industrial states. The New Environmental Paradigm (NEP) reflects a shift in people's attitudes and values relating to the environment. It represents a new cognitive worldview about the earth and humanity's relationship with it. More specifically, the NEP refers to the increased importance attributed to balancing economic growth with the preservation of nature. Thus, to the extent that here has been a more sustained paradigmatic shift in Canadian society (Blake et al., 1996), (Wall, 1995), this would suggest that environmental concern would continue to increase or at the very least remain stable.

To add to this, another line of analyses indicates that there has been a steady increase in postmaterialist value orientations in Canada over the 1980s and 1990s (Nevitte & Kanji, 1995). This finding is relevant because similar to Dunlap et al. (R. Dunlap & E. Mertig, 1997), Inglehart's (Inglehart, 1995) theory of value change suggests that people with postmaterialist values place a greater emphasis on achieving their higher level needs and attaining a better quality of life. As part of this shift in value priorities, postmaterialists place a higher priority on protecting the environment than materialists who place a greater emphasis on attaining economic and physical security (pp.57). Franzen (Franzen, 2003) also demonstrates that pro-environmental attitudes are a result of a value change in society, emanating from socialization in developed nations. Similarly, Abramson claims that this relationship tends to be stronger in modern industrial societies than in less economically developed societies(Abramson, 1997). And Pierce's (Pierce et al., 1992) preliminary investigation suggests that the relationship between concern and postmaterialist values is higher in Canada than in the United States (pp. 32).

Similarly, an earlier study conducted by Nevitte & Kanji (Nevitte & Kanji, 1995) demonstrates that at least part of the reason why Canadians have become more sensitive to the quality of the environment than they were in the past is due to a change in values (pp.87). More importantly, however, they argue that cognitive mobilization is an even stronger determinant of environmental concern and action in Canada than postmaterialist values: "the combined effects of the education explosion and the technological revolution, especially as it applies to the now rapid dissemination of information, has expanded the cognitive horizons of publics" (pp.88). The combination of higher levels of education and information has helped to create a more knowledgeable, sophisticated and self-sufficient citizenry than in the past. This means that the public is now more capable of making the connection between environmental degradation and its consequences. This also suggests that any recent increase in environmental concern is likely to be more stable than unstable. And Wall (Wall, 1995) claims that, although societal dimensions did not prove to be a plausible explanation of local environmental concern, they worked for general concern. Furthermore, Wall's results also demonstrate that education and political-party identification were the only variables that had statistically significant effects on her measure of general concern in Canada.

1.3. Socio-demographic indicators

When it comes to socio-demographic determinants of environmental concern, gender, age, education, income level, community size, political ideology and political-party identification have been extensively analyzed in research relating to environmental concern, but here the findings have been more varied (Van Liere and Dunlap, 1980), (R. Dunlap & Van Liere, 1977), (Bord & O'Connor, 1997), (Steger & Witt, 1989); (Hayes,

2001),(Schultz, Zelezny, & Dalrymple, 2000), (Klineberg et al., 1998) and.(Olofsson & Öhman 2006). For example, Van Liere and Dunlap (Van Liere and Dunlap, 1980) found that age, education, and political ideology are consistently associated with environmental concern (pp, 190). Klineberg et al's (Klineberg et al., 1998) study, on the other hand, finds that education and age were the only indicators that consistently correlated with different measures of environmental concern. They also claim that determinants of environmental concern vary greatly depending on the wording and framing of the questionnaire items (p. 749).

The majority of studies refer to the usefulness of socio-demographic indicators to explain environmental concern; however, due to different types of research designs, socio-demographic indicators have mixed results (R. E. Dunlap & Michelson, 2002). Bord and O'Connor (Bord & O'Connor, 1997) demonstrate gender differences in environmental concern related to issues of wellbeing or perceived vulnerability to risks from the environment rather than differences in ecological sensibilities. Likewise, Brody et al. (Brody, Zahran, Vedlitz, & Grover, 2008) found in their examination of the relationship between physical vulnerability and public perceptions of global warming, that women were more likely than men to perceive higher risks of global warming and could in consequence be more ready to support climate initiatives. And in a slightly different vein, Hayes (Hayes, 2001) analysis in understanding the relationship between gender, scientific knowledge and attitudes toward the environment claim that despite males are more knowledgeable about scientific matters than females, these higher knowledge levels do not automatically translates into a greater anti-environmental stance. That said, Steger and Witt (Steger & Witt, 1989) found that even though women acquired

less specific knowledge about environmental issues such as acid rain they nonetheless expressed higher risks perceptions and expressed higher levels of perceived policy influence than men . Olofsson & Öhman (Olofsson & Öhman 2006) found that gender, age, and urban or rural location had a weak relationship with environmental concern in their analysis in North America and Scandinavian countries. However, in their findings, postmaterialism along with socio demographic characteristics appear to be most of the common predictors of environmental concern in advanced industrial states.

Considering the existence of different dimensions of environmental concern, Pakulski and Tranter (J. Pakulski & Tranter, 2004) found in Australia that people concerned by green issues tend to be non- religious, left-of centre, young, and active environmental group's supporters. Brown concern tends to be associated with women, with right-of-centre orientations and some religious beliefs and less concentrated in specific social locations, more popular and mainstream (p. 249). This suggests therefore that different dimensions of concern may be driven by various factors.

Research related to the effects of political ideology and political party affiliation on environmental concern refers to the premise that conservative party supporters are less likely to be concerned about the environment. Dunlap and Vanliere's formulation of the New Environmental Paradigm (NEP) (R. Dunlap & Van Liere, 1977) claim that individuals with a liberal ideological orientation should be more favourable toward the NEP because they are presumed to be less committed to the status quo in general and are less devoted to the economic growth and prosperity than their conservative counterparts. Moreover, Steel's (Steel, 1996) examination of the effect of environmental attitudes on environmentally protective behaviors found that Liberals, who typically say the are more

committed to environmental protection than conservatives, were indeed significantly more likely to engage in environmentally protective behaviors than conservatives.

Furthermore, in Canada, those voting for the New Democratic Party appear to be more likely to be concerned about the environment than others who intend to vote for other political party. For example in 1995, Wall's (Wall, 1995) study found that, compared with non-New Democrats, respondents identified with the New Democratic party were more concerned about the Earth's environment in general and less supportive of a economic trade-off over the environment than non-New Democrats. Also, Blake (Blake et al., 1996) found partisan differences in explaining environmental concern. British Columbia reform voters were significantly less green than the average voter. Likewise, Urmetzer et al. (Urmetzer, Blake, & Guppy, 1999) found that those voting for the New Democratic Party are more likely to support economic measures designed to reduce environmental pollution due to car use than supporters for the Liberal Party. Similarly in the United States, O'Connor et al. (O'Connor, Bord, Yarnal, & Wiefek, 2002) found that Democrats are more likely than republicans to support government efforts to reduce green house gas emissions in the United States.

Other relevant socio-demographic indicators found in previous research are related to the level of urbanization or community size. Roschneider (Rohrscheneider, 1988) makes reference to community size by claiming that urban residents are more likely to be exposed to environmental problems than people living in rural areas and, therefore, they will perceive more ecological problems and will have more favourable attitudes towards the protection of the environment. Additionally, others have considered

the importance in looking at regional variations of environmental concern and environmental action in Canada.

For example, Nevitte and Kanji (Nevitte & Kanji, 1995) expect that, due to regional differences in political culture and economic activities in Canada, by considering Canadian regions in their analysis, they will able to tap important regional variations in environmental concern and activism. Their findings therefore suggest that Canadians living in the West are more likely than Canadians living in Quebec to be concerned about the environment (p. 96). However, no other significant differences were found for the Atlantic or Ontario region. Likewise, the 2006 Environmental Monitor Report (McAllister Opinion Research, 2006) conducts a regional analysis of 2006 results. For example, they found that residents of Quebec show the highest concern about the use of fossil fuels such as oil, gas and coal in Canada. On the other hand, British Columbia and Atlantic Canada were most concerned about fish stock depletion (p.17).

There are other socio-demographic indicators used in survey research, such as language. The environmental monitor report (McAllister Opinion Research, 2006) for example found that French speaking Canadians tend to believe more than English speaking Canadians that technology will provide solutions to environmental problems. Also, residents of Quebec and French speaking Canadians were more likely to reduce consumption in order to address environmental problems.

Furthermore, Dunlap and Mertig (R. Dunlap & E. Mertig, 1997) claim that subjective conditions or personal characteristics, such as psychological, demographic, social networks, media influence and policy maker's actions may have as much influence as do objective conditions like national wealth in explaining environmental concern (pp.

27). Thus, considering the existence of possible dimensions of environmental concern due to different types of natural issues or objects of analysis, it would appear that different expressions of concern have been also analyzed in previous research (R. E. Dunlap & Michelson, 2002),(Inglehart, 1995), (R. Dunlap & Scarce, 1991), (Olofsson & Öhman 2006). Dunlap and Michelson (R. E. Dunlap & Michelson, 2002) claim that researchers of environmental concern have measured policy-relevant aspects of environmental concern by analyzing the role of social institutions and individuals in protecting or degrading the environment. Likewise, Carman (Carman, 1998) claims in his study of support for environmental policy in the United States that respondents' perception with the management of environmental resources by the government is another dimension of environmental concern. Therefore, the perceived responsibility of industry, the government, and individuals in protecting and managing natural resources seems to be another dimension in explaining environmental concern.

There are at least two possibilities, therefore, when it comes to generating plausible explanations about the dynamics of environmental concern. The first is that any recent increase in environmental concern is likely to fluctuate according to "issue-attention cycles", which may be explained by the state of the economy. The implication of economic conditions at the individual level will be measured by respondents' income levels. The second is that any recent surge in environmental concern may be an indication of a more stable transformation as characterized by a paradigmatic shift in postmaterialism and cognitive mobilization. Furthermore, it is also expected that environmental concern, measured by different issues, will be affected in different ways by age, gender, political-party vote intention, language, community size, and region. In

addition, it is also expected that public's perception of the role of societal actors in protecting the environment will make it possible to tap the various dimensions of environmental concern in Canada. In chapter 3 of this study, we will use the Environmental Monitor data to examine what accounts for environmental concern in Canada.

2. Environmental action

2.1. Link between environmental concern and environmental action

Environmental concern becomes particularly relevant when it translates into environmental action and these are good reasons to suppose that it does. To this point, research examining the link between environmental concern and action has produced mixed results. For example, Dunlap's (R. Dunlap & Scarce, 1991) analysis of the United States indicates that environmental concern does not automatically translate into the basic social change needed for solving major environmental problems. Although, in a more recent study, Dunlap and Michelson claim (R. E. Dunlap & Michelson, 2002) that environmental action or behaviour is part of environmental concern and that "such concern can often be inferred from a person's overt actions" (p. 490). Therefore, people who are aware of environmental problems are already willing to support efforts to solve them and/or to contribute personally to their solution. Nevitte and Kanji (Nevitte & Kanji, 1995) find that general measures of environmental concern have a strong, direct and significant effect on environmental action (pp.94). Likewise, Steel (Steel, 1996) finds that there is a direct link between environmentally protective attitudes and environmental behaviour, and between attitudes and political activism. A second attitudinal indicator is based on respondents' ratings of citizen participation in the environmental policy process. It is noteworthy that likewise Blake et Al. (Blake et al., 1996), Steel's (Steel, 1996) measure of environmental attitudes is captured by respondents' reactions to some broad and abstract NEP statements, such as: "The balance of nature is very delicate and easily upset by human activities", "the earth is like a spaceship with only limited room and resources", and "Plants and animals do not exist primarily for human use" (pp. 32).

However, Wall's (Wall, 1995) analysis suggests that widespread levels of environmental concern in Canada may in fact translate into inaction when it comes to environmental behaviour (310). Based on her findings, Wall (Wall, 1995) suggest that it is difficult to explain environmental concern with traditional socioeconomic and demographic predictors, specially using local environmental issues and posing economic tradeoffs, such as protecting the environment versus job creation. Furthermore, Wall refers to Dunlap and Scarce's (R. Dunlap & Scarce, 1991) claim that minimal effort and personal costs are the most popular types of environmental behaviours.

It would appear, therefore, that any association that exists between various forms of environmental concern and different types of environmental action may be less than straightforward. Also some forms of environmental concern, for instance, may translate into particular types of action but not others. For example, Blake et al. (Blake et al., 1996), (Blake et al., 1997) claim that local concern is a strong predictor of reusing, reducing and recycling activities of "green behaviour". They also found that local, rather than generalized environmental concern, is a strong predictor of environmental activism. Generalized environmental concern, on the other hand, better explains support for more abstract economic tradeoffs between people's desire to protect the environment and their willingness to pay (pp. 17).

And Pakulski and Tranter (J. Pakulski & Tranter, 2004) found that respondents holding a green concern in Australia are more attracted to environmental organizations than respondents holding a white or brown environmental concern. Therefore, respondents concerned about the green house effect are more likely to be a member of an environmental group than respondents concerned about toxic issues. Furthermore,

O'Connor et al.'s (O'Connor et al., 2002) claim that people will take steps to reduce green house gas emissions if they understand the causes of climate change, perceive substantive risks like a lowering of their standard of life, and if they think that mitigation efforts will not affect their jobs or threat the health of the economy. It should be expected that people concerned about climate change and green house gas emissions will be more willing to act if their jobs are not threatened by the protection of the environment.

2.2. Dimensions of environmental action

There are good reasons to suppose that environmental concern translates in environmental action. But just as people may be concerned about different aspects of environment degradation, it is conceivable that they may also be involved in different types of action. Previous research on environmental behaviour indicates that there are a variety of actions that people engage in to protect the environment. For example, Johnson et al (2004), in their analysis of ethnic variation and environmentalism in the United States, point to at least four different indicators of environmental behaviour: reading of environmental magazines, household recycling, participation in environmental or conservation groups, and participation in nature-based outdoor recreation activities.

Others, such as Nevitte and Kanji (Nevitte & Kanji, 1995), determine environmental action according to broad measures such as people's willingness to give financially to or assume responsibility for the environmental cause. Likewise, Montgomery and Helvoigt (Montgomery & Helvoigt, 2006) analysis refer to salmon recovery efforts in Oregon and the willingness to pay of the local residents for its preservation. Or Scott's (Scott, Rowlands, & Parker, 2001) study of residents in Waterloo Ontario uses willingness to pay for a premium-priced greener electricity. Similarly,

Gelissen (Gelissen, 2007) analysis of environmental support is determined by the willingness of individuals to make financial sacrifices to protect the environment in 50 nations. And Ivanova and Tranter's (Ivanova & Tranter, 2008) analysis of determinants of willingness to pay for global warming in various countries are other examples of the extensive use in previous research of this measure of environmental behaviours.

In a slightly different vein, Blake et al (Blake et al., 1996) claim that there are at least three different types of action related to "green behaviour": green consumerism, green activism and willingness to pay. Green consumerism refers to activities such as reducing, reusing and recycling. The most common examples of such activities according to Blake et al. include turning off lights when leaving the room, turning down thermostat at night and recycling newspapers. Green activism, on the other hand, has an explicit political focus, intended to influence public opinion and public policy.

Blake et al. (Blake et al., 1996) argue that participation in various types of environmental activism seem mainly to be a function of the degree of individual or collective action involved and the amount of time required. Thus, the most common activities are typically personal in nature and include such actions as donating money for environmental causes, signing petitions and participating in product boycotts. Less common are collective actions, such as protests, working in election campaigns and joining environmental groups (p.11). Blake et al.'s third dimension of green behaviour - willingness to pay - pertains to the "environment versus jobs" trade-off and includes various actions such as the willingness to incur job losses, settle for a lower standard of living, pay more for gasoline, and accept higher utility prices in the interests of the environment (pp. 17).

Also in attempting to define environmental behaviour, Hunter et al.'s (Hunter, Hatch, & Johnson, 2004) analysis of gender variations in environmental behaviour define two types of environmental behaviours. Private behaviour is related to green consumerism and recycling. And public behaviour is defined by membership in environmental groups, signing a petition or protesting about environmental issues. Likewise, Klineberg et al (Klineberg et al., 1998) definition of environmental behaviour is measured by household recycling, green shopping, giving money to environmental organizations on one side, and on the other side by tradeoffs questions between enhancing jobs and economic growth, reducing taxes and the size of the government, and protecting the environment.

In reference to environmental activism, Mcfarlane and Hunt (Mcfarlane & Hunt, 2006) claim in their study of activism in forest policy and management practice, that the concept of environmental activism is the culmination of many factors that contribute to the development of value orientations, attitudes to forestry and knowledge about forests. Similarly, McAllister and Studlar (McAllister & Studlar, 1999) found that members of environmental organizations in Australia are motivated by a stronger sense of urgency of green environmental concern (Green environmental concern as defined by Pakulski et al.) And Lubell et al. (Lubell, Vedlitz, Zahran, & Alston, 2006) in his research of environmentalism as collective action, claim that the effect of environmental values on policy support, rather than behavioural intentions, is the strongest indicator in his analysis. Furthermore, his interpretation of these findings is that the effect of environmental values on policy support decreases as one moves closer to actual behaviours that incurs in real costs (p. 135). Considering the different dimensions of

environmental behaviour, previous analysis refers to possible predictors of environmental action and behaviours.

2.3. Predictors of environmental action

There are various possibilities in explaining environmental action. First, considering the link between environmental concerns and environmental action explained above, it is expected that different types of concern have different implications on action. Moreover, it is expected that concern on climate change and green house gas emissions have a strong effect on Canadians environmental actions. In addition, and also often found in the literature is the effect of postmaterialism in predicting environmental action is as important as in predicting environmental concern. For example, Rootes's (Rootes, 2004) analysis of environmental movements claims that postmaterialism is not only associated with global green awareness, but it is a better predictor of environmental activism. Likewise, Gelissen's analysis (Gelissen, 2007) of support for environmental protection in fifty nations suggest that postmaterialism populations with stronger postmaterialist value orientations are more willing to pay for environmental protection. Similarly, Blake et al. (Blake et al., 1997) found that postmaterialism was a determinant for green consumerism, green activism and willingness to pay.

Likewise, the use of socio-demographic indicators in explaining environmental action is commonly used in previous research. For example, Dietz et al.'s (Dietz, Kalof, & Stern, 2002) report extensive research findings indicating significant gender differences in environmentalism due to differences in socialization and life experiences. Blocker and Eckberg (Blocker & Lee Eckberg, 1997) found that women were more likely to lead a green lifestyle and be greater concerned about health and safety issues related to the environment, but women were not more likely to engage in green actions than men. That said however, Hunter et al.'s (Hunter et al., 2004) cross-national analysis found that

private behaviours such as recycling and buying organic food were more predominant among women living in developed nations. On the other hand, men were more involved in activism and other types of public behaviours. Similarly Blaine et al. (Blaine, Lichtkoppler, Jones, & Zondag, 2005) found that women in a high-income brackets were more likely to participate in recycling programs than young males in lower income brackets. And, Blake et al.(Blake et al., 1997) found that financial economic circumstances had a significant effect on people's willingness to pay in dealing with environmental problems. In addition, Blake et al. claim that vote intention and political values are sources of green behaviour in Canada. Their results show that those whose vote intentions are for the New Democratic Party are more likely to participate in green activities. And those who hold conservative values are less likely to engage in green activities and less willing to pay for the protection of the environment. Similarly, Gelinsen (Gelissen, 2007) found that individual support for willingness to pay for environmental protection was positively and directly related to income, postmaterialism, educational attainment, and negatively related to age. And Montgomery and Helvoigt (Montgomery & Helvoigt, 2006) found that younger respondents, male, urban residents, more educated and with higher income are more likely to express support for efforts to protect wildlife and salmon.

There are compelling reasons, therefore, to suggest that the link between environmental concern and action requires more detailed and systematic investigation. And, that there are other important factors that could also have an important implication in analysing environmental action in Canada. Consequently, in chapter 4 of this study, we

will use the Environmental Monitor data to examine: 1. the sorts of actions that Canadians are willing to engage in to protect the environment, whether they participate in certain activities more than others 2. Whether environmental concern affects environmental action and whether some types of environmental concern, such as climate change and use of fossil fuels are more relevant than the others. 3. And what is the implication of other predictors of environmental action in Canada.

Chapter 2 - Methodology

1. Data

Currently, there is a limited amount of survey research available on Canadians orientations toward the environment. The data sets that are available are found for a specific year or for limited environmental issues. Others resources are not available for academic research and are collect mainly for the private sector. Fortunately, cross-time data sets for various environmental issues in Canada have recently emerged. Data for this study comes from the Canadian Environmental Monitor Survey (EM). Data files from 1987 to 2002 come from the Canadian Opinion Research Archive at Queen's University. Data sets from 2004 through 2007 were provided by McAllister Opinion Research Incorporated and GlobeScan Incorporated. Initially, this survey was designed to run quarterly, but more recently has been conducted twice yearly. The average sample size in each survey is 1,500 adult Canadians. The EM surveys allow us to compare over time Canadians orientations toward the environment, using different measures of environmental concern and action. These surveys are also comparable to other surveys around the world, commonly used for international media reports.

In order to perform this study of environmental concern and action in Canada, a merged data set from 1987 to 2007 was built using comparable indicators of environmental issues of concern. The construction of the merged data set took more than fifty single data files. The merged data file has standardized socio-demographic indicators for the files selected.

2. Research design

The purpose of this analysis is to examine environmental concern in Canada and its link to environmental action focusing specifically on issue of climate change and green house gas emissions. The analysis of environmental concern starts with a brief comparison of recent international polls about environmental concern, especially climate change. Secondly, a cross-time examination of environmental concern in Canada looking at different dimensions is conducted. Thirdly, various regression analyses are done for each environmental issue of concern for the most recent data available (2007). The purpose of these analyses is to examine the effects of various predictors of environmental concern and attempt to uncover the explanatory power of different groups of variables.

Based on Dunlap's (R. E. Dunlap & Michelson, 2002) research on conceptual and measurement issues of environmental concern, the approach of the present analysis is meant to follow Dunlap's suggestion about blending the strengths of two possible approaches of environmental concern studies: a theoretical approach, based on attitude theory, and a policy-relevant approach (p. 493). Dunlap claims that there are identifiable elements of a theoretical approach based on elements of attitude theory: "Attitudinal indicators tap personal feelings or evaluations (good-bad, like-dislike, etc) about environmental conditions or issues" (acid rain, ozone depletion, recycling, etc)" (pp. 492). For example, attitudes towards the quality of air can be evaluated either good or bad by respondents. In this study, levels of concern about specific environmental issues are tapping the feelings of concern about specific environmental issues. In reference to measures of environmental action, the attitudinal indicators used in this analysis are willingness to perform specific actions or environmental intentions and commitments,

and reported actions taken by the individuals. The elements of policy-relevant approach, on the other hand, are the information about a respondent's rating of performance of different social institutions in protecting the environment. For example, rates of the municipal government in protecting the environment or the role of the private industry in degrading it are used in the analyses.

The first part of the analysis using the cross-time Canadian EM data is aimed at examining different statements related to willingness to act over time. Second, two purchase indexes of environmentally friendly products are constructed for the most recent files. Third, various regression analyses of the different indicators of willingness to act and two purchase indexes are performed. The purchase indexes refer to various environmental friendly items and recycling activities. The regression analyses will help to further analyse the link between environmental concern and environmental action in Canada and the effect of other important predictors of action used in previous research.

It is noteworthy that the wealth of the Canadian EM in analyzing environmental concern could provide a broader perspective of environmental concern. Various questions could be selected and different measures of concern constructed. Exploratory factor analyses were done prior to the selection of the files. Different files were selected after a careful and systematic analysis of indicators of environmental issues of concern over time. The criteria used were to choose questions that were present over the three possible decades: the 1980s, 1990s and 2000s. Furthermore, the questions selected should be part of the last file of analysis (2007.2). This is a particularly important file because it contains, for the first time in the survey, the introduction of a 4 item battery index of

postmaterialism. The decision to measure environmental concern by different environmental issues makes it possible to have a broader picture of this complex concept

3. EM merged data set

The task in merging the data was time consuming because since 1987 until 2007 there were a big variety of possibilities about socio-demographic indicators. For example, the lowest income levels category was under $10,000 in the 1980s and under $20,000 at the end of 1990s. The highest level was $60,000 and over during the 1980s and over $100,000 by the end of 2000s. In addition to this, the selection of the issues of concern files was challenging. The idea was to have the most comparable issues of concern, which also needed to be included in the last available file (2007.2). There were some issues, such as acid rain or ozone layer that did not comply with these criteria and, unfortunately, were not included in the present analysis. On the other hand, there were issues, such as concern on fossil fuels, such as oil, gas, and coal that although were not in the 1980s files, were included in the analysis due to the current significance of this issue on the international agenda.

The conceptualization of environmental concern based on different environmental issues of concern was the best suitable option the EM cross-time data offered. Factor explanatory analyses were conducted by years, group of years, decades, groups of issues and by most comparable issues. None of these factor analyses produced a solid construction of different dimensions of environmental concern cross-time in Canada. The results did not lay a possible way to group, cross-time, different environmental issues. As a consequence, the measure of environmental concern is based on people's concern on various environmental issues. More specifically, the measure of environmental concern is

represented by responses to the following question: *Now I'd like to ask you about various environmental issues. Are you very concerned, somewhat concerned, not very concerned about, or not at all concerned...*(See appendix 1). Based on the selection criteria described above, environmental issues used for this study are manufacture, use and disposal of toxic materials; the quality of air; the quality of water; nuclear energy; climate change; use of fossil fuels, such as oil, gas and coal; depletion of natural resources; disposal of municipal and manufacturing waste. The responses selected for the analysis of environmental concern over time are based on *very concerned* answers. The cross-time analysis of these questions is done from 1987 to 2007 (See appendix 5 for sample sizes). The data is presented by decades: the 1980s, 1990s, and 2000s. However, the coding of the environmental concern variables used for the regression analyses presented in this thesis utilize the full scale of levels of concern (very concerned, somewhat concerned, not very concerned, not at all concerned).

4. Environmental concern

4.1 Variables for explanations of environmental concern

This analysis will analyze the impact of the five possible explanations of environmental concern in Canada in 2007: issue-attention cycle or economics argument, postmaterialism, cognitive mobilization, socio-demographic indicators and rates of performance of societal actors in protecting the environment in explaining environmental concern in Canada. For a full description of the construction of the socio-demographic indicators, please refer to appendix 2. However, a brief explanation follows. The first independent variable for the measure of environmental concern used in the analysis is the issue-attention cycle or economics argument, which is measured by the total household

income of the respondent[5]. This is similar to Nevitte and Kanji's (Nevitte & Kanji, 1995) operationalization of the economics argument at the individual level in their research. They refer to Bakvis and Nevitte argument that "public support will depend greatly on the state of the economy" (Bakvis & Nevitte, 1992)(p. 87). Nevitte and Kanji claim that those who are financially well off are more likely to those in low income groups to be both concerned and active about the environment. Therefore, the use of household income would make it possible to see the relation between level of income and environmental concern. This is the only possible way to measure this argument due to the characteristics of the EM data. However, the use of this variable may have some limits.

First, the effect of this variable is only measure in the latest available data point (2007). It could be argued that the use of this variable over time may produce more solid results about issue-cycle theory. Nevertheless, regression analyses results over time, not included in this thesis, did not demonstrate a positive relation between higher levels of income and higher environmental concern. In addition, higher income levels of the Canadian society from 1980s to 2000s show a different economic structure, having more people in 2000s with higher income levels than in 1980s. More people in the 2000s hold higher income levels than in previous decades. This differentiation of income levels would make less clear the effects of income levels on environmental concern across time. In despite of the limits presented above, previous research use of income variable and the significance of this variable in understanding environmental concern still make it possible

[5] Information regarding unemployment is not available in the data file used for the regression analyses.

to observe the effect of issue-cycle or economics argument in understanding environmental concern.

The second independent variable is a four-item materialism-postmaterialism index, repeatedly used in previous research (Inglehart, 1995; Nevitte & Kanji, 1995). A dummy variable was used for postmaterialism in order to only select respondents who tap postmaterialist priorities in their answers. The third independent variable is cognitive mobilization, which is operationalized by the level of education as a proxy. Level of education is measured on a 6-point scale, ranging from no schooling to completed university studies. The rest of the independent variables are single socio-demographic indicators, including gender, age, political-party vote intention, region, community size and language.

Gender is a dummy-coded variable labelled male; male respondents were coded as 1 and female respondent were coded as 0. Age is measured by a 6-point scale ranging from 18-24 years, 25-34 years, 35-44 years, 45-55 years, 55-64 years and 65 and older. Political-Party vote intention is measured from responses to the question: *If a Canadian Federal election were held today who would you be most inclined to support?* This variable is also dummy- coded and labelled for the two national parties: Liberal and Conservative against the New Democratic Party. The variable region is measured by respondents' region of residence. This variable was recoded into four regions: West British Columbia region, Ontario region, Atlantic Region and all of them against Quebec. Community size is a 4-point scale, ranging from less than 10,000 habitants /rural to one million or more. And language of interview is dummy-coded variable labelled English against French.

Furthermore, based on Dunlap et al.'s (R. E. Dunlap & Michelson, 2002) conceptualization and measures of environmental concern, indicators of rate of performance of differential societal actors were included as part of the independent variables in the environmental concern regression analyses. The questions selected asked about the rate of performance of the private industries, federal government, provincial government, municipal government and individual Canadians in protecting the environment (See appendix 3). The use of these indicators is to assess the implications of a poor rating of performance of these actors in protecting the environment and the consequent level of concern on each of the environmental issues. The poorer the rating of performance of the social actors, the higher the level of concern about the environment. The codification to the question how would you rate the performance of the actor in protecting the environment has a 4-point scale. One is excellent rate, 2 is good rate, 3 is fair rate and 4 is poor rate of performance in protecting the environment.

4.2 Regression analysis of environmental concern

In order to start examine what accounts for environmental concern in Canada, regression analyses of each environmental issue of concern described above are conducted. Each regression is done in order to be able to find what the most significant factors are for each type of issues in 2007. Considering the dynamics of each environmental issues cross-time and understanding what accounts for it will help to provide a broader measure of environmental concern in Canada. The results will be presented in two summary tables in order to compare results related to concern on climate change and green house gas emissions and results about other types of issues, such as

toxic materials, air quality, water quality, waste, nuclear energy, and depletion of natural resources.

5. Environmental Action

The same selection criteria described above for the questions related to environmental concern were used for the selection of the questions related to environmental action (see appendix 4). However, two types of indicators of action are used: the first indicator is related to people's reactions and expressions of willingness to act based on tradeoffs questions and the second indicator is about people's actual actions. During the building process of the merged data file for the EM, various types of questions of environmental action were identified. The first part of the analysis of environmental action was conducted by decades; 1980s, 1990s and 2000s. Similar to the results of the selection process for environmental concern indicators, comparable questions of environmental action were limited. The objective was to have a cross-time picture of environmental action in Canada. However, for the second part of the analysis of environmental action, only questions asked in 2007 were incorporated in the regression analyses. The regression analyses will assess the explanatory power of the different predictors of environmental action presented in chapter 2.

5.1. Canadians pro-environmental reactions and tradeoffs questions

There were various possibilities in order to refer to environmental action. The statements used in this analysis indicate if people are upset because of the lack on action in protecting the environment, if people feel empowered in taking possible protective actions, and two types of tradeoffs questions. Tradeoffs are questions repeatedly found in the environmental literature (Klineberg et al., 1998), (Blake et al., 1997). Tradeoffs

questions offer statements indicating if people are willing to act or not, based on respondent agreement with a given statement. The questions selected for the cross-time analysis were:

1. At times I get upset because of the lack of action taken to protect the environment.

   If respondents agree with the statement, they demonstrate that actions taken are not enough and they may like to see more commitment in the protection of the environment, therefore they are not happy.

2. Environmental pollution is such a big problem that there is very little the individuals can do.

   If respondents disagree with this statement they are expressing that they feel they can deal with pollution despite the size of the problem, therefore they are empowered. Respondents indicating agreement with this statement are demonstrating that they are not willing to perform specific individual actions to deal with pollution because the impact of their individual actions is very small compared to the size of the problem.

3. Protecting the environment will increase unemployment in Canada

   If respondents indicate they disagree with the statement, they will have behavioural dispositions to protect the environment.

4. The clean-up and protection of the environment will contribute significantly to the growth of our economy.

   If respondents agree with the statement, they indicate that they not believe in possible tradeoff between protection of the environment and economic growth.

Thus, they indicate their support to protect the environment as their concept of economic growth is inclusive of environmental protection.

5.2. Environmental indexes behaviour:

The second aspect of environmental actions used in the analysis is defined by actual behaviour based on reported actions taken by respondents. Two indexes were constructed for this purpose.

The first index is about green consumerism or buying eco-friendly products. Respondents were asked if they have each of the following around their home. This index is constructed by putting together the following questions:

1. A product you bought specifically because it was better for the environment
2. A device such as a light-bulb or appliance you bought specifically because it was more energy efficient
3. A water purification filter that you regularly use
4. Food chosen specifically because it was grown organically or without the use of chemicals.

The index lumps together the answers and it results in an index from 0 to 4. Zero means they did not have any of the items, 1 means they have one product at home, 2 means they have two items, 3 means three items and 4 means four items at home. Due to the fact that the Canadian EM data have different questions asked in different years, the criteria to select these years was to be able to have them in the last data file, 2007, for reasons already mentioned above. The results were for the comparable years 1997, 2005, 2006 and 2007.

The second index of environmental actions included respondents' recycling behaviour, in addition to the questions used in the first index. The specific question was: Garbage you have set aside to re-use, recycle or dispose of safely. This question was only asked twice in the survey; 1997 and 2007.

5.3. Regression analyses of environmental action

The last part of the analysis of environmental action is to do regression analyses for all the actions questions asked in 2007. The idea is to use all the independent variables used in the regressions for environmental concern, in addition each of the issues of concern as independent variables. The dependent variables are the action questions available in 2007. These questions are as follows:

1. At times I get upset because of the lack of action taken to protect the environment.
2. The clean-up and protection of the environment will contribute significantly to the growth of our economy.
3. Purchase Index 1.
4. Purchase Index 2.

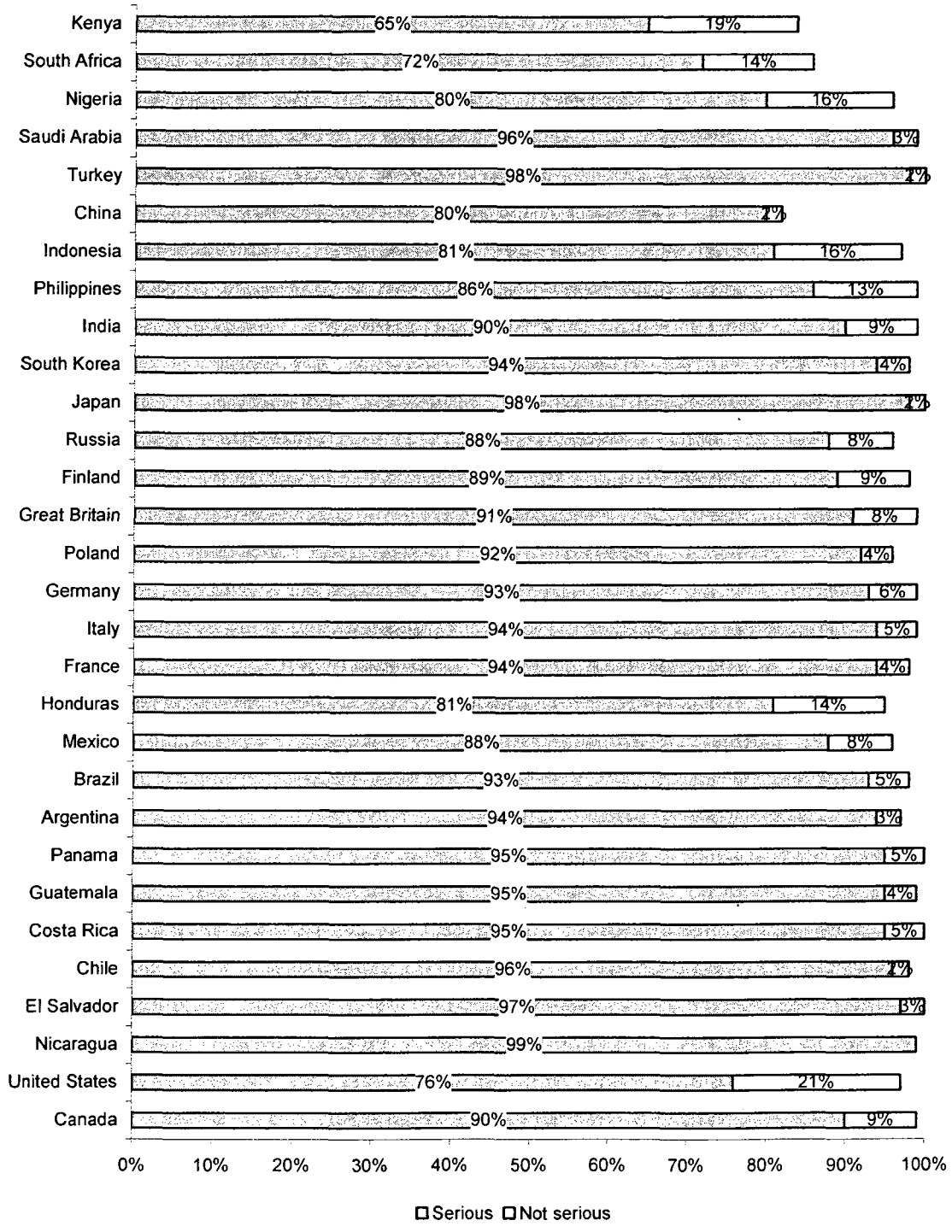
The regression analyses of different indicators of environmental action makes possible to examine the relationship between environmental concern and action in Canada. Moreover, it brings new elements to the debate about what accounts for environmental action and the effect of other predictors of environmental action.

Chapter 3 – Findings on environmental concern

1. Environmental Concern around the world

The following analysis looks at environmental concern in Canada in a comparative context with other countries. Evidence from 2003, 2006 and 2007 international surveys, compiled by the world public opinion organization (World Public Opinion, 2006), make it possible to study how concerned citizens around the world are about the environment. More specifically, how preoccupied they are about climate change. Figure 1 presents the results of the 2006 survey of 30 countries. It appears that there is a growing concern about climate change around the world. When people were asked if "Climate change or global warming, due to the green house effect is a very serious or somewhat a serious problem", results indicate that majorities in the 30 participant countries of the 2006 survey, including Canada, said that climate change or global warming due to the green house effect is a serious problem.

Figure 1: Is climate change a serious problem?



Source: World public opinion/Globe Scan 2006
Argentina (n=1000), Brazil (n=800), Canada (n=1004), Chile (n=1200), China (n=1863), Costa (n=1000) Rica, El Salvador (n=1012), Finland (n=1069), France (n=1002), Germany (n=1006), Great Britain (n=1000), Guatemala (n=1000), Honduras (n=1002), India (n=1012,) Indonesia (n=1000), Italy (n=1015), Japan (n=1374), Kenya (n=1005), Mexico (n=1000), Nicaragua (n=363), Nigeria (n=1000), Panama (n=1002), Philippines (n=1000), Poland (n=1007), Russia (n=1004), Saudi Arabia (n=1004), South Africa (n=3497), South Korea (n=1000), Turkey (n=1000) and the United States(n=1000). Figure 1 results consider DK answers.

Considering that there are 30 participant countries in the survey, the countries are presented by geographical region. The first group is composed of North American countries, such as the United States and Canada; the second group is composed of Latin American countries. The third group is composed of European countries, the fourth is composed of countries in Africa and the fifth group is composed of countries in Asia.

Figure 1 shows that 90% of Canadian respondents consider climate change a very serious problem, 14% percent more than their North American counterparts (76%). On the other hand, 21% of respondents from the United States consider that climate change is not a serious problem. Nine percent of Canadians consider the same. A higher percentage of Canadian respondents considering climate change a serious problem than other North Americans. On average, 83% of respondents in North America consider climate change a serious problem.

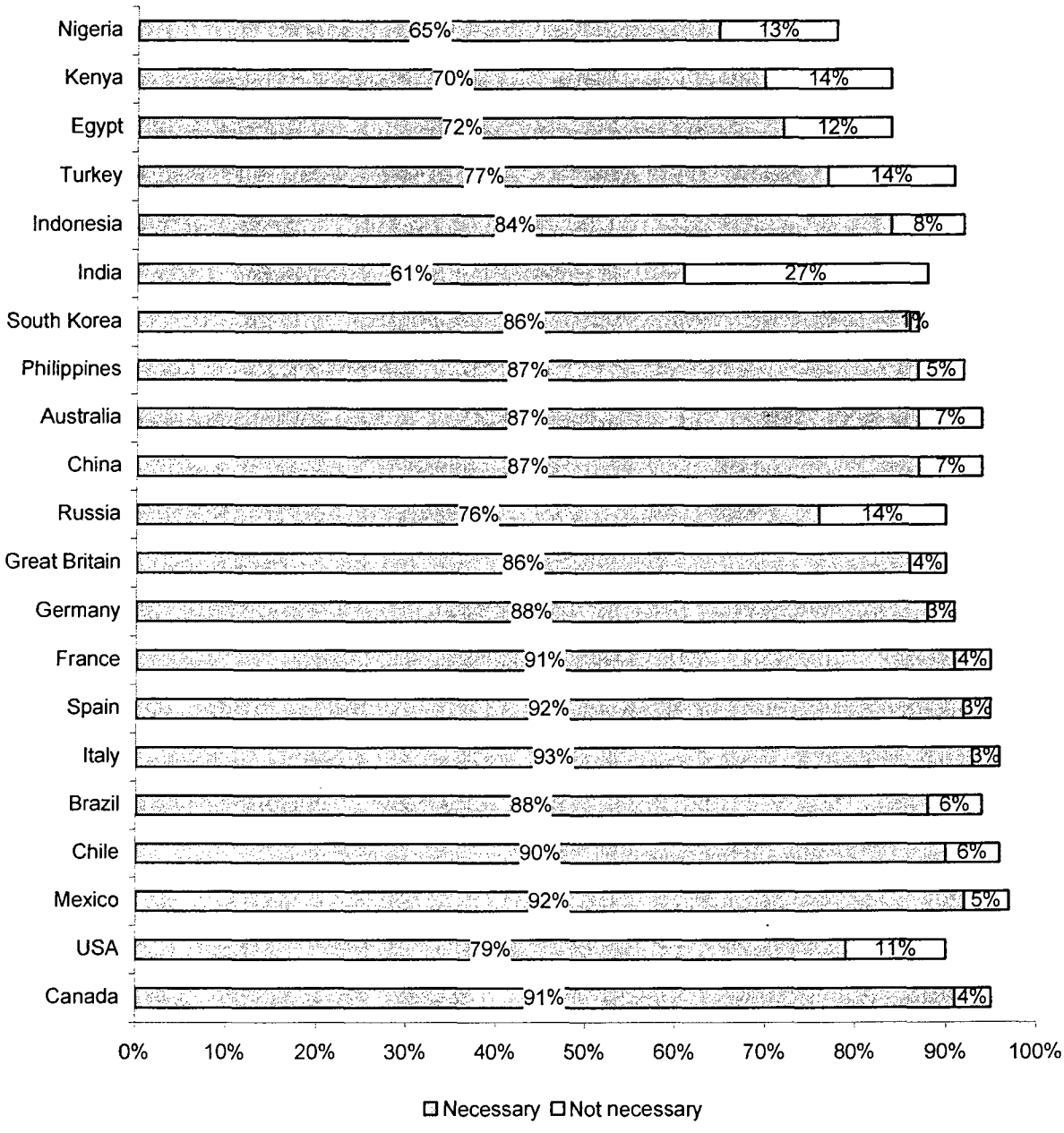
Figure 1 also shows responses from Latin American countries. Higher percentages of Latin American respondents consider climate change a serious problem than respondents in North America. Ninety three percent of respondents from Latin American countries consider climate change a serious problem; this result is 10% higher than for their North American counterparts. However, there is only a 3% difference in comparison with Canadian results. Figure 1 also shows that Canadian results are above results from Mexico (88%) and Honduras (81%).

On average, results from European countries are similar to results from Latin American countries. Ninety two percent of respondents from Europe consider climate change a serious problem; this result is 9% higher than the result in the North American region, but only one percent lower than results from Latin America. The results from

Asian countries are on average 5% higher than the North American countries. These results are lower than results from European and Latin American countries; however, Canadian results are higher than results from Asian countries. Figure 1 also shows that fewer respondents from countries in Africa than any other region consider that climate change is a serious problem. Only 82% consider climate change a serious problem, slightly lower than the results from North America.

Figure 1 shows that large proportions of publics consider climate change a serious problem. However, regionally, these results varied. Large majorities of respondents from Latin American countries are followed by respondents from European countries, Asian countries, North American countries and African countries. However, Canadian respondents consider climate change a serious problem in bigger proportion (14% more) than their American counterparts. These results suggest that, despite large majorities of Canadians considering climate change a serious problem (90%), the highest level in the North American region, they are not the most concerned citizens around the world. More respondents from other countries perceive that climate change is a serious problem. Canadian results are similar to those in Brazil (93%), Great Britain (91%) and India (90%).

Figure 2 **It would be definitely or probably necessary for individuals to make changes in their lifestyle and behaviour in order to reduce the amount of climate changing gases they produce**



Source: BBC/GlobScan/PIPA, 2007
Figure 1 results consider DK answers.

Australia (n=1,000), Brazil (n=802), Canada (n=1,000), Chile (n=1,000), China (n=1,800), Egypt (n=1,000), France (n=1,002), Germany (n=1,010), Great Britain (n=1,010), India (n=1,521), Indonesia (n=1,000), Italy (n=1,003), Kenya (n=1,000), Mexico (n=1,000), Nigeria (n=1,000), Philippines (n=1,000), Russia (n=1,034), South Korea (n=1,000), Spain n=1,000), Turkey (n=1,000), USA (n=1,000).

Figure 2 shows the results of a 2007 survey (BBC et al., 2007) in 21 countries around the world asking whether "it would be necessary for individuals to make changes in their lifestyle and behaviour in order to reduce the amount of climate changing gases they produce"[6]. The results are also grouped by geographical regions: North America, Latin America, Europe, Asia and Africa. This time, Canadians are ranking very high. Ninety one percent of Canadian respondents consider it necessary for individuals to make changes in their lifestyle. This is 12% higher than respondents in the United States (79%). Thus, overall, 85% of respondents in North America think it is necessary to make changes in their lifestyle and behaviour in order to reduce the amount of climate changing gases they produce. Just 8% consider it not necessary to do so. Ninety percent of publics from Latin American countries think making changes is necessary. This is 5% more than North American respondents. In comparison with Canada, the only country that is above the Canadian results is Mexico with 92% of respondents considering that it is necessary to change lifestyle.

Results for European countries are varied. Overall, 88% of European respondents think it is necessary to make lifestyle changes; this is 3% less than the North American results. However, countries such as Italy (93%), Spain (92%) and France (91%) are at the lead. These results are very similar to Canadian ones (91%). Results from Germany (88%), Great Britain (86%) and Russia (76%) are below Canadian results. Canadians still

[6] A total of 22,182 citizens in Australia, Brazil, Canada, Chile, China, Egypt, France, Germany, Great Britain, India, Indonesia, Italy, Kenya, Mexico, Nigeria, the Philippines, Russia, South Korea, Spain, Turkey, and the United States were interviewed face-to-face or by telephone between May 29 and July 26, 2007. Polling was conducted for the BBC World Service by the international polling firm GlobeScan and its research partners in each country The margin of error per country ranges from +/-2.4 to 3.5 percent. (worldpublicopinion.org,2007)

rank high when asked if they think it is necessary to make changes in their lifestyles in order to reduce climate changing gas production.

Results for countries in Asia are not homogeneous. However, overall, 82% of respondents consider it necessary to change lifestyle. This is 3% less than the North American results. It is noteworthy that countries such as Australia and China have the same results (87%). These results are 4% below Canadian results. Moreover, all the results for Asian countries are lower than Canadian results.

Fewer respondents from the African region think it is necessary to make changes than any other region in the world (77%). Also, 13% of respondents from these countries do not think it is necessary to change lifestyle to reduce the amount of climate changing gases. This is the highest percentage of people thinking that the change it is not necessary. Canadians' rank is definitively very high. In comparison to results from the African region, 20% more Canadians think change is necessary.

Figure 1 and Figure 2 have the results of two questions raised at the beginning of this thesis. Figure 1 shows that the majority of people in the participant countries of the survey, including Canada, think that climate change or global warming is a serious problem. At the head of this growing concern are countries such as Nicaragua (99%), Turkey (98%) and Japan (98%). However, Canada is not an exception as 90% of Canadians consider climate change a serious problem. In addition, Canadian results are on average 2% below European results. In North America, Canadian results are 14% higher than results in the United States. Figure 2 shows that the majority of people around the world consider it necessary for individuals to make changes in their lifestyle to reduce the amount of climate changing gases, and Canadians more than others think it necessary.

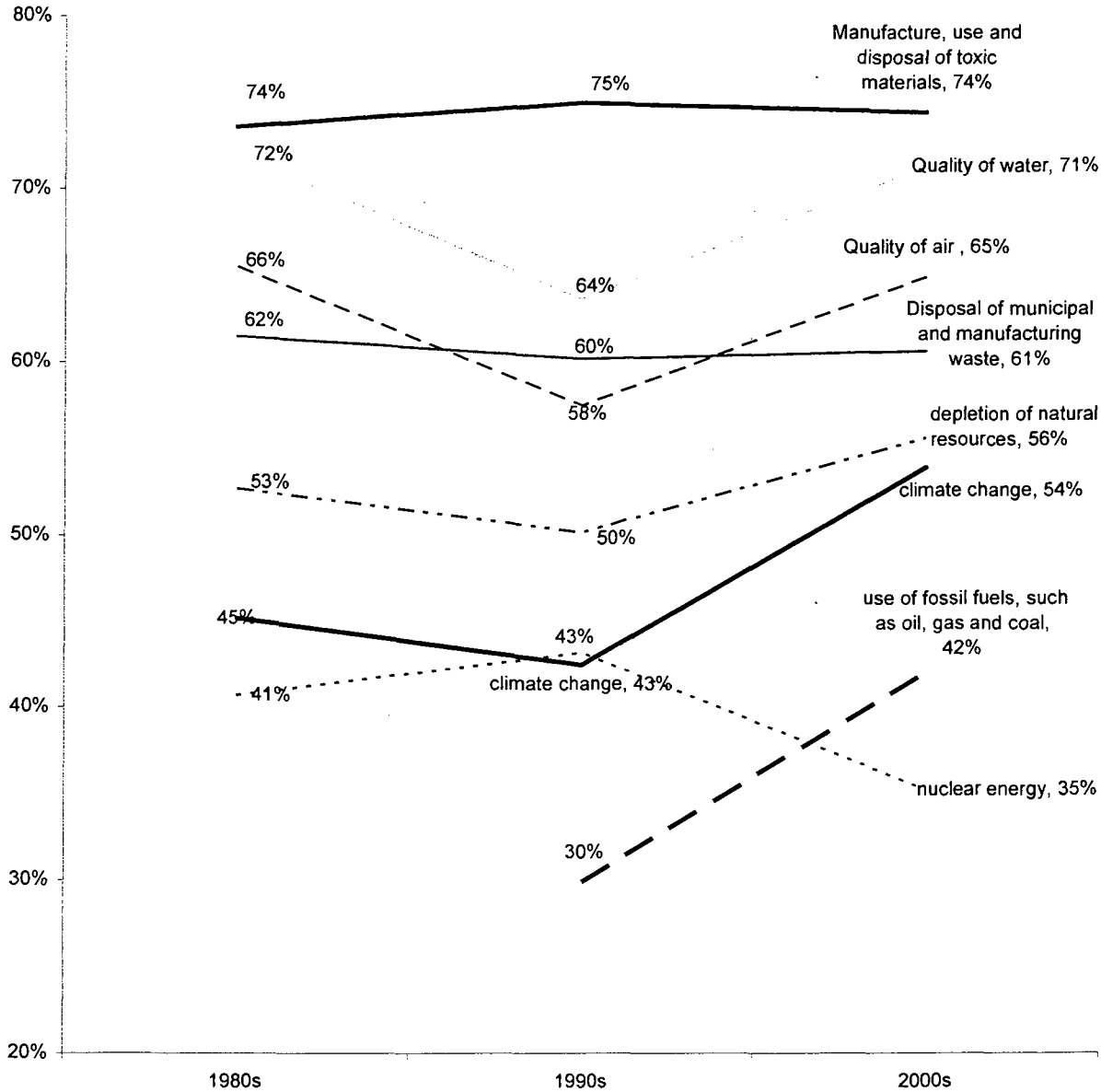
Canadian results (91%) are slightly below those of top ranking countries such as Italy (93%) and France (92%). Canada ranks third with Spain (91%). Moreover, Canadian results are higher compared to the average results by regions: North America (85%), South America (90%), Europe (88%), Asia (82%) and Africa (71%). Even in the North American region, Canadian results are 12% higher than in the United States.

Evidence from the EM would make it possible to further explore the previous findings about climate change and green house gas emissions in Canada. In addition, the EM data will make it possible to analyze the link between different expressions of concern, including climate change and use of fossil fuels, and Canadians' willingness or readiness to act in protecting the environment.

2. Environmental concern in Canada

The following analysis examines environmental concern in Canada, and it attempts to answer the first two set of questions posed at the beginning of this thesis. First, how concerned are Canadians about the environment, what specifically are they concerned about, do concerns vary depending on the type of degradation being addressed and what concerns about climate change and green house gas emissions rank among Canadians' various attitudes on the environment? Second, is there any evidence to suggest that Canadian's concern shifted over time? Have concerns on climate change and green house gas emissions actually grown, and what accounts for Canadians' environmental concerns?

Figure 3 Are you very concerned about...



Source: Canadian Environmental Monitor. Data sets from 1987 to 2002 from Canadian Opinion Research Archive at Queen's University. Data sets from 2004 through 2007 are provided by McAllister Opinion Research Incorporated and GlobeScan Incorporated. Sample sizes n 1980s= 7,562; n 1990s = 34,890; n 2000s= 15,792.
Walter-duncan significant test results (=0.05) : concern on toxic: 1980-1990 >0.05, 1990-2000>0.05, 1980-2000>0.05, 1990-1980>0.05, 2000-1980>0.05; concern on air:1980-1990 =0.05, 1990-2000=0.05, 1980-2000>0.05, 1990-1980=0.05, 2000-1980>0.05, concern on water: 1980-1990 =0.05, 1990-2000=0.05, 1980-2000>0.05, 1990-1980=0.05, 2000-1980>0.05, concern on nuclear energy: 1980-1990=0.05, 1990-2000=0.05, 1980-2000=0.05,1990—1980=0.05, 2000-1980=0.05; concern on climate change: 1980-1990>0.05, 1990-2000=0.05, 1980-2000=0.05,1990>1980=0.05, 2000-1980=0.05; concern on depletion of natural resources: 1980-1990>0.05, 1990-2000=0.05, 1980-2000=0.05,1990>1980=0.05, 2000-1980=0.05; concern on disposal of waste: -1990 >0.05, 1990-2000>0.05, 1980-2000>0.05, 1990-1980>0.05; concern on fossil fuels: sig- 2 tailed test: 1990-2000 =0.05.

Results from the Environmental Monitor (EM) data presented in Figure 3 refer to the question: *Now I would like to ask you about various environmental issues, are you very concerned about...* (Appendix1) [7]. The environmental issues analyzed in this section were specifically the manufacture, use and disposal of toxic materials; the quality of air; the quality of water; nuclear energy; climate change; the use of fossil fuels such as oil, gas and coal; depletion of natural resources and the disposal of municipal and manufacturing waste. The concern related to the use of fossil fuels, such as oil, gas and coal, is a proxy for green house gas emissions[8]. In addition, results are presented by decades: the 1980s, 1990s and 2000s.

Figure 3 shows that environmental concerns vary from the 1980s to the 2000s in Canada. Canadians' concerns were different depending on the type of degradation being addressed. Still, each of them varied over time, but there were concerns that varied more than others. During the late eighties, concern about environmental issues was high for the manufacture, use and disposal of toxic materials (74%), the quality of water (72%), the quality of air (66%) and the disposal of municipal and manufacturing waste (62%). Less pressing concerns were related to the depletion of natural resources (53%), climate change (45%) and nuclear energy (41%). It is relevant to note that concern for the use of fossil fuels was not asked during the eighties. It seems that issues related to toxic issues were at the top of Canadians' environmental concern during the eighties. More general or

[7] Using two top boxes for the concern on different environmental issues results show very similar trends when just considering respondents very concerned about environmental issues. Larger majorities (between 71% and 96% over time) of Canadians are very concerned and somewhat concerned about the environment. Two top boxes results also show that slight decreases of concern on quality air and water are presented in 1990s, different than sharper decreases observed in the same decade when considering just very concerned answers. Finally, an increase of level of concern on depletion of natural resources is found in 1990s as opposed to a decrease of concern when using very concerned answers.

[8] This is based on the indicators of the 2006 Households and the environment report which considers green house gas emission from consume of energy, fuels, oil gas and coal industries. (Statistics Canada, 2007b)

global issues such as climate change were not part of Canadians' most pressing worries. Concern on climate change was relatively low in comparison with other types of concern. There is a difference of 29% between Canadians' top concern on the manufacture, use and disposal of toxic materials (74%), and concern on climate change (45%).

In the 1990s, it is possible to observe both consistencies and changes in comparison to the 1980s results. Concern on the manufacture, use and disposal of toxic materials increased by 1%, staying pretty stable in comparison with the 1980s. However, this difference is not significant. Concern on the quality of water and the quality of air actually decreased. Sixty four percent of Canadians were very concerned about the quality of water, a significant 8% less than in the 1980s, and 64% of Canadians were very concerned about the quality of air, which also represents a significant decline of 8% from the previous decade.

Also decreasing in the 1990s, but to a lesser extent, were concerns about the disposal of municipal and manufacturing waste (60%–no significant difference), depletion of natural resources (50%–no significant difference) and climate change (43%–no significant difference). Their decrease in the 1990s was, on average, 2% compared with the 1980s. On the other hand, concern on nuclear energy increased by 2% during the 1990s, a significant difference. The 1990s is the decade when the EM started collecting evidence for concern on use of fossil fuels such as oil, gas and coal or green house gas emissions. Thirty percent of the respondents during the 1990s were very concerned about green house gas emissions. This result in comparison to concern on the other types of issues is not very high. However, the difference could be explained by the argument used by Dunlap (1997) who claims that it is during the 1990s that the relevance of these types

of issues of concern started to grow in comparison to issues such as local air and water pollution that emerged in the previous decades. Results of the EM for the 1990s show, in general, slightly lower levels of concern about environmental issues in Canada. However, the change was quite small, which means that the trend of Canadians preoccupations about environmental issues during the 1990s was more stable that unstable.

In the 2000s, the picture has a different dynamic. Canadians' concern about the quality of water and air regained people's attention at similar levels as in the 1980s. The tendency was upward also for issues such as the depletion of natural resources and a much higher degree for climate change and on green house gas emissions. The top issue of concern was again the manufacture, use and disposal of toxic materials (74%), 1% less than during the 1990s (no significant difference). Seventy one percent of Canadians were very concerned about the quality of water, a 7% increase from the 1990s. The same difference was for the quality of air, where 65% of Canadians expressed their highest level of concern ever about the quality of air. More stable, but also higher, was concern on the disposal of municipal and manufacturing waste (61% – no significant difference). Issues that historically have been of lower levels of concern had a rapid and significant growth of concern during the 2000s. For example, 56% of respondents were very concerned about the depletion of natural resources, the highest level over the three decades. This could be explained by Paehlke's (Paehlke, 1992) claim about the re-emergence of preservationist issues during the second wave of environmentalism.

During the 2000s, concern about climate change and concern on green house gas emissions, had a dramatic increase of 11% and 12%, respectively, in comparison to the 1990s results. It appears that international results of the growing concern about issues

related to climate change and green house gas emissions, presented at the beginning of this section, are very similar to Canadians' case about climate change using the EM data. Fifty four percent of Canadians expressed that they are very concerned about climate change and 42% expressed their highest levels of concern about the use of fossil fuels, such as oil, gas and coal. It is possible to say that concern on global warming and green house gas emissions in the 2000s is growing more than any other type of environmental issue in Canada. These findings are similar to Ivanova and Tranter's (Ivanova & Tranter, 2008) claim that Global warming has becoming increasingly important over the last two decades.

On the other hand, levels of people very concerned about nuclear energy decreased in the 2000s. Thirty five percent of respondents were very concerned about this issue; a significant decrease of 8% from the previous decade. It seems that the 2000s in Canada were characterized by two things: high and maintained levels of concern for traditional issues related to pollution, such as toxic materials, air and water quality, and disposal of waste, and an active dynamic of issues related to climate change and green house gas emissions. Concern about issues related to climate change and green house gas emissions are increasingly high over the last two decades in comparison to other environmental issues in Canada. For example, there is a difference of 32% between concern on the manufacture, use and disposal of toxic materials (75%) and concern on climate change (43%) in the 1990s. This difference decreased to 20% in the 2000s. Also, the difference between the depletion of natural resources (53%) and climate change (45%) was 8% in the 1980s, compared to 2% in 2000s. Also, there is a difference of 21% between concern on disposal of municipal and manufacturing waste (66%), compared to

climate change (45%) in the 1980s. This difference decreased to 7% in the 2000s. Furthermore, there is a difference of 20% between depletion of natural resources (50%) in the 1990s and concern on green house gas emissions (30%). This difference decreased to 14% in the 2000s. Finally, the difference of concern on green house gas emissions and concern on disposal of waste was 30% in the 1900s, compared to 19% in the 2000s.

Considering different types of environmental issues in order to examine the dynamics of environmental concern in Canada, it seems that environmental concern has shifted over time. However, environmental concern in Canada is more stable than unstable for certain issues, such as toxic materials, air and water quality and waste. On the other hand, there is a growing and significant concern about climate change and green house gas emissions. Levels of concern about climate change and green house gas emissions have a rapid growth during the 2000s. However, what accounts for these higher levels of environmental concern in Canada and what the characteristics are of the people in Canada who expressed concern about environmental issues will be examined in the next section.

3. What accounts for environmental concerns in Canada

In order to investigate what accounts for environmental concern in Canada, five possible explanations are used in this analysis: issue-attention cycles or economics argument, a paradigmatic shift in postmaterialism, a paradigmatic shift in cognitive mobilisation, socio-demographic indicators used in previous research, and indicators of rates of performance of different societal actors in protecting the environment. Therefore, as described in the methodology, the independent variables used in the analysis are: income level (economics argument), postmaterialism, education level (proxy for

cognitive mobilization); socio-demographic indicators such as gender, age, political party vote intention, region, community size and language of interview; and the rate of performance in protecting the environment of private industry, the federal government, the provincial government, the municipal government and individual Canadians. For the purpose of this analysis, the rate of performance of private industries, the federal government, the provincial government, the municipal government and the individual Canadians is expected to have an effect on people's concern about the various environmental issues analyzed. This is used in regards to previous research discussed in the literature review section. One example is Dunlap's (R. E. Dunlap & Michelson, 2002) reference to the importance of the public's perception of the government's role in protecting the environment. On the other hand, there is also the public's perception of the role of private industries in degrading the natural environment.

Regression analyses for the 2007 EM data are conducted in order to examine what accounts for environmental concern in Canada. Based on the growing concern on climate change and green house gas emission in the 2000s decade in comparison to the other environmental issues analyzed in this research, results from the various regression analyses are presented in two tables. One table will be used to present results of concern on toxic materials, air quality, water quality, waste, nuclear energy, and depletion of natural resources. The other table will be used to present results for concern on climate change and green house gas emissions.

Table 1 2007 Regression analyses of environmental concerns

	Manufacture, use and disposal of toxic materials		The quality of air		Quality of water		Nuclear energy		Disposal of municipal and manufacturing		Depletion of Natural Resources	
Intercept	Unstandardized Coefficients B	Standardized Coefficients Beta	Unstandardized Coefficients B	Standardized Coefficients Beta	Unstandardized Coefficients B	Standardized Coefficients Beta	Unstandardized Coefficients B	Standardized Coefficients Beta	Unstandardized Coefficients B	Standardized Coefficients Beta	Unstandardized Coefficients B	Standardized Coefficients Beta
(Constant)	3.347		3.630		3.931		3.489		3.281		3.721	
	(0.105)		(0.127)		(0.128)		(0.171)		(0.121)		(0.141)	
Level of education	-0.009	-0.03	-0.0153	-0.039	-0.024	-0.062 **	-0.069	-0.129 ***	-0.004	-0.01	-0.023	-0.05 **
	(0.009)		(0.011)		(0.011)		(0.015)		(0.011)		(0.012)	
Age 6	0.024	0.068 **	-0.018	-0.041	-0.016	-0.037	0.009	0.016	0.02	0.049 **	-0.055	-0.12 ***
	(0.009)		(0.011)		(0.011)		(0.015)		(0.011)		(0.012)	
Levels of income	-0.012	-0.02	-0.039	-0.063 **	-0.035	-0.057 **	-0.067	-0.079 **	-0.015	-0.03	-0.045	-0.07 **
	(0.014)		(0.017)		(0.017)		(0.023)		(0.016)		(0.019)	
Community size	-0.008	-0.01	0.009	0.013	-0.007	-0.01	-0.003	-0.003	0.004	0.006	0.011	0.014
	(0.016)		(0.019)		(0.019)		(0.026)		(0.018)		(0.021)	
Postmaterialism	0.039	0.031	-0.002	-0.001	0.014	0.009	0.106	0.052 **	0	0	0.044	0.026
	(0.032)		(0.038)		(0.039)		(0.052)		(0.037)		(0.043)	
Liberal	0.011	0.008	-0.010	-0.006	-0.023	-0.014	-0.077	-0.034	-0.02	-0.01	0.003	0.002
	(0.038)		(0.045)		(0.046)		(0.061)		(0.044)		(0.05)	
Conservative	-0.058	-0.05 *	-0.092	-0.070 **	-0.191	-0.145 ***	-0.202	-0.113 ***	-0.067	-0.05 *	-0.142	-0.1 ***
	(0.032)		(0.038)		(0.038)		(0.052)		(0.036)		(0.042)	
English	0.185	0.13 **	0.053	0.031	0.066	0.038	0.358	0.153 **	0.161	0.1 *	0.121	0.063
	(0.083)		(0.100)		(0.101)		(0.139)		(0.096)		(0.111)	
male	-0.155	-0.15 ***	-0.187	-0.148 ***	-0.162	-0.129 ***	-0.367	-0.214 ***	-0.148	-0.13	-0.26	-0.19 ***
	(0.027)		(0.032)		(0.032)		(0.043)		(0.031)		(0.035)	
Ontario	-0.064	-0.05	0.015	0.010	-0.027	-0.018	-0.274	-0.137	-0.043	-0.03	-0.059	-0.04
	(0.081)		(0.098)		(0.098)		(0.136)		(0.093)		(0.109)	
West British Columbia	-0.11	-0.11	-0.170	-0.134 *	-0.164	-0.13 *	-0.446	-0.26 ***	-0.199	-0.17 **	-0.196	-0.14 *
	(0.079)		(0.095)		(0.096)		(0.133)		(0.091)		(0.106)	
Atlantic	-0.039	-0.02	-0.078	-0.027	-0.072	-0.025	-0.38	-0.094 **	-0.192	-0.07 *	-0.128	-0.04
	(0.097)		(0.118)		(0.118)		(0.162)		(0.112)		(0.13)	
Rate of private industries	0.062	0.086 **	0.017	0.019	0.022	0.026	0.08	0.067 **	0.024	0.029	0.058	0.06 **
	(0.022)		(0.026)		(0.026)		(0.035)		(0.025)		(0.029)	
Rate of federal gov.	0.054	0.078 **	0.054	0.064 **	0.011	0.013	0.054	0.047	0.064	0.081 **	0.069	0.074 **
	(0.023)		(0.027)		(0.028)		(0.037)		(0.026)		(0.03)	
Rate of provincial gov.	0.003	0.004	0.000	0.001	0.004	0.004	0.007	0.006	0.027	0.034	-0.025	-0.03
	(0.022)		(0.027)		(0.027)		(0.036)		(0.026)		(0.03)	
Rate of municipal gov.	0.027	0.041	0.059	0.074 **	0.021	0.027	0.04	0.037	-0.012	-0.02	0.029	0.033
	(0.02)		(0.023)		(0.024)		(0.032)		(0.023)		(0.026)	
Rate individual Canadians	-0.015	-0.02	0.001	0.001	0.02	0.024	-0.045	-0.041	0.01	0.014	-0.007	-0.01
	(0.018)		(0.022)		(0.022)		(0.03)		(0.021)		(0.024)	
R2	7.10%		7.50%		7.20%		12.40%		5.40%		10.30%	
N	2001		2001		2001		2001		2001		2001	

* p<0.1 **p<0.05 ***p<0.001. (Standard error)
Source: Canadian Environmental Monitor 2007 provided by McAllister Opinion Research Incorporated and GlobeScan Incorporated.

3.1. Regressions analyses results of environmental concerns

Table 1 presents the regression analyses results for concern on manufacture, use and disposal of toxic materials, quality of air, quality of water, nuclear energy, disposal of waste and depletion of natural resources. Table 1 results make it possible to asses the explanatory power of each of the five explanations established in the methodology section. It seems that, the economics argument does not explain levels of environmental concern on the issues analyzed. It is not possible to say that respondents with higher

income respondents will be more likely to be concerned about environmental issues, it is quite the opposite. The lower the income, the more likely that people will be concerned about the environment. This relation is significant but not very strong for issues such as quality of air, quality of water, nuclear energy and depletion of natural resources. These findings may support Wall's (Wall, 1995) claim that from the perspective of class analysis, cultural rather than economic advantage is the relevant predictor (p. 306). And Pakulski and Tranter's (J. Pakulski & Tranter, 2004) claim that people concern on brow issues are less concentrated on social locations and are more popular.

The second explanation set up in the analysis is the shift in values characterized by postmaterialism. Table 1 results make it possible to assess the explanatory power of postmaterialism on the environmental issues mentioned above. The effect of postmaterialism is most of the time positive, with the exception for concern on quality of air; however, the effect is significant only for nuclear energy. The meaning of these results is that people holding postmaterialist values are more likely to be concerned about nuclear energy. These findings are similar to, among others, Pakulski and Tranter (J. Pakulski & Tranter, 2004), where postmaterialism has positive effects on environmental issues. However, it was expected that postmaterialism would have more explanatory power.

The cognitive mobilization argument measured by the education variable did not work as expected. This variable has significant negative effects only for quality of water, nuclear energy and depletion of natural resources. Less educated people are more likely to be concerned about the quality of water, nuclear energy and depletion of natural resources. It is particularly strong for the concern on nuclear energy; in fact, education

has the strongest effect in the nuclear energy regression analysis. These findings are opposite to previous research on what to expect from the effects of cognitive mobilization on environmental concern. However, these results are similar to Pakulski and Tranter (J. Pakulski & Tranter, 2004) regression analysis findings of environmental concern in Australia (Table 7, p. 23): diploma holders are less likely to be concerned about the environment than respondents without diploma.

The fourth explanation is based on the effect of socio-demographic indicators, such as gender, age, political party vote intention, region, community size and language. Table 1 results show that women are more likely than men to be concerned about environmental issues. Moreover, the effect of gender is very strong for nuclear energy and air and water quality, but not that strong though still significant for the manufacture of toxic materials and depletion of natural resources. These findings are as predicted by Dietz, Stern, and Guagnano (Dietz, Stern, & Guagnano, 1998), Gelissen (Gelissen, 2007), Hayes (Hayes, 2001), Nevitte and Kanji (Nevitte & Kanji, 1995), Stegger and Witt (Steger & Witt, 1989) and Blake et al. (Blake et al., 1996).

The effect of age, on the other hand, varies depending on the type of environmental issue. For example, age has a significant, positive and moderate effect on concern on the manufacture of toxic materials and disposal of waste, which means that older people will be more likely to be concerned about the manufacture of toxic materials and the disposal of waste. But, on the other hand, age has a stronger and negative effect on depletion of natural resources. Therefore, younger people are more likely to be more preoccupied about the depletion of natural resources than older people. These findings are similar to

Kanji and Nevitte (Kanji & Nevitte, 1997), Pakulsiki and Tranter (J. Pakulski & Tranter, 2004), Klinebert et al. (Klineberg et al., 1998) and Blake (Blake et al., 1996).

Table 1 results are similar to previous research findings about the effect of political party identification or, in this case, political party vote intention for the conservative party in Canada. People whose vote intentions are for the conservative party in Canada are less likely to be concerned about environmental issues compared to people whose vote intentions were for the new democratic party. These results are similar to Wall's (Wall, 1995) and Blake's results (Blake et al., 1996). The effect of vote intention for the conservative party is strong and significant for almost all environmental issues analyzed in Table 1.[9] On the other hand, the effect of vote intentions for the liberal party on environmental concern varies depending on the environmental issue and it is not significant.

The effect of region varies depending on the region used. The effect of the Ontario region variable varies with the environmental issue, but is not significant. On the other hand, the effect of West Canada region is negative at all times and it has a strong and significant effect for issues such as nuclear energy, disposal of waste and depletion of natural resources. Respondents from the west are less likely to be concerned about nuclear energy, disposal of waste and depletion of natural resources than respondents

[9] As requested by the second supervisor of this thesis, additional analyses were performed in order to verify the influence of vote intention on environmental concern regression results. When removing the variable vote intention from the analysis of environmental concern not considerable changes were found. Four of eight variables present slight changes in the significant results, such as 1 or 2 more variables are included in the analysis. Moreover, the relevant importance, determined by weighting all the Betas and sorting them by the percentage, is very low. The R squares is smaller than the R square of the analysis including the vote intention variable, which means that it has lower explanatory power. Finally, there are not changes in the direction of the effect in the explanatory variables such as income and education. Therefore, the effect of vote intention remains significant and strong in the analysis of environmental concern

from Quebec. These results are similar to results from the Environmental Monitor report (McAllister Opinion Research, 2006). The regional difference may respond to Wall's (Wall, 1995) claim that environmental concern differs from situations where a respondent's personal interest is more closely associated with the outcome of the concern, such as resource development in Western Canada. Therefore, Western Canadians are not likely to be concerned about depletion of natural resources due to their economic interest on their resource extraction oriented regional economy.

There is no effect of the community size variable on the different environmental issues of concern presented in Table 1. In addition, the results vary depending on the type of environmental issue. The last socio-demographic indicator presented in Table 1 is language of interview. The effect of English language spoken at the interview is positive for all types of concern, but is only significant for the manufacture of toxic materials, nuclear energy and disposal of waste. In addition, language effect on concern on nuclear energy is one of the strongest. Therefore, people whose language is English are more likely to be concerned about environmental issues than people whose language is French.

The last possible explanation about environmental concern is the rating of performance in protecting the environment of different societal actors. Table 1 results show that only rates of private industries, the federal government and municipal government have significant effects on the environmental issues analyzed. The lower the ratings of performance of private industries in protecting the environment, the more people will be concerned about the manufacture of toxic materials, nuclear energy and depletion of natural resources. Likewise, the lower the rate of performance of the federal government, the higher the concern on the manufacture of toxic materials, quality of air,

disposal of waste and nuclear energy. And, the more preoccupied the people are about the role of the municipal government in protecting the environment, the higher their level of preoccupation about the quality of air. Higher levels of concern about the environment are closely related to a poor rating of the different actors in protecting the environment, especially private industries and the federal government. This is similar to the Environmental Monitor report (McAllister_Opinion_Research, 2006) findings about rating environmental performance in the 2006 survey in Canada.

Top explanations of issues of concern presented in Table 1 are conservative party vote intention, gender, west region, rating of federal government and education. Therefore, respondents whose vote intentions are not for the conservative political party, female, not living in the west region, who poorly rate the federal government in protecting the environment and whose level of income and education is lower are more likely to be concerned about toxic issues, air and water quality, nuclear energy, disposal of waste and depletion of natural resources.

Table 2 2007 Regression analyses Concern on climate change and green house gas emissions

	Climate change			Green house gas emissions		
Intercept	Unstandardized Coefficients B	Standardized Coefficients Beta		Unstandardized Coefficients B	Standardized Coefficients Beta	
(Constant)	3.187			2.913		
	(0.146)			(0.143)		
Level of education	0.015	0.032		0.014	0.031	
	(0.013)			(0.013)		
Age 6	-0.038	-0.074	**	-0.005	-0.011	
	(0.013)			(0.012)		
Levels of income	-0.026	-0.035		-0.025	-0.037	
	(0.02)			(0.019)		
Community size	0.033	0.041		0.014	0.019	
	(0.022)			(0.021)		
Postmaterialism	0.029	0.016		0.117	0.07	**
	(0.044)			(0.043)		
Liberal	0.049	0.025		-0.032	-0.018	
	(0.052)			(0.051)		
Conservative	-0.261	-0.169	***	-0.197	-0.135	***
	(0.044)			(0.043)		
English	0.068	0.034		0.055	0.029	
	(0.115)			(0.114)		
male	-0.168	-0.113	***	-0.073	-0.052	**
	(0.037)			(0.036)		
Ontario	-0.152	-0.088		0.02	0.012	
	(0.112)			(0.112)		
West British Columbia	-0.214	-0.145	**	-0.091	-0.065	
	(0.109)			(0.109)		
Atlantic	-0.033	-0.01		0.018	0.006	
	(0.135)			(0.134)		
Rate of private industries	0.119	0.116	***	0.093	0.096	**
	(0.03)			(0.029)		
Rate of federal government	0.098	0.1	**	0.065	0.07	**
	(0.032)			(0.031)		
Rate of provincial government	-0.026	-0.026		-0.02	-0.021	
	(0.031)			(0.03)		
Rate of municipal government	-0.025	-0.027		-0.006	-0.007	
	(0.027)			(0.027)		
Rate individual Canadians	0.012			0.012	0.013	
	(0.025)	0.012		(0.025)		
R2	12.30%			6.80%		
N	2001			2001		

*p<0.1 **p<0.05 ***p<0.001 (Standard error)

Source: Canadian Environmental Monitor 2007 provided by McAllister Opinion Research Incorporated and GlobeScan Incorporated.

3.2. Regressions analyses concern on climate change and green house gas emissions

Table 2 shows the results of the regression analyses for climate change and green house gas emissions. A comparative analysis between the results of Table 1 and Table 2 will follow a short description of Table 2 results.

In general, Table 2 results show that the economics argument explanation does not explain environmental concern on climate change and green house gas emissions. Not only did the income variable have a negative effect, but it was also not significant for the two types of concerns.

The second possible explanation, postmaterialism, has a strong explanatory power for concern on green house gas emission, but not for climate change. It is a bit surprising that the effect of postmaterialism was not significant for climate change. Thus, holders of postmaterialist values are more likely to be concerned about green house gas emissions. This finding is similar to previous research about the influence of postmaterialism on green concerns in Australia Pakulski and Tranter (J. Pakulski & Tranter, 2004), in Canada Kanji and Nevitte (Kanji & Nevitte, 1997) and other nations Gelissen (Gelissen, 2007).

The third explanation used in this analysis is cognitive mobilization with education as a proxy. Unfortunately, Table 2 results show that this variable, though positive, does not have a significant effect on climate change or green house gas emission concerns. Therefore, cognitive mobilisation does not explain levels of concern on climate change issues.

The fourth explanation is defined by socio-demographic indicators. The first one used in the analysis is gender. This indicator is significant for both issues and additionally is very strong for climate change. Table 2 results show that female respondents, as opposed to male, are more likely to be concerned about climate change and green house gas emissions. This is similar to Brody et al's (Brody et al., 2008) regression results: women are more likely than men to be cognizant and more concerned of the adverse impacts of global climate change than men.

With regards to the effect of age, it is significant and strong only for concern on climate change and not for concern on green house gas emissions. However, the results of Table 2 are as expected. Younger respondents are more likely to be concerned about climate change than older respondents. These findings are also similar to previous Pakulski's findings in Australia (J. Pakulski & Tranter, 2004).

Considering the effects of vote intentions, Table 2 results show that conservative voters are less likely to be concerned about climate change and green house gas emissions. The effect of this variable is the strongest for the two types of concern. Therefore, new democratic party voters are more likely to be concerned about climate change and green house gas emissions than conservative party voters. The effect of respondents who intended to vote for the liberal party is not significant.

Regional differences also have significant effects on concern on climate change and green house gas emission concern. Western Canadians are less likely than Quebec residents to be concerned about climate change and green house gas emissions. The effect of this variable is very strong on climate change and moderate for green house gas emission concern. These results are similar to the findings of the Environmental Monitor

(McAllister Opinion Research, 2006). No other regions have significant effects on climate change or green house gas emission concern. Other socio demographic indicators such as community size and English language do not have significant effects on these concerns.

The fifth possible explanation set for the analysis, rating of performance in protecting the environment, has significant effects in explaining climate change and green house gas emission concerns. Respondents preoccupied by the poor performance of private industries in protecting the environment are more likely to be concerned about climate change. Also, this variable has the third strongest effect on concern on climate change, followed by conservative party vote intention. The effect of poor ratings of the federal government's job in protecting the environment is also strong and significant for both types of concern. Poor ratings in protecting the environment of provincial and municipal governments and individual Canadians were not significant. This is an indication of Canadian's lost of faith in the ability of the federal government in protecting the environment and also, the responsibility of the private industries in the degradation of the environment.

Table 2 results show that significant and strong effects on concern on climate change are produced by, in declining order of the strength of the effect, conservative party vote intention, region, rate of performance of private industries, gender, rate of performance of the federal government and age. The relevance of Table 2 results is that they had the direction of their effect on climate change concern is as expected. Unfortunately, the effect of postmaterialism is not significant. Therefore, non conservative voters or new democratic party voters, discouraged by private industries' and the federal government's

job in protecting the environment, female and younger respondents are more likely to be concerned about climate change.

Likewise, Table 2 results show that significant effects on green house gas emission concern are produced by conservative party vote intention, rate of performance of private industries in protecting the environment, postmaterialism, rate of performance of the federal government and gender. Thus, new democratic party voters, less confident in the performance of private industries in protecting the environment and the federal movement, holders of postmaterialist values and female are more concerned about green house gas emissions.

Significant findings of Tables 1 and 2 presented above make it plausible to claim that the economics argument does not explain levels of environmental concern in Canada because significant results in Table 1 found a negative relationship with income levels. Therefore, respondents in the lower income brackets appear to be more concerned about environmental issues than respondents in the higher income ones for issues such as the manufacture of toxic materials, air and water quality, nuclear energy, disposal of waste and depletion of natural resources[10]. In addition, Table 2 results do not show significant results for this variable. As mentioned before, these findings could be explained by Wall's (Wall, 1995) claim that environmental concern is "trickling down the class structure and becoming diffused throughout the population" (p.310).

[10] As requested by the second supervisor of this thesis, a different specification of income and education variables was done using dummy variables instead of full scale for the different levels of income and education, as it is done in the current analysis. Results of the new codifications show that either there are not changes or the results show that there is a linear relationship between income and education and environmental concern. In addition, the power of predictability of the variance with the new codification slightly increased due to an increase in the number of variables of the analysis. In some cases there is more detailed information about each of the variables of income and education in explaining concern For example in the case of concern on Climate change, low income became significant at 0.09 but his Beta is .048. Also, there is the case of concern on water where level of education and income become no significant with the use of dummy variables for education and income.

The second explanation, the effect of postmaterialism on environmental concern, is possible for issues such as nuclear energy and green house gas emissions. However, the effect is stronger on green house gas emission concern. Therefore, postmaterialism does have an effect on environmental concern in Canada.

The cognitive mobilization argument, the third possible explanation of the analysis, did not explain as expected environmental concern on issues such as water, nuclear energy and depletion of natural resources. The effect was opposite than expected for these issues and, in addition, cognitive mobilization did not have a significant effect for climate change or green house gas emission concerns.

The fourth possible explanation was defined by socio-demographic indicators. Results of Tables 1 and 2 make it possible to confirm previous research findings that women are more likely than men to be concerned about the environment. This is one of the top factors in explaining environmental concern in Canada. The effect of age, on the other hand, had different results depending on the issue of concern of Table 1. Older people were more likely to be concerned about the manufacture, use and disposal of toxic materials and the disposal of municipal and manufacturing waste. On the contrary, younger people were more likely to be concerned about the depletion of natural resources. Table 2 results have the same relation with age and concern on climate change: younger respondents are more concerned about climate change than older ones.

Additionally, respondents considering voting for the conservative party are less likely to be concerned about environmental issues in Canada. Table 1 and 2 results confirm that this is the strongest factor of environmental concern in the analysis.

Region was also one of the strongest factors in Table 1 and 2 regression analyses; respondents living in West Canada are less likely to be concerned about the environment than respondents living in Quebec. On the other hand, the effect of community size was not significant for any of the issues of concern. English language spoken at the interview was significant and positive as Table 1 shows, but not the case for Table 2 results.

The influence of poor ratings of performance of private industries and the federal government do have a significant and strong effect on environmental concern in Canada. These variables have a significant and similar explanatory power of levels of environmental concern on Table 1 issues, such as toxic issues, quality of water, nuclear energy, disposal of waste, depletion of natural resources. However, Table 2 results show a stronger explanatory power of rate of performance of private industries than the federal government's in explaining climate change and green house gas emission concern.

Chapter 4 - Findings on Environmental Action in Canada

1. Environmental action in Canada

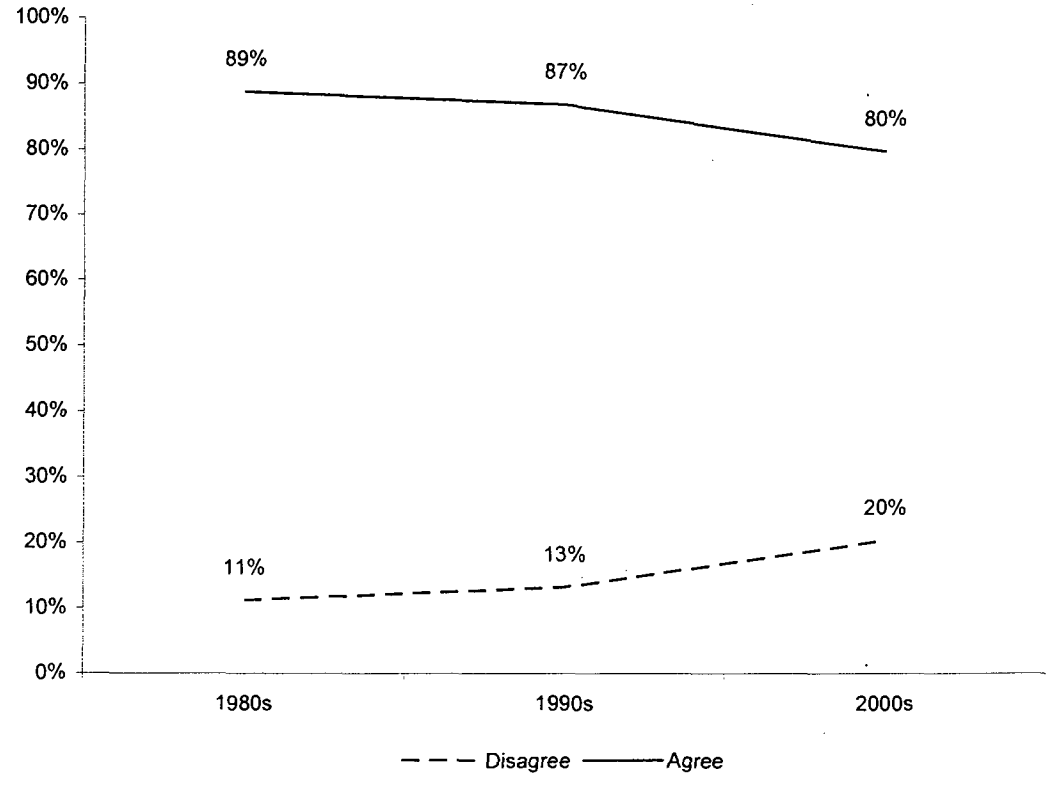
The following analysis examines environmental action in Canada and aims to answer the third set of questions asked at the beginning: Do concerns over climate change have implications for Canadians' willingness to protect the natural environment? If so, what is the nature of this association? In order to respond to these questions, selected indicators of action as explained in chapter 2 –methodology– are analyzed over time. This analysis will be followed by the results of regression analyses for 2007, in order to analyse the implications of predictors of environmental action.

Four different indicators of Canadians' pro-environmental reactions and tradeoffs questions about the protection of the environment and two purchase indexes are analyzed. The questions used for upset feelings, empowerment and tradeoff questions in taking action are: At times I get upset because of the lack of action taken to protect the environment; Environmental pollution is such a big problem that there is very little the individuals can do; Protecting the environment will increase unemployment in Canada; The clean-up and protection of the environment will contribute significantly to the growth of our economy. Two indexes were constructed for environmental behaviour. The first index is constructed by putting together the following questions: A product you bought specifically because it was better for the environment, A device such as a light-bulb or appliance you bought specifically because it was more energy efficient, A water purification filter that you regularly use, Food chosen specifically because it was grown organically or without the use of chemicals. The second index of environmental actions

included the previous index questions plus the question; Garbage you have set aside to re-use, recycle or dispose of safely.

1.1. Canadians pro-environmental reactions about the protection of the environment

Figure 4 At times I get upset because of the lack of action taken to protect the environment



Source: Canadian Environmental Monitor. Data sets from 1987 to 2002 from Canadian Opinion Research Archive at Queen's University. Data sets from 2004 through 2007 are provided by McAllister Opinion Research Incorporated and GlobeScan Incorporated. Sample sizes n 1980s= 2,988; n 1990s = 2,977; n 2000s= 3,702.
Significant tests: Waller-Duncan test alpha =0.05; 1980-1990 >0.05, 1980-2000 = 0.05, 1990-1980 > 0.05, 1990-2000 = 0.05, 2000-1980 = 0.05, 2000-1990 = 0.05

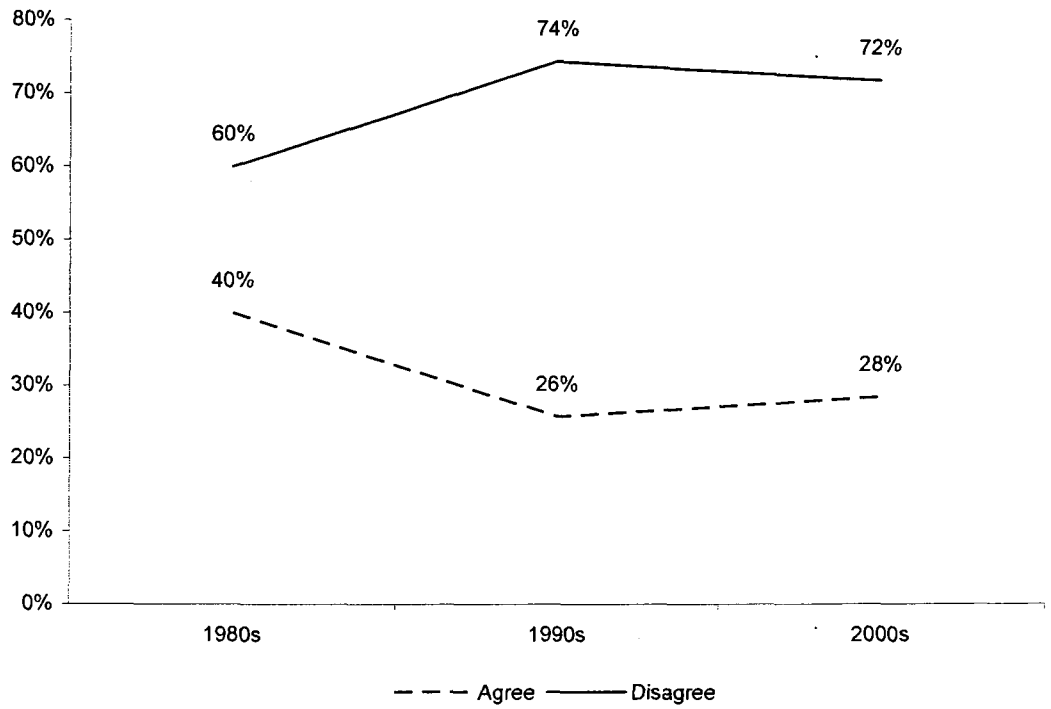
Figure 4 results show that people agreeing with this statement indicate they are upset because of the lack of action in protecting the environment. During the 1980s, 89% of Canadians agreed with this statement and just 11% of Canadians disagreed with it. This means that large majorities of Canadians are not happy with the lack of action taken in protecting the environment. In the 1990s, respondents agreeing with the statement reduced by 2 % (no significant difference). Also, there was a 2% increase in disagreeing

respondents. Figure 4 results from the 1990s mean that Canadians were not conceiving, as during the 1980s, the lack of action taken to protect the environment as a reason to be upset. In the 1990s, 87% of respondents were upset because of the lack of action and 13% were not necessarily upset because of the lack of action in protecting the environment. In the 2000s, 80% of Canadian respondents agreed with the statement. This is the lowest point over time of this unhappy reaction, a 7% decrease from the 1990s and a 9% drop since 1980s.

Also in the 2000s, 20% of Canadians disagreed with the statement, thus, levels of disagreement with the statement increased by 7% from the last decade and 9% from the 1980s. These results suggest that, despite large majorities of Canadians being upset because of the lack of action in protecting the environment, however stable, this feeling has slightly declined over time. This may be because either they consider that efforts in protecting the environment have improved over time, or they feel themselves able to act in order to protect the environment instead of waiting for governmental or industry actions.

4

Figure 5 Environmental pollution is such a big problem that there is very little that individuals can do



Source: Canadian Environmental Monitor. Data sets from 1987 to 2002 from Canadian Opinion Research Archive at Queen's University. Data sets from 2004 through 2007 are provided by McAllister Opinion Research Incorporated and GlobeScan Incorporated. Sample sizes n 1980s= 4,452; n 1990s = 7,482; n 2000s= 3,481.
Significant tests: Waller-Duncan test alpha =0.05;1980-1990=0.05, 1980-2000 = 0.05, 1990-1980 = 0.05, 1990-2000 = 0.05, 2000-1980 = 0.05, 2000-1990 = 0.05

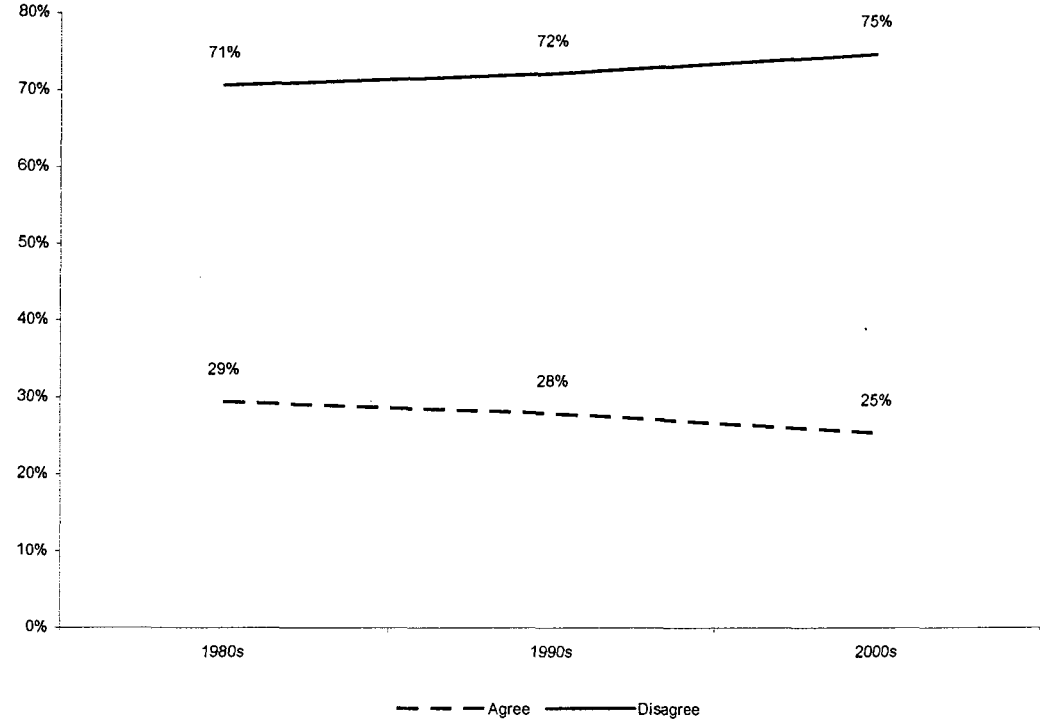
Figure 5 results show that respondents agreeing with the statement Environmental pollution is such a big problem that there is very little that individuals can do feel less empowered in acting in the protection of the environment. Therefore, respondents disagreeing with the statement will be more likely to feel empowered about the possibility to act in order to improve pollution problems.

In the 1980s, 60% of respondents disagreed with this statement. On the other hand, 40% agreed with the statement. Therefore, 60% of Canadians expressed a higher willingness to act independent of the size of the environmental problem. In the 1990s, the change is noteworthy. Seventy four percent of Canadians disagreed with the statement, an

increase of 14% from results in the 1980s. In consequence, more Canadians felt empowered. However, a bigger difference of 16% was perceived over the two decades for respondents who agreed with the statement. The difference was from 40% of respondents agreeing with the statement to 26% in the 1990s. Therefore, less people in the 1990s were pessimistic about acting against pollution in the 1980s. Figure 5 results show that in the 2000s, 72% of respondents disagreed with the statement, 2% less than in the 1990s, but 12% more than in the 1980s. On the other hand, 28% of respondents in the 2000s felt less empowered. Despite the slight change in Canadians' empowerment feeling about pollution abatement during the 2000s, it is possible to say that there is a stable dynamic over the three decades. Based on the findings, large majorities of Canadians feel empowered to act regardless of the size of the environmental problem. These results are similar to the findings of the environmental monitor (2006).

1.2. Canadians' tradeoffs questions and willingness to act in protecting the environment

Figure 6 Protecting the environment will increase unemployment in Canada



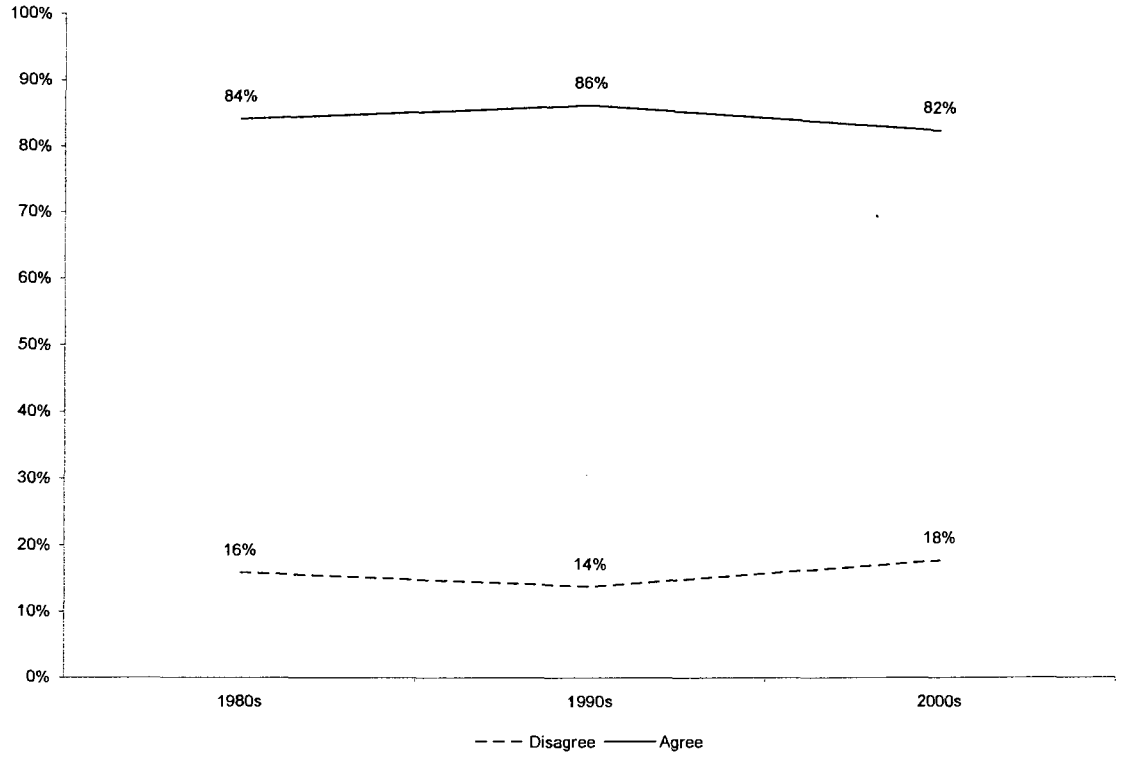
Source: Canadian Environmental Monitor. Data sets from 1987 to 2002 from Canadian Opinion Research Archive at Queen's University. Data sets from 2004 through 2007 are provided by McAllister Opinion Research Incorporated and GlobeScan Incorporated. Sample sizes n 1980s= 2,905; n 1990s = 5,810; n 2000s= 3,408.
Significant tests: Waller-Duncan test alpha 1980-1990 >0.05, 1980-2000 = 0.05, 1990-1980 > 0.05, 1990-2000 = 0.05, 2000-1980 = 0.05, 2000-1990 = 0.05

Cross-time results about respondents' willingness to act are possible with the use of the Canadian EM data sets. Figure 6 shows a traditional tradeoff question about environmental action. Respondents indicated whether they agree or not with the statement "protecting the environment will increase unemployment in Canada". During the eighties, Figure 6 results show that 71% disagreed with this statement, which means that 71% of the respondents do not make a negative connection between protecting the environment and increasing unemployment. Therefore, respondents who disagree with

this question will not have a problem in protecting the environment because they do not think this will increase unemployment. On the other hand, 29% of respondents during the eighties expressed disagreed with the statement. In the 1990s, there was a 1% increase (no significant difference) of respondents disagreeing with the statement and a decrease of also 1% (no significant difference) of respondents who agree with the statement.

Figure 6 results show that in the 2000s the shift is bigger: respondents disagreeing with the statement increased by 3% from the previous decade. The same difference was observed for the respondents who agree. Seventy five percent of Canadians in the 2000s do not agree with the statement that protecting the environment will increase unemployment in Canada. Also, 25% of respondents agreed with the statement. Based on these results, Canadians will not consider a tradeoff between the protection of the environment and unemployment over time, and the gap between Canadians who disagreed with that and Canadians who agreed is increasing over time.

Figure 7 The clean-up and protection of the environment will contribute significantly to the growth of our economy



Source: Canadian Environmental Monitor. Data sets from 1987 to 2002 from Canadian Opinion Research Archive at Queen's University. Data sets from 2004 through 2007 are provided by McAllister Opinion Research Incorporated and GlobeScan Incorporated. Sample sizes n 1980s= 2,914; n 1990s = 7,305; n 2000s= 3,618.
Significant tests: Waller-Duncan test alpha 1980-1990 =0.05, 1980-2000 > 0.05, 1990-1980 > 0.05, 1990-2000 = 0.05, 2000-1980 > 0.05, 2000-1990 = 0.05

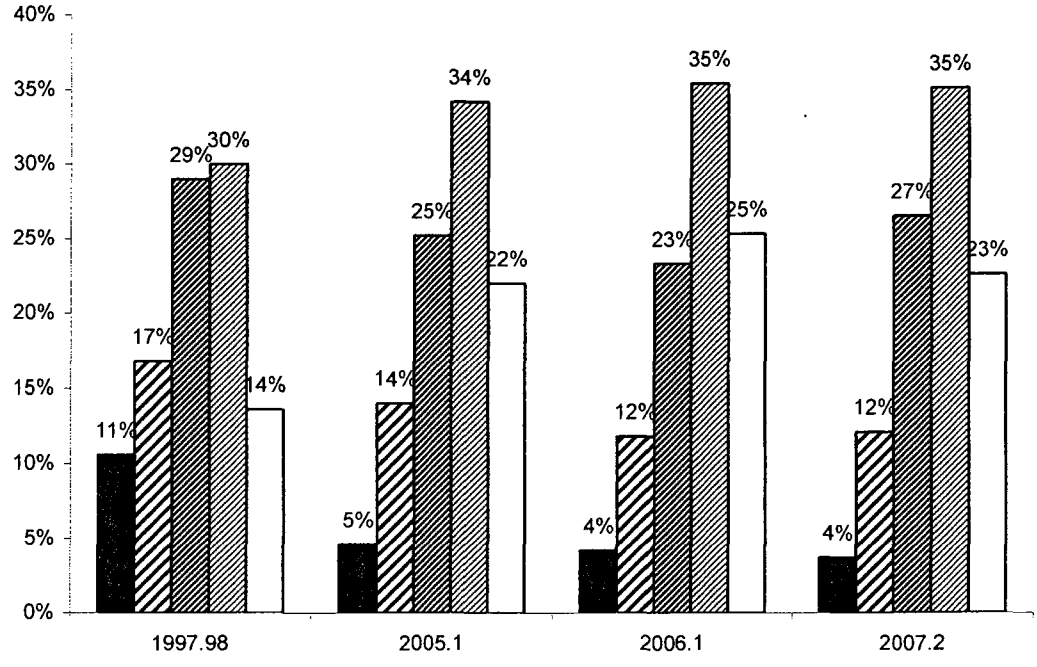
Figure 7 shows results about another tradeoff question about the protection of the environment as a contributor to the growth of the economy. In this case, respondents agreeing with the statement think that protecting the environment will contribute to economic growth. On the other hand, respondents disagreeing with the statement do not conceive the protection of the environment as a contributor of economic growth.

In the 1980s, results show that a majority of Canadians (84%) considered the clean-up and protection of the environment as a contributor to the growth of the economy. On the other hand, 16% disagreed with the statement. In the nineties, respondents agreeing with

the statement increased to 86%. Also, 14% of respondents over the same decade did not consider that the clean-up and protection of the environment would contribute to economic growth. The 2000s results show a 4% decrease of respondents agreeing with the statement; however, not lower than in the 1980s. A similar difference was found for respondents disagreeing with the statement: 18% of respondents in the 2000s. Therefore, Figure 6 results show that a majority of Canadians consider that the clean-up of the environment will contribute to economic growth. Canadians increasingly consider this from the 1980s to the 1990s, but this dynamic slightly changed in the 2000s.

It appears that when Canadians are asked tradeoff questions about protecting the environment and increasing unemployment as Figure 6 shows, the large majority disagrees with it (75% in 2000s). Moreover, Canadians increasingly disagree with this statement. These results are similar to another tradeoff question about economic growth. Figure 7 results show that a large majority of Canadians consider the clean-up of the environment a contributor to the economic growth (82% in 2000s). Therefore, based on Figure 6 and 7 results, it seems that there are high levels of Canadian willingness to act in protecting the environment, because they do not consider they existence of a possible negative effects on unemployment or economic growth. Nonetheless, based on Figure 6 and 7 results, it seems that Canadians are more pro-environment over time, but do they act? Are Canadians acting in the protection of the environment? And do their concern on climate change and green house gas emission have anything to do with it?

Figure 8 Purchase Index 1



Source: McAllister Opinion Research Incorporated and GlobeScan Incorporated. Sample sizes n 1997= 2,419; n 2005 = 1,698; n 2006= 1,659; 2007 n=1,921.
Significant tests: Waller-Duncan test alpha =0.05: 1997-2005=0.05, 2005-2006 = 0.05, 2006-2007 = 0.05. 2005-1997=0.05; 2005-2007=0.05, 2006-1997=0.05, 2006-2005=0.05; 2007-1997=0.05, 2007-2005=0.05, 2007-2006=0.05

1.3. Environmental behaviour in Canada

Figure 9 results show purchase Index 1, which was created by adding together the respondents' purchases of the following items: a product specifically bought because it was better for the environment, a device or electric device because it was more energy efficient, a water purification filter and organic food. The comparable results presented in Figure 9 are for the years 1997, 2005, 2006 and 2007. Figure 9 presents the results on a scale from 0 to 4, with 0 being no products were bought by respondents and 4, four products were acquired. The black bar in the graph means no products were bought by the respondents. In 1997, 11% of the respondents did not purchase any environmentally

friendly product of index 1. Seventeen percent bought one product, 29% bought two products, 30% acquired three products and 14% acquired four.

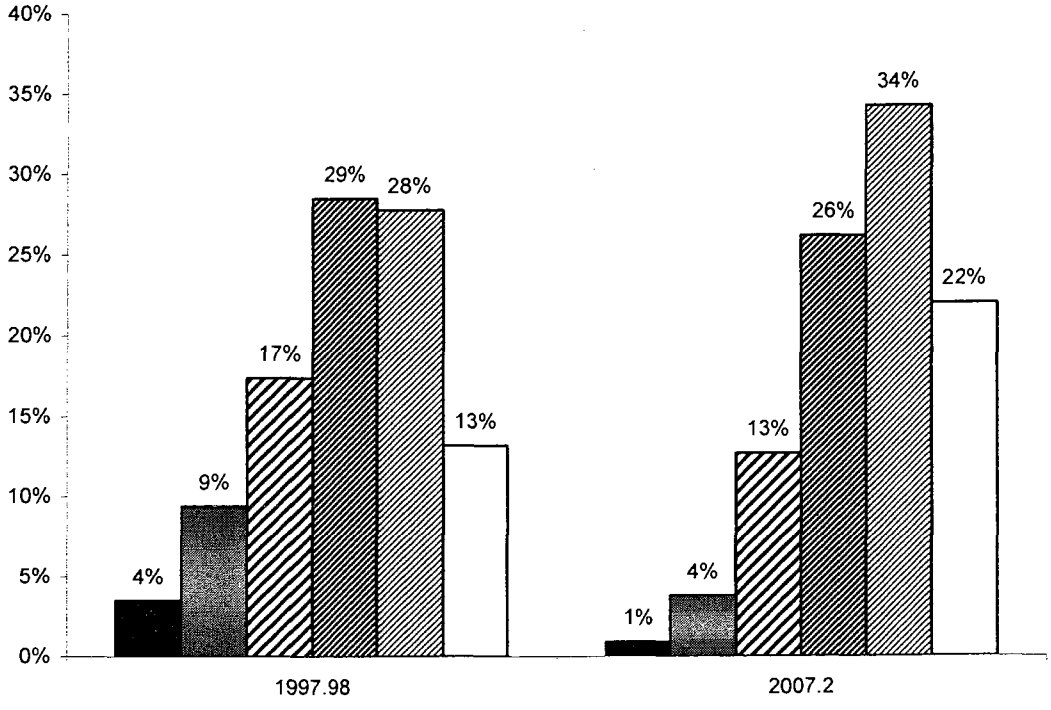
Figure 9 shows that in 2005, it appears that more people were interested in buying environmentally friendly products than in 1997. Five percent of the respondents did not buy any product; this difference was significantly less than in 1997. Thirty four percent of respondents got three environmental friendly products, a 4% significant increase since 1997. Fourteen percent of respondents got one product and 25% got two products. There was a decrease in purchases of one and two products compared with 1997. Finally, 22% of the respondents acquired four environmentally friendly products, a positive significant difference of 8% from 1997 results. These results suggest that Canadians were increasingly interested in acquiring more environmentally friendly products for their households.

In 2006, 1% fewer respondents than in 2005 did not get any environmentally friendly product; less people also acquired one and two products. However, more people got three (+1%) and four (+3%) products. In 2006, more people purchased more environmentally friendly products than in the previous years. Less people did not consume these types of products.

In 2007, the situation for not acquiring any product or getting just one product did not change from 2006. However, there was a 3% increase of respondents purchasing two environmentally friendly products. This was not the same for respondents purchasing three and four products. The behaviour of consumers buying three products remained the same in 2007, but the consumption of four products slightly decreased in 2007 by 1%.

Overall, these results suggest that there was a significant and gradual increase of green behaviour measured by various purchases in Canada. The 2000s were particularly important for green behaviour activities. Fewer people were not participants of this trend. More and more Canadians were interested in getting products less harmful to the environment, such as an electric device, a water purification filter and organic food. Additionally, there is a significant change from the late 1990s to the late 2000s. It seems that Canadian consumers were significantly greener in the 2000s than in the 1990s. This can be further observed in figure 9.

Figure 9 Purchase Index 2



Source: Source: Canadian Environmental Monitor. Data sets from 1987 to 2002 from Canadian Opinion Research Archive at Queen's University. Data sets from 2004 through 2007 are provided by McAllister Opinion Research Incorporated and GlobeScan Incorporated. Sample sizes n 1997= 1,419; n 2007= 1,920
Significant test: t-test: 1997-2007 = sig (2-tailed) 0 at 0.05 confidence interval

Results of figure 9 show a second type of index created in order to include recycling behaviour in the analysis. The variable added to the index was related to garbage set aside

or reused, recycled or disposed safely. Therefore, this index will have 5 different scales. Zero indicates none of the products or possibilities of green behaviour were taken by the respondents and 5 indicating that all of them were done or bought. This index was only possible for the years 1997 and 2007, due to data limitations described in the methodology chapter.

Figure 9 results show that in 1997, 4% of the respondents indicated that they did not buy any environmentally friendly product or engage in a green behaviour. Seventeen percent of the respondents did acquire or incur into two out of five possibilities of green behaviour. Respondents who took three and four green actions were between 29% and 28%, respectively, of the respondents. Thirteen percent did buy all the products available and also recycled at home. Figure 9 results show that in 2007, just 1% of respondents did not engage in any of the green actions available, which was a 3% decrease from 1997. Also, there was a decrease of people just acquiring two items or recycling behaviour from 9% in 1997 to 4% in 2007, and a 4% decrease for doing three possibilities out of the five of green behaviour. There was a 2% decrease for engaging in three activities of green behaviour. However, respondents taking four environmentally friendly actions increased by 6% from 1997 to 2007. Moreover, an increase of 9% was observed for respondents who bought four environmentally friendly products and also set aside garbage or recycled at home.

What these results suggest is that there is a change in consumer behaviour from the 1990s to the 2000s. More Canadians engaged in different types of green behaviours This is similar to Blake's et al.'s claim about increase participation on green behaviours (Blake et al., 1997). More Canadians considered environmentally friendly products or actions in

the 2000s than in the 1990s. Similar to previous results, a general increase of environmental friendly behaviour is observed considering separately the change across time (1997 and 2007) of each of the items purchased and the recycle activities used in the different indexes created to measure environmental behaviour. On average there is an increase of 11% in 10 years of Canadians environmental friendly behaviours. The purchasing of products because is better for the environment increased 5% from 1997 (9%) to 2007(14%). Followed by the increase of 9% purchases of water purificator because is better for the environment. During the same decade there is an increase of 12% of purchases of energy efficient appliance or light-bulb because is better for the environment. Likewise, there is an increase of 13% of purchase of organic food from 1997 (17%) to 2007 (30%). Finally, the biggest increase in the decade is for garbage set aside to re-use, recycle or dispose safely. There is 17% increase of Canadian recycling activities in a period of ten years, from 41% in 1997 to 58 % in 2007.

In sum, Canadians' behaviours are increasingly greener, more people are purchasing goods because it is better for the environment, and more Canadians consider recycling and proper management of their waste as part of their day to day activities. The issue now will be who they are and what are the more significant characteristics of Canadians willing to act or to change their behaviours to more environmentally friendly one.

2. What accounts for environmental action in Canada

2.1. Canadians' pro-environmental reactions about the protection of the environment and willingness to act:

Table 3 shows the results of the regression analyses for 2007 data for the available questions: At times, I get upset because of the lack of action taken to protect the environment, and the cleanup and protection of the environment will contribute significantly to the growth of our economy[11].

Table 3 Regression analyses of pro-environmental reactions and tradeoffs

	At times I get upset because of lack of action being taken to protect the environment			The clean-up and protection of the environment will contribute significally to the growth of our economy		
Intercept	Unstandardized Coefficients B	Standardized Coefficients Beta		Unstandardized Coefficients B	Standardized Coefficients Beta	
(Constant)	-0.051			1.643		
	(0.242)			(0.266)		
Level of education	0.013	0.024		-0.014	-0.027	
	(0.014)			(0.016)		
Age 6	-0.014	-0.023		-0.012	-0.02	
	(0.014)			(0.015)		
Levels of income	0.002	0.002		0.038	0.046	
	(0.021)			(0.023)		
Community size	0.039	0.042	*	0.01	0.011	
	(0.024)			(0.026)		
Postmaterialism	0.069	0.034		0.027	0.014	
	(0.048)			(0.053)		
Liberal	0.059	0.026		0.024	0.011	
	(0.057)			(0.062)		
Conservative	-0.206	-0.114	***	-0.164	-0.094	**
	(0.049)			(0.053)		
English	-0.035	-0.015		0.214	0.094	
	(0.13)			(0.142)		
male	-0.029	-0.017		0.012	0.007	
	(0.042)			(0.046)		
Ontario	0.136	0.068		-0.187	-0.096	
	(0.127)			(0.139)		
West British Columbia	0.153	0.089		-0.207	-0.124	
	(0.125)			(0.136)		
Atlantic	0.132	0.032		-0.046	-0.012	
	(0.152)			(0.166)		
Rate of private industries	0.042	0.035		-0.069	-0.059	**
	(0.033)			(0.036)		
Rate of federal government	0.149	0.129	***	0.08	0.071	**
	(0.035)			(0.038)		
Rate of provincial government	0.037	0.032		-0.024	-0.021	
	(0.034)			(0.037)		
Rate of municipal government	-0.024	-0.022		-0.007	-0.006	
	(0.029)			(0.032)		
Rate individual Canadians	-0.032	-0.028		-0.034	-0.031	
	(0.028)			(0.031)		
Concern on manufacture, use and disposal of toxic materials	0.054	0.032		0.059	0.036	
	(0.046)			(0.05)		
Concern on the quality of air	0.045	0.033		0.11	0.083	**
	(0.04)			(0.044)		
Concern on the quality of water	0.036	0.026		0.015	0.011	
	(0.039)			(0.043)		
Concern on nuclear energy	0.029	0.028		0.027	0.028	
	(0.028)			(0.031)		
Concern on climate change	0.229	0.194	***	0.085	0.074	**
	(0.034)			(0.038)		
Concern on use of fossil fuels, such as oil, gas and coal	0.126	0.102	***	0.075	0.062	***
	(0.034)			(0.037)		
Concern on depletion of natural resources	0.122	0.098	***	0.082	0.068	***
	(0.035)			(0.038)		
Concern on the disposal of municipal and manufacturing waste	0.095	0.066	**	0.034		**
	(0.038)			(0.042)	0.024	
R2	28.70%			10.80%		
n	2001			2001		

*p<0.1**p<0.05 ***p<0.001 (Standard error)

Source: 2007 Canadian Environmental Monitor provided by McAllister Opinion Research Incorporated and GlobeScan Incorporated. Sample sizes n 1980s= 7,562; n 1990s = 34,890; n 2000s= 15,792.

Table 3 compares the results of the effects on Canadians' reactions to the protection of the environment and their willingness to act produced by the predictors of action analyzed in Chapter 2 and the effect of each type of environmental concern.

The significant results shown in Table 3 for Canadians being upset because of the lack of action taken in the protection of the environment are concern on climate change; poor rating of performance of the federal government, conservative party vote intention [12]; concern on green house gas emissions; concern on depletion of natural resources, concern on the disposal of municipal and manufacturing waste and community size. Therefore, people concerned on issues such as climate change, depletion of natural resources, disposal of waste and not interested in voting for the conservative party are more likely to get frustrated by the lack of action in protecting the environment.

It is noteworthy that this is the first time that community size is part of the significant factors in the analysis, which means that the larger the size of the community, the more concerned the people are about the lack of action taken to protect the environment. These results suggest that the effect in explaining people's upset reactions is mostly given by people's concern on climate change and green house gas emissions, poor rate of performance of the federal government in protecting the environment and by the vote intention for the political party.

[12] As requested by the second supervisor of this thesis, additional regression analyses were performed to verify the explanatory power of vote intention on the measures of willingness to act. When removing the variable vote intention from the analysis of willingness to act indicators, results are not significantly different from the original analysis. However, results for the regression analysis of lack of action now include postmaterialism in the analysis. But, the effect of this variable is low compared with the other explanatory variables. On the other hand, results for the tradeoff questions related to economic growth have one less significant variable in the analysis.

Predictors of environmental action given in Chapter 1, such as the economics argument operationalized by income, postmaterialism and cognitive mobilization with education as a proxy were not significant on the regression analysis. Table 3 significant results of the regression for the tradeoff question between cleanup of the environment and economic growth are slightly different from the previous question. In declining order of explanatory power, the significant effects are vote intention for the conservative party, concern on the quality of air, climate change, green house gas emissions, poor rating of the federal government, concern on the depletion of natural resources, and rate of performance of industries. Noteworthy is that people concerned about the poor rating of performance of private industries are less likely to consider that the clean up and protection of the environment will contribute to the growth of the economy. This could be explained by the fact that respondents may think about a positive relationship with the private industries' role in the growth of the Canadian economy. Similar to results for people being upset because of the lack of action in protecting the environment, the effect of concern on climate change and green house gas emissions is very strong. Also similar is that concern on the depletion of natural resources has a significant moderate effect. Different, however, is the effect of concern on air quality.

The inference of the concern on environmental issues makes it possible to think that respondents agreeing with this statement are having a more open concept of economic growth, such as the importance of sustainable development, and relate inaction with harm for the growth of the economy. This would confirm Brechin and Kempton's (Brechin & Kempton, 1997) claim about the concept of environmentalism as integral to sustainable economic development.

Table 3 results have various elements in common: the strong influence on pro-environmental reactions and willingness to act given by concern on climate change and green house gas emissions, the strong negative effects of vote intentions for the conservative party, and the poor rate of performance of the federal government. Possible explanations given by the economics argument, cognitive mobilization and postmaterialism did not work. In addition, the effect of gender is surprisingly not significant in these analyses.

Table 4 2007 Regression analyses of purchase indexes

Intercept	Purchase Index 1 Unstandardized Coefficients B	Standardized Coefficients Beta		Purchase Index2 Unstandardized Coefficients B	Standardized Coefficients Beta	
(Constant)	-0.422			0.265		
	(0.323)			(0.338)		
Level of education	0.025	0.037		0.042	0.059	**
	(0.019)			(0.02)		
Age 6	-0.031	-0.042		-0.026	-0.034	
	(0.019)			(0.02)		
Levels of income	0.141	0.134	***	0.166	0.151	***
	(0.029)			(0.03)		
Community size	-0.009	-0.008		-0.016	-0.013	
	(0.032)			(0.033)		
Postmaterialism	0.212	0.085	***	0.216	0.082	***
	(0.064)			(0.067)		
Liberal	-0.058	-0.021		-0.07	-0.024	
	(0.076)			(0.08)		
Conservative	-0.034	-0.016		-0.035	-0.015	
	(0.065)			(0.068)		
English	0.427	0.148	**	0.433	0.142	**
	(0.175)			(0.183)		
male	-0.207	-0.098	***	-0.219	-0.099	***
	(0.056)			(0.058)		
Ontario	-0.145	-0.059		-0.098	-0.038	
	(0.171)			(0.179)		
West British Columbia	-0.209	-0.099		-0.197	-0.088	
	(0.168)			(0.175)		
Atlantic	-0.314	-0.062		-0.298	-0.056	
	(0.205)			(0.215)		
Rate of private industries	0.018	0.012		0.007	0.004	
	(0.045)			(0.047)		
Rate of federal government	0.116	0.082	**	0.126	0.085	**
	(0.047)			(0.049)		
Rate of provincial government	0.003	0.002		0.005	0.003	
	(0.045)			(0.047)		
Rate of municipal government	-0.02	-0.015		-0.016	-0.011	
	(0.04)			(0.041)		
Rate individual Canadians	-0.064	-0.047	*	-0.098	-0.068	**
	(0.037)			(0.039)		
Concern on manufacture, use and disposal of toxic materials	0.179	0.087	**	0.185	0.086	**
	(0.061)			(0.063)		
Concern on the quality of air	0.004	0.002		0.005	0.003	
	(0.054)			(0.056)		
Concern on the quality of water	0.064	0.038		0.057	0.032	
	(0.052)			(0.055)		
Concern on nuclear energy	0.02	0.017		0.016	0.012	
	(0.037)			(0.039)		
Concern on climate change	0.117	0.081	***	0.135	0.089	**
	(0.046)			(0.048)		
Concern on use of fossil fuels, such as oil, gas and coal	0.212	0.141	***	0.219	0.138	***
	(0.045)			(0.048)		
Concern on depletion of natural resources	-0.034	-0.022		-0.031	-0.019	
	(0.047)			(0.049)		
Concern on the disposal of municipal and manufacturing waste	0.092	0.052	*	0.106	0.057	**
	(0.051)			(0.053)		
R2	14.90%			16.10%		
n	2001			2001		

*p<0.1 **p<0.05 ***p<0.001 Source: Canadian Environmental Monitor provided by McAllister Opinion Research Incorporated and GlobeScan Incorporated. Sample sizes n 1980s= 7,562; n 1990s = 34,890; n 2000s= 15,792.

2.2. Environmental behaviour in Canada

Table 4 results show that significant results of the regression for Index 1 are: English language spoken at the interview, concern on use of fossil fuels or green house gas emissions, income level, gender, postmaterialism, poor rating of the federal government, concern on the manufacture of toxic materials, on climate change, on disposal of waste, and the performance of individuals. It seems that concern on green house gas emissions is again having a powerful and significant effect on green behaviour. In addition, individuals whose language is English, with higher income, female, and postmaterialist were more likely to purchase environmental products than their counterparts. [13]

Individuals who poorly rate the federal government and positively rate individual Canadians in protection the environment were also more likely to purchase environmentally friendly goods. Furthermore, Canadians concerned about issues such as toxic materials and waste were more likely than others to acquire better products for the environment. What these results suggest is that economics argument, gender and postmaterialism have a significant effect on green consumer behaviour as discussed in chapter 1. These predictors of environmental action, along with concern on green house gas emissions, explain people's decisions to purchase environmentally friendly products.

Table 4 results for the purchase Index 2, which includes recycling behaviour, has similar results to Index1 regression. The significant indicators for Purchase Index 2,

[13] As requested by the second supervisor of this thesis, other regression analyses were performed to verify the influence of vote intention on environmental actions. When removing the vote intention variable from the analysis of environmental action based on the two purchase indexes variables, results do not differ considerably with the original analysis. Notwithstanding its low significant weight, new regression results for the purchase index 1 include age as a significant variable however with a low significant weight.

including recycling behaviours, are income levels, English language spoken at the interview, concern on green house gas emissions, gender, concern on climate change, postmaterialism, concern on the poor rating of the federal government, education level, performance of individual Canadians and concern on disposal of waste. Similar to the purchase Index 1 results, the influence of income is very strong [14]. Also similar is the implication of concern on green house gas emissions and climate change in consumer and recycling behaviour. Gender is displaced by the effect of language, though still very strong. Also similar is the effect of postmaterialism. Therefore, respondents with higher income, female, with higher education and holding postmaterialist values are more likely to purchase environmental products and recycle at home.

Respondents whose rating is poor for the federal government and positive for individual Canadians will be characteristic of green behaviour. Therefore, people who poorly rate the federal government in protecting the environment are more likely to purchase green products and recycle, and people who poorly rate individual Canadians are less likely to buy green products or recycle. This could also mean that rates of performance of individual Canadians are more favourable. Additionally, respondents concerned about toxic materials and waste are also more likely to purchase products because they are better for the environment and will recycle, reuse or dispose safely.

[14] As requested by the second supervisor of this thesis, a new codification of income and education variables were done for the environmental action regression analyses. However, the use of a new codification of income and education variables using dummies variables in the analysis of environmental action do not translate in considerable changes of the analysis because there is a linear relationship between income, education and environmental actions. There is one exception in the case of lack of action, when high income and mid income variables become significant in the analysis but without a strong effect. In the case of economic growth there are not changes in the number of the significant variables included in the analysis. When using dummy variables for levels of income and education in the analyses of environmental actions based on the purchase index 1 there are not differences in the significant variables. For the analysis of purchase index 2, two significant variables are excluded from the analysis; education and concern on disposal of waste.

Table 4 results are similar to Table 3 results in various aspects. There is a strong influence of concern on green house gas emissions and climate change in Canadians' environmental actions, such as willingness to act and green behaviour. Concern on disposal of waste has an implication also on both measures of environmental action, nor as strong as the implication of concern on green house gas emissions and climate change. Therefore, concerns on climate change and green house gas emissions different than other types of environmental concerns, which draw more attention from Canadian publics, have strong implications in Canadians' environmental actions.

Also similar to the effect of Canadians' environmental concerns, but to a different degree, is the influence of a poor rating of the federal government in protecting the environment on environmental actions. This could be an indication of Canadians loosing faith in the abilities of the federal government, to contend with environmental problems. Nevertheless, there are also factors which explain Canadian willingness to act but not environmental behaviours or vice versa. For example, environmental concerns, such as depletion of natural resources and air quality have implications in Canadians willingness to act but not in Canadians' green behaviours. And concern on manufacture of toxic materials has an implication in Canadians environmental behaviours but not in Canadians' willingness to act. And factors such as community size, conservative vote intention, and poor rating of private industries in protecting the environment have implications on Canadians' willingness to act but not in green behaviors. Furthermore, there are factors that explain green behaviours but do not explain Canadians' willingness to act, such as income, postmaterialism, gender, education, language and rate of performance of individual Canadians.

Table 3 and 4 results demonstrate the explanatory power of environmental concern on green house gas emissions and climate change in explaining Canadians' environmental action. In addition, as indicated in previous research findings; respondents with higher income levels, better educated and postmaterialist are more likely to purchase green products and recycle at home. Therefore, cognitive mobilization, postmaterialism and the economics argument do explain environmental behaviour in Canada.

This analysis reproduced results previously found in various studies examined in Chapter 1. In addition, it makes it possible to answer the third set of questions posed at the introduction of the thesis: Concern on climate change and green house gas emission do have strong implications in Canadians' willingness to act and Canadian's environmental behaviours. And, there is a strong association between environmental concern and action in Canada.

Chapter 5 - Conclusions

1. Environmental Concern in Canada

Three sets of questions were asked at the beginning of this study about Canadians' outlooks toward the environment. The answers were possible by analyzing evidence from the Canadian Environmental Monitor (1987-2007). Some infers were related to international poll results about environmental concern as a world wide phenomena and the possibility that Canada will be a very concerned post-industrialized country. More specifically, some infers were about the high salience of concern on climate change related issues happening in Canada. Findings from this research supported these speculations. Furthermore, when Canadians were asked if they consider making changes in their lifestyle and behaviour in order to reduce the amount of climate changing gases they produce, they overwhelmingly said yes. These results suggest that issues related to climate change are considered serious problems by Canadians, and they are willing to change their lifestyle in order to protect the environment. However, a link between Canadians considering climate change a serious problem and their willingness to act in order to deal with the problem was not clear. The Canadian EM was instrumental in further understanding this association.

Findings from this research confirm Dunlap's (R. E. Dunlap & Michelson, 2002) claim about environmental concern as a complex concept. Fortunately, overtime data of the Canadian EM make it possible to say that the organization of Canadians' environmental concern was neither grouped by a local or global dimension, or specific or more general types of concern (Blake et al., 1997), (McAllister, 1994), (Rohrscheneider, 1988) and(Wall, 1995), but by the extent of influence of environmental concern in

environmental action. Therefore, the conceptualization of environmental concern in Canada was analyzed from the relevance for action of first, concern on issues, such as climate change and green house gas emissions and; second, environmental concerns on issues such as use of toxic materials, quality of air and water, disposal of waste, nuclear energy and depletion of natural resources. The findings of this research are similar to Pakulski and Tranter's (J. Pakulski & Tranter, 2004) analysis of the Australian public's orientations toward the environment. They were also interested in understanding the bifurcation of environmental concern and its implication on environmentalism in Australia.

Therefore, in order to respond to the first set of research questions posed in the introduction, Canadians are very concerned about the environment. However, concerns about the environment do vary from one respect to another. Canadians' top concerns were about toxic materials, air quality and water quality; however, over time Canadians are increasingly concerned about climate change and green house gas emissions. Furthermore, Canadians' concerns about the environment have shifted over time and the trends vary depending on the type of degradation being addressed.

In reference to the second set of research questions, Canadians' concern on issues related to toxic materials and air and water quality has a stable dynamic over the three decades. On the other hand, concern on climate change and green house gas emissions presented a rapid and upward dynamic. Therefore, the dynamic of environmental concern depends on the types of issues. Downs's issue-attention cycle (Downs, 1972) does not necessarily respond to the concept of environmental concern in Canada; however, as Downs also warned about the inherent characteristics of environmental issues to keep

salience in the public's attention, findings from this research show that environmental concern in Canada has not faded from the public's attention. Moreover and similar to Pakulski and Tranter's (J. Pakulski & Tranter, 2004) concept of routinization of environmental concern and the mainstream media effect to maintain salience in the public's attention, findings of this research make it possible to say that environmental concern's salience will remain high in Canada. What accounts for the dynamics of environmental concern responds to Nevitte and Kanji's (Nevitte & Kanji, 1995)claim about the shift of values in Canadian society. This shift is more characterized by a Postmaterialist value shift in Canadian Society than by higher levels of education or cognitive mobilization in Canadian society. It is noteworthy that the influence of the economics argument was not as expected. This could be explained by the claim of Wall (Wall, 1995) and Pakulski and Tranter (J. Pakulski & Tranter, 2004) about the popularization or the trickling down in society of environmental concern.

Considering the influence of socio-demographic indicators of environmental concern, findings of this research confirm previous research findings about the strong influence of gender; women are more likely than men to be concerned about the environment. Also significant is the effect of political party vote intention: respondents considering voting for the conservative party are less likely to be concerned about environmental issues in Canada. However, the effects of age had mixed results depending on the issue of concern analyzed. Older people were more likely to be concerned about toxic issues. On the contrary, younger people were more likely to be concerned about climate change. The effect of region was significant and showed that Canadians living in the West region were less concerned about environmental issues. Effects of community

size were not significant. Finally, findings also show that English speaking Canadians were more likely to be concerned about the environment.

Another important predictor of environmental concern in Canada has to do with Dunlap's (R. E. Dunlap & Michelson, 2002) claim of the importance of the concern about societal actors' role in protecting the environment, which is confirmed with results of this analysis. Poor ratings of private industries and the federal government in protecting the environment had a negative and strong effect for the different types of concern identified in Canada during the last three decades. This would make it possible to say that Canadians are increasingly losing faith in the capacity of their federal government and private industries to protect the environment.

2. Environmental action in Canada

In answering the third set of research questions, Canadian EM results make it possible to claim that Canadians' pro-environmental reactions, willingness to act and behaviours in the protection of the environment are very high and are increasing since the 1980s, with their highest level in the 1990s. Furthermore, the influence of environmental concern on climate change and green house gas emissions is very strong and significant in Canadians' pro-environmental reactions and behaviours. Additionally, Canadians' empowerment feelings about the possibility to make individual actions in order to protect the environment have also increased. Individual Canadians' actions are more relevant than before when considering willingness to act. In addition, Blake's (Blake et al., 1996) green behaviour and Hunter et al.'s (Hunter et al., 2004) private behaviour activities, such as purchasing goods because it was better for the environment and recycling activities, also increased in Canada over time.

Considering the link between environmental concern and action in Canada, it is relevant to say that; first, there is a strong influence of concern on green house gas emissions and climate change in Canadians' environmental actions, such as willingness to act and green behaviours. Canadians concerned about these issues are more likely to act and to commit green behaviours. Also very significant is the influence of a poor rating of the federal government in protecting the environment on environmental actions. Due to the strong significant effects of postmaterialism, higher income levels, higher levels of education , gender and political party vote intention in explaining green behaviours, it is possible to say that results in Canada are very similar to previous research findings. Results of this analysis confirm that Canadians are very concerned about the environment and they are willing to act in the protection of the environment. Moreover, they are increasingly involved in green behaviours that directly implicate them.

3. Implication of this research

This cross-time analysis of environmental concern and action in Canada is an instrument to further understand what Canadians consider as their most pressing preoccupations about the environment. Moreover, what Canadians are willing to do in order to protect the environment. Policy implications are clearly a result of this investigation. Governments, entrepreneurs, politicians and media leaders may consider different approaches to the protection of the environment. They may be more proactive in considering a change of behaviours or will propose more aggressive policy measures in protecting the environment. In addition, media managers could eventually focus on issues that respond to Canadians' biggest environmental preoccupations. Furthermore, environmental advocacy groups will be able to stress their efforts on specific

environmental issues, such as climate change and green house gas emissions. However, the biggest implications are for individual Canadians to realize that individual actions are probably the best thing they are currently doing in the protecting of the environment. As Pakulski and Tranter (J. Pakulski & Tranter, 2004)mentioned, environmentalism is more popular and has spread to the general public. Canadians do have the necessary tools for change that Dunlap's (R. Dunlap, 1992) analysis about environmentalism in the United States did not find. This is due to the reason that change is coming from empowered individual Canadians protecting the environment.

4. Limitations of this research

It is important to mention that various limitations to this research make it difficult to analyse the information contained in the Canadian Environmental Monitor. First, the existence of technical information of the data sets from 1987 to 2004 affected the time consumed in order to build merged data sets. In addition, the inconsistence in some of the questionnaires limited the variety of issues available to analyze environmental concern and environmental action in Canada. The use of the postmaterialism index only in the 2007.2 file limited the analysis of environmental concern and action only to questions asked in this year. Also, the lack of data collected about concern on fossil fuels in the 1980s made less clear the analysis over time. On the side of the literature review, research on Canadians' orientation towards the environment is limited to specific years and issues. Nevertheless, this is the first time a three decade analysis of environmental concern is conducted in Canada.

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Appendices

Appendix 1 Environmental concern questions

Now I'd like to ask you about various environmental issues. Are you very concerned, somewhat concerned, or not very concerned about...? Read and rotate

1.00 Not at all concerned
2.00 Not very concerned
3.00 Somewhat concerned
4.00 Very concerned

1. The manufacture, use and disposal of toxic chemicals (conctoxic)
2. The quality of air (conair)
3. The quality of water (conwater)
4. Nuclear energy (conucleare)
5. Changes in our climate due to the greenhouse effect(Concclimglob)
6. The use of fossil fuels, such as oil, gas and coal. (conusefossil)
7. Depletion of natural resources (condeplnatur)
8. The disposal of municipal and manufacturing waste (conwaste)

The name of the variable used in the analysis is indicated in parenthesis.

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Appendix 2 Socio-demographic Indicators and predictors of environmental action

1. Age (age6)
   - 1.00 18 thru 24 yrs
   - 2.00 25 thru 34 yrs
   - 3.00 35 thru 44 yrs
   - 4.00 45 thru 54 yrs
   - 5.00 55 thru 64 yrs
   - 6.00 65+yrs

2. Gender (sex)
   - 1.00 Male
   - 2.00 Female

3. Level of education (education)
   - 1.00 No schooling
   - 2.00 Some elementary (grades 1-7)
   - 3.00 Completed elementary (grade 8)
   - 4.00 Some high school (grades 9-11)
   - 5.00 Completed high school (grade 12 or 13)
   - 6.00 Community college, vocational, trade school, CEGEP
   - 7.00 Some university
   - 8.00 Completed university (bachelor's degree)
   - 9.00 Post graduate (Masters degree or PhD)

4. Level of Income (Income)
   - 1.00 Under $20,000
   - 2.00 $20,000 to $40,000
   - 3.00 $40,000 to $60,000
   - 4.00 over $60,000

5. Language (english)

   Language (language)
   - 1.00 English
   - 2.00 French
   - 3.00 Other

   English (english)
   - 1.00 English

6. Community size (commsize)
   - 1.00 Less than 10,000
   - 2.00 10,000-100,000
   - 3.00 100,000-1,000,000
   - 4.00 Over 1 million

7. Vote intention for (VoteFor)
   Dummy coded variables for
   The Liberal Party
   The Conservative Party
   The New Democratic Party

8. Postmaterialism (postmat)

Answers to the question: In your opinion Which of these items is the most important to you, And what would be the next most important?

1. Maintaining the order in the nation
2. Giving people more say in important government decisions
3. Fighting rising prices
4. Protecting freedom of speech.

Respondents selecting question 1 and question 3 are considered materialists
Respondents selecting questions 2 and 4 are considered Postmaterialists

- pm
  1.00 Materialist
  2.00 Mixed
  3.00 Postmaterialist

- postmat
  1.00 Postmaterialist

9. Decades (decade)
   1.00 1980s
   2.00 1990s
   3.00 2000s

The name of the variable used in the analysis is indicated in parenthesis.

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Appendix 3 Rate of Performance

How would you rate the performance of the following groups in protecting the environment? Would you say that each has done an excellent, good, fair or poor job?

[READ AND ROTATE]

1.00 Excellent
2.00 Good
3.00 Fair
4.00 Poor

1. Rate private industries (Rateindust)
2. Rate of the federal government (ratefedg)
3. Rate of the provincial government (Rateprovg)
4. Rate of performance of the municipal government (ratemung)
5. Rate of performance of the individual Canadians (rateindcan)

The name of the variable used in the analysis is indicated in parenthesis.

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Appendix 4 Environmental Action questions

Pro-environmental reaction and tradeoffs questions

Please tell me if you strongly agree, somewhat agree, somewhat disagree or strongly disagree with each of the following statements.

1.00 Strongly disagree
2.00 Somewhat disagree
3.00 Somewhat agree
4.00 Strongly agree

1. At times I get upset when I think about the lack of action being taken to protect the environment (lackofaction)
2. Environmental pollution is such a big problem that there is very little the individuals can do (littleindiv)
3. Protecting the environment will increase unemployment in Canada (envunempl)
4. The clean-up and protection of the environment will contribute significantly to the growth of our economy. (cleangrowth)

The name of the variable used in the analysis is indicated in parenthesis.

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Environmental behaviour -Purchase Indexes

Purchase Index 1

Please tell me whether or not you have each of the following around your home right now. [READ AND ROTATE]

1.00 Yes, I have it at home
2.00 No, I don't have it

1. A product you bought specifically because it was better for the environment (envpurch)

2. A device such as a light-bulb or appliance you bought specifically because it was more energy efficient (purcenereff)

3. A water purification filter that you regularly use (purcwatpur)

4. Food chosen specifically because it was grown organically or without the use of chemicals (purchorgfood)

Purchase Index 2

Please tell me whether or not you have each of the following around your home right now. [READ AND ROTATE]

1.00 Yes, I have it at home
2.00 No, I don't have it

1. A product you bought specifically because it was better for the environment (envpurch)

2. A device such as a light-bulb or appliance you bought specifically because it was more energy efficient (purcenereff)

3. A water purification filter that you regularly use (purcwatpur)

4. Food chosen specifically because it was grown organically or without the use of chemicals (purchorgfood)

5. Garbage you have set aside to re-use, recycle or dispose of safely (greusecyle)

The name of the variable used in the analysis is indicated in parenthesis.

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Appendix 5 sample sizes

Canadian Environmental Monitor Sample sizes on environmental issues selected

Wave	Sample size
1987_4**	n=1503
1988_4	n=1504
1989_4	n=1518
1990_4	n=1495
1991_4	n=1506
1992_1	n=1500
1992_4	n=1507
1995_4-1996_1	n=1510
1998_1	n=1501
1998_4	n=1549
1999_4-2000_1	n=1591
2001_1	n=1547
2004_3&4	n=1506
2005_2	n=1754
2006_1	n=1766
2007_2	n=2001

**_ sign corresponds to the number of waves on the year indicated

Sources: 1987 to 2002 data: Environics Environmental Monitor. Produced by Environics Research Group. Distributed by Canadian Opinion Research Group (CORA), Queen's University.
2004 to 2007 data: Environmental Monitor ™ (2004-1&2, 2004-3&4, 2005-1&2, 2005-3&4, 2006-1&2, 2006-3&4, 2007_2) licensed to McAllister Opinion Research produced by GlobeScan Incorporated.