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Climate Change Identities 2014

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Climate Change Identities 2014

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WORCESTER POLYTECHNIC INSTITUTE in partial fulfillment of the
requirements for the Degree of Bachelor of Science

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Abstract

By collecting and analyzing public interviews, this project assisted Landcare Research in its study of responses of New Zealanders to climate change; public reaction is a key component of climate change prediction. Our team developed a framework of four theories for understanding perceptions of climate change among the people of New Zealand. Those theories involve observations about frustration, media coverage, and economic aspects of climate change as well as research questions to further refine Landcare's understanding of citizens' perceptions.

Executive Summary

Few global problems have the potential to become as large and as widespread as climate change. Global temperatures are expected to increase, and in New Zealand, this could cause an increase in heat stress and subtropical diseases in the summer and an increased frequency of extreme, and potentially damaging, events such as floods, droughts and storms (Ministry for the Environment, 2009).

The aim of Landcare Research - Manaki Wenua's work in its Climate Change Impacts & Implications project (CCII) is to explore New Zealand's climate change scenarios and response options out to 2100. Our project was designed to help Landcare Research refine its predictions and its options by providing better insights into the way New Zealand's civil society thinks about the future of climate change.

Methodology

To meet our project goal, we developed two research objectives: to understand how New Zealanders view the future of climate change and to assess which sources they use to get climate change information. As our project aimed to broadly explore people's perceptions of climate change, rather than to prove a prior hypothesis, we utilized a grounded theory approach, where data is collected and analyzed first, before final theories are formed from such data (Patricia Yancey Martin & Barry A. Turner, 1986).

Utilizing the Grounded Theory approach described by Charmaz (2006), our methodology was composed of two main parts: the collection of recorded, open-ended interviews of New Zealanders located in Wellington, and the coding and categorization of collected interviews to identify recurring patterns and themes.

We collected, recorded, and transcribed 37 interviews of 39 people from three age groups (18-30, 30-50, 50+) from around Wellington. The interviews were based upon four open-ended questions. Those questions served primarily as guidelines for topics that we wanted to discuss; we asked follow up questions as necessary in order to understand the reasoning behind interviewee responses and to obtain elaboration on points discussed.

To analyze the interviews, we associated each transcription with a series of codes, which are words or short phrases that capture the essence of each interview and helped us to identify important ideas (Saldana, 2009). The process of coding was broken into two phases: initial coding, where we individually applied codes to each interview, and focused coding, where we agreed upon the most accurate codes as a group. After both coding phases were complete, we grouped the focused codes into categories, so that they could be more easily compared with

one another. We then explored relationships and themes, between and within categories, and formed four theories from our findings.

Findings and Recommendations

We found that many New Zealanders were frustrated by the inaction of various groups such as other people, the media, and the government. Respondents frequently mentioned that they believed people were failing to act because climate change was not directly relevant to them, that people were not informed, or that economic reasons prevented others from acting. This frustration was particularly strong among the youngest generation, who placed greatest urgency on the issue of climate change, compared to the more passive framing of those aged 30-50. Although our research gave us insight to the urgency levels of New Zealanders, it did not indicate willingness to act. Thus, **we recommend answering two related research questions: Does a high level of urgency translate to action? What does it take for climate change to become relevant?**

New Zealanders were particularly frustrated with the government for three reasons: belief that the government was not concerned about climate change, a perceived disconnect between the government and the people, and the notion that the government prioritized the economy over climate change. **We recommend a study to explore what New Zealanders think of specific policies and politicians** as well as **what New Zealanders expect the government to do about climate change.**

Our respondents indicated that the media's coverage of climate change was insufficient. Many claimed that the media only focuses on climate change when large events occur, such as the 2006 iceberg or wide-spread droughts. The minimal information that currently is presented is often not highly visible and sometimes from a biased source. While our interviews indicate that many of our respondents are unsatisfied with the current media, the interviews do not suggest a better alternative. **We recommend a study that explores the effectiveness of media and the preferred delivery mechanism for climate change information,** specifically which sources appeal to each audience.

Finally, many respondents commented on a possible relationship between the economy and climate change. New Zealanders indicated that they believed climate change will hurt the economy in several ways, and many New Zealanders also believed that the state of an economy dictates one's ability to respond or adapt to climate change on both a governmental and individual level. Our interviews were not conclusive in discovering if the economy was a higher priority than climate change to New Zealanders. Hence, **we recommend a study that explores the importance of climate change relative to other major public issues.** This

study might include a question that asks interviewees to rank the relative importance of concerns such as sustainability, economic growth, and climate change response. In addition to a study that explores relative importance, **our team recommends that Landcare Research utilize the economy as an incentive to respond to climate change.**

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1 Introduction

Few global problems have the potential to become as large and as widespread as climate change. According to the Intergovernmental Panel on Climate Change (IPCC, 2007), in the next century, the global temperature will increase 2.5 to 10 degrees Fahrenheit (1.4 to 5.6 degrees Celsius), a change that will likely have many negative repercussions for the Earth. These effects include more frequent wildfires, longer periods of drought in some regions and an increase in the number, duration, and intensity of tropical storms. In New Zealand, global climate change has the potential to adversely influence both the natural environment and human life. The average temperature is expected to increase, particularly on the North Island, which will cause an increase in heat stress and subtropical diseases in the summer. As temperature rises, some areas of New Zealand will become significantly drier, which will lead to increased frequency of extreme, and potentially damaging, events such as floods, droughts and storms (Ministry for the Environment, 2009). In addition, a change in rainfall patterns may cause plantation forests to experience reduced growth and productivity.

A problem with such large potential magnitude requires careful monitoring, and thus researchers frequently attempt to predict the effects of climate change by developing models, which simulate the behavior of several different factors, such as the earth's atmosphere, oceans, land surface and cryosphere, in one comprehensive visual (Australian Bureau of Meteorology and CSIRO, 2011). Once a model is developed, researchers can then use calculations to predict the future of the behaviors depicted in the models. To build climate change models, researchers use data on previous weather and temperature patterns, data and projections on the human contribution to atmospheric deterioration, and people's perceptions of the future (Australian Bureau of Meteorology and CSIRO, 2011).

Understanding public reaction has become a large part of creating accurate models and prediction about the future of climate change. When writing each assessment report, the Intergovernmental Panel on Climate Change (IPCC) creates multiple models looking into the future effects of climate change; the most recent models, Representative Concentration Pathways (RCPs), were chosen because they include the effects of social, legislative, and policy initiatives, which allow the models to be much more accurate than previous iterations (Wayne, 2013a). Social factors have a large role in modeling the future: the population's reactions to the effects of climate change and policies play a significant part in how drastically carbon emissions are predicted to decrease or increase.

The aim of Landcare Research's work in its Climate Change Impacts & Implications

project (CCII) is to explore New Zealand's climate change scenarios and response options out to 2100. Our project was designed to help Landcare Research refine its options by providing better insights into the way New Zealand's civil society thinks about the future of climate change. Because our project aimed to broadly explore people's perceptions of climate change, rather than to prove a prior hypothesis, we utilized a grounded theory approach, where data is collected and analyzed first, before final theories are formed from such data (Patricia Yancey Martin & Barry A. Turner, 1986). Following grounded theory, we collected 37 open-ended interviews across different age groups about individual views and information sources on the future of climate change. These interviews were then transcribed and analyzed, allowing us to formulate theories about how New Zealanders perceive climate change.

Based on our analysis, we observed that our respondents generally found the future of climate change to be an important topic, but were dissatisfied with its treatment by the general public, media and government, with some observing that "a lot of New Zealanders...go with the flow and see what happens" (Appendix A.8). Additionally, many people believed that climate change and the economy have close ties, suggesting that "given the sort of economy [New Zealand has] based on agriculture...[climate change is] going to have an impact," (Appendix A.5), and also that "[New Zealand] has not really got 2 or 3 or 4 hundred million dollars...to spend on mopping up after weather events" (Appendix A.2).

2 Literature Review

As a result of human activity, on average the earth's temperature has risen 1.4 degrees over the past hundred years (EPA.gov, 2013). The increase in overall temperatures causes a sizeable shift in weather and climate. Serious storms and weather conditions are becoming more frequent and more deadly, the ice caps are melting away raising the sea level, and oceans and rain are becoming more and more acidic (EPA.gov, 2013). The burning of fossil fuels is releasing vast quantities of greenhouse gases that trap large amounts heat and energy (EPA.gov, 2013). The consequences of climate change could be disastrous, and will require a large effort on a global scale to address. But before large actions can be taken, knowledge and awareness must be raised in everyday people. To help teach people about climate change, one must first understand what they already know and how they look at it.

This chapter will examine past research on climate change, with an increased emphasis on the social side of it. It will examine the potential effects of climate change on the world and New Zealand, including an examination of some methods used to predict these effects. Previous findings about the level of general awareness and the nature of climate change perceptions will be explored, as will the opposition to action on climate change, and some of the psychological reasons why people are inactive. Finally, with these topics covered, New Zealand's climate change perceptions and policy responses will be examined.

2.1 Causes and effects of global climate change

Global climate change has recently sped up dramatically as a result of human actions, including burning fossil fuels, raising livestock, and industrial activities. Stanford scientists Noah Diffenbaugh and Chris Field claim that climate change is on pace to occur 10 times faster than any change recorded in the past 65 million years (Carey, 2013). According to the Intergovernmental Panel on Climate Change (IPCC), in the next century, the global temperature could increase up to 4.8 degrees Celsius from 2005 levels (IPCC, 2013)

The greenhouse gases produced by human activities absorb the thermal infrared radiation from the Earth's surface. This process is the fundamental reason for global climate change. As shown in the following figure, some of the larger sources include providing an energy supply (i.e.: burning coal, oil, and natural gases), industry activities that also burn fossil fuels, deforestation, and clearing land for agriculture.

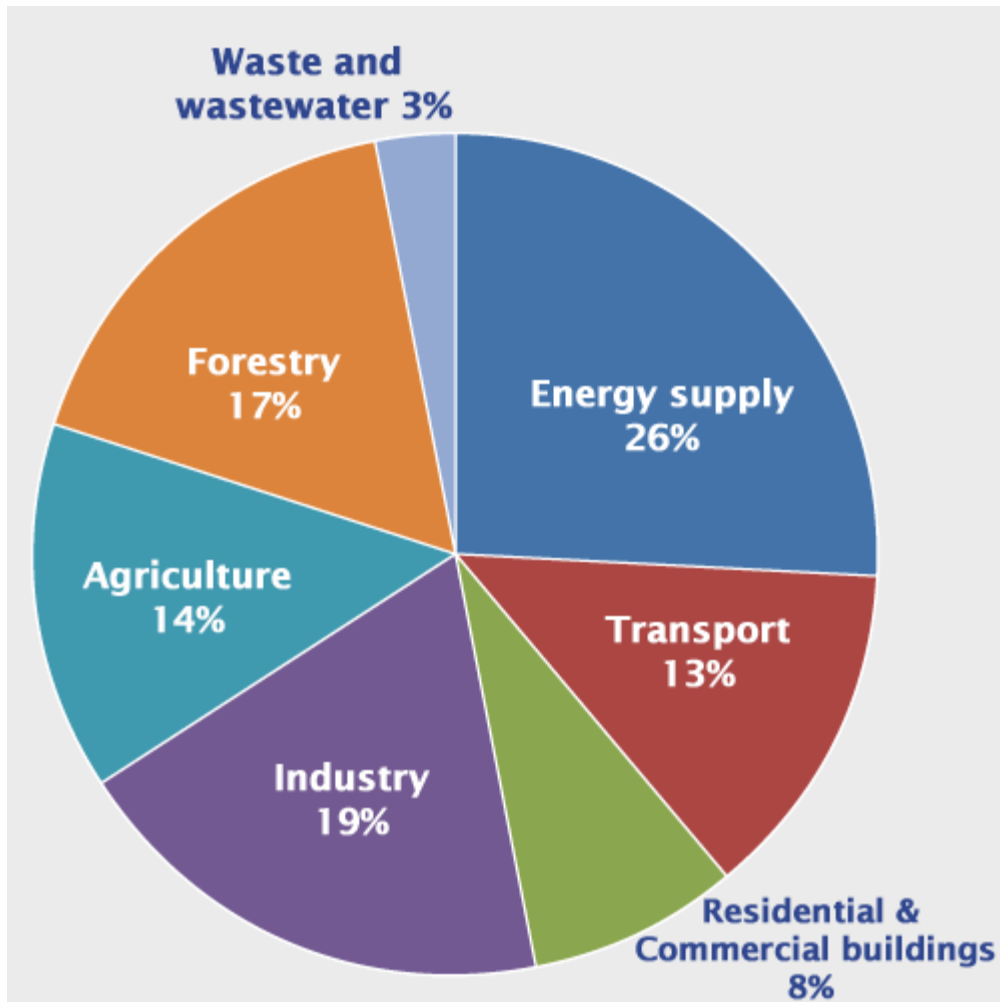


Figure 1. Greenhouse gas emissions by source (Barker et al., 2007)

Even small temperature changes can result in huge differences for life on earth. For example, at the end of the last ice age, when the Northeast United States was covered by more than 3,000 feet of ice, average temperatures were only 5 to 9 degrees cooler than today (NASA's Jet Propulsion Laboratory, n.d.). The potentially damaging effects that may occur as a result of climate change, can be seen in Appendix A.

2.1.1 Climate change prediction methodology

As the earth's climate is very complex, past trends cannot simply be extrapolated to predict future situations. As a result, mathematical global climate models have been the main method of predicting the scenarios resulting from global climate change. One of the predominant forms of model, used by the Intergovernmental Panel on Climate Change (IPCC) in their 2013 report, are Representative Concentration Pathways (RCPs), which describe four future scenarios used to predict greenhouse gas emissions, based on a number of variables (Wayne, 2013a).

Global climate models predict the effects of climate change on a large-scale, thus downscaling methods are required to obtain more accurate information about climate change in a specific region, such as New Zealand. One such method is statistical downscaling, which uses historical observations to develop regression equations between local climate changes and large-scale climate changes (Mullan *et al.*, 2008). More information about global climate models, RCPs and downscaling can be referenced in Appendix B.

2.2 Effects of climate change on New Zealand

According to regional projection in New Zealand, climate change is expected to bring about four major changes: an increase in temperatures, an increase in sea levels, more frequent droughts, and a general change in rainfall patterns (Ministry for the Environment, 2009). The results of anthropogenic climate change in New Zealand will largely depend on responses from tropical cyclones, the Australian monsoon, the strength and latitude of the mid-latitude westerlies, and the El Niño Southern Oscillation (ENSO) (Bernstein *et al.*, 2007).

2.2.1 Impacts on natural environment

New Zealand is very likely to rise in temperature this century, resulting in increased frequency of extreme high daily temperatures and decreased frequency of extreme cold temperatures (Parry, 2007). As a result of increased temperatures, forests and vegetation are expected to grow faster. This includes both native species, and exotic botanic species that could potentially invade the native ecosystems. The same increase in temperatures will result in the retraction of snowlines and glaciers, which will potentially result in increased variation of water flow in major south island rivers. Additionally, damaging extreme events such as floods, droughts and storms are expected to be more frequent as a result of drier conditions in some areas. (Ministry for the Environment, New Zealand, 2001).

2.2.2 Impacts on human activities

The potential for higher temperatures and changes in rainfall patterns are likely to affect the people of New Zealand in multiple ways. Higher temperatures may result in increased heat stress and subtropical diseases, while unpredictable changes in rainfall patterns could cause dramatic shifts in agriculture patterns: productivity might be reduced, and droughts could see farmers and the government facing costly climate adaptations. Additionally, the predicted rise in sea levels could increase erosion, saltwater intrusion, and contamination of drinking water (Ministry for the Environment, 2009).

2.3 Awareness, perceptions, and opposition towards climate change

2.3.1 Climate Change Awareness

People around the world are becoming more aware of climate change as a result of notable changes in weather patterns and an increased number of educational resources. According to a study done by Gallup in 2008, 62% of the world's adult population is aware of climate change (Pugliese & Ray, 2009). This statistic does not represent the notable differences in awareness between highly developed countries such as Japan, 99%, and less developed countries, such as Liberia, 15% (Pelham, 2009).

2.3.2 Global perception towards climate change

Gallup asked those surveyed who claimed knowledge of climate change, how serious they perceived the threat of climate change to be. Similar to awareness, perception of climate change as a threat greatly varies from developed countries to undeveloped countries. Of the population that acknowledges climate change as an issue, 63% of Americans and 60% of Germans perceive climate change as a threat. In contrast, only 19% and 18% of knowledgeable Ghanaians and Afghans believe climate change could negatively affect their lives (Pugliese & Ray, 2009). While many are still unaware of the dangers of climate change these numbers are changing due to increased availability of climate change education. As Figure 2 shows, citizens of most countries showed an increased awareness of the threat of climate change.

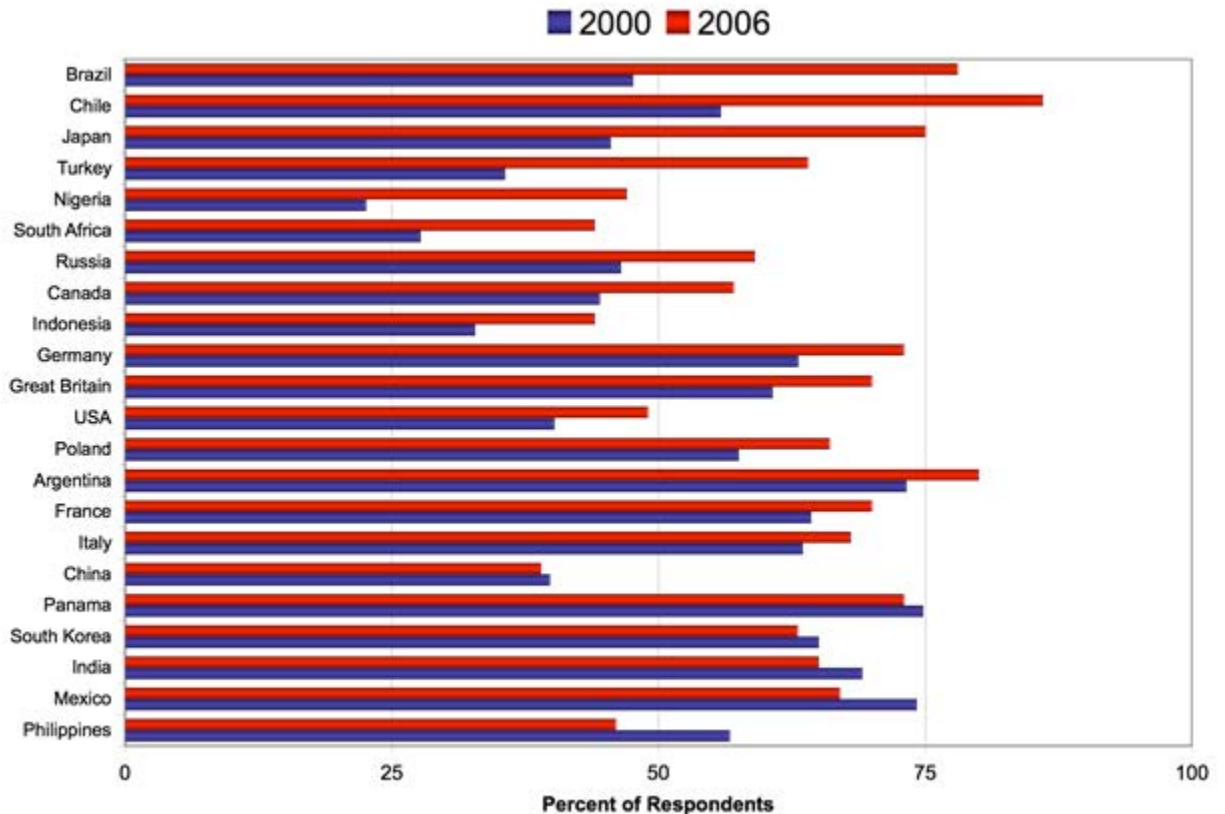


Figure 2. Climate Change is a “Very Serious Threat” (GlobeScan 2000; 2006)

2.3.2 Opposition to Action on Climate Change

Even with the data that currently exists on climate change, there is still much debate about whether what we are currently experiencing is a natural phenomenon, or something caused by the actions of humans. Due in an increase in data supporting anthropogenic climate change, currently 97% of scientists agree that climate change is a result of human activities (NASA, n.d.), and yet about 39% of the world’s populations still refuses to believe that climate change even exists (Pelham, 2009). On an individual level, there are a number of psychological reasons why people are reluctant to believe in climate change and respond, which are explored in greater detail in chapter 2.6. Factors such as the society we live in, economics, and personal aversion all act together to create an opposition to action.

On a societal level, opposition against climate change and policy often comes from social barriers and politics. For example, in the United States, many politicians are opposed to the concept of climate change and have made public statements against it. Many of these politicians are supported and financed by companies, such as Shell Oil and BP, who have economic reasons to fight climate change policies (Mayer, 2008). These political decisions can

often have an effect on the economy. When George W. Bush became president, he withdrew the United States from the Kyoto Protocol because he believed that it “would have a negative economic impact, with layoffs of workers and price increases for consumers” (“In president's words;,” 2001). Similarly, many other developed countries have hindered the progress of reducing carbon emissions due to the negative effects it would have on their governments.

Additionally many have personal aversions to actively participate in the battle against climate change. Many view the effects of climate change as an abstract idea that will come many years after they die, therefore they do not have to worry about it or change their behavior. Others believe that their change in behavior will have little to no effect on climate change due to its enormity. Laziness and self-interest also drive people away from action. By changing their behavior, many see themselves giving up comfort they have grown used to or spending more than they can afford (Semenza, Hall, Wilson, Bontempo, David & George, 2008).

2.4 Psychological Aspects of Inaction

Despite high levels of awareness (Whitmarsh, Seyfang, & O’Neill, 2011), and a significant level of concern in at least half of the population of most countries (Franzen & Vogl, 2013 and Pew Research Center, 2013), there has not been any significant collective action to combat climate change. This inaction stems from a variety of psychological barriers, including uncertainty, denial, misinformation, and distance.

2.4.1 Uncertainty

Although there has been much research and modeling to anticipate climate change, and although there is a general consensus that climate change is coming and is manmade (“Climate change 2013;,” 2013), most of the effects are still yet to come, and are thus not locked down with 100% confidence. There is also a lack of consensus about what people should do in response to the anticipated impacts of climate change. This has led to high levels of uncertainty among the population at large about the effects and responses to climate change, with some reports indicating that as many as 70% of their respondents are unsure about the effects of climate change (Spence, Poortinga, & Pidgeon, 2012).

Multiple studies have indicated that uncertainty may often be used as a reason for inaction (Lorenzoni, Nicholson-Cole, & Whitmarsh, 2007; Stoll-Kleeman, O’Riordan, & Jaeger, 2001; Kortenkamp, 2006). In one survey conducted by Semenza, *et al.* (2008), the most frequently cited reason that respondents did not change their climate change-related behaviors was uncertainty.

2.4.2 Skepticism and Mistrust

According to multiple studies (Ding *et al.*, 2011; Whitmarsh *et al.*, 2011) various forms of skepticism can be a major reason for lack of public engagement or policy support with regards to climate change. Some highlighted reasons for skepticism include a belief that the media overhype the issue, doubts on the science of the matter, and conspiracy theories (Leiserowitz, 2005). Additionally, mistrust of government can be seen as a significant role in reluctance to take action on climate change (Stoll-Kleeman *et al.*, 2001). In American politics, the movement behind skepticism was strong enough to delay passage of the Kyoto Protocol in the 1990s, in addition to other environmental policies (McCright, A. M., & Dunlap, R. E., 2003).

2.4.3 Denial

Some people may hear information presented about climate change, but unconsciously decide not to believe it for a number of reasons. Swim *et al.* (2009) propose that one significant theory behind this denial is “terror management theory” (Goldenberg, Pyszczynski, Greenberg, & Solomon, 2000), where people deny a problem because it reminds them that they are mortal; the denial helps validate their beliefs and boost self-esteem. Multiple studies make similar observations, indicating that individuals are more inclined to dismiss the severity of climate change, and have reduced willingness to confront the issue as a result of information on its extreme consequences (Feinberg & Willer, 2011; O’Neill & Nicholson-Cole, 2009; Spence & Pidgeon, 2010).

Another leading theory behind climate change denial is Weiner’s attribution theory (1985). One of the key points of this theory suggests that an actor may avoid attributing responsibility to themselves in the case of a negative outcome. Mo Jang (2013) tested this theory and confirmed that members of a group were more likely to attribute climate change to uncontrollable causes when exposed to information about their group’s excessive energy use.

2.4.4 Low Self-Efficacy

One common reason a person might be inactive, is that they believe that mankind is incapable of doing anything about climate change, and thus are not inclined to put effort into fighting it. This can stem from two sources, either a “crisis of hope” wherein the actor does not believe themselves capable of changing the outcome of climate change, or the managerial-fix interpretation, where it is believed that someone else, whether through technology or regulation, will solve the problem of climate change (Stoll-Kleeman *et al.*, 2001). The feeling of self-efficacy is considered a critical element in encouraging response to climate change (Klöckner, 2013), and a lack of self-efficacy was cited as the second most common reason for inaction in a study performed by Semenza, *et al.* (2008).

2.4.5 Underestimation of the problem

Among those who does not have a comprehensive understanding of climate change, there is a tendency to underestimate the effect that human actions are having on climate change. In two different studies (Attari, Dekay, Davidson, & de Bruin, 2010; Gatersleben, Steg, & Vlek, 2002), people were asked to estimate or rank the costs associated with different common activities and appliances. Both studies showed that people tended to estimate the costs of these activities and appliances as being significantly more similar to one another than they actually were, typically erring on the side of undervaluing an item's actual ecological cost. Gifford suggests that this undervaluation is consistent with a human tendency to undervalue dangers, and has the potential to prevent someone from feeling inclined to take climate change action (2011).

2.4.6 Social comparison and norms

The social context in which someone lives can have substantial effects on their willingness to take significant action on climate change. Multiple studies have shown that social norms can drastically weaken the effects of environmental values, potentially rendering them insignificant (Klöckner, 2013; Nilsson, Borgstede, & Biel, 2004). However, social comparison can also benefit environmental behaviors: people have been shown to be more likely to practice better conservation efforts and purchase greener products when others do the same (Nolan, Schultz, Cialdini, Griskevicius, & Goldstein, 2008; Griskevicius *et al.*, 2010).

2.4.7 Internal habits and predispositions

Previous conditioning and habits can make a person significantly less likely to change their attitudes and actions in response to climate change. Klöckner & Matthies (2004) and Verplanken *et al.* (1998) have come to the conclusion that strong habits can moderate the effect of both one's personal norms and intentions regarding environmental behavior. In a related study, Verplanken, Aarts, and Knippenburg also discover that those with strong habits tended to inspect and implement fewer pieces of information in the decision-making process (1997).

Similarly, one's self-identification can alter the impact of climate change information on their actions. How one perceives, and thus, labels themselves has been shown to have strong correlations with environmentally related actions and feelings of obligation (van der Werff, Steg, & Keizer, 2013; Cook *et al.*, 2002). For example, if someone considers themselves to be an environmentalist, they are more inclined to feel inclined to follow through with environmental actions. Other individual predispositions, such as partisanship, may also be potential sources of influence (Hamilton, 2011; Malka *et al.*, 2009).

2.4.8 Distance

In a series of studies by Liberman and Trope (2003, 2008), the pair proposes a phenomenon known as Construal Learning Theory (CLT) which suggests that people perceive distant objects and events in space and time in more abstract concepts; that, the further away something is, the more trouble people have perceiving it in concrete terms.

Multiple studies have confirmed this idea to varying extents in regards to climate change. In a survey conducted by Leiserowitz (2005) most of the survey respondents viewed climate change as a geographically and temporally distant problem that will have a lower effect on them, and thus is not an imminent or high-priority danger. A similar result occurs in a study by Spence *et al.* (2012), where a lower psychological distance correlated with a higher concern about climate change. Notably, in this particular study, the subjects actually reported being more prepared to take sustainable action the further away the effects of climate change occurred. In another study, Demarque (2013) found that the higher one rated in consideration of future consequence (CFC), the more likely they were to take action.

2.4.9 Tokenism and rebound effect

A report by the American Psychological Association (APA) suggests that many people have a preference for easier but less-effective climate-change-related behaviors. This phenomenon, based on studies by Diekmann & Preisendörfer, and Kempton *et al.* (as cited in Swim *et al.*, 2009) is referred to as tokenism, or the low-cost hypothesis. Tokenism suggests people take these easy, smaller tasks and then register as having done their part to fight climate change, resulting in the lack of further climate change mitigation action.

Another somewhat paradoxical result of climate change inaction is the rebound effect, also known as the Jevons paradox or the Khazzoom-Brookes postulate (as cited in Swim *et al.* 2009). The rebound effect occurs when, after a saving or effort is made, people take actions that undo their gains. The example proposed by Swim *et al.* (2009) is that one who buys a fuel-efficient vehicle ends up driving further than they would have previously, resulting in the same net carbon emission.

2.5 Social context of climate change in New Zealand

2.5.1 Perceptions of climate change

Studies indicate that New Zealanders generally viewed climate change as an important issue (Hallet, 2012; Hopkins, 2013) and desire action. A large majority of New Zealanders believe that finding alternative sources of energy and reducing the production of greenhouse gases is paramount ("New Zealanders," 2007), and desire political action to combat climate change ("People want more," 2012). A study done by Aitken, Chapman, & McClure (2011), however, indicates that preparedness to take individual action varies wildly, as many New Zealanders view themselves powerless to do anything.

Despite viewing climate change as important, New Zealanders showed reduced concern in the years leading up to 2012, as a study by Hallet suggests (2012). This low level of urgency is also suggested by a survey completed in 2011, which showed that New Zealanders ranked climate change as the ninth most important of ten issues including cost of living, health, education, and employment ("Nzers fear cost," 2011).

2.5.2 Policies

New Zealand's government and policy makers are working quickly to cope with climate change. As part of its commitment to the Kyoto Protocol, New Zealand's government has created the New Zealand Emissions Trading Scheme (NZ ETS). ETS is a government program that works to actually increase prices on fuels that emit greenhouse gases when used. Increasing the prices incentivizes consumers and businesses to invest in clean technology and renewable power generation. The ETS also does work to try to combat further expansion of climate change impacts like planting more trees to reduce the effect of carbon emissions. (newzealand.govt.nz, 2013) This program is designed to push people and businesses towards energy conservation and therefore a reduction in carbon emissions production. But should a business not comply, they may suffer consequences laid out in the Climate Change Response Act of 2002 (Parliamentary Counsel Office, 2002).

More recently, New Zealand has also contributed to the UNFCCC negotiations with the aim to reach a post-2020 global climate change agreement that will improve legal framework for regulating global emissions (newzealand.govt.nz, 2013). Additionally, New Zealand has created the Primary Growth Partnership (PGP), which is a collection of businesses and corporations under the direction of the government, designed to provide investment in significant programs of research and advancement to improve the economic growth and sustainability of New Zealand's businesses (Ministry for the Environment, 2013).

3 Methodology

Our project was designed around two objectives: to understand how New Zealanders view the future of climate change and to assess which sources they use to obtain climate change information. Additionally, our research was intended to help inform future studies on the perceptions of climate change in New Zealand.

Given the open-ended and ongoing nature of our objectives, which aimed to identify patterns in New Zealanders' perceptions, we decided to base our methodology upon Grounded Theory. Whereas many studies begin with an assumption, then attempt to prove or disprove it, those operating under grounded theory seek to understand their data without the potential bias of a hypothesis. In grounded theory, data collection and analysis comes first, and from that a theory is formed. Grounded theory has no definite end, as the theories formed are then explored by further research (Patricia Yancey Martin & Barry A. Turner, 1986).

Utilizing the Grounded Theory approach described by Charmaz (2006), our methodology was composed of two main parts: the collection of recorded, open-ended interviews of New Zealanders located in Wellington and the coding and categorization of collected interviews to identify recurring patterns and themes. From these two steps, we formed the theories that found in chapter 5, Conclusions & Recommendations.

3.1 Interview Collection

We carried out our interviews during the daytime, in the most densely populated areas in Wellington, where many interview subjects could be reached in a short period of time. In our initial tests we discovered that places like the wharf, parks, the central business district of Wellington, and Cuba Street were favorable locations to survey, particularly in the early to mid-afternoon. Interview subjects were selected at random from each location, but each subject needed to be at least 18 and currently residing in New Zealand. Subjects were asked to identify their age and ethnic group on our consent form, which can be viewed in Appendix C.

Initially, we had hoped to collect fifty interviews from three different age groups (18-30, 30-50, and 50+) and three ethnicity groups (European, Maori, and Other) selected from the general demographic of New Zealand (*2013 census - New Zealand as a village of 100 people*, 2013). Ultimately, we collected 37 interviews of 39 respondents, who were predominantly European in race, as shown in table 1. This is possibly a result of our chosen locations, which were centered around the Wellington business district, and were chosen without factoring in different employment rates for different races. For this reason, our subsequent analysis focused on identifying patterns based on age groups rather than ethnicity.

	European	Maori	Other	All Races
18-30	10	2	3	15
30-50	10	1	5	16
50+	7	0	1	8
All Ages	27	3	9	39

Table 1. Number of respondents from each age and race.

In order to sufficiently explore our research objectives, we developed and tested four open-ended interview questions. These questions were intended to allow interviewees to give their opinions and to open up further discussion. We began with a question on importance so that we could adapt the rest of the interview to the interviewee’s level of concern for climate change. We then followed up with two questions to address different aspects of our first research objective, to understand how New Zealanders view the future of climate change. The final question, on media, was used as a starting point for discussion related to our second research objective, to assess which sources New Zealanders use to obtain climate change information. The questions were as follows:

- How important do you believe the issue of climate change will be in the future?
- How do you think New Zealand will be different 100 years from now due to climate change?
- What do you think needs to be done about climate change?
- From what source do you get most of your climate change information?

The interviews themselves were fairly flexible, and our set of questions functioned mostly as a guideline for topics that we wanted to discuss; we asked follow up questions as necessary in order to obtain as much information as possible. Many of our follow up questions were focused on understanding the reasoning behind an interviewee’s response and obtaining elaboration on the points discussed. For instance, if an interviewee responded to our first question by stating that “climate change is very important”, we would ask why the interview subject thought it was important. The open-ended nature of the interviews also allowed our interview subjects to focus the discussion on topics that they found particularly interesting or important in relation to climate change.

Each interview was digitally recorded and each interviewee was photographed, when the interviewee agreed, for later reference. After collecting a full day of interviews, we transcribed individual recordings for later coding and analysis.

3.2 Coding and Categorization

To each interview transcription, we assigned codes, words or short phrases that captured the essence of each interview and helped us to identify important ideas (Saldana, 2009). For instance, if an interview subject stated that “climate change is important because I heard on TV that the world is going to end,” then one of us might code it as “climate change is important” or note the reference to a “climate change apocalypse.” Codes are open-ended and subjective, so alternatively, we could have coded those comments as they “heard about climate change on TV” or as “TV presents climate change as apocalypse”.

The process of coding was broken into two main phases: initial coding and focused coding. In the initial coding phase, each group member created codes for each interview individually. Initial coding increased the chance of identifying an accurate code, since we had four possible options for each phrase. In order to reduce the risk of jumping to conclusions with incomplete data, each interview was analyzed independently of the codes assigned by other team members, thereby permitting patterns to develop naturally. During the focused coding phase, the initial codes were revisited and each code discussed. Focused coding aimed to assign codes that best captured the essential ideas of each interview as judged by the team as a whole (Charmaz, 2006). Where initial codes were different for each coder, we maintained more consistent wording and topic references in our focused codes enabling us to better compare interviews to one another.

As individuals coded the data, they recorded their thoughts in the form of memos, informal pieces of writing that captured individual findings that might later point to theories. Memos were written whenever an individual found evidence pointing to a potential theory and no less frequently than once a week. For instance, if one of us observed that the first few coded interviews indicated that people wanted more government action, one of us might write a memo titled “Call for government action.” This memo would then elaborate upon the individual’s thoughts and provide some examples from these interviews expressing the desire for government action. By writing these memos periodically we were able to accelerate our analysis process and detail half-formed ideas while they were still fresh on our mind. Memos were referenced when defining patterns, they were used to track the analysis, and they guided the development of categories (Walker & Myrick, 2006). Although memo-writing can be an important first step in forming theories, if further interviews refute a point advanced in a memo, then that particular memo is just a dead-end (Charmaz, 2006).

After both coding phases were complete, we grouped the focused codes into categories, so that they could be more easily compared with one another. These groupings were based on

rules for each category, criteria that we as a group had agreed upon,. For example, for an emergent category called “awareness”, the rule required that each code included would in some way be related to propaganda, education, knowledge of the subject, etc. (Saldana, 2009).

The final step of our analysis was to explore relationships and themes, between and within categories. These relationships and themes formed the basis of our theories. Although our work ended here, further research is required to identify the extent to which our theories apply throughout New Zealand’s civil society. Our final theories and recommendations for future research can be seen in chapter 5.

4 Data and Analysis

In the coded interviews, we discovered four patterns in New Zealanders' perceptions of climate change in the future and in their views on the media. Many New Zealanders were frustrated with inaction, both from the general public and the government. Another frustration was aimed at insufficient media coverage, with many respondents complaining of lack of easily available articles on climate change, whether the complaint targeted infrequent coverage or its lack of adequate prominence. Finally, a subset of New Zealanders appear to prioritize the economy over climate change, expressing their concerns about lack of action on climate change in economic terms.

4.1 Frustration with Inaction

Frequently, our interview respondents expressed frustration as they wait for other people, the media, and the government to take action in response to climate change. One respondent told us that “A lot of New Zealanders...go with the flow and see what happens” with regards to climate change (Appendix D.8), while another suggested that people will “learn to live with [climate change]” and will find “coping mechanisms” (Appendix D.4).

Reasons cited for climate change inaction fell into twelve categories, which are listed in Appendix E. The most frequently cited reasons, as shown in Appendix F, were that climate change lacked direct relevance to people, that people were either uninformed or had economic reasons for inaction. The 18-30 age group was the most likely to believe that lack of information was preventing people from acting, while the 30-50 age group was the most likely to cite economic concerns.

In general, the 18-30 age group indicated the greatest dissatisfaction with inaction on climate change. They cited “lack of urgency” among other explanations for inaction and a desire for “action now” more than any other age group. Additionally, when asked to suggest actions to take towards climate change, those aged 18-30 were more likely to call for direct actions, with most suggestions falling into the “resource management” and “government action” categories, with individual recycling often mentioned in the former.

It is possible that the youngest generation was more invested in the future than those over the age of 30. When asked why they thought climate change was important, most of the respondents aged 18-30 cited future impacts or inaction as the primary reason. For the youth of New Zealand, climate change will be critical to their future, and immediate action was important. Thus, when they saw nothing occurring, they expressed frustration and concern.

The frustration with inaction most likely came as a result of the passivity of the 30-50 age group, who generally showed less concern than both the groups around them. In contrast with interviews with the other age groups, not one person aged 30-50 specifically called for “action now.” The 30-50 age group were also the only ones with more codes in the not urgent category than the urgent category, as can be seen in figure 3. Similarly, the suggested actions among this age group were more passive, with the majority of them falling into the “education” category. In contrast to the younger generation, only one person in the 30-50 age group specifically called for more government action. This lower level of concern might explain why the actions so far might be deemed insufficient. The 30-50 age group composed a large portion of the working class, and their lower concern translated into inaction, much to the frustration of the other two age groups. Our evidence indicates that, while the 30-50 age group might not have been inclined to take action in response to climate change, the 18-30 age group may be more likely to act as they take the same roles.

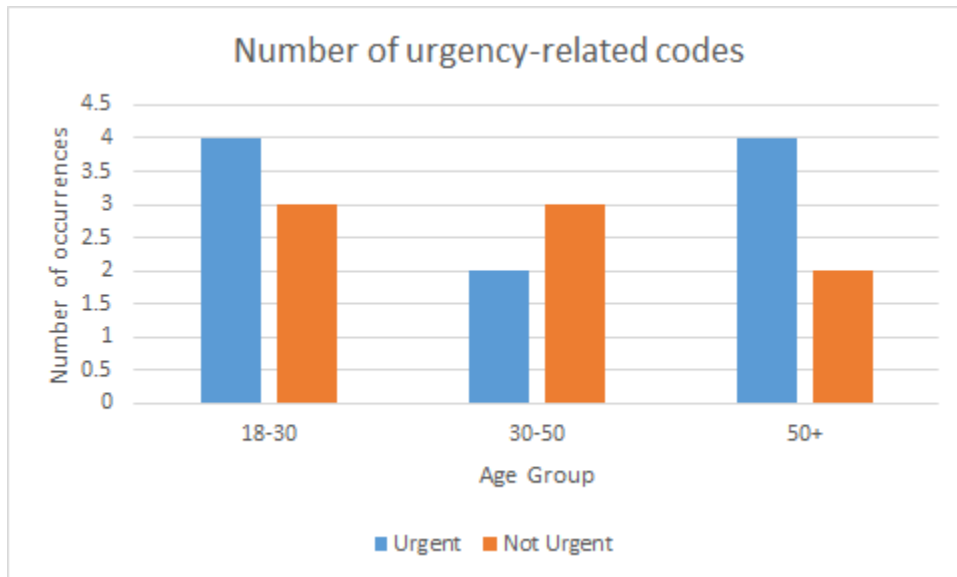


Figure 3. Number of urgency-related codes by age group. “Urgent” and “Not Urgent” categories defined in Appendix G.

4.2 Frustration with the Government

Many respondents expressed a frustration with the governmental reaction to climate change. Ten respondents brought up government during interviews, nine of which were dissatisfied with the government's inaction towards climate change. Of the nine respondents who were unhappy with the government's response, all of them believed that climate change was an important issue, and eight actively followed the issue in the media.

From their perspective, they were frustrated because the government ignored climate change. Nine interviewees out of ten who brought up government expressed frustration with the government's lack of concern for climate change. One of them said that "The government response [to climate change] is pretty muted" (Appendix D.1).

The government's apparent neglect of climate change seemed to contradict respondents' individual sense of urgency about climate change; they were disappointed with the disconnect between government and citizens on the issue of climate change. Many respondents suggested that the public was willing to contribute to climate change mitigation efforts while the government showed no interest. One respondent said "You'd like to think...that people care enough about their environment but...there is a difference between what [is important] as a person and what [is important] as a society that relies on information to be provided to them [by the government]" (Appendix D.4). Some people identified the current government as too conservative to mitigate climate change, saying in one case that "we have a sort of conservative government who has not really been taking things [climate change] as seriously as we would like to see at the international level" (Appendix D.3).

In addition, respondents believed that the government was too focused on improving the country's economy at the expense of the climate and environment. At the time of our interviews, New Zealand had committed itself to decreasing its carbon emissions to 10-20% of its 1990 levels by the year 2020 (newzealand.govt.nz, 2013). The government had slowly been lowering these targets as it became clear that they would not reach them, which displeased some of our respondents, one of whom said "[the government] should stop pushing back the deadlines for ... agriculture to meet the [greenhouse gas emission] requirements" (Appendix D.5).

We observed that different groups had different levels of frustration towards government on different fronts; the 30-50 group was more likely to support the government's actions placing the economy before climate change action whereas the 50+ generation was much more critical of these actions. As Appendix I illustrates, not one person in the 30-50 age group mentioned the government ignoring climate change for the sake of economy. Appendix I also shows that the 30-50 age group was the most likely group to cite economic concerns as a reason for the

government's inaction. The 50+ respondents, however, were more likely to be critical of the government, describing it as short-sighted, incompetent, and lacking credibility. Many respondents in this age group mentioned that the government was, in the words of one 50+ respondent, "approaching [climate change] in a very short-term way" (Appendix D.2) and that politicians were "just looking towards the next election" (Appendix D.6).

4.3 Mainstream Media Shortcomings

Our interviewees believed that the mainstream media exhibited many shortcomings: they only showed concern for climate change during large events and portrayed information in a biased manner. Ten out of thirty-nine respondents reported shortcomings in the media, seven saying that there was low coverage of climate change in the media. One of these respondents mentioned that the topic of climate change was “kind of dead” and “not really talked about [in New Zealand]” (Appendix D.12). Many other respondents felt similarly, some wishing that the media would cover climate change more frequently, not just when it is convenient.

Throughout our survey, seven people mentioned low media coverage of climate change, yet of these people, only one actively followed climate change. The other six followed climate change when information was readily available. This data suggests that many New Zealanders are willing to learn about climate change passively or when the information is “shoved down their throat” as one interviewee said (Appendix D.9). As shown in Appendix F, nine out of 39 respondents said that others believed climate change was irrelevant to daily life in New Zealand. It’s possible that climate change is not taken as a serious issue by some people and that is why they put so little effort into educating themselves on the subject. Many respondents mentioned they did not actively look for information, only learning about climate change when it was brought up by the news. Such passive learning happens when climate change is consistently a front page story, allowing information to be transmitted regularly to readers.

Respondents who follow climate change find it difficult to locate information on climate change and were often unsatisfied with what they did find. When information is available it is “not usually [in] enough detail” (Appendix D.14) for some of our respondents to be satisfied. Of the ten people to report shortcomings in media coverage, three mentioned how the little information they found was often biased or ineffective. Those who are interested in climate change claim they need to actively seek out unbiased information. Some sources identified by respondents, such as *The Guardian* and *Resurgence Magazine*, have web pages solely dedicated to climate change news and information; that information is just not displayed openly on the front page. Most New Zealanders we interviewed found media coverage to be too limited and sporadic to be useful. In order to increase awareness, they felt media coverage of climate change should be more consistent and prominent.

4.4 Climate Change and the Economy

When discussing climate change, many of our respondents framed the potential threats of climate change around the economy, suggesting that the economic impacts of climate change are particularly important to many people in Wellington. Nine out of the twelve respondents who suggested an economic link to climate change also said they actively follow climate change news, as shown in figure 4. This linkage might indicate that those who discussed the economic aspects of climate change are more inclined to actively follow the topic and might have a higher level of interest in climate change coverage.

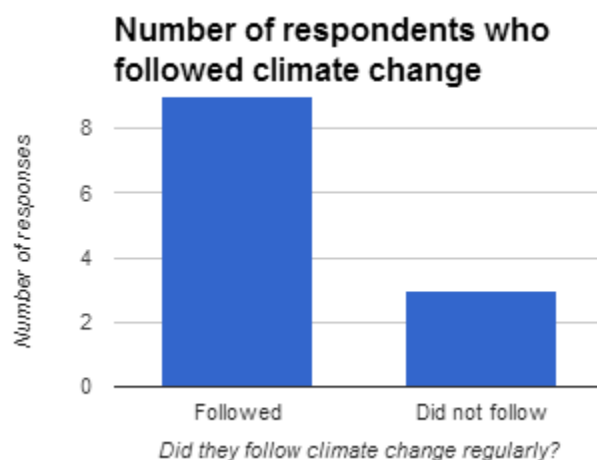


Figure 4. Number of respondents who identified an economic connection and followed climate change.

Most of the respondents who suggested a link to the economy were from the higher salaried occupational categories. Those in the professional and manager categories, as seen in the chart in figure 5, made up seven of the 12 respondents who identified a link between the economy and climate change. This bias towards higher paying professions among those who follow climate change suggests that those who have a larger stake in the economy have a greater concern for its wellbeing. However, interviewees who were more interested in climate change's effects on the economy were uniformly distributed across the age categories.

Percentage per occupation category

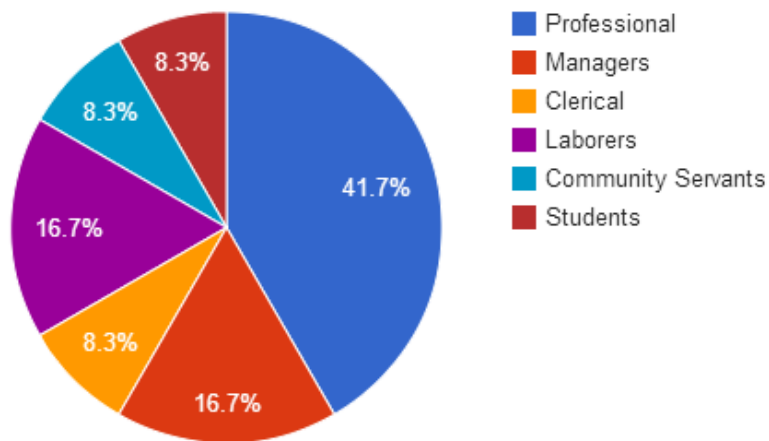


Figure 5. Percentage of respondents in each occupation category who identified a connection between climate change and the economy

Many respondents also expressed a particular concern for the agriculture and dairy industries. Out of the 20 codes referencing people’s thoughts on the economy, 9 of these codes describe economic impacts of climate change. Of those 9 codes, 7 of them, or 77% (see figure 6), referred to the agriculture and dairy industries, suggesting that other interviewees shared one’s concern that New Zealand’s “agriculture industry might not [do] so well” as climate change takes its toll (Appendix D.1). Some respondents believed that climate change was already impacting the agriculture industry, such as one New Zealander who told us that “last year there was a massive drought up north. All the farmers...had to stop milking [their cows] because there wasn’t enough grass for them to eat” (Appendix D.13).

Sources of Predicted Economic Impact

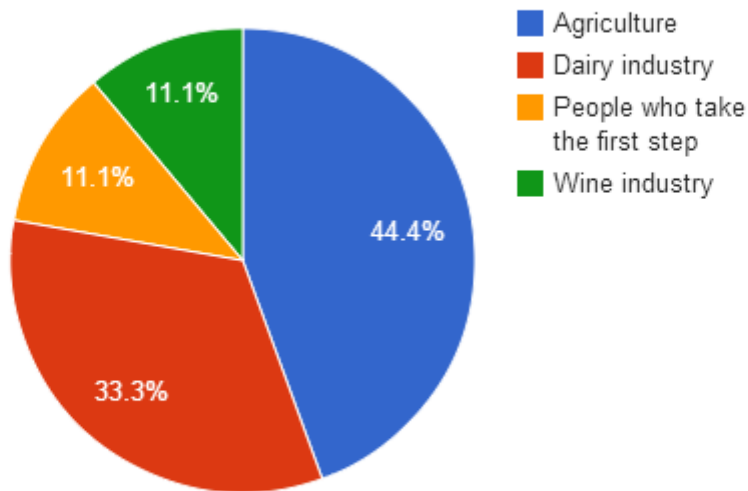


Figure 6. Sources of predicted economic impact out of nine economic predictions.

In addition to climate change impacting the economy, some New Zealanders also believed that individuals' economic status affects their ability to respond to climate change. Economic concerns were the second most cited explanation for inaction against climate change; see the chart in Appendix F. Often being green or becoming more eco-friendly was associated with higher costs of living or production than continuing unsustainable practices. In some of the interviews people called to make green technology more affordable or called for taxes to make unsustainable practices more expensive. One respondent said that "people are just too afraid to make the first steps because people who make the first steps economically are going to get hurt first" (Appendix D.5). With individual costs providing a significant roadblock, these respondents were waiting on action from larger groups with more monetary resources, such as the government.

In the same vein, according to a portion of our respondents, the status of a nation's economy affects its ability to respond or adapt to climate change. New Zealand's economy in particular "hasn't really got 2 or 3 or 4 hundred million dollars...to spend on mopping up after weather events" (Appendix D.2). New Zealand is not alone, however, as some respondents specifically cited the massive developing nations of the world, one stating that "it's hard to tell

those [large developing] countries to stop when they got massive populations they need to feed and need to cloth and keep going so when economies drive everything money drives everything” (Appendix D.10). For a certain subset of the population, particularly among professional and managerial classes, economic concerns might be higher than climate change concerns. This group is most likely to take an interest in climate change when the economy is somehow involved.

5 Conclusions and Recommendations

The goal of this project was to enhance understanding of and to provide avenues for further exploration on the topic of climate change perceptions in New Zealand. Based on our study, we have reached several conclusions relating people's levels of frustration towards climate change, people's attitude towards government involvement and mainstream media coverage in climate change, and the link between the economy and New Zealand's response to climate change. For each of these conclusions we present a recommendation for continued research and action.

5.1 Level of Frustration

Through our interviews we found that many New Zealanders were frustrated by the inaction of various groups, including fellow citizens, the media, and the government. Respondents frequently mentioned that they believed people were not acting because climate change was not directly relevant to them, that people were not informed, or that economic reasons prevented others from acting.

This frustration was particularly strong among the youngest generation, who felt greater urgency on the issue of climate change. The respondents aged 18-30 generally focused more on the future of climate change, suggested more immediate actions, and more frequently expressed climate change in an urgent light.

In contrast the middle-aged range, composed of people from ages 30-50, framed the issue of climate change more passively. This group focused on what had already happened as a result of climate change, called for less direct action, and spoke of climate change with less urgency than the other age groups. We believe that the passive nature of responses from the 30-50 age group might have been responsible for the general inaction that frustrated the other two age groups.

Although our research gave us insight to the urgency about climate change felt by New Zealanders, it did not indicate whether or not the urgency would translate to action. This is a particularly important issue to consider, given that the 18-30 age group was also most likely to express uncertainty towards climate change. Thus, we recommend answering the research question: Does a high level of urgency translate to action?

Our research also indicated that many New Zealanders might not act on climate change because they believe it is not directly relevant to them. Given the high level of involvement that future action against climate change might require, we suggest asking what it would take for climate change to become a more important topic for New Zealanders.

5.2 Attitude towards Government

Many respondents expressed frustration with the lack of governmental reaction to climate change. There were three main reasons for this frustration: a belief that the government was not concerned about climate change, a perceived disconnect between the government and the people, and the notion that the government prioritized the economy over climate change.

Different age groups expressed their frustration with the government's inaction in different ways. For instance, respondents aged 18-30 were the most likely group to express their frustration with a desire for more actions. Members of the 50+ generation were more likely to be critical of the government, describing it as short-sighted, incompetent, or lacking credibility. In contrast to the other two groups, those in the 30-50 age group were least likely to express criticism of the government, with none in the 30-50 age group complaining that the government prioritized economy over climate change and none calling for government action. In addition, many of the respondents aged 30-50 brought up the economic side of climate change, suggesting that the 30-50 group might be more likely to align with the government's actions and perceived economic priorities than the other groups.

Our study was not focused on the government's relationship with climate change. Thus most of our respondents' descriptions of government actions and expectations were limited. As a result, we recommend that Landcare Research conduct another study to explore further the public's perception of government as related to climate change. Such a study might seek to answer two questions: What are people's views and knowledge of current government policies and politicians? What does the general population expect the government to do about climate change? If conducted carefully, such a study could illuminate the specific causes of dissatisfaction with government actions as well as identify some possible solutions to the dissatisfaction.

5.3 Mainstream Media Coverage

Our interviews suggest that many New Zealanders are frustrated with what they perceive as the media's inadequate coverage of climate change. Many noted that the media only focuses on climate change when large events occur, such as the 2006 iceberg, or widespread droughts. According to respondents, the limited information that currently appears is often not very visible and sometimes from a biased source.

Responses indicated that many people passively follow climate change, reading articles when easily accessible but making little effort to seek out more information. Many respondents mentioned that they did not follow climate change while indicating that they were curious about the subject and would read articles or watch TV news stories if such resources were readily available.

While our interviews indicate that many of our respondents are dissatisfied with current media coverage of climate change, the interviews do not offer a better alternative. We suggest a study that explores the effectiveness of media and the preferred delivery mechanism for climate change information, specifically which sources appeal to various audiences. The results of this study could be used to determine the best format to regularly convey information on climate change to the public to build awareness and educate the population.

5.4 Climate Change and Economy

Many responses to our interviews commented on a possible relationship between the economy and climate change. New Zealanders indicated that they believed climate change will affect the economy in several ways. Most frequently, respondents discussed the toll on the agriculture and dairy industries, but some also noted that as extreme weather continues to escalate so do the costs of cleaning up after such events.

Respondents also believed that the state of the economy dictates the ability to respond or adapt to climate change on both a governmental and individual level. Many said that being unsustainable was cheaper and less taxing on financial resources, making it difficult to become sustainable. Some New Zealanders also expressed a concern that the massive developing countries of the world would be unable to take on more sustainable practices because those countries do not have adequate economic resources.

The fact that the issue of the economy appeared in interviews multiple times, without explicit mention of the economy, suggests that it may be a more important topic to New Zealanders than climate change. However, our analysis was not conclusive in discovering if the issue of climate change was secondary to that of economic strength and other such topics. We recommend a study that explores the importance of climate change relative to other major topics. This study might include a question that asks interviewees to rank the relative importance of issues such as sustainability, economic growth, and climate change response.

In addition to a study that explores relative importance, our team recommends utilizing the economy as an incentive to respond to climate change. By using public concern for the economy, an awareness campaign might be able to incentivize New Zealanders to make changes to their lifestyles and take on more sustainable habits. In particular, we recommend focusing on the agriculture and dairy industries, as they were the most frequently cited points of vulnerability.

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Appendix A: Potential global effects of climate change

Phenomena	Likelihood of occurring in late 21st century
Warmer and/or fewer cold days and nights over most land areas	Virtually certain
Warmer and/or more frequent hot days and nights over most land areas	Virtually certain
Warm spells/heat waves. Frequency and/or duration increases over most land areas	Very likely
Heavy precipitation events. Increase in the frequency, intensity, and/or amount of heavy precipitation	Very likely over most of the mid-latitude land masses and over wet tropical regions
Increases in intensity and/or duration of drought	Likely
Increases in intense tropical cyclone activity western U.S. and Mediterranean basin	More likely than not in the Western North Pacific and North Atlantic
Increased incidence and/or magnitude of extreme high sea level	Very likely

Table 2. Probability of potential effects as a result of global climate change (IPCC, 2013)

Appendix B: Current climate change prediction methodology

Because the earth's climate is very complex past trends cannot simply be extrapolated to predict future situations. As a result, mathematical global climate models have been the main method of predicting the scenarios resulting from global climate change. Due to the fact that most global warming from the mid-twentieth century is caused by greenhouse gases emission from human activities (IPCC, 2013), predicting greenhouse gas emission is crucial in simulating future climate change using global climate models.

Appendix B.1 Global climate models

Global climate models simulate the behavior of the earth's atmosphere, oceans, land surface and cryosphere. The globe is divided by a three-dimensional array of grid cells and variables such as temperature, rainfall, and wind are calculated within those grid cells. Weather conditions are modeled according to mathematical rules which depend upon the conservation of mass, energy and momentum, among other physics laws (Australian Bureau of Meteorology and CSIRO, 2011).

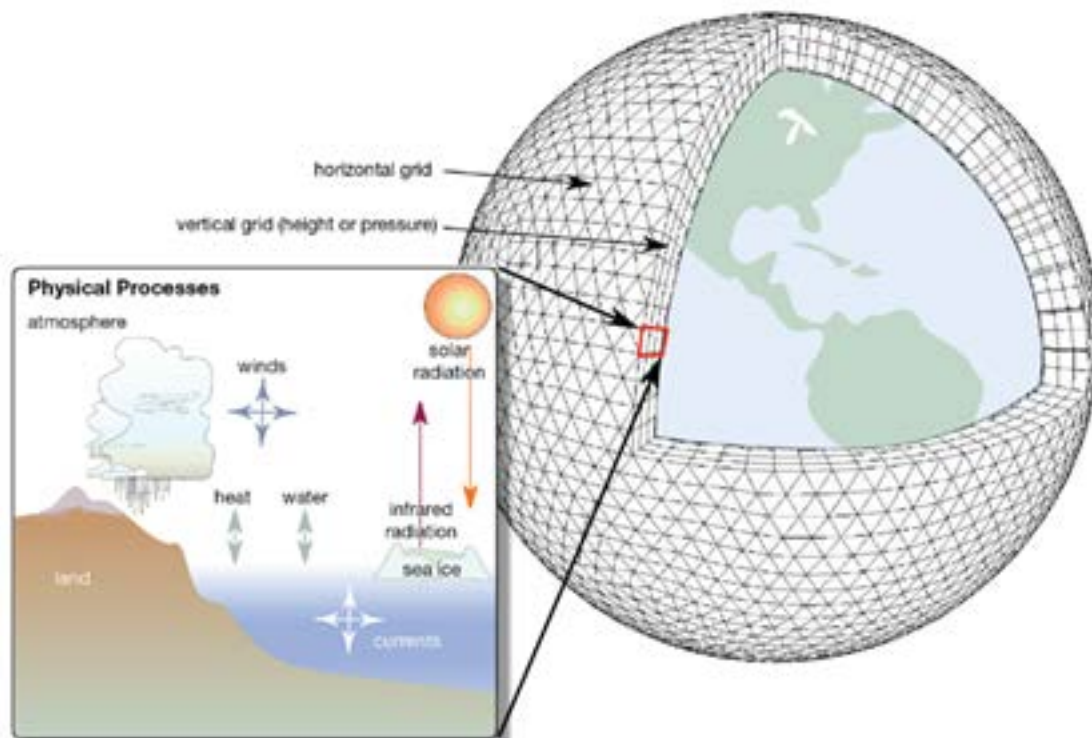


Figure 7. Representation of the Earth in global climate models (What is a global circulation model (gcm)?, n.d.)

Appendix B.2 Representative Concentration Pathways

According to the Intergovernmental Panel on Climate Change's (IPCC) fifth assessment report summary for policymakers, the main cause of climate change since the mid-20th century is the emission of greenhouse gases (IPCC, 2013). Therefore, to accurately project future climate change, future greenhouse gas estimations need to be made first.

In order to predict greenhouse gas emissions, the IPCC used Representative Concentration Pathways (RCPs) to describe four future scenarios. These scenarios are RCP2.6, RCP4.5, RCP6, and RCP8.5, where the numbers describe the radiative forcings (global energy imbalances) by the year 2100, in watts (Wayne, 2013a). **Figure 8** displays the four RCP scenarios and their predicted carbon emissions and concentrations. The four scenarios are as follows:

- RCP8.5: Greenhouse gas emissions continue increasing over time
- RCP6: Radiative forcing is stabilized shortly after 2100, by the application of technologies and strategies to reduce greenhouse gas emissions
- RCP4.5: Radiative forcing is stabilized shortly after 2100, without overshooting the long-run radiative forcing target level
- RCP2.6: The radiative forcing peaks mid-century, and then declines by 2100 due to the substantial reduction of greenhouse gases over time. (Wayne, 2013b)

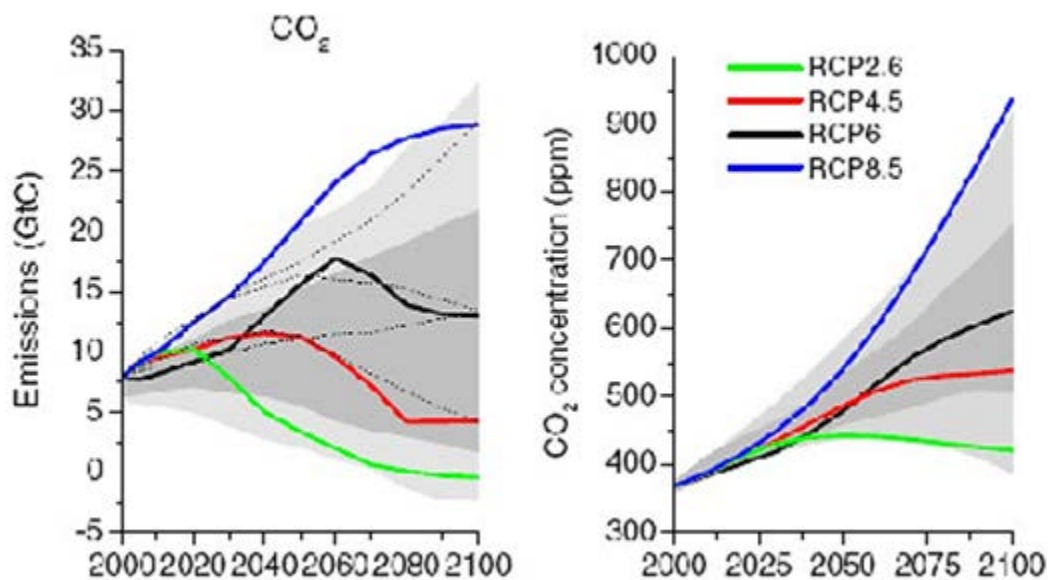


Figure 8. Carbon emissions and concentrations of four RCPs (van Vuuren et al., 2011)

Appendix B.3 Statistical downscaling applied to New Zealand

Global climate models predict the effects of climate change on a large-scale, thus downscaling methods are required to obtain more accurate information about regional climate change. One such method is statistical downscaling, which uses historical observations to develop regression equations between local climate changes and large-scale climate changes. Using the equation, the historical observations are substituted with the changes observed from the Global Circulation Model, resulting in small-scale regional projections (Mullan *et al.*, 2008).

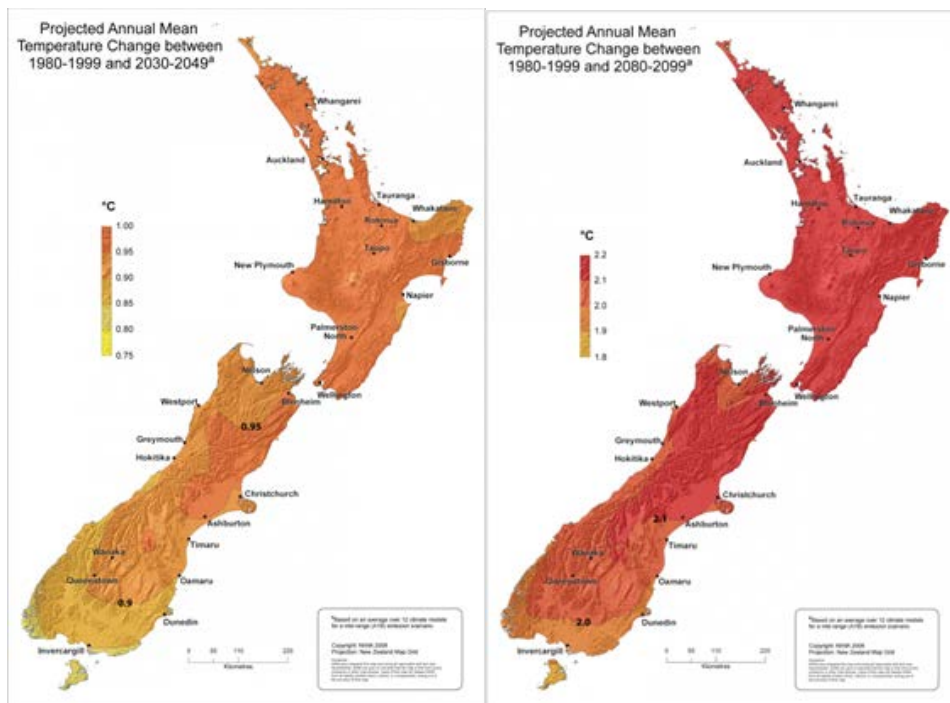


Figure 9. The temperature change projection for two periods – 1980-1999 to 2030-2049 and 1980-1999 to 2080-2099 (Mullan *et al.*, 2008)

According to regional projection generated by downscaling method in the 6 emission scenarios outlined in the previous section, the temperature will increase 0.2–2.0°C by 2040 and 0.7–5.1°C by 2090 (Mullan *et al.*, 2008). The temperature change is generally uniform across the country, although it's slightly larger in North Island than South Island, as you can see in figure 9.

The rainfall patterns also can be projected by downscaling methods, which reveal that, unlike temperature patterns, rainfall patterns vary more spatially. Figure 10 shows that rainfall levels increase in the west region while they decrease in the north and east region.

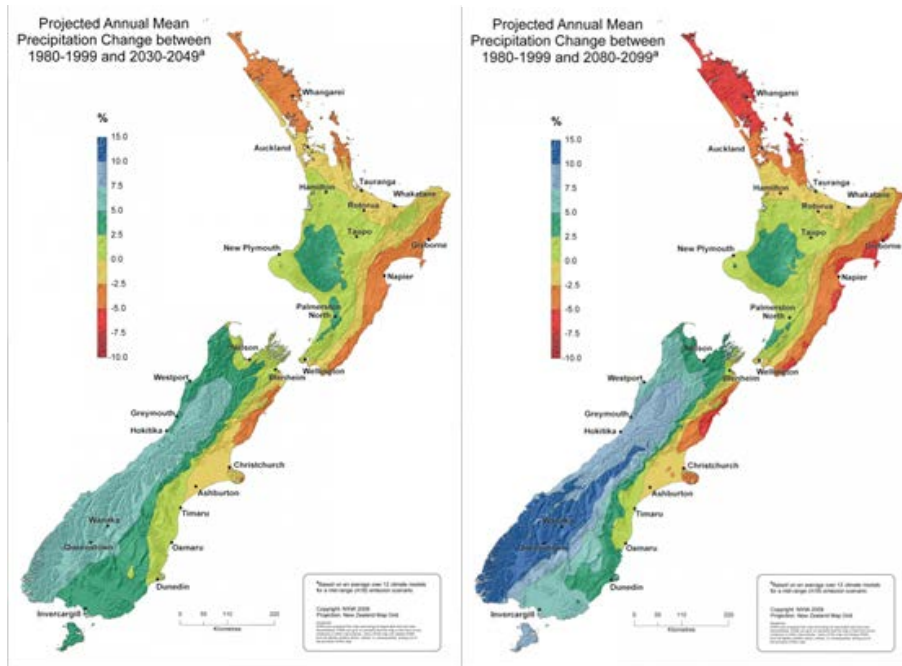


Figure 10. The rainfall change projections for two periods – 1980-1999 to 2030-2049 and 1980-1999 to 2080-2099 (Mullan et al., 2008)

Appendix C: Interview Consent Form



Exploring Perceptions of Climate Change in New Zealand

Sam Kodzis Richard Malcolm Angela Nagelin Quan Peng
Contact Email: Landcare-c14@wpi.edu

Purpose: You are being asked to participate in a research study. The purpose of this study is to gather data and information through interviews with residents of New Zealand. These interviews may later be made public by Landcare Research.

You will be recorded using audio and photography equipment. The final recordings may be released to the public.

Record keeping and confidentiality: No information other than a person's name, age, race, and occupation will be collected, and only name, age, and occupation will be displayed should the interviews be publicized. All records and interviews will be filed accordingly and original audio and photographs may later be made public. Additionally, the study investigators, the sponsor or its designee and, under certain circumstances, the Worcester Polytechnic Institute Institutional Review Board (WPI IRB) will be able to inspect and have access to confidential data that identify you by name.

Your participation in this research is voluntary. Your refusal to participate will not result in any penalty to you. You may decide to stop participating in the research at any time without penalty. The project investigators retain the right to cancel or postpone the interview at any time they see fit.

By signing below, you acknowledge that you have been informed about and consent to be recorded and be a participant in the study described above. Make sure that your questions are answered to your satisfaction before signing. You are entitled to retain a copy of this consent agreement.

Age: 18-30 30-50 50 and up
Race: European Maori Other
Occupation: _____

Study Participant Signature

Date: _____

Study Participant Name (Please print)

Date: _____

Signature of Person who explained this study

Appendix D: Interview Transcripts

D.1

Date: 29/01/2014

Interviewer: Angela Nagelin

Age of interview subject 1: 30-50

Occupation of interview subject 1: Marine Ecologist

Age of interview subject 2: 30-50

Occupation of interview subject 2: Manager

Q: How important do you think the issue of climate change is going to be in the future?

A1: I think it's going to be very important.

A2: Yeah, extremely important. Like the highest number you would have on a scale I would say.

Q: And do you think that there's a high amount of concern amongst the people in NZ?

A2: I don't think there's a high amount of concern at all.

A1: I agree I think that, um, people who know a little bit about it maybe have a bit more concern. But it doesn't feel like there's that big a groundswell of concern. And, you know, partly coming through what we get told in the media and that kind of thing.

A2: And the government response as well. The government response is pretty muted really.

Q: And what is it you see that the government is doing?

A1: Well I think we've got, there's a big opportunity here to be looking at renewable energy. Whether it's, you know, every new house needs to have a solar panel on the roof or, you know, every house has to have a solar panel. There's all sorts of good research now around renewable energy and we're not doing any of that thing now in NZ.

Q: And do you think that there's a lot of an individual push to do things?

A2: I wouldn't say a lot. I think that some individuals are fairly proactive but um. I don't think there's much individual push at all.

Q: And where would you see NZ in 100 years?

A1: Wow.

A2: That's kind of a scary thought. Uh.... Yeah.

A1: Well I'm a Marine ecologist. So I think about things that are gonna affect the marine environment.

A2: (laughing) Yeah, the ocean.

A1: I see us not being about to collect Paua, um. Which is a favorite NZ pastime. Um... Abalone. And I see a bunch of our coastal properties, which is also a real kiwi thing- to have coastal properties, you know cause of erosion or storm events and that kind of thing. Yeah, probably our agriculture industry might not be doing so well. Yeah.

A2: Yeah. And not so much NZ but as well in the UK there's many more significance of flood events happening. Like big green events. And I mean you see that every year now somewhere in NZ there'll be some big flood event that destroys roads and houses and all the rest of it. And I think we'll see more and more of that.

A1: And we still live in a car-dependent world. That's gonna have to change. You know there's no way you're going to, the average person's going to be able to afford fossil fuels when there's none left.

Q: And do you any alternatives coming forth or do you think we're still holding off on all that?

A2: I just read an article yesterday on The Listener. I mean, they're saying that they're like fantastic and the technology is now really good and you can drive long distances without having to do a charge but they're twice as expensive as normal cars. So all that stuff has to become more mainstream so that prices come down and so that people can afford them.

A1: And even the environmental cost of producing them is really high. The ones they produce don't use fossil fuels but in the production of them it's still...

A2: They're so worried about the batteries. And the batteries. The batteries are really bad environmentally. But I mean the fact that we've got them now, is a step towards improving things.

A1: It's still like we're not taking the bull by the horns with this one. We're just kinda waiting and seeing. And things aren't really that bad yet. The governments aren't really having to do anything major. Feels like we're just going to wait till things get really bad and then something will kick in.

A2: I don't think that climate change or the environment or reducing the use of fossil fuels is a decision making factor and all those decisions that you make day to day for most people. It doesn't feature in the list of considerations, and it needs to really.

Q: And what sort of things do you think need to be done now?

A2: Well what's the biggest, the biggest uses of fossil fuels must be cars and travel and electricity in our houses. So anything we can do to change that.

A1: Yeah. And I guess better investment in public transport. I think New Zealand is still pretty slow to pick up that as an easy one to, you know, reduce fossil fuel emissions.

A2: And anything you can do with the efficiency of housing. You know there's been some drives around insulation and double glazing and heating and anything you can do to make these things either easier and or compulsory. That's got to help as well.

A1: And even just better education to the general public about what..... one- Climate change is real and it's not really a debated thing anymore. You know, which I'm sure my parents still think it's alright, a bunch of skeptics. So better education about that. And better education about what the impacts will be. So that people, individually, want to take more responsibility for what they do.

Q: And just one last question for you. Where do you get your news on climate change?

A2: I would get it from national radio and The Listener.

A1: I think I'm not very good at looking at newspapers and that kind of thing so I think most of mine is through my job. I work for the government department of conservation so probably related to my marine role. So that's where I get most of it.

D.2

Date: 29/01/2014

Interviewer: Sam Kodzis

Age of interview subject: 50+

Occupation of interview subject: Environmental Lawyer

Q: So, how important do you believe the issue of climate change will be in the future?

A: I think it will be very important. Probably one of the most important issues.

Q: Are there any other issues that you think would be more important than climate change? And be honest, we're looking for honesty here.

A: Um, obviously things like the economy and pandemics, and things like that, but I think a lot of that will flow from climate change, so... Natural disasters and all those sort of things can affect the economy. And y'know, are attributable to climate change to some degree.

Q: I'm curious, if you can elaborate on that a bit. How do you think climate change will influence the economy and pandemics?

A: Because we have to spend money being prepared for those sorts of events, and because those sorts of events are usually costly. I mean, look at Christchurch earthquake for example, but you know, typhoons...um...um...I think I read in the paper yesterday [that] weather events cost us \$240 million last year.

And that's going to increase if climate change influences increase. Then, you know, we could be looking at a lot of money. Which, our economy's pretty fragile; it hasn't really got 2 or 3 or 4 hundred million dollars to put in places exponentially over the next ten years to spend on mopping up after weather events.

Q: You brought up that you read the newspaper. Is that your primary source of climate change information?

A: No, I'm generally interested. I'm an environmental lawyer, [and] so [I am] generally interested in that sort of issue.

Q: So would you also, like, look stuff up on the internet? Like what other [sources]?

A: Yeah, I keep up. I tend to follow what the government's doing around the Resource Management Act and things like that...Carbon trading and emissions

Q: I'm curious then, what are your thoughts on those...the RMA and ETS?

A: Oh, I think the government's got it horribly wrong. I don't think they're going about it the right way at all. I think they're approaching it in a very short-short-term way. You know, we can't keep milking, you know, just keep increasing our dairy herds, for example, um, without significant environmental effects. And there doesn't seem to be any kind of...consequence, you know, any plans to manage the consequences, or those sorts of strategies.

Q: Do you believe their actions have been insufficient?

A: Yes! I do! I think they're hopelessly inadequate!

Q: Alright, well what do you think the government, or common people for that matter, should be doing, then?

A: I think people's consciousness about the need to be, um, thinking about how all-out the way we live our lives impacts the environment. So, I think, um, education's really important. I don't think the government is interested in educating the population about what the effects of climate change are, because it doesn't fit their political agenda.

Um, I think, um, we should be managing our dairy herds and dairy farming much better than we are. And, um, you know, the fact is, the world doesn't actually need a lot of milk [or] milk products. It's a luxury product. I think we should be focusing much more on sustainable farming practices, like, you know, going back to sheep and beet farming.

Sheep is one of the most benign animal, farming methodologies in the world. And people [are] always gonna need wool, so... and lamb meat, so... I think we've got it wrong...And we shouldn't be selling all our land to foreigners either. You can put that one in capital letters. I don't think we should be selling our farm off. The fact of the matter is, [that] overseas investors, and overseas pitchers don't have an investment in New Zealand--a long-term investment in New Zealand. And we shouldn't be selling our--You know, we're a very small country, and a very fragile population. 4 million people at the bottom of the world.

Q: Yes, certainly. So, going back to the education and the resource management, out of all the things that you mentioned they should do, what do you think will be done?

A: Well, under this government, I don't think anything will be done. What we should be doing is making it expensive for people not to live sustainable lives. So we should be taxing products, services, and um, you know, those things that people use that are not sustainable. And we should be incentivizing people...

I mean why can't we have small solar panels? Why shouldn't we have bylaws that require everybody who builds a new house to put solar panels on the roof, and, you know, give them a fees discount if they put, you know, more than one? We could have...we got 150,000 people unemployed; we could have 50,000 people employed manufacturing solar panels. But

this government, if they did that, they'd import the bloody things, so we'd be paying some other person in China, or Korea, or somewhere, to make our solar panels. It's insane!

We've got regions where there's no jobs; why can't we have regions, you know, like Wairarapa or somewhere, have a manufacturing plant, making solar panels. I mean...how many buildings are in Auckland? Why can't they everyone [to] put a bloody solar panel on the roof?

You know, it's those sorts of practical things that they need to be doing...encouraging homeowners to, you know, manage their green waste better, to, um, make it expensive to be recycling water bottles instead of cardboard cartons. Cardboard cartons are entirely biodegradable, and yet here we are with plastic bottles. You should be allowed not to make, not one new milk bottle. You should have to just [keep] recycling the ones you've already got.

Lots of things they could do to really practically live, which people would willingly do, knowing that, that's the proper way to live in this world with the problems we're facing in the future.

Q: You bring up an interesting point. Do you believe that people would be willing to do this, and that government doesn't understand what people are willing to do?

A: It's not interested. I think people would be very willing to do it. I think people do a lot of this voluntarily. Particularly young people like yourself that have, uh, you know, an awareness. And our schools should be much more aggressive at teaching, you know, teaching young people about sustainable living...And then you'd get the young people who can do it.

I mean, we did the same thing with smoking. After all, you know, my kids used to come home from school saying 'no, you can't smoke. No one can smoke, you're gonna die!' Why can't we be doing that about the environment? ...Gardens in schools; why aren't they funding more gardens in schools?

Q: Yeah, I don't know the full details of the government here...

A: There are so many things we could be doing. I could take up much longer than five minutes.

Q: So, then, you brought up the economic impacts...In 100 years how do you think climate change will affect New Zealand in addition to the economy as you mentioned before?

A: Well if we keep going the way we're going, we'll salinate our pastures. So we would have no bloody land. It's not enough to say you can irrigate. We are carrying out farming practices in environments where it's simply not possible. You know, dairying in the Wairarapa-- I have a house in the Wairarapa, I live over there-- we have dairying in the Wairarapa; you cannot dairy in the Wairarapa without irrigating. As a result, our aquifers are being drained. Which, if we carry on the way we're going, we'll be a very impoverished country.

Q: You believe a lot of the natural resources are just--

A: --Are gonna be depleted. We'll have our rivers dammed, we'll destroy our natural environment. It'll be so heavily polluted, what streams are left. I'm really pessimistic about the future.

Q: So how long until we see the impacts of all of these actions?

A: Oh, I think it's happening now.

Q: Alright, so elaborate: what's happening now that you think...

A: Well, I think, like, the aquifer in the Wairarapa which used to be huge-- I mean, there was enough water in that aquifer to last hundreds of years. [It's] Probably down, I don't know what it would be down to now, but it's significantly depleted. And those are the sorts of things: our water storage areas, our rivers, I think we're seeing a lot of impacts.

Q: And you would attribute that to climate change, or...

A: I think it's not so much attributable to climate change, so much as the way we are contributing to climate change, and the lack of, um, awareness and...Incentives to encourage people to be managing our environment better... Might be a carrot and stick approach...No carrots and no sticks.

Q: I think that's all of our questions. Thanks for your time...

D.3

Date: 09/02/2014

Interviewer: Angela Nagelin

Age of interview subject: 18-30

Occupation of interview subject: Policy Advisor

Q: How important of an issue do you think that climate change will be to the future of New Zealand?

A: Very important.

Q: And what makes you believe that?

A: Well it impacts on the quality of life for everybody. Most importantly probably our Pacific neighbors but it will impact New Zealanders as well.

Q: What sort of impacts do you see happening?

A: Well we had a quite severe drought last year in Wellington. And events like that are probably just going to increase. And have a big economic impact as well as a physical impact.

Q: So what sorts of economic impacts?

A: So the drought decreases yields and agriculture is a big contributor to our economy. So that's quite a big economic impact if we have a reduced yield.

Q: And where do you see New Zealand in 100 years?

A: Well if we could keep it below a 4 degree raise that would be fantastic but we're really just not making much of an effort so.... We're not going to get past that point. I see us having at least some sea level raise and extreme weather events.

Q: And why do you think that there's not a lot of action right now?

A: Well we have a sort of conservative government who hasn't really been taking things as seriously as we would like to see at the international level. Particularly pushing larger countries to commit to stronger targets. We've reduced our targets.

Q: So what sorts of things do you think need to be done on both an individual level and a government level to reduce the impacts of climate change?

A: We all on an individual level we need to be conscious of the decisions we make day to day. And we also need to make our views known to the government. I think that the government needs to put in place strong targets for NZ and set an example for other countries. So we have a strong moral standpoint on the international stage.

Q: Where do you get your information about climate change?

A: Ahh... a variety of places. The news, friends, and articles online.

D.4

Date: 29/01/2014

Interviewer: Sam Kodzis

Age of interview subject: 30-50

Occupation of interview subject: "Self-Employed"

Q: What country do you come from?

A: New Zealand

Q: What part of New Zealand do you live in?

A: Wellington

Q: So you work in this area?

A: Yup.

Q: Awesome. So we're going to ask about climate change. Just want to know what people are thinking. So just how important of an issue do you think climate change will be in the future?

A: Uh. It'll be pretty critical I guess.

Q: Would you say it's going to be one of the most important issues, or what would you say is going to be the most important issue...?

A: So you'd like to think that it'd be an important issue that people care enough about their environment but. Well usually the most important issue is what most important to government since that's where policies and laws come from. So I guess there's a difference between what you see as a person and what you see as a society that relies on information to be provided to them.

Q: So you believe that the people might be concerned but not the politicians?

A: Correct.

Q: In 100 years how do you think climate change will affect New Zealand?

A: Hopefully we'll have more sunny days like this. But as far as our dependence on agriculture and fruit products we would probably have to have diversified or we'd be pretty buggered.

Q: So you expect that it will largely result in heating up?

A: Yup

Q: When you say you expect that it will be diversified. What do you expect is most at risk?

A: Uh dairy. They're pretty. Uh... dairy is one of our main exports. If they don't have good quality grass or rain to help that. Then that'd be the most impacted. You only have to look at Fonterra* to see how much that'd screw us.

Q: when do you expect these effects would start occurring?

A: I think they've already started occurring.

Q: You think they've already started. Alright. Now would you say that a warm day of like today is an effect?

A: Uh not so much now that its summer. I guess it's not so much of the good days but the lack of rainy days. Like so it can still be overcast and stuff like that but the lack of rainfall is not helpful.

Q: Alright. So what do you think needs to be done in order to help prepare for/prevent climate change?

A: I guess they need. I guess the 1st part would be to build awareness about what the effects could be but make them realistic. So talking about a scorched earth is a bit too bleak. And people go 'oh it won't happen to me'. But if you talk about in a hundred years what things will be, most people will just think 'oh I'll be dead in 100 years, why should I care'. If you start directing messages where it's like this it's going to mean for the next 5 years, this is what's happening now, this is what it was like 5 years ago. And that makes it more relevant. But yeah. A 100 year plan until science makes us live for 200 years, it's not my problem.

Q: What do you think people actually will do?

A: I think they'll just learn to live with it. Likes its ambivalence. They'll adjust. But that's not really a strategy. So I guess they'll find alternatives. But that doesn't mean it's the right thing to do. They'll just find coping mechanisms.

Q: So you think they'll just find coping mechanisms rather than trying to solve the problem?

A: Yeah. Solving it, I guess, is just kinda black and white. Like you know you gotta be pragmatic, Cause when you introduce change, regardless of what it is, there's other effects that you may not have seen as being outcomes. So I mean, that's why I say this 100 year planning and that's kinda... I don't know. A bit... but it's a nice strategy but, fuck it never happens. So it'd be better to go that you have an end goal in mind but be more aware and monitor it more closely but it's the small wins and the small setbacks on a year by year basis. That's what makes it more touchable.

Q: one more question. What is the primary source of climate change information for you?

A: Um. Suppose it's a bit of the internet.

Q: Any site in particular?

A: Not really. Like I suppose this thing. It's not really out there as a leading headline anywhere. Usual when you see it out there is scare mongering or two intellectuals having a go at each other saying 'oh no that persons bullshit and I'm right.' So it's not different than reading the

entertainment headlines.

Q: So would you say the news you're reading is at all productive?

A: No, not when it's just two guys having a go at each other to see whose PhD is worth more than the other guys.

*Fonterra is a New Zealand based dairy company

D.5

Date: 03/02/2014

Interviewer: Sam Kodzis

Age of interview subject: 18-30

Occupation of interview subject: Project Manager

Q: So, how important do you believe the issue of climate change will be in the future?

A: Uh, well it's obviously very important...We need to obviously change our, uh, economics and everything around climate change, and stop sort of going business as usual. Speaking more about, obviously, um, the triple bottom line, um, and going from that, because obviously, it's uh, very shortsighted to...think about the straight-away costs rather than the long-term. Yeah, I believe in, uh, changing and getting towards what the requirements is, certainly.

Q: If we don't start changing things, how do you think it will impact us 100 years from now?

A: Uh, we potentially may not be here. Uh, well, there'll be a huge drop in global population. Um, I think definitely making small steps now, um, you know, in the next five or so years will have dramatic consequences down the track.

Q: Do you believe that after 5-10 years it'll be just be too late then?

A: Well it depends...well (sigh) I think, as we're going now, we are going to see some changes to climate change. Um, [it's] already happening, because of obviously, the massive spike in global temperatures that has randomly occurred in the last past five years. So we have seen, obviously, increase of uh, global...weather events. But definitely...I don't think there's—in all the literatures I've read—there's a definitive time period. If anything, all the previous limits seem to have sort of gone past that point. But we are getting very close to a temperature, which is uh, no point in going back to, so... Yeah, I don't think you can point a time on [it], but definitely act now. And act as soon as possible.

Q: How would you have people act?

A: Um, well...it'd have to be a wider scale. So, you've got to go from, obviously, government policies and implementations. But you also gotta go right down to households, you know? Really getting into that, um, making smart decisions. So when you're in the shops and you're, uh, choosing the light bulbs, choose the energy efficient ones. When you're, uh, buying your groceries, buy ones that are closer to New Zealand, or ones that are produced in New Zealand; and also ones that they heavily sanction.

All these...we need to all make a lifestyle change, but also government does need to, like, I would say, push it through and start the process. Um, and it's good in Wellington, we're sort of getting that, you know, with the changes...currently with, you know, putting cycles as a real bit priority on transport. You know, so, our local government's sort of pushing it through, but

I think [it] still needs to be more like, on the central. To start, not avoiding...the uh...the issue, um, and stop pushing back the, uh, deadlines for our agriculture to meet the requirements.

Q: So, then, if that's what should be done, what do you think will actually be done?

A: Depends if we have a new government this year. Uh, yeah...if anything I think, at the moment, people are just too afraid to make the first steps, because people who make the first steps, economically are going to get hurt first. Um, as we're coming out of our recession and our economy's growing, I think we need to actually...instead of giving tax cuts, uh, start to look at ways we, uh, produce our--looking into green industries, and uh, making sure that we actually do follow a bit more of our plan that we've put forth.

Q: So would you say that you're hopeful/optimistic about the future? Trying to get a gauge...

A: The way that it's going, and the way that we view climate change and global warming and sustainability, um, I don't see that we, uh, have ever shown any signs of great initiative and, uh, striving forwards to do the right thing. I think it's, uh...nothing really's gonna be done.

Q: One last question our sponsors wanted us to ask: from what source do you get most of your climate change information?

A: Um, being a university student and [having] done a paper, or done a degree around sustainability—more in terms of buildings—I've got a lot of my literature through, uh, local[?] information through literature, uh and obviously, uh, panels that research climate change. So not so much through media or anything like that, obviously, got to gauge hard data and actual adverse effects; not what the media want to pull on your heartstrings with.

Q: ...Thanks for your time...

D.6

Date: 04/02/2014

Interviewer: Angela Nagelin

Age of interview subject: 50+

Occupation of interview subject: Retired/Sculptor

Q: How important do you think the issue of climate change is going to be to New Zealand in the future?

A: Quite important.

Q: And what makes you believe that it's going to be that important?

A: The consensus seems to be that it's going to happen and the debates [are] over just what the implications will be but given the sort of economy we got based on agriculture and that sort of thing it's going to have an impact. We have to get used to making some sort of provision work.

Q: And what sort of impacts do you think it's going to have on New Zealand?

A: It might determine what sort of crops we grow and animals we look after, it might have a huge bearing. The wine industry might disappear, anything could happen. Someone needs to be researching all those [possibilities] and keeping an eye on it.

Q: So if you had to guess, where would you say New Zealand is going to be in 100 years due to climate change?

A: Well I think we will still be here, it might be a slightly more attractive place to be if we've adapted or adjusted to it. Everyone says if it were a few degrees warmer it would be quite a nice place to live. But then again it might attract more immigrants, and we might get too many people here to enjoy the pleasant climate with a more milder winter than we get at the moment.

Q: So what changes do you think we need to make in order to hinder the effects of climate change?

A: Well it's like they say: everyone doing their own little bit to try and improve the situation. It's a hard thing to get across to people though, you know, think local act global. You know, do the right thing and if everyone's doing it be a better place. Like walking everywhere, walking more, using public transport all those things that you should be doing to improve the environment.

Q: And do you think that a lot of people are doing this and acting upon it.

A: I think a lot of people are thinking about it but then they hope in their car and drive down to the supermarket to get their stuff. The same thing the government needs to be taking a lead, and the current government doesn't seem to be wanting to do much they got their head in the sand a little bit. It needs to come from both ends, from individuals doing their thing as well as the leaders at the top sort of providing a bit of leadership on the matter.

Q: And why do you think they are not doing anything, any guesses?

A: Well if you look at the current government, it's a very conservative government, they are only looking three years ahead they are not looking thirty years ahead. That's the nature of a conservative government you know they are just looking towards the next election which is this year. So they don't really think ahead to the longer term really. They claim they are, but in reality they are just looking for the next three years in power.

Q: And where do you get their information on climate change?

A: Newspaper, magazines, radio, national station radio.

Q: And do you think there is a lot of coverage on it?

A: Yeah I think there is, I think you would have to be a dummy not to realize or be aware of the arguments anyways. I think it's quite well publicized I think, it's not something that's brushed under the carpet there are plenty of people talking about it. Particularly scientists and others. And there are quite a lot of debates on radio and television. So yeah I think it's up there as an issue.

D.7

Date: 04/02/2014

Interviewer: Sam Kodzis

Age of interview subject: 18-30

Occupation of interview subject: Office Manager

Q: How important do you believe the issue of climate change will be in the future?

A: Quite important.

Q: What do you think will be important about it?

A: People needing to actually actively make a difference in the environment. I think rather than just waiting for someone else to fix the problem, people are going to have to actually be doing something about it.

Q: Do you feel that's happening a lot now?

A: No I feel like it's starting to but there needs to be a lot more.

Q: So what happens if we don't start taking these actions?

A: The planet is just going to keep on deteriorating. I think it's just going to speed up even more and the planet is just going to get ruined.

Q: Could you give some examples like how it's going to get ruined?

A: Just like the levels of pollution, and the levels of rubbish, and animals that get affected by that, sea life, and yeah I think it's just going to be a giant snowball effect.

Q: So then how do you think New Zealand will be different 100 years from now as a result of climate change?

A: I don't know, I don't really think I can even picture it. I can't say I've thought about it. I definitely don't think we are going to be as, we would have lost all of our beautiful green natural reputation; I imagine we are just going to be like some of the bad countries are now. But I reckon we will be one of the last countries to see it.

Q: So you think that New Zealand is heading in a direction that's not as green as you would like it to be?

A: Definitely.

Q: How long do you think it will be until we start feeling to effects of climate change?

A: I don't know. In some ways you feel it now, with the seasons you know with the warmer winters and the colder summers and I think all the sort of natural disasters and things that are happening. I think that there must some sort of link between all that. I think that we are seeing it all now and it kind of feels a little bit apocalyptic. There is so many more earthquakes and cyclones and stuff happening all over the world and I feel like it's all potentially linked to global warming and the rest of it.

Q: What should people be doing?

A: I think people, for example at my work we do recycling we've got the recycling bins, but people find it too much effort to put a coffee cup in the landfill one rather than the paper recycling. I think people are just really lazy about it...and think that it's someone else's problem and someone else will come along and do it. And I think everyone just needs to actively get involved. More so than just recycling, more so than just doing the bare minimums, I think people should be going above and beyond to get involved.

Q: What do you think will actually be done?

A: I think a lot more of what we should be doing now, which is voluntary; I think a lot of that will become mandatory. They're gonna have to get laws in place to force people to do certain things. Like with the carbon emissions and the rest of it I think it's going to have to become something you have to do. The voluntary side will get taken out of it.

Q: So you believe that the government will start to make these regulations?

A: I believe that they will need to. I think it will be forced on them. I don't think that they are going to actively decide to go that way. I think the situation will force the government to force the people. I think it will come to a point where you can't ignore it anymore. And if they were doing it now it wouldn't be such a big disaster but it will come to a point where they will go 'oh, we should have done this, if we had done this ten years ago it wouldn't have come to this.'

Q: From what source do you get most of your climate change information?

A: Just from reading news articles and stuff on like stuff or whatever. And I do like to use stumble upon, and I look up documentaries and I will just end up clicking on stumble and end up looking at a documentary on something that pops up. And often you sort of see something that might relate to it. Just reading generally though.

Q: And what are your thoughts on the climate change coverage?

A: I think that there's mixed opinions about it all you have to do is read the comments at the

bottom of those and people sort of like to think it's a conspiracy theory and people all just get a little bit silly about it. And that can be off-putting I imagine to someone who doesn't know a lot about it. Like myself sometimes it's hard not to get swayed and go 'oh maybe, maybe it is a little bit blown out of proportion' and then you just look at the planet and go 'well something needs to change.' I mean, it's not going to hurt if we start treating the planet better.

D.8

Date: 31/01/2014

Interviewer: Sam Kodzis

Age of interview subject: 18-30

Occupation of interview subject: Museum Host/Tour Guide

Q: First I want to ask what country you are from?

A: New Zealand

Q: And what part of New Zealand are you from?

A: Manuatui. It's part of North Island above kind of a couple regions up from Wellington.

Q: How important do you believe the issue of climate change will be in the future?

A: Probably a big deal because they always put that the icebergs are melting in Antarctica and that sort of thing. But then I'm torn because you've got the whole natural cycle of the earth with that, ice age and that whole sort of thing. People do have a big part in the change of it but I also think it's a normal thing for the planet to go through.

Q: So would you say that you're concerned, or not concerned?

A: I don't know whether or not it would be in my lifetime before a dramatic change would kinda happen. Unless a meteorite fell out and destroyed heaps of stuff.

Q: So jumping out of your lifetime then, 100 years from now, what do you think will happen to New Zealand as a result of climate change?

A: Maybe [we'll] lose some of our beaches if the water levels go up. And also we are in an interesting spot on the planet as well, just kinda below the equator. Probably get cold there for a lot of people here--we're more of a winter country actually.

Q: You mentioned about an interesting spot below the equator, could you elaborate on what you were thinking with that?

A: In New Zealand we are pretty lucky because we got up north its really warm and then you go down south and it gets colder because you are closer to Antarctica. But if our water levels go up I just think we are in an interesting position because the temperatures will become more extreme so to speak, but also more colder.

Q: So I just want to make sure I'm getting this, temperatures will become more extreme but also

gradually move to become colder?

A: Yeah, and also New Zealand is kind of twisting as well so the landscapes going to change a bit.

Q: How are the landscape going to change?

A: Because we are on two tectonic plates, so we are kinda shifting. I think the southern island will get taller which is great for ski season, but then we are not too sure about volcanic activity and stuff like that. I mean, with all the earthquakes that are happening at the moment just because we are on that fault line. I'm not really sure what will happen actually, nature's one of those weird things that will throw you a curve ball. My best guess on this, for us in New Zealand I think, well because we've all the sort of different climates and microclimates I think it might stay the same mostly just shift around a bit. So like different areas will become other microclimates and massive droughts will just sort of twist around the landscape.

Q: I'm curious: you brought up the shifting tectonic plates do you think climate change is going to affect them?

A: Only if someone decides that they want to like drill into them or something.

Q: So you think that it will be more of a result of how people respond to climate change?

A: Yes, totally.

Q: So on the topic of people responding, what do you think should be done then, if anything, about climate change?

A: In the sense that we are going to affect it or in the sense that it is going to happen anyway?

Q: What should we do in response either to try and stop things from happening or to adapt?

A: I think adapt. Adapt is definitely better because in the sense of having things naturally go on and humans are best at adapting to where they live or migrate. I mean we move around the world and set up or sort of civilizations and little countries and everything and we've adapted to what suits us. I think it's quite arrogant really. But yeah I think we will adapt, people should definitely should try and lessen the whole gasses going into the atmosphere and all that sort of thing. Definitely agree of all those points but at the same time things are just going to take their natural toll and we are just going to have to adapt to it.

Q: So how do you think the people should adapt then?

A: Again it's one of those long-term questions. I think at this point in time we should try and be a bit more green with recycling and that sort of stuff but that's been going on for years and I don't

know if I've seen a huge change with that sort of thing.

Q: You brought up actually that people have moved around the world. Do you think that maybe moving is a possible response that might happen?

A: Yeah I think that will definitely happen because unless technology takes massive advances and we work out how to make an area something that we want almost like a little bubble which I doubt would happen. Well I suppose we could do a bit, it would take a lot of effort and then we'd be producing more stuff that you don't really want in the atmosphere anyway. I think you would have to move or adapt again. I think it would have to be one of the extremes that would make people really change where they'd have to move to. Like all the sudden no food or something or all the sudden there's massive blizzards and we just can't take it, I don't know. It would take an extreme I think. For people to move, because we are pretty good at adapting houses or where we live and all the sort of thing. And people can put more clothes on or take them off or put on a whole lot more sunscreen.

Q: Do you think that those types of extremes will force adaptation as a result?

A: Yes, definitely. Well it would take the extreme I think for a lot of people's minds to shift. People don't really take things too seriously these days. And a lot of New Zealanders have just kind of chilled out and started to go with the flow and see what happens.

Q: So what do you think people actually will do? You know we should adapt and maybe get this technology and all that what do you think will happen?

A: That is so unpredictable. But then people can be like sheep as well, like they'll go with the majority.

Q: Where do you think the majority is headed?

A: Now? I don't know, I'd say we are pretty comfortable here so I think we would stay put until something traumatic would have to change. But I think there has to be a need to move away first before people are going to.

Q: How long do you think it will be until we see the effects of climate change?

A: Well things are already kind of changing all the time, so... Climate change is a very broad term I think. Well I think that as soon as they hear the word climate change they think the icecaps are melting you know all that sort of thing that people immediately go to what's cold and hot and all that sort of dramatic things and I don't think the little stuff tends to be on people's minds as much. Especially not mine. To be honest I have no idea.

D.9

Date: 04/02/2014

Interviewer: Sam Kodzis

Age of interview subject: 30-50

Occupation of interview subject: Admin clerk

Q: How important do you believe the issue of climate change will be in the future?

A: I think it's going to be vitally important; our children's children are going to be in very deep doo-doo by the time they get to middle age.

Q: What do you think is gonna be so vital about it? Describe the doo-doo.

A: Doo-doo will be, as you've seen at home in your country [America], you're getting snow in places where it shouldn't be snowing, and where it hasn't snowed much for years; they're having bad weather in Europe; and here we're having storms at the wrong time of the year...All these southern storms coming up from the southern ocean; it's been very windy, [and] very bad.

Q: So children's, children...let's say 100 years from now: how do you think New Zealand will be different as a result of climate change?

A: I think New Zealand will be a lot hotter and a lot windier. I think we're gonna get a lot more wind, especially down south. They have a lot of trouble with the wind down there, since it comes straight off the ice. I think it's gonna get worse.

Q: So you think the south is gonna be more vulnerable?

A: I think it will be more vulnerable in years to come. Most definitely.

Q: How long until all of this starts happening?

A: I believe that it's happening now. I just think that, as you said, [in] probably another century, maybe less, it's gonna get a lot worse. You're gonna get a lot worse weather where you come from, Europe's gonna be the same, and here, even though we're down at the bottom of the planet, um, we're still unprotected from the huge storms that come from the ice.

Q: So then, what should we be doing?

A: We need to cut back on fossil fuel use, and people who invent batteries to run cars on need to be given more money—a lot more money in a big hurry.

Q: So you think, like alternative [fuels]--?

A: Alternative fuels, biodiesels—that's a start. You can get electric cars now, but...they're too

expensive for most people. You know, most people couldn't afford them and pay a mortgage, and raise children at the same time. They need to be cheap. Fuel[?] cheap.

Q: So if that's what *should* be done, what do you think will actually be done?

A: [sighs] I think that biodiesels and the like will probably continue to be developed—which is good. I also think that electric cars will continue to be developed, but the main sticking problem is the batteries. Because as the moment, you know, a huge amount of battery weight is in the back of the car. Somebody needs to, I dunno, be given more money to try and develop a better battery that, you know, holds a better charge and lasts longer. Because that's the only way you can start easing the reliance on fossil fuels.

Q: Alright so to jump topics a bit...from what source do you get most of your climate change information?

A: Well, from looking out the window...From seeing your country on TV, and seeing Europe on TV, and also I neglected to, um, mention Australia, because in recent years—they've had bushfires anyway because they're hot—but in recent years they've also had some serious flooding. Which has affected a lot of people quite badly. And, I personally, believe that some of that—maybe not all, but some of it—is down to climate change.

Q: You mentioned TV. How do you think the TV coverage has been, of climate change?

A: TV coverage is pretty good. But it could also be better: there could be more people out there, more often. Because the only way to, get the general public, you know, at large to actually take notice and do anything, is to keep shoving it down their throats on a daily basis.

Q: Do you feel the public isn't as concerned right now?

A: I think a lot of people are. I truly think a lot of people are, and they're just going 'I'm 50 now, okay? In another 20 years I'll be just about ready to [motions across throat]. So, you know, what do I care if the planet's weather turns to rubbish? I don't care, I won't be here'...But that's the wrong attitude.

People have got to say, 'well what can I do, now?' you know. Stop using your car to go to work every day—I don't, I catch the bus, you know. Recycle more—I try to do my best, you know. And maybe...push the...cheaper public transport...something about light rail or something through the city—uh, encourage more bicycles, you know. They've only just started here, um, having bikes, you know, around the places you can pick up and ride around on, and then you put them back. I know they do that in America, and I'm sure that they do that in Europe quite a lot. You know, and it seems to work over there. I don't see any reason why it shouldn't work here, you know. Celia Wade Brown is okay; she might not have the best policies in the world, but she does have, you know, the idea of 'we should bike' you know, get a bit of exercise, get off those sofas. There a lot of people out there who could use a bit of cardio[?] [Lot of wind in the recording]

Q: Thank you for your time.

D.10

Date: 29/01/2014

Interviewer: Angela Nagelin

Age of interview subject 1: 30-50

Occupation of interview subject 1: Business Analyst

Age of interview subject 2: 30-50

Occupation of interview subject 2: Business Analyst

Q: How important is climate change?

A1: Very

A2: Extremely important.

[Off the record discussions about sea level]

Q: Do you have any idea how much of New Zealand is at sea level, how much land could be lost.

A1: Never more than 2 hours away from the beach, it's just a big long line. So the sea encroaches from every side very quickly.

Q: How different do you think New Zealand will be in a hundred years due to climate change?

A1: I don't think we will be sitting here.

Q: Have you heard anything from experts about this?

A2: No, but I have heard it's supposed to be rising something like a meter and a half in the next 50 years.

Q: Do you think that we are seeing impacts of climate change currently?

A2: I would like to say yes but it hasn't been fully confirmed. I'm in the upper percentile of thinking that yes it is. But you get the odd ball coming out saying this is the general cycle of the earth heating up and cooling down. Personally I believe human beings are having a detrimental effect on climate meaning climate is heating up more than what is naturally occurring.

Q: What do you guys think needs to be done about climate change? Do you think there is currently being enough done?

A1: More. More needs to be done to reduce the reliance on fossil fuels. We got two massive developing nations that need a lot of power and a lot of energy to do what they need to do. So it's hard to sort of tell those countries to stop when they[ve] got massive populations they need to feed and need to cloth and keep going so when economies drive everything money drives everything.

A2: It's particularly hard from the developed world to tell the developing world not to do what the developed world has already done. How do you do that particularly when they are some of the biggest emerging markets and economies in the world?

Q: One last question, from what source do you get your information about climate change?

A1: News, Internet, reading.

Q: What sort of things--is it like forums online?

A1: Documentaries or things like that that are interesting or basically articles that come out in the mainstream media.

A2: The information that is pushed online news agencies or online news sources the traditional media sources newspaper, television.

Q: And do you find that there is an abundance of information or it's just scattered every once in a while?

A1: For mainstream it's pretty much scattered depending on what's the main issue today or what they got else to report on.

A2: Predominantly scattered but also predominantly headaquitous. The worst case scenarios is entered by those with a reason to present the worst case scenario. There doesn't seem to be a balanced debate across mainstream media as to what is really happening with climate change.

D.11

Date: 04/02/2014

Interviewer: Sam Kodzis

Age of interview subject: 30-50

Occupation of interview subject: Design

Q: How important do you believe the issue of climate change will be in the future?

A: In the future it will be pretty important. What we do now we affects the future.

Q: So why do you think it will be important in the future?

A: Well it's going to change the planet really. Affecting weather and the way we live our life basically.

Q: How do you think it will change the weather?

A: Well I'm not 100% sure but what I've seen already there are a lot of dramatic changes: temperatures going up, sea levels changing, ice caps melting that sort of thing.

Q: Let's extend 100 years from now, how will New Zealand be different as a result of climate change?

A: I'd say it be a lot hotter. That said it could either way really. Hotter, colder. It might not even be here anymore, New Zealand, earthquakes and such.

Q: So how long until we see the impacts that might cause New Zealand to vanish out of existence?

A: Hopefully not too soon. I don't know, 100 years.

Q: What do you think we need to do then to make sure this bad stuff doesn't happen or to adapt?

A: I wouldn't know, obviously we have to make some changes. I don't know if it's just a New Zealand thing, but I'd leave that to the experts to let us know what needs to change really.

Q: From what source do you get most of your climate change information?

A: Television

Q: Like what channels?

A: News, channel one, three, sky news that sort of stuff.

Q: And what are your thoughts on their climate change coverage?

A: There really isn't that much on it to be honest. Discovery has a bit. But only when something really, you know when there is a disaster or something that they start bringing that stuff up again.

Q: You think it fades from the public view most of the time?

A: Yeah, yeah exactly. It's when there's like a cyclone or something like that when they start bring up climate change and all that.

D.12

Date: 09/02/2014

Interviewer: Angela Nagelin

Age of interview subject: 18-30

Occupation of interview subject: Student

Q: How important of an issue do you think climate change is going to be to New Zealand?

A: It could be a big issue. Like I guess the water level rising because New Zealand's like an island so that's pretty important but I guess it's not just New Zealand though. It's kind of a worldwide thing so it's pretty important.

Q: And where do you think New Zealand is going to be in 100 years due to the effects of climate change?

A: Well I have thought about this, but this could be a temporary thing though, it could be. But in 100 years we could be better off or worse off I'm not sure actually.

Q: Do you have any ideas of how it could be better or worse?

A: Better as in the earth will be sustaining itself, or worse as in it's just going to continue to deteriorate. It's going to get hotter or colder, or drier or wetter and yeah, like that.

Q: And how aware do you think the people of New Zealand are of the issue?

A: I guess we are somewhat aware, but not fully aware of what could happen.

Q: And is there like a lot of propoganda out about climate change that could raise awareness or is it a dead issue?

A: [The issue's] Kind of dead, yeah. It's not really talked about here a lot.

Q: And why do you suppose that is?

A: I'm not really sure but it's kind of all the stuff that would affect us more recently. Like the deep sea oil drilling, that's probably going to happen within the next five to ten years, while climate change would be the next fifty maybe. So it's more recent than climate change maybe that's why.

Q: Like its way off in the distance so they keep it in the back burner?

A: Yeah

Q: And where do you get your information about climate change?

A: It's usually news articles or sometimes online articles which aren't really news articles but just general opinions.

Q: And do you think there is a lot of information out there on climate change, or is it really hard to find?

A: I'm not sure actually, because I've never actually gone to look at the studies involved or anything but I'm pretty sure it's out there if you just google it or something.

D.13

Date: 31/01/2014

Interviewer: Sam Kodzis

Age of interview subject: 18-30

Occupation of interview subject: Student

Q: So how important do you believe the issue of climate change will be in the future?

A: Quite important. It seems like it's going to affect everyone. I guess it's up there in priorities.

Q: How do you think it's going to affect everyone?

A: Um, well I mean like, if what we're told is true then there'll be the ice caps melting and the sea levels rising and stuff. And like weather extremes and stuff, like droughts and storms and stuff. So.

Q: So like we're told. From who?

A: Well, the media and that kind of thing.

Q: The media... could you elaborate? There's a lot of different media.

A: Um, like news or just stuff on the internet.

Q: Do you read the news a lot?

A: Um. Yeah. Like news websites and sometimes watch the 6 o'clock world news and...

Q: So like what sites?

A: Like Stuff. The New Zealand one. I did at one point have the New York Time's app on my phone. But I got rid of that.

Q: Curious. This is just a personal question- why did you get rid of the New York Times?

A: Uh... um. It was all just overseas news. Nothing really New Zealand relevant.

Q: So you brought about a few things about weather... fluctuating droughts and all that. Do you believe these will affect New Zealand in the next 100 years?

A: Um Yeah. Of course. I mean there's already evidence about it. Um...Last year there was a massive drought up north. All the farmers and stuff had cows. And they had to stop milking them because there wasn't enough grass for them to eat and that kind of thing. So I think it's definitely going to affect us a bit.

Q: So you believe it's already happening?

A: Uhh.... To a certain degree.

Q: So, figuring where we'll go, to where we are now. To what degree [has climate changed happened]? Like barely started? All the way?

A: So like. Not really starting. It's kinda. It's not like every year we're getting massive droughts. It's like once every few years. So. I guess. It'll get more and more common. So it's not really started yet, I'd say.

Q: So when do you think we'll start seeing the really bad stuff?

A: Um. I'm not really sure. It depends if people become more aware of it and change their ways. Or if they like, continue on if we are. So like if we continue on as we are....so like. Um.... I think someone said that like 2050 they'll be more extreme weather.

Q: If we continue on without ways.... So how would you have people change then?

A: Um. Just the "Reduce. Reuse. Recycle." kind of thing. Try not to consume as much stuff that damages the environment. All plastic packaging and stuff. Like make sure you recycle it. Um. Try not to go overboard with power. Like turn it off when you're not using it.

Q: So would you agree with this statement: "waste management is most important thing people should be doing?"

A: Um yeah. I'm not sure if it's the most important thing we should be doing but it's definitely important.

Q: What's the most important?

A: I'd say probably just power consumption. There's no point to leaving all the lights on and you're the only person home and you're just in the lounge or something. Like all those kind of things. And leaving switches on when you're not using it.

Q: So what do you think actually will be done?

A: Um There's like public education campaigns like make everyone more aware of the issues. I think people will start to notice things. Like take a [something] starts. But at the moment. Everyone just kinda goes on in their everyday lives. So. Not much change.

Q: So you think people will be doing the public awareness campaigns or you think they should be done.

A: I think they should be done. Like if people put ads on the TV. And that kind of thing. Just make people more aware of the issue. And I guess they need like more proof as well. Like right now it's all like theories and like 'will climate change actually happen?' But. If they actually got some like cold hard facts and started convincing people. Then I think everyone would be like more concerned about it and try to do more

Q: Do you think that they will do awareness campaigns?

A: Yeah. A little bit. You already kinda see them on TV a little bit. Like Genesis. And they've got

solar farms... well solar panels and wind farms and that kind of thing. Um/ yeah. I ... they've already kinda started but they aren't all in your face and that kind of thing.

Q: do you think it would be better if they'd be more prominent?

A: Yeah... or just like reach a broader audience and like stick in people's heads more.

D.14

Date: 29/01/2014

Interviewer: Sam Kodzis

Age of interview subject: 50+

Occupation of interview subject: Public Servant

Q: How important do you believe the issue of climate change will be in the future?

A: Very important.

Q: Do you think it'll be, like, one of the most important issues, or are there others that you think might be more important?

A: Um, I think it'll be one of the most important.

Q: Why do believe it's gonna be very important?

A: Because we've only got one planet...

Q: Do you think it'll have dangerous repercussions?

A: I think it's possible, but we don't know.

Q: So, if you were to take a guess, how do you think New Zealand will be different 100 years from now as a result of climate change?

A: Um, I think lots of areas will find it harder to, uh, grow good crops, because there won't be enough water in the region, [and] it'll be too hot.

Q: So you believe there'll be a lot of droughts?

A: I think there'll be more droughts, yeah. Far more droughts, especially in the east?

Q: So you think that'll affect the crops... You think this'll be something that people could or couldn't recover from?

A: If we don't take steps now, I think it could be difficult to recover from.

Q: What do you think people should do, then?

A: Um, it's very difficult-- there's not much New Zealand could do by itself; it's a worldwide thing...We have to address the causes of climate change.

Q: So would you then agree with the statement that people don't know the causes worldwide enough?

A: Um, I think they're mostly getting pretty well-known now...I know that's controversial, but there's a lot of consensus now.

Q: How long do you think it will be actually, until we see the impacts [of climate change]?

A: I don't know; I think, um, we're seeing some impacts now, but [won't see] the pretty serious ones for another 20 or 30 years, but I don't know.

Q: What type of impacts are we seeing now then?

A: I think the increased frequency of droughts is possibly a result of climate change, but it's hard to tell.

Q: So back on the topic of what people should do, you mentioned that we need a worldwide cooperation. What do you think will actually end up being done?

A: I'm pretty pessimistic. We're not doing very well so far.

Q: To what extent do you think they will do enough? Or they won't do anything?

A: I think they'll do some things, but I think a lot of big countries and major polluters are gonna keep on trying to avoid doing what...what they should.

Q: Some of these countries for instance, might be...?

A: Oh, [the] U.S. and China, and India too probably.

[Exchange about us not being the government]

Q: From what source do you get most of your climate change information?

A: Oh um... Probably from...um....magazines and other news media. Things like the economist, or um, some television obviously, but that's not usually enough detail. And some from the internet.

Q: So, if there were to be more detail presented, would you end up watching that?

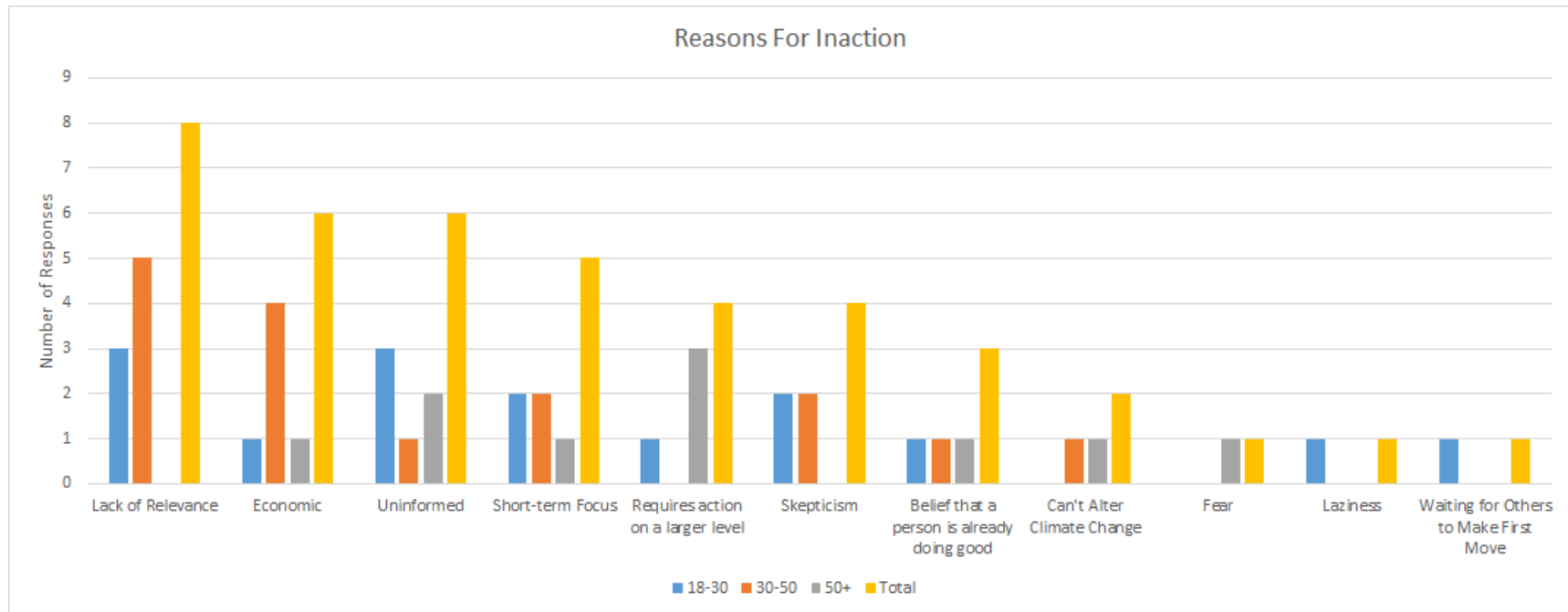
A: Yes, either watching that, or accessing it on the net.

Q: Thank you for your time, Peter.

Appendix E: Categorized codes describing reasons for inaction

Category	Codes
Lack of relevance	people ignore the smaller effects not extreme enough not relevant to daily life ignored topic only interested in extreme events only acting when it's bad
Economic	economic focus economy versus climate change economy affects response industry driven by costs action is unaffordable
Laziness	people are lazy
Belief that a person is already doing good	not as green as believed hidden pollution in production hypocrisy
Short-term focus	recent issues take prevalence short-term focus people will cope
Requires action on a larger level	role of government New Zealand is too small experts lead
Skepticism	doubt in climate change science skepticism natural cycle theory
Uninformed	low media coverage people unaware poor education population unaware people lack knowledge people not considerate of environment
Waiting for Others to Make First Move	flock mentality
Can't Alter Climate Change	too late to change too many fossil fuels to change
Fear	people scared of climate change

Appendix F: Categorized reasons for inaction by group of respondents



Appendix G: Categorized codes indicating urgency or low-urgency

Category	Codes
Urgency	call for action now insufficient current action no reason not to act people will regret inaction nearly too late human responsibility
Low-urgency	too late to change New Zealand will be OK climate change exaggerated mis-attribution to climate change personal lack of urgency humans will change personal lack of concern

Appendix H: Categorized reasons for respondents' frustration towards government inaction

Category	Codes
Disconnect between government and people	government doesn't know people's views disconnect between people and government government doesn't know willingness to be green
Lack of concern about climate change	government ignoring climate change government not serious about climate change government not responding to climate change ignoring application of renewable energy research government disinterest in climate change central government doesn't push enough not forcing people to be sustainable
Prioritization of economy over climate change	not enough regulation on corporations government afraid to take first economic steps pushing back agriculture emissions deadlines ineffective dairy farm management selling land to foreigners
Short-sightedness	short-term focus only looking towards next election
Incompetence	government is incompetent
Lack of credibility	doesn't believe the government anymore government hypocrisy

Appendix I: Reasons for frustration towards government inaction by age group

