ENERGY CRISIS AND PUBLIC RESPONSE:

A CROSS-CULTURAL STUDY OF CURTAILMENT BEHAVIOUR FOR ELECTRICITY CONSERVATION CAMPAIGNS IN NEW ZEALAND AND JAPAN

Sophia Murphy

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Abstract

A myriad of factors can rapidly destabilise a nation's energy security. Factors such as extreme weather events, geo-political tension, and supply instability may result in acute or chronic energy supply shortages occurring with little or no warning. In a critical response context, a society's resilience is tested, and the ability to change consumption behaviour is vital. Energy conservation campaigns are often implemented to elicit this behaviour.

New Zealand and Japan have both experienced conservation campaigns in the past decade as a result of natural disasters (Japan) and weather-related generation shortages (New Zealand). The context from which each campaign developed and the resulting urgency of the reductions were distinct. However, the goal of appealing to the public to reduce electricity consumption was comparable. This provides a unique opportunity to explore determinants of willingness to change consumption behaviour during a conservation campaign in different socio-cultural contexts.

Values are guiding principles in people's lives informing their behaviour, and value orientations can be shaped by socio-cultural contexts. Therefore, differences between value orientations may be present cross-culturally. Specifically, the Schwartz theory of basic values is used as a theoretical basis for investigating value orientations underpinning individuals' willingness to participate in a conservation campaign.

This thesis investigates the relationships of two socio-psychological determinants, (1) value orientations, and (2) environmental concern, with willingness to participate in a conservation campaign and adopt curtailment behaviours. A sequential mixed-methods study was utilised in two countries, New Zealand and Japan. The quantitative questionnaire examined associations between values, environmental concern, and willingness to adopt curtailment behaviours. Furthermore, a cultural dimension was captured in both societies to determine each society's preference for placing more importance on either personal, or social interests. Different sets of determinants were associated with willingness between countries. The qualitative component provided an opportunity to explore value relationships and motivations through the dialogue of participants when discussing electricity shortage scenarios and conservation campaigns. Diversity among determinants that promote and hinder willingness to reduce electricity consumption transpired between participants from New Zealand and Japan, and these differences are found to be related to the personal versus social preference of their respective socio-cultural contexts.

For Jenny and Raquel

With more aroha and appreciation than words can express.

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List of Abbreviations and Terms

EIA   Energy Information Administration

EROEI Energy Return On Energy Invested

GHG   Greenhouse Gas

HVDC   High Voltage Direct Current

IEA   International Energy Agency

JP   Japan

MBIE   Ministry of Business, Innovation, and Employment

NZ   New Zealand

OCC   Official Conservation Campaign

Chapter 1. Introduction

1.1 Preamble

A stable and secure energy supply is a fundamental pillar to a functioning society. Throughout history, economic expansion, social welfare, and human development have been essentially dependent on the availability and use of different forms of energy (Hall & Klitgaard, 2012). Stability of energy supply is central to modern social and economic activities. Disruptions to energy security could have immediate and large effects, environmentally, socially, and economically (Morgan, 2013).

The concept of resilience in regard to energy security, refers to the ability of systems and end users to cope with "a hazardous event or trend, responding in ways that maintain their essential function" (International Energy Agency [IEA], 2015a, p. 1). A number of emerging trends are likely to affect both global and local energy security, including growing population pressure, resource depletion, and the increased risk of geopolitical tensions between nations. This diminishing security of supply provides an impetus to understand the resilience of societies facing such crisis scenarios.

This thesis aims to identify and explore the behavioural determinants of individual responses to short-term destabilisation of energy security in an electricity conservation campaign context. New Zealand and Japan are two countries that have both required national electricity conservation campaigns in response to threats to energy security in the past decade. Although Japan and New Zealand's campaigns differ in original cause, both appealed to the public with the aim of eliciting a reduction in energy consumption. The occurrence of these provides a unique opportunity for a cross-cultural analysis investigating demand-side behavioural responses in a conservation campaign scenario.

A sequential mixed-methods study is employed to identify and explore the socio-psychological determinants underpinning individuals' willingness to participate in conservation campaigns, and engage in behaviours that reduce their electricity consumption. Whether there are different sets of determinants in each country is explored through a cross-cultural comparison. The insights provided through such a comparative study are invaluable in understanding how culture may affect determinants of willingness to conserve energy in a crisis.

1.2 Electricity in Context

1.2.1 Energy Security

The International Energy Agency (IEA) defines energy security as "the uninterrupted physical availability at a price which is affordable, while respecting environment concerns" (IEA, 2011, p. 9). This definition is comprised of four major components which reflect both external and domestic risks to energy security; (1) availability, referring to the physical availability of energy resources; (2) accessibility, referring mostly to potential geopolitical tensions affecting energy supply; (3) acceptability, in terms of associated environmental and social effects of energy choices; and (4) affordability, in terms of what is economically viable for a nation.

Emerging trends point to an increase in energy demand in the future, with recent projections estimating global demand to grow by one third by 2040 (IEA, 2015b). Growing demand and heightened volatility due to the risk components identified above, points to a sustained threat to energy security both in the short and the long-term (IEA, 2015b). This thesis is centred on the behavioural willingness of individuals in response to a short-term, immediate electricity conservation campaign.

Concerns for energy security in the long-term are also vital, and drive the necessity for a fundamental transformation of global energy supply (Organisation for Economic Co-operation and Development, 2012). Availability concerns pertain to natural resource constraints and by extension, affordability concerns as dwindling supplies result in lower energy returns on energy invested (EROEI). Acceptability concerns stem largely from climate change effects; two-thirds of global greenhouse gas (GHG) emissions and over 80% of carbon dioxide (CO_2) emissions are emitted from the energy sector alone (Hood & Briner, 2014). While long-term shifts are critical, infrastructure and supply transformations take significant time, capital investment, and unwavering policy deployment. International commitments have occurred to transform the energy sector. However, progress has been slow (IEA, 2015a).

These longer-term concerns increase the likelihood of short-term supply instability. For example, the climatic instability related to GHG emissions is associated with an increased risk of extreme natural events that can disrupt energy security (IEA, 2015a). In the meantime, many societies are left vulnerable in the short-term to potential immediate

environmental, social, and economic effects of a supply disruption. This thesis provides an exploration of demand-side behavioural responses that comprise an often over-looked aspect of energy security.

As energy importing nations, risks of particular importance to Japan and New Zealand's energy security in the short-term include potential disruptions to energy supply due to unforeseen events. This includes geopolitical tension and instability in regions where energy supplies are sourced. Domestic risks are mostly related to supply instability, typically resulting from extreme weather related disruptions to generation and transmission (IEA, 2011b). Electricity generation, transmission, and distribution are particularly vulnerable to extreme weather events. Both New Zealand and Japan have called conservation campaigns in the past decade as a result of domestic instability caused by natural events affecting generation. Japan initiated the *setsuden* (energy saving) campaign from 2011 onwards following the Fukushima nuclear incident, while New Zealand's 2008 Official Conservation Campaign (OCC) was called following the worst drought seen since 1947 (IEA, 2011a; Ministry of Business, Innovation, & Employment [MBIE], 2012). These conservation campaigns constitute emergency driven demand-side management and were critical for managing these electricity disruptions (IEA, 2015a).

An additional aspect of resilience in responding to threats to energy security lies in the capability of affected nations to recover to normal functioning following a supply shortage (IEA, 2015a). The IEA recommends a minimum stock holding of supplies for use in critical response situations, some of which could be fuel for electricity generation. Currently, neither New Zealand nor Japan hold the minimum amount of physical energy supply stocks recommended by the IEA to tide a nation over in times of energy instability (IEA, 2014). This further highlights the need to investigate determinants of willingness for conservation in a shortage scenario.

The diverse threats to energy security in New Zealand and Japan, coupled with the necessity for conservation campaigns in the past, highlights the benefits of investigating the behavioural responses of individuals under such circumstances. In order to strengthen energy resilience, this study aims to explore the antecedents that promote or hinder willingness to reduce electricity consumption during a conservation campaign, and

whether and how different socio-cultural contexts may shape determinants of individuals' willingness to participate.

In order to provide context for understanding the behavioural responses to a conservation campaign, the main features of the electricity sectors for both countries are outlined below. The conservation campaigns that were implemented in both countries are also briefly summarised below.

1.2.2 New Zealand

Electricity Sector and Conservation Campaign

Household energy use amounts to 33% of New Zealand's electricity consumption, and this jumps to 52% during the peak winter season (IEA, 2011a). New Zealand's electricity supply relies on several different forms of generation. Approximately 60% comes from hydropower (depending on hydrological conditions), and the remaining mix is supplied by thermal (gas, coal, and oil), geothermal, and wind generation (IEA, 2011a). Although New Zealand has a relatively large contribution of electricity generation from local renewable sources by global standards, there remain supply risks due to imported thermal fuel and the international provision of key equipment and services for the electricity sector. During times of peak demand, it is often thermal plants (coal and gas fired generation) that are used to meet this demand, supplementing renewable forms of generation (Parliamentary Commissioner for the Environment, 2013). To this extent, New Zealand's renewable forms of generation do not necessarily safeguard the country from supply destabilisation in the short or the long-term.

Supply flows between the South and North islands via an inter-island link, called the HVDC (High Voltage Direct Current) link. The majority of hydro generating capacity is located in the South Island, but higher population means demand is primarily concentrated in the North Island. Other potential threats to New Zealand's electricity supply include severe droughts, transmission grid or generator failures, natural disasters, and cyber security; all with the potential to affect New Zealand's homes and businesses to varying degrees. New Zealand has been particularly vulnerable to dry winters (low rainfall) due to a combination of reduced hydro inflows, limited hydro storage capacity, and winter peaking demand.

In 2008, New Zealand was at risk of an unavoidable energy supply shortage due to a severe dry spell (IEA, 2011a; MBIE, 2012). An Official Conservation Campaign (OCC) was called during the height of the drought (June to July). The mass-media campaign involved advertisements through TV, print, and radio, encouraging people to conserve electricity. A dedicated website was also built to provide the public with news and feedback on consumption (Blackwell, 2009; IEA, 2011a). Advertisements were aimed at encouraging voluntary conservation measures to help mitigate the risk of a supply shortage. The household energy sector saved between an estimated 3.6% to 6.7% during the conservation campaign (Blackwell, 2009; IEA, 2011a). Post-campaign reports noted that the 'residential demand response' can be expected to be employed again in the future as supply options and industrial sector reductions are each likely to be faced with their own challenges in a crisis scenario (International Energy Agency, 2011a).

1.2.3 Japan

Electricity Sector and Conservation Campaign

After World War II, Japan saw significant industrial and economic development, supported by a heavy reliance on oil imports for electricity generation. By the early 1970's, 66% of their fuel for electricity generation was supplied by the Middle East (Jordan-Korte, 2011). The oil shocks beginning in 1973 highlighted a critical vulnerability to import reliance, and attempts to reduce this dependence were intensified, including significant development of nuclear electricity generation (World Nuclear Association, 2014).

By 2011, Japan had over 50 nuclear reactors online, accounting for approximately 31% of its total electricity generation (Energy Information Administration [EIA], 2014). Other forms of generation include natural gas (27%), coal (24%), oil (8%), and hydroelectricity (9%) (Ministry of Economy, Trade and Industry, 2011).

Japan is an island nation, lying near major seismic fault lines, has a number of active volcanoes, a history of large earthquakes, and can be prone to tsunami following earthquakes. The geographical nature of Japan alone provides a level of risk inherent in its energy sector, exacerbated by a high proportion of nuclear generated power (Tong, Zhao, & Yang, 2011). The Tohoku Earthquake and resulting tsunami on March 11th, 2011 brought this risk into sharp realisation. The tsunami severely damaged the Fukushima Daiichi nuclear plant, with explosions and meltdowns occurring across three reactor cores. Over 100,000 residents were evacuated from their homes, environmental effects devastated the area, and following the incident all nuclear plants were switched offline, resulting in a 30% loss of electricity supply capacity (Yamaguchi, 2012). This loss of supply significantly affected economic activity, as effects were concentrated in the Kanto region, which includes the political and economic hub of the Greater Tokyo area (Hayashi & Hughes, 2013).

In the short-term, from a supply-side response, Japan increased its imports of fossil fuels, in particular gas and oil (IEA, 2011a). This helped to maintain some level of economic and energy supply stability. However, from the demand-side, an immediate reduction was also critical in order to manage the sudden decrease in generating capacity.

A number of unscheduled blackouts occurred until thermal plants returned to service and the weather improved in April. Minimising the social and economic disturbances caused by these blackouts became a priority as Japan moved into the summer months of peak electricity demand (IEA, 2011a). It is in this context, that a series of behavioural, demand-based responses were implemented to alleviate stress on the electricity system.

Campaign Approach and Energy Saving Results

Japan's *setsuden* (power saving) campaign was initiated to help reduce demand pressure on the electricity system. Japan faced the need to make deep reductions in consumption, as many cultural practices already captured "low-hanging fruit", in other words, many low-cost energy saving behaviours had already been adopted. The electricity saving strategy introduced by the government in May 2011 included a target reduction of 15% for most sectors, including residential. The relevant strategies implemented to support residential reductions are presented in Figure 1.1 below. A shift in public expectations and behaviours was required to achieve the reduction targets and avoid rolling blackouts. Quite remarkably, the collective efforts managed to decrease overall electricity consumption by 15% in the short-term (EIA, 2014; Phillips, 2014).

Figure 1.1: Japan's 'Setsuden' Campaign Approach

Information	Feedback	Goal-setting
• Electricity-saving tips readily available and highly publicised. • Brochures with electricity saving actions distributed.	• Forecasts and supply/demand balances were widely available to public access. • Displayed on websites, train stations, and TV.	• Power-saving contests for residents were implemented. • Rewards offered to those meeting their targets.

Adapted from International Energy Agency (2011)

Summary

Overall, it is noted that the supply crises affecting Japan and New Zealand are not exactly alike, but they do have some fundamental parallels and present a unique opportunity to explore how differing socio-cultural contexts may be related to behavioural determinants of willingness to participate in conservation campaigns. Energy consumption depends on the choices and behaviours of individuals, and therefore an investigation into the antecedents to energy conservation behaviours in a crisis response scenario is invaluable.

1.3 Approach

The overarching aim guiding this project is to identify and explore the determinants of willingness to reduce electricity consumption in a conservation campaign context. In this thesis, 'conservation campaign' refers to a campaign implemented to reduce electricity consumption from a destabilisation of supply in the short term, such as New Zealand and Japan's recent campaigns. This represents a scenario distinct from long-term threats to energy supply, such as climate change effects and resource depletion, as discussed earlier.

Specifically, this thesis investigates the relationship of a number of psychological factors in shaping willingness; value orientations, environmental concern, and proclivity for placing more importance on personal or social interests. Research was conducted in Japan and New Zealand to explore the relationship of cultural context in shaping responses. This helps provide a level of comparability between the two societies and the nature of their willingness to participate in a campaign.

A sequential, mixed-methods approach is employed and carried out in both countries. Study one involves analysis of responses from a quantitative survey conducted online in both English and Japanese. Study two utilises semi-structured, qualitative interviews which took place in New Zealand and Japan. This research provides a novel perspective on energy resilience by investigating psychological determinants through a cross-cultural analysis.

1.4 Thesis Structure

Determinants of Curtailment Behaviour

A review of relevant literature is presented in chapter two and selected relevant studies are discussed. Findings and insights from environmental behavioural research, social-psychology, and cross-cultural research together inform the underlying approach of this thesis. Rationale for use of the chosen values framework is established, and opportunities identified through the literature review shape the research questions detailed at the end of this chapter.

Study One – Quantitative Component

The quantitative component of this thesis is presented. First, methods and study design are detailed. A Japanese translation of the Portrait Values Questionnaire (PVQ) is

developed to be used in this research. Following this, measures included in the questionnaire and methods of analysis are presented. Results in the form of summary statistics of all measures are presented and followed with correlation and regression analysis. The overall aim of this study is to empirically capture and analyse the relationships of determinants with willingness to adopt electricity conservation actions in both countries. Some unexpected results emerge from the analysis. Some findings from Japan in particular contribute to the literature and this is discussed further in the discussion chapter.

Study Two – Qualitative Component

The second component of this thesis is the qualitative study. This study aims to identify and explore the underlying value motivations associated with participants' discussion of their actions and perceptions during an electricity conservation campaign. Aspects of the semi-structured interviews conducted in New Zealand and Japan are thoroughly presented. This includes methods, study design, interview content and translation methods, a framework for analysis, and a presentation of the overall findings. The values related to participants' discussion highlights the complex nature of values and energy conservation behaviours. Some differences were found between countries, suggesting the incidence of unique value relationships in different socio-cultural contexts.

Discussion

In the discussion chapter, insights are drawn from both studies in order to comprehensively answer the research questions set out at the conclusion of chapter two. A few results align with previous literature, while others are somewhat unexpected. Different values are associated with willingness between New Zealand and Japan, and the relationship of environmental concern with willingness also differs between countries. Overall, the findings suggest that socio-cultural contexts do play a role in influencing determinants of willingness to participate in a conservation campaign. The discussion concludes with recommendations for further research, and key insights for consideration by policy makers.

Concluding Remarks

The final chapter of this thesis restates the purpose of this study, provides a succinct summary of the findings of this thesis, and its contribution to the literature.

Chapter 2. Determinants of Electricity Curtailment

"Energy demand is essentially driven by human behaviour"

(OECD, 2008, p. 95)

2.1 Introduction

In the past decades, a few key events and issues have highlighted the importance of energy conservation. One such major event was the oil embargo and resulting energy shortage which occurred in the 1970's, spurred on from geopolitical tensions and peak production in Western nations (Stern, Berry, & Hirst, 1985). This led to immediate spikes in oil prices and conservation measures to be implemented. Both New Zealand and Japan relied on oil imports, and each suffered economically as a result.

New Zealand responded by increasing burning of gas to generate electricity, and Japan intensified their nuclear powered generation to meet local electricity demands (Ministry for Culture and Heritage, 2012). This event demonstrated the vulnerability of energy security and prompted a multitude of research into the human behavioural aspects of energy use and electricity conservation. This literature review briefly outlines the insights drawn from earlier research stemming from the oil shocks in the 1970's, most of which retroactively assessed relative successes in these conservation campaigns.

More recent research on in-home electricity conservation, predominantly investigates energy conservation in an 'everyday' context, not a shortage scenario. This stems largely from the need to reduce demand and consumption of residential energy use in general. As mentioned in the introduction chapter, this is primarily due to longer-term geophysical constraints in energy supplies such as oil and coal, and the multitude of environmental externalities associated with electricity generation and consumption, in particular the need to reduce GHG emissions globally. However, it is plausible that the factors promoting and inhibiting electricity conservation from longer-term pressures may differ from those in a conservation campaign scenario.

A number of researchers suggest that different sets of determinants are associated with different environmental behaviours, such as energy use, or energy conservation

measures (Abrahamse & Steg, 2009; Karlin et al., 2014). There is a relative lack of recent research investigating behavioural determinants of reduced electricity consumption in a conservation campaign scenario, such as New Zealand and Japan's campaigns discussed in the previous chapter.

To help set the context for this research, this chapter begins by briefly drawing together insights from both the earlier conservation campaign response literature, and the more recent electricity conservation research. From this, gaps and opportunities to explore conservation in a campaign scenario are highlighted, and specifically, it points to the benefit of applying a values framework to investigating determinants of electricity conservation in a campaign context.

The values framework underpinning this research is then discussed. Two electricity conservation studies which have used a values framework are presented. How values may be shaped by cultural context is then explored and insights from cross-cultural research provides context for the investigation of values and conservation in both New Zealand and Japan. Lastly, a summary of the chapter is presented and the specific research questions of this thesis are outlined.

Curtailment versus Efficiency

It is important to highlight here that different dimensions of energy conservation have been examined in the literature; typically curtailment and efficiency. Such a delineation is essential because they have different attributes and determinants; curtailment and efficiency behaviours are not equivalent behaviours (Dietz, Gardner, Gilligan, Stern, & Vandenbergh, 2009; Karlin et al., 2014).

Curtailment typically refers to actions that "cut back on amenities or comfort and must be repeated to continue energy savings" (Karlin et al., 2014, p. 428). Examples include reducing hot water usage by restricting the length of showers, or turning appliances off when they are not in use. Individuals are not as restricted by income to achieve energy savings with curtailment actions. It is also noted that curtailment behaviours need to be repeated and maintained by "habit or repeated conscious choice" in order to reach energy savings (Dietz et al., 2009, p.18454).

Efficiencies on the other hand, are typically achieved through technology adoption and purchases; these behaviours are usually one-off and involve higher monetary cost (Karlin et al., 2014). Examples include buying more energy efficient appliances such as refrigerators or clothes dryers. Other purchases which can help achieve energy savings through efficiencies include installing heating insulation in a home.

In a conservation campaign context, curtailment behaviours are more relevant and the majority of energy savings during a campaign context are achieved through curtailment behaviours. This is because reductions are needed as soon as possible, by a large number of people (irrespective of levels of income), and to go beyond normal energy savings that can be achieved through efficiency related behaviours.

2.2 Insights from Conservation Campaigns

Information

Both Japan and New Zealand's recent conservation campaigns used an information appeal approach to encourage individuals to adopt conservation behaviours. For this reason, brief insights from retrospective assessment of relative successes in energy saving interventions and past conservation campaigns are presented in this section.

The 'rational economic model' and 'attitude model' tended to shape the early information campaigns following the supply shortage from the oil shocks. The rational economic model assumes that individuals will adopt conservation measures which are beneficial for them in economic terms (Coltrane, Archer, & Aronson, 1986). Information appeals typically provided general information regarding the occurrence of an energy shortage and encouraged people to reduce electricity use by highlighting the economic benefits of doing so. For example, advertisements would show potential monetary savings by installing insulation in homes or switching off lights when not in use (Stern & Aronson, 1984).

The attitude model rests on the assumption that attitudes influence behaviour, whereby a change in attitudes towards energy conservation will lead to a change in behaviour. Subsequent research typically found a weak direct association between attitudes about energy and a change in behaviour (Coltrane et al., 1986; Stern et al., 1985). The

relationship between attitudes and behaviour is neither simple, nor direct, and other factors contribute to explaining one's behaviour. As Stern and Aronson argue "for information to be effective in a decision process, making it available is not enough" (1984, p. 74).

Overall, the conservation campaigns that were modelled on this understanding of conservation behaviour were not overly effective (Aronson, 1990; McKenzie-Mohr, 1994; Stern et al., 1985). Moreover, some researchers criticised the early information appeal models for not acknowledging the "subtleties of social interaction" and the way that individuals process and act on information (Coltrane et al., 1986, p. 134). In light of this, research investigating information delivery and social-psychological aspects of conservation behaviour emerged (Costanzo, Archer, Aronson, & Pettigrew, 1986).

When feedback and goal setting approaches were utilised in later energy conservation campaigns, positive results were generally achieved, and these results can be partially attributed to the combined effect of goal-setting and feedback together, rather than each in isolation (Abrahamse, Steg, Vlek, & Rothengatter, 2005; Becker, 1978). This is because a person's knowledge of how they are performing in relation to a goal influences their decisions on how much subsequent effort should be exerted in order to reach a set goal. Both New Zealand and Japan's recent conservation campaigns employed aspects of feedback on national energy consumption during campaign time. However, Japan did have a more tailored, targeted approach where households had access to direct feedback (IEA, 2011a)

In summary, insights learned from the retrospective valuation of conservation campaigns in the 1970s revealed that providing information alone, and specifically under the assumptions of the rational-economic model or attitude model, was not a particularly successful strategy to elicit conservation behaviour. Some researchers posit the reason for this is because these models do not adequately consider the importance of other factors. A number of researchers note that contextual or socio-demographic variables may also play a role in promoting or hindering energy saving behaviour (Coltrane et al., 1986; Costanzo et al., 1986; Poortinga, Steg, & Vlek, 2004).

2.3 Socio-Demographic versus Psychological Factors

Abrahamse and Steg (2009) examined the effects of socio-demographic and psychological factors in explaining household energy use, and those related to energy saving behaviour. Typically, socio-demographic variables such as household size and income were found to be positively related to total energy use, but not to conservation. For example, households with more occupants and with higher income levels tend to use more energy, but these variables were not found to be significantly correlated with energy saving behaviour.

On the other hand, psychological factors were found to predict energy saving behaviour. For example, 'perceived behavioural control', which refers to the perceived difficulty, or ease of engaging in a behaviour (Abrahamse and Steg, 2009), was positively correlated with energy savings and significantly explained the variance in adopting energy saving behaviours. To a lesser extent, the study also found 'awareness of consequences', the level to which an individual believes their energy use to be a problem for society, such as its relationship with GHG emissions, was also found to be positively correlated with energy savings.

The decision to engage in conservation behaviour requires repeated conscious efforts (Abrahamse & Steg, 2009). This is one reason why socio-psychological variables are posited to play a determining role in curtailment behaviour (Abrahamse & Steg, 2009; Karlin et al., 2014). Lending further support to the Abrahamse and Steg study, Karlin and colleagues (2014) found that demographic variables such as income and gender were not correlated with energy curtailment behaviours, whilst psychological variables were.

One of these psychological variables found to be a strong predictor was that of one's concern for the environment, which is discussed further in the following section. Taken together, these studies' findings indicate that different variables determine general in-home energy use, from those determining adoption of curtailment behaviours.

2.4 Environmental Concern

The most widely used framework to measure environmental concern is the New Ecological Paradigm (NEP) (Dunlap et al., 2000). The NEP was developed to capture people's beliefs about how humans were altering the balance of nature, questioning our rights to 'rule' over nature, and acknowledging limits to social and economic growth (Dunlap, 2008; Dunlap et al., 2000). Numerous studies analyse the predictive validity and role of environmental concern in shaping positive environmental behaviour.

In the research pertaining to in-home energy conservation, environmental concern has generally been found to be positively related with energy saving behaviour (Poortinga, Steg, & Vlek, 2004). One study by Karlin and colleagues (2014) investigated both socio-demographic and psychological variables associated with energy efficiency behaviours, such as buying more efficient appliances, and energy curtailment behaviours, which require more frequent performance of an action such as restricting the length of showers. Their study found different sets of determinants to be associated with adoption of efficiency or curtailment behaviours. This lends supports to the postulation made in this thesis that determinants related to willingness to participate in a conservation campaign and adopt curtailment behaviours in this context, may be different from those associated with energy saving behaviours not during a campaign context.

Karlin and colleagues (2014) found environmental concern to be more strongly associated with adoption of curtailment behaviours than energy efficiency behaviours. (Karlin et al., 2014). This lends further support to the notion that psychological variables, including environmental concern, are important predictors of behaviours which require repeated conscious efforts, such as energy curtailment behaviours. Indeed, they found environmental concern to be one of the strongest positive predictors of electricity curtailment behaviour. The importance of environmental concern was also noted in a study by Poortinga and colleagues (2004) who found it to be positively correlated with adoption of energy conservation behaviour.

In recognising the importance of environmental concern, Schultz and Zelezny (1999) state that "it is necessary to go beyond environmental concern and examine the underlying bases for these attitudes" to better understand what motivates this concern (p. 258). Environmental concern can be delineated into a 'tripartite classification' representing

three theoretically distinct underlying motivations (Milfont, Duckitt, & Cameron, 2006; Stern & Dietz, 1994). The three values reflect whether decisions to engage in positive environmental behaviours are made with regard for; (1) the "costs and benefits" to other people (altruism); (2) for the costs and benefits to the ecosystem / biosphere (biospherism); and (3) the costs and benefits to the self (egoism) (de Groot & Steg, 2008, p. 333). Whether the three values, altruism, biospherism, and egoism, are distinct to one another has had mixed empirical support (de Groot & Steg, 2008; Milfont et al., 2006; Stern & Dietz, 1994). However, later research using more items to comprise each value has found empirical support for the three distinct value orientations (Schultz, 2001).

One reason it is beneficial to distinguish these values is because as Schultz (2001) notes, attitudes about the environment are "the result of more general underlying values" (p. 335). For example, some individuals may have concern for the environment due to underlying socially orientated motivations (altruism), or for the existence and value of nature in itself (biospheric). Delineating the underlying values of environmental concern is useful. However, it is also beneficial to investigate a wider set of values that may not be directly associated with environmental attitudes.

Poortinga and colleagues (2004) note that personal and social interests are likely to be in conflict when energy curtailment behaviours are needing to be adopted. In such a context, a wider range of values, aside from those related to environmental concern can play an important role in these decisions (Poortinga et al., 2004). Therefore, it may be useful to investigate a broader range of values when investigating electricity curtailment behaviours, especially through a cross-cultural lens. The nature of values are discussed in the following section.

2.5 Values

2.5.1 The Nature of Values

Values are conceptualised as broad trans-situational life goals or principles which guide and motivate one's behaviour (Rokeach, 1973; Schwartz, 1992). Values are regarded as stable across time and situations for individuals. This is one reason why researchers in different fields of research have used a values framework to investigate motivations for behaviour. Research exploring and characterising values across cultures typically stem from the work of Rokeach (1973), Hofstede (1980; 2001), Schwartz (1992), Inglehart (1997), and Triandis and Gelfand (1998).

Schwartz's theory of basic values is one of the most widely used in a variety of disciplines, including research related to environmental behaviours (de Groot & Steg, 2008; Gatersleben, Murtagh, & Abrahamse, 2014; de Groot & Steg, 2007; Havasi, 2012; Howell, 2013; Milfont, Duckitt, & Cameron, 2006; Oreg & Katz-Gerro, 2006; Schultz & Zelezny, 1999).

Schwartz's values theory identifies ten values which represent trans-situational goals that motivate behaviour. They are said to be universal, human values, as research has found strong empirical support for occurrence of them across many different cultures. One reason they are rationalised as basic human values, is because they stem from the personal and social motivations of humans interacting and evolving in a social environment. Attaining these values helps satisfy basic human motivations, such as a desire for social affiliation or self-gratification (Rokeach, 1973; Schwartz, 2012).

As these values are deemed basic human values, all individuals are meant to hold each of them in some regard. That being said, it is the relative importance or priority of values which is important. Schwartz (2012) notes that engaging in any particular behaviour is likely to have implications for a number of values; expressing some, while at the expense of others. This "trade-off among relevant, competing values" which occurs when an individual makes decisions is what guides their behaviour (Schwartz, 2012, p. 4).

It should be noted that Schwartz's values theory is typically used to measure values at an individual level. However, a number of studies have aggregated these responses to characterise national or sub-cultural patterns of values as well (Bardi et al., 2008; Schwartz & Bardi, 2001). The ten values and their definitions are listed in table 2.2.

Table 2.1: Value Types and Definitions

Types of Values	Definitions of Types of Values and (Scale Items that represent them)
Power	Social status and prestige, control or dominance over people and resources (social power, authority, wealth)
Achievement	Personal success through demonstrating competence according to social standards (successful, capable, ambitious, influential)
Hedonism	Pleasure and sensuous gratification for oneself (pleasure, enjoying life)
Stimulation	Excitement, novelty, and challenge in life (daring, a varied life, an exciting life)
Self-direction	Independent thought and action-choosing, creating, exploring (creativity, freedom, independent, curious, choosing own goals)
Universalism	Understanding, appreciation, tolerance and protection of the welfare of all people and of nature (broadminded, wisdom, social justice, equality, a world at peace, a world of beauty, unity with nature, protecting the environment)
Benevolence	Preservation and enhancement of the welfare of people with whom one is in frequent personal contact (helpful, honest, forgiving, loyal, responsible)
Tradition	Respect, commitment, and acceptance of the customs and ideas that traditional culture or religion provide the self (humble, accepting my portion in life, devout, respect for tradition, moderate)
Conformity	Restraint of actions, inclinations, and impulses that are likely to upset or harm others and violate social expectations or norms (politeness, obedient, self-discipline, honouring parents and elders)
Security	Safety, harmony and stability of society, of relationships, and of self (family security, national security, social order, clean, reciprocation of favours)

Source: (Schwartz & Bardi, 2001)

2.5.2 The Structure of Values

Schwartz's basic values theory suggests a grouping of ten motivational value types and four higher order dimensions. Values that share similar underlying motivations are grouped into one of the four higher order dimensions together.

Self-enhancement versus Self-transcendence

The underlying motivational basis of self-enhancement values such as 'power' and 'hedonism' is a "pursuit of one's own interest" (Schwartz, 2012, p. 8). These values relate to a priority of an individual's goals and desires over those of others. The conflict between a 'self-interest' and a 'social interest' orientation occurs between the self-enhancement and self-transcendence dimension. Values related to self-transcendence emphasise a

stronger importance placed on social goals for the sake of others, compared to goals directly serving the self (Schultz & Zelezny, 1999). Self-transcendence is comprised of 'benevolence' and 'universalism' values which reflect a concern for the welfare of others, and that of the environment respectively.

Conservation versus Openness to Change

The conservation dimension emphasises restriction of one's impulses or interests, placing high importance on social order, security, and a reluctance for change (Schwartz et al., 2012). Values comprising this dimension are that of 'tradition', 'conformity' and 'security'. In opposition to the conservation value dimension, openness to change values reflect an inclination for change, more acceptance of new ideas and freedom to make one's own decisions. Values comprising this dimension include 'stimulation' and 'self-direction'. Figure 2.1 below illustrates the dynamic relations between the higher order dimensions and the ten underlying values.

Figure 2.1: Structure of Value Relations

Prevention of loss goals — Promotion of gain goals
Anxiety – based values — Anxiety – free values

Personal Focus

Self-Enhancement
Achievement
Power
A

Openness To Change
Hedonism
Stimulation
Self-Direction
B

Conservation
Security
Tradition
Conformity
D

C
Self-transcendence
Universalism
Benevolence

Social Focus
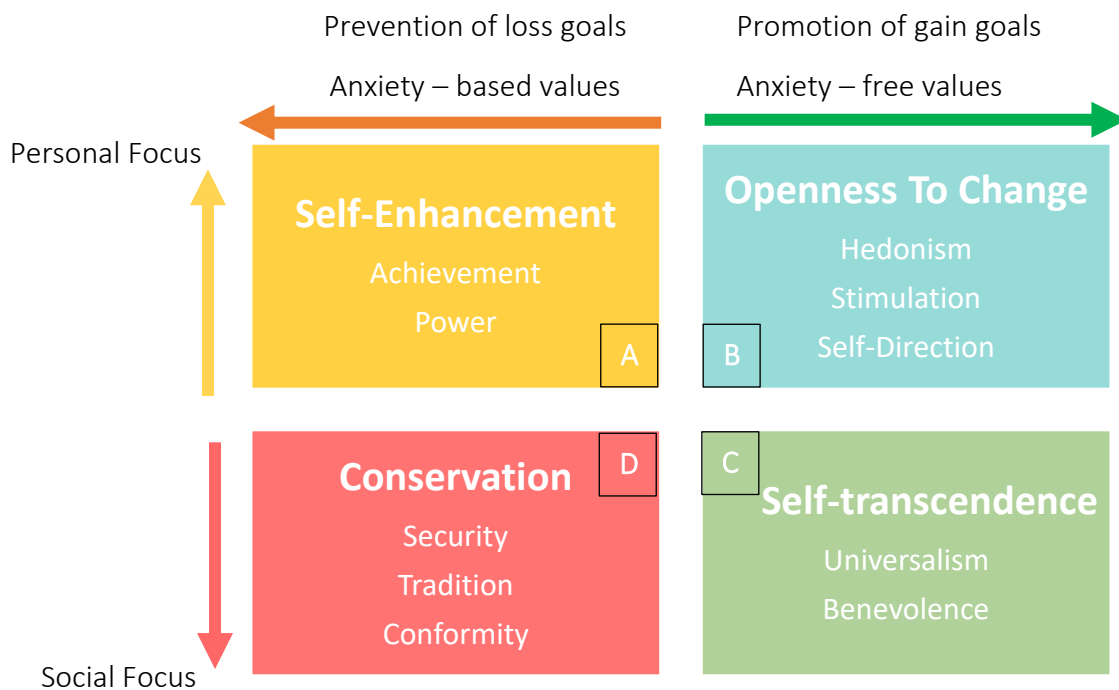
Source: Adapted from Schwartz (2012, p. 3).

The structure of value relations shows patterns of "conflict and congruity" (Schwartz, 2012, p. 8). Values in conflict, with theoretically opposing motivations are in diagonal opposition. Values along the top horizontal axis (A and B) "regulate how one expresses personal interests", and conversely, values along the bottom horizontal axis (D and C)

"regulate how one relates socially to others and affects their interests" (Schwartz, 2012, p. 13-14). For example, 'openness to change' sits opposite 'conservation' as the values within each of these dimensions are theoretically in conflict with one another. The other two higher order dimensions 'self-enhancement' and 'self-transcendence' also theoretically sit in conflict.

A further principle reflected in the organisation of values in this arrangement is their relation to anxiety. For example, values along the same vertical axis on the left side (A and D) share a similar anxiety-based and prevention of loss interest. The motivational pursuits for attaining these goals helps to reduce uncertainty and anxiety; conformity values help to minimise conflict, tradition values help to maintain current social order, and each promote social harmony (Schwartz, 2012).

Conversely, values along the right vertical axis (B and C) share a more anxiety − free motivational basis and a promotion of gains interest is reflected. Self-direction values promote an individual's need for uniqueness without harming social relations in the process; benevolence values are typically central to promoting positive social relations with one's close social circles.

Two studies that explore the relationships between values and in-home energy use and conservation behaviour specifically are outlined in the following section.

2.5.3 Values and In-home Energy Use

Poortinga and colleagues (2004) investigated the role of values and environmental concern in different aspects of energy use. They contend that values can play an important role in household energy use and curtailment behaviour. In investigating general household energy use, they found socio-demographic variables to be particularly relevant. However, for energy curtailment behaviours, values and environmental concern played a more important role in shaping behaviour in this context. In particular, they found that environmental concern was the strongest (positive) predictor of energy saving measures, and self-enhancement values was the third strongest predictor (negatively) of energy saving behaviour. That is, a lower importance of self-enhancement meant a higher acceptance and willingness to change and engage in in-home energy saving behaviours. However, they also found achievement values to be positively related to the acceptance

of in-home energy saving behaviours. Openness to change values were not found to be related to energy saving behaviours.

Mirosa, Lawson, and Gnoth (2013) investigated relationships of Schwartz's values with both in-home energy use in general, and energy-saving behaviours with New Zealand participants. Semi-structured interviews were conducted, and value to behaviour relationships inferred through the interview dialogue and questioning of participants' motivations for acceptance or reluctance of energy saving behaviours. Mirosa and colleagues investigated values specifically, as they questioned a focus on purely environmental values in shaping energy saving behaviour. They propose that many energy conservation behaviours cannot be explained through a narrow set of values. They demonstrate that values associated with protecting the environment do influence conservation behaviour. However, it was not always the most important in influencing participants' decisions. They note that critically, "a much wider range of personal values exist, which influence energy use and purchases in the home" (Mirosa et al., p. 470).

Five of Schwartz's values were the most commonly identified in determining energy use behaviours in their study; achievement, universalism, hedonism, tradition, and security (in descending order in frequency identified). They find that for some curtailment actions, a number of different values combined underpin certain behaviours. They further demonstrate that achievement values in particular are significantly related to New Zealand participants' energy saving behaviour choices. Sometimes, achievement values act as a barrier, irrespective of one's views on the environment or concerns about energy. However, they also found achievement values sometimes promote energy saving behaviour as well. Their findings are relevant because this implies that values interact with behaviours in complex ways; the same value can underpin a range of behaviours (both promoting and hindering behaviour), and that different values can underpin the same behaviour. They argue the relationship between values and conservation is not always straightforward. Further to this point, they posit that a qualitative methodology can help illuminate some of these complex relationships. This complexity is also alluded to by Poortinga and colleagues (2004b), finding that values and energy conservation can be influenced by socio-cultural factors.

A number of researchers have suggested that the role of culture in shaping individuals values and energy use and conservation decisions should be recognised (de Groot & Steg, 2008; Lutzenhiser, 1992; Poortinga et al., 2004; Wilhite, Nakagami, Masuda, Yamaga, & Haneda, 1996). Lutzenhiser particularly comments on the "culturally sensitive" nature of an individual's energy choices (1992, p. 154) and the need to investigate culture as a wider context affecting behaviour. This study explores value relations in New Zealand and Japan. The way culture may shape values and an individual's decision-making process is therefore discussed in the following section.

2.6 Cultural Context

The word 'culture' originates from Latin's 'colere', meaning to cultivate ("Online Etymology Dictionary," n.d.). This notion of cultivation is still reflected in its modern definition as the collective developing of the mind, thoughts, feelings, and behaviours; a collection of attributes distinguishing members of one group from another (Hofstede, 2001).

2.6.1 Constructs of Culture

In the past, many studies have commonly sought to amalgamate Asian nations and their respective value structures and cultural aspects into one common category, such as Inglehart's categorisation of *Confucian Culture* (1997), or more generally, referring to a host of Asian nations as the 'East' in contrast to the 'West'. Hill (2000) describes this polarisation as a "largely Western social scientific artefact" (p. 177), constructed to provide a label for the 'other' for which the west felt towards cultures whose values were not simply aligned with their own. Moving away from a broader grouping of nations based loosely on their geographic location, cross-cultural researchers worked to capture ways in which individuals between cultures differed from (or were similar to) one another.

The application of the individualism-collectivism dichotomy has dominated literature concerned with exploring and explaining differences between cultures (Bond et al., 2004; Hofstede, 1980; Kemmelmeier et al., 2003; Triandis, 1995; Yamaguchi, 1994; Yamawaki, 2012). The central meaning of individualism is the proclivity to place importance on one's own needs, motivations, and preferences (Kemmelmeier et al., 2003; Oyserman, Coon,

& Kemmelmeier, 2002). This gives rise to individualists giving higher priority to their own personal goals over wider social goals (Triandis, 1995). By contrast, collectivists place more importance on the needs, motivations, and preferences of a wider group, rather than an individual. In this way, the relationship between collectivists reflects a more socially cohesive unit with a 'group mentality'.

Fundamentally, this dichotomy reflects either a personal and independent emphasis (individualism) or a social, more interdependent nature of relating to others (collectivism). A comparison through Hofstede's measures (2001), rates New Zealand as an individualist society (with an individualist rating of 79) and Japan as a more collectivist society (with an individualist rating of 46). This aligns with a number of studies which have traditionally categorised Japan as a collectivist society (Yamaguchi, 1994; Yamawaki, 2012).

Aspects particularly relevant to Japanese collectivism include higher value placed on harmony of the group or collective over individual expression, interpersonal sensitivity, and fear of rejection from within a group. Failure to uphold group harmony invokes a sense of shame (Hofstede, 2001; Yamaguchi, 1994; Yamawaki, 2012). The personal interest or social interest underpinning the individualism versus collectivism dichotomy is somewhat relatable to Schwartz's values because of the underlying emphasis on either personal or social motivations (Schwartz, 1990).

On the point of personal or social focus, Macfarlane (2007) points to an interesting difference in the form and meaning of the word for *person* in both the English and Japanese language. More than mere semantics, the respective words illustrate a distinction in how an *individual* or *person* in society is conceived. The English word *person* is defined as "a human being regarded as an individual" (Oxford Dictionaries, 2015). The singular denotation of the word is its defining essence; and thus, the idea of a person in English-speaking cultures. In contrast, the comparable word for person, in Japanese (pronounced *ningen,* 人間), is composed of two characters; *nin* 人, meaning human, and *gen* 間, meaning 'between'. Thus, a *person* in Japanese, is not defined as an individual and solitary unit, but is instead conceptualised and defined relative to one's relation with others.

Although empirical and observational differences have been found between different cultures such as Japan and New Zealand, recently, the dimensions used to explore

cultural level differences have progressed. The unidimensional approach to categorising a culture as either 'East' or 'West' or 'collectivist' or 'individualist' has been found to over-simplify the differing and unique facets of any one culture (Vignoles & Brown, 2011; Yamawaki, 2012).

2.6.2 Reframing Culture

Vignoles and Brown (2011) contest one-dimensional categorisations of culture such as 'individualism versus collectivism', or simply 'independence versus interdependence', noting that this approach overlooks the fundamental multi-faceted nature of culture.

The concept of a 'self-construal' represents an individual's 'mode of being'. This refers to the patterns that regulate an individual's behaviour (Kitayama & Cohen, 2014). Independent patterns encourage "self-directedness" while interdependent patterns encourage "social responsiveness" (Kitayama & Cohen, 2014, p.138). The self-construal is multi-faceted; meaning that an individual's mode of being can vary in different domains. The focus is not on how one relates to others most strongly in general (unidimensional), but on how one relates to others in different domains of functioning (multi-faceted). A person may be independent in one way, and interdependent in another way.

These different contexts are termed "domains of functioning" (Vignoles & Brown, 2011, p. 83), and will be referred to as such throughout this thesis. Examples of domains of functioning include how one is when 'defining the self', or when 'making decisions'. The premise is that within any one culture, an individual may be independent in one domain, such as defining the self independently, yet could also be interdependent in another domain, such as making decisions with greater importance placed on socially focused goals. Vignoles and Brown (2011) identified seven domains of functioning.

Of particular interest to this thesis is the 'decision-making' and 'dealing with conflicting interests' domains. The 'decision-making' domain refers to how receptive one is to the influence of others, or whether one places greater importance on self-direction in making decisions. The 'dealing with conflicting interests' domain refers to situations where personal and social goals are at odds with one another. In the context of electricity conservation, individual and collective interests are in conflict with one another (Poortinga et al., 2004). In such a situation, the tension between independent and interdependent motivations must be played out.

The seven domains put forward by Vignoles and Brown (2011), and the independent versus interdependent orientations of them are presented in Figure 2.2.

Figure 2.2: Domains of Functioning and Independent versus Interdependent Modes

Ways of being independent or interdependent across different domains of personal and social functioning

Domain of functioning	Independent response		Interdependent response
Defining the self	Difference	↔	Similarity
Experiencing the self	Self-containment	↔	Connection to others
Making decisions	Self-direction	↔	Receptiveness to influence
Looking after oneself	Self-reliance	↔	Dependence on others
Moving between contexts	Consistency	↔	Variability
Communicating with others	Self-expression	↔	Harmony
Dealing with conflicting interests	Self-interest	↔	Commitment to others

Source: Vignoles and Brown (2011, p. 83)

The degree to which an individual gives expression to either independent or interdependent goals is connected to the level to which these expressions are 'socially sanctioned' and implicitly (and explicitly) disciplined. One often acts, not so much as one wants to, but rather as how one supposes will be socially appropriate. What consists of socially appropriate behaviour is typically learned through exposure, repetition, sanctioning, and disciplining (Park, 1967). Over time, these learnings shape an integral part of the individual, informing one's values and behaviours. Therefore, it can be supposed that social learnings through cultural modes of independence and interdependence can inform the values of individuals in a given society, and by extension, their behaviour.

2.6.3 Culture, Values, and Environmental Behaviour

Values, motivations, and behaviours are said to be "grounded in cultural meaning" (Heine, 2007, p. 29). It is suggested that differences in motivations underlying values and behaviour can be partly explained by the degree to which a culture exhibits promotion of independence, or interdependence (Heine, 2007; Oyserman & Lee, 2008; Yamawaki, 2012). Findings from cross-cultural research suggest that in societies like Japan, the interdependent relationship between the self and one's group may be especially strong

(Kemmelmeier et al., 2003); placing more importance on in-group harmony over one's own self-enhancement. Social guidelines are often shaped through the notion of respecting authority and upholding tradition. Deviations from this socially acceptable behaviour are also strongly discouraged (Suzuki & Yamagishi, 2004; Yamaguchi, 1994). This more interdependent nature of relations may be related to values that prioritise group motivations and goals over those of the individual. Therefore, it is plausible that individuals demonstrating interdependent characteristics such as in Japanese culture, may hold high regard for socially focused values such as tradition, conformity, and security values. It is also conceivable then that this contrasts with values in societies such as New Zealand, where motivations are more closely related to self-enhancement, autonomy and independence (Hofstede, 2012; Schwartz, 2012). Exploring the independent or interdependent nature of an individual's behaviour is an important element to consider when studying values and environmental behaviours (Schultz & Zelezny, 1999) .

A study by McCarty and Shrum (2001) investigated the relationship between cultural value orientations (they used the individualism–collectivism categorisation) and determinants of recycling behaviour. They found that "the path to behavior varies as a function of value orientation" (p. 101), meaning that what motivated behaviour varied between individuals with different value orientations. For example, their study illustrated that recycling behaviour of participants with more individualistic personalities were predicted by a negative association with the "inconvenience of recycling" (p. 93). On the other hand they found recycling behaviours of individuals who were more collectivist, were positively associated with beliefs about "the importance of recycling" (p. 93). Their findings suggest that individuals with differing value orientations are motivated by different things. They also suggest that appeals to motivate behaviour change should take this into account. They note that if an appeal's message is not aligned with the underlying value orientation of an individual, eliciting change will prove difficult. In conclusion, they propose that cultural context can strongly influence an individual's value orientations, and furthermore, that the determinants of any given behaviour may differ between individuals, based on their value orientations.

Values related to the self-enhancement versus self-transcendence dimension have typically been found to be the most relevant to environmental behaviours (de Groot & Steg, 2008; Mirosa et al., 2013; Stern, 2000). A study by Milfont and colleagues (2006) found that different cultural contexts have an effect on the value patterns of individuals engaging in environmental behaviours. Their study investigated the patterns of values associated with the self-transcendence orientation; biospherism, altruism, and egoism. They investigated the relationship of these values in European New Zealand participants and Asian New Zealand participants to explore the role of cultural context and value patterns. They found different value patterns to be associated with positive environmental behaviours. Specifically, they found support for a positive correlation between biospherism and environmental behaviours for European New Zealanders, suggesting individuals of European descent were motivated more by biospheric values. On the other hand, they found a positive correlation of both biospherism and altruism values with environmental behaviour for Asian New Zealanders. They suggest that biospheric values are strong predictors of environmental behaviour. However, irrespective of this, the importance an individual places on concern for the self (egoism) or on concern for others (altruism) may differ in different cultural contexts (Milfont et al., 2006).

Specifically in research pertaining to energy use and curtailment behaviours, a few researchers propose that cultural aspects need be considered when aiming to understand determinants of curtailment behaviours (Lutzenhiser, 1992; Stephenson et al., 2010; Wilhite et al., 1996). Wilhite and colleagues (1996) conducted a cross-cultural qualitative study in Oslo, Norway and Fukuoka, Japan, investigating the influence of cultural orientations in relation to energy use, energy curtailment, and energy efficiency behaviours. Significant differences were found in the patterns of everyday energy use behaviours, and willingness (or reluctance) to engage in electricity conservation.

They relate their findings back to cultural factors, noting that much of the behavioural patterns are grounded in cultural significance. The authors demonstrate that amongst participants from Japan, the use of lighting and space heating was "more disciplined and less culturally significant" (Wilhite et al., 1996, p.795) and therefore, participants were more willing to change these behaviours to conserve energy. On the contrary, they found that bathing habits were "extremely important to the Japanese lifestyle" (p. 795) and

were rooted in long traditions of bathing practices. As such, they were less willing to make sacrifices to their bathing routines. This study illuminates the importance of culture in shaping some energy use patterns and moreover urges researchers to consider that culture can shape willingness to adopt certain curtailment behaviours. Lutzenhiser (1992) also implores researchers to be cognizant of this, nothing that "energy use within different cultures, show that energy consumption differentials can also follow from cultural practice" (p. 271). This suggests that cultural contexts can play a role in shaping which curtailment behaviours individuals may be willing to adopt.

The following section summarises insights from the research mentioned here. Opportunities for research are identified and the research questions of this thesis outlined.

2.7 Summary and Research Questions

Researchers analysing the earlier energy conservation campaigns that were based on assumptions of the attitude model or rational economic model, found them to be generally ineffective at explaining conservation behaviour. Social-psychological approaches to understanding conservation behaviour investigated other influencing variables, such as the importance of feedback and goal setting, the role of environmental concern, socio-demographic variables, and values.

A values framework has been used across many disciplines to examine associations between people's values and a number of specific behaviours in question. Furthermore, values associated with any given behaviour may differ across cultures. A couple of studies have examined the relationship of values and energy use. Simultaneously, there have been studies that explore the relationship of cultural context in shaping values. However, there is a relative dearth of research, to my knowledge, that has investigated the relationship of values and conservation in an energy shortage and conservation campaign scenario, and that have compared these relationships cross-culturally. Research question one aims to identify and explore the values associated with an individual's willingness:

(1) What values are associated with willingness to engage in electricity curtailment behaviours in both countries?

In addition to a wider range of values underpinning behaviour, studies have identified, specifically, environmental concern to be positively associated with energy curtailment behaviour. However, these studies are not typically situated in a conservation campaign context. The relationship of environmental concern in shaping conservation behaviour in a campaign scenario is worth being investigated. Research question two helps to investigate this relationship:

(2) What is the relationship of environmental concern and willingness to curtail electricity use in both countries?

Looking out further from just individual motivations and influences, researchers highlighted the importance of recognising constraining or promoting factors that are external to the individual. Recently, a number of researchers have urged expanding this sphere of influence on an individual's choices to include an exploration of socio-cultural context. In this regard, a cross-cultural perspective of curtailment behaviour is beneficial. Wilhite and colleagues' (1996) cross-cultural energy use study found that some energy behaviours were related to cultural practices, beliefs, and traditions. Some behaviours were 'culturally significant' and participants were not very willing to change them. Conversely, some behaviours were 'culturally insignificant' and participants were more willing to change them. I aim to identify if there are different behaviours individuals in New Zealand and Japan would be willing to adopt:

(3) Are there differences between which curtailment actions individuals are willing to adopt in the two countries?

Furthermore, a number of cross-cultural researchers have noted the unique and varying ways societies may differ from each other and encourage researchers to empirically measure dimensions of a culture being investigated, rather than relying solely on polarised theoretical constructs (Vignoles & Brown, 2011; Vinken, 2006). This study is interested in Japan and New Zealand specifically. Therefore, primary research is undertaken to measure independent or interdependent responses in the identified domains of functioning in both societies. Research question four helps capture these cultural differences or similarities:

(4) Are there differences between New Zealand and Japan's independent or interdependent preferences?

2.8 Framework

From the opportunities and questions identified for research above, the following section outlines the framework informing this thesis project.

This research is informed by a pragmatic approach, where the methods chosen to carry out this research were based on which seemed to be the most appropriate for answering the research questions (Mertens, 2005). There was no automatically appropriate method to answer each question. Instead, deciding on which methods to use was done with reference to other research addressing similar questions and topics to what is being explored in this project. A pragmatic approach to research is typically aligned with a mixed-methods methodology as it embodies an emphasis on using which methods work to answer the research questions, rather than being constrained by methodological assumptions associated with the use of one particular method (Mertens, 2005).

A number of studies investigate the relationship between psychological variables and energy behaviours through a quantitative approach. This approach allows for correlations between variables to be assessed. It further enables researchers to measure how significant each variable is in relation to the behaviour in question. Measuring individuals' environmental concern and values is often achieved through quantitative analysis (de Groot & Steg, 2008; Poortinga et al., 2004).

It is worth noting that studies such as Wilhite and colleagues (1996) and Mirosa and colleagues (2013) are examples that have utilised a qualitative methodological approach to investigate energy curtailment and culture, and energy curtailment and values respectively. Both studies highlight that a qualitative methodological approach can help illuminate these relationships from a different perspective to quantitative analysis.

On the following page, table 2.2 presents the overarching aim and research questions identified above. A sequential, mixed-methods approach was employed in this thesis. The table additionally presents sub-questions, and identifies whether they are answered through study one (quantitative analysis) or study two (qualitative analysis). The table format is helpful for presenting the questions and associated study in a succinct way for quick reference.

Table 2.2: Research Questions and Corresponding Study

Overarching aim: To identify and explore determinants of willingness between the two countries. If differences occur, how are these related to cultural dimensions?		
Research Question	Study	Sub-questions to answer the main research questions.
1. What values are associated with willingness to engage in electricity curtailment behaviours in both countries?	1	What are the value orientations of respondents in both countries? What associations exist between value orientations and willingness?
	2	What values are associated with interview participants' discussion of electricity conservation?
2. What is the relationship of environmental concern and willingness in both countries?	1	What associations exist between environmental concern and willingness?
	2	Do participants discuss environmental concern in relation to electricity conservation, and if so, how is it related to willingness?
3. Are there differences in the conservation actions individuals are willing to adopt in the two countries?	1	What are the mean scores of willingness for each energy saving action for respondents in both countries?
	1	Do the mean scores of willingness for each energy saving action differ between the countries?
4. Are there differences between New Zealand and Japan's independent or interdependent preferences?	1	How do respondents measure on the selected cultural dimension measures?

Chapter 3. Study One – Quantitative Methods and Results

3.1 Introduction

This chapter provides an overview of the quantitative component of this research project. First, a rationale for the online questionnaire is provided and the objectives of this study are specified. Next, an overview of the methods and procedure of this study are provided. Within this, the steps and decisions made in preparation for the questionnaire, as well as the process used to administer the questionnaire, are outlined. Subsequently, a section on study design is included, which explains the flow of the survey, and the major components included in the questionnaire are covered to establish what data was captured through this study.

The final sections of this chapter address the methods used in analysing the data before moving on to presenting the results. A concluding summary provides a brief discussion of the results from this quantitative component of this thesis. An overall discussion addressing the research questions and drawing together insights from both the quantitative and qualitative studies is provided in the final thesis chapters.

3.1.1 Aims

The aim of the quantitative questionnaire was to quantifiably measure and understand the relationships of determinants of curtailment behaviour during an electricity conservation scenario in both Japan and New Zealand. The previous chapter highlighted relevant research and studies that collectively build an understanding of the determinants related to curtailment. In particular, this thesis uses Schwartz's values framework to provide a measure of individual respondents' value orientations. Research question one pertains to the role of these values in shaping willingness to engage in curtailment behaviour. Research question two explores the role of environmental concern in shaping one's willingness. A measure of each individual's independence and interdependence along self-construal dimensions was also captured in order to provide an informed basis of cultural similarities or differences, rather than relying on the geographical locations of New Zealand and Japan to infer cultural differences. Research question three pertains to identifying whether there are differences between the two countries in which curtailment behaviours participants are willing to do.

3.2 Methods

3.2.1 Preparations

Ethics

Ethics approval to conduct the online questionnaire was sought and granted from the Victoria University Ethics Committee prior to administering this survey online. The approval can be found in appendix 8.1. The principal consideration with regards to the questionnaire was assuring participants that their responses would be confidential, anonymous, and only viewable by the researcher and supervisors overseeing this study. Prior to commencing with participation, individuals were provided with information outlining their rights and what information was being captured in the questionnaire (see appendix 8.2.1). Participants also had the opportunity to request an aggregate summary of data results, available after the conclusion of the study.

Language

The questionnaire for New Zealand and Japanese participants was provided in their respective languages. Existing measures to be used for data collection such as the Schwartz' values framework and the NEP scale to measure environmental concern, as well as the measure of cultural dimension were all available in English at the time of this study. However, only the cultural dimension measure was readily available online in Japanese. Methods for procuring Japanese translations of other measures are briefly mentioned in their respective measurement section.

Place and Promotion

The questionnaire was created in and hosted through the internet-based survey building and hosting platform, *Qualtrics.* Administering both questionnaires online was the most feasible option because it enabled recruitment of participants in both countries. Online access was especially important because I was not in Japan after the Japanese survey translation was completed and therefore, other recruitment methods would have proved difficult.

A simple website was also built using *Squarespace* in order to have a centralised place for both surveys to be accessed (www.valuesandenergy.com). This helped to streamline promotional efforts, and establish a personable yet professional connection to the research project through an online presence. The site consists of two pages, one in

English (see Figure 3.1)[1] and one containing the same information translated into Japanese (see Figure 3.2). Both pages provided redirection buttons which took participants directly through to the information page at the beginning of the questionnaire being hosted on Qualtrics. On each page, an 'About' and 'Contact' section with brief information regarding the objectives of the study, University affiliations, and contact details of the researcher were provided. A separate URL was created for the Japanese page (www.valuesandenergy.com/japanesesurvey) to enable potential participants to land on this page initially upon visiting the site (Figure 3.2).

Timing

Originally, the questionnaire was going to be launched during August and September, to align with high-consumption periods of electricity in New Zealand's winter and Japan's summer. The rationale being that participants could imagine the conservation campaign scenario more viscerally if taken during times of more extreme temperatures and of high demand.

Due to delays with translation work, these dates were pushed back to go live in October for New Zealand, and in November for Japan (see Table 3.1). Although the questionnaire launch did not align with peak temperature extremes and high demand as planned; fortunately for the study, low, winter temperatures were still being experienced at this time in New Zealand. Additionally, Japanese participants have recent, lived experience of conservation campaigns to draw on in imagining a conservation scenario.

Table 3.1: Questionnaire Launch Date and Number of Respondents

	START DATE	NUMBER OF RESPONDENTS
NEW ZEALAND	October 2015	271
JAPAN	November 2015	184

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[1] Domain rights for the www.valuesandenergy.com URL and website hosting rights were self-funded by the researcher. Please note that the site was created for the purposes of administering the online questionnaire. As such, they website may be deactivated at the time of reading this thesis.

Figure 3.1: English Landing Page www.valuesandenergy.com[2]
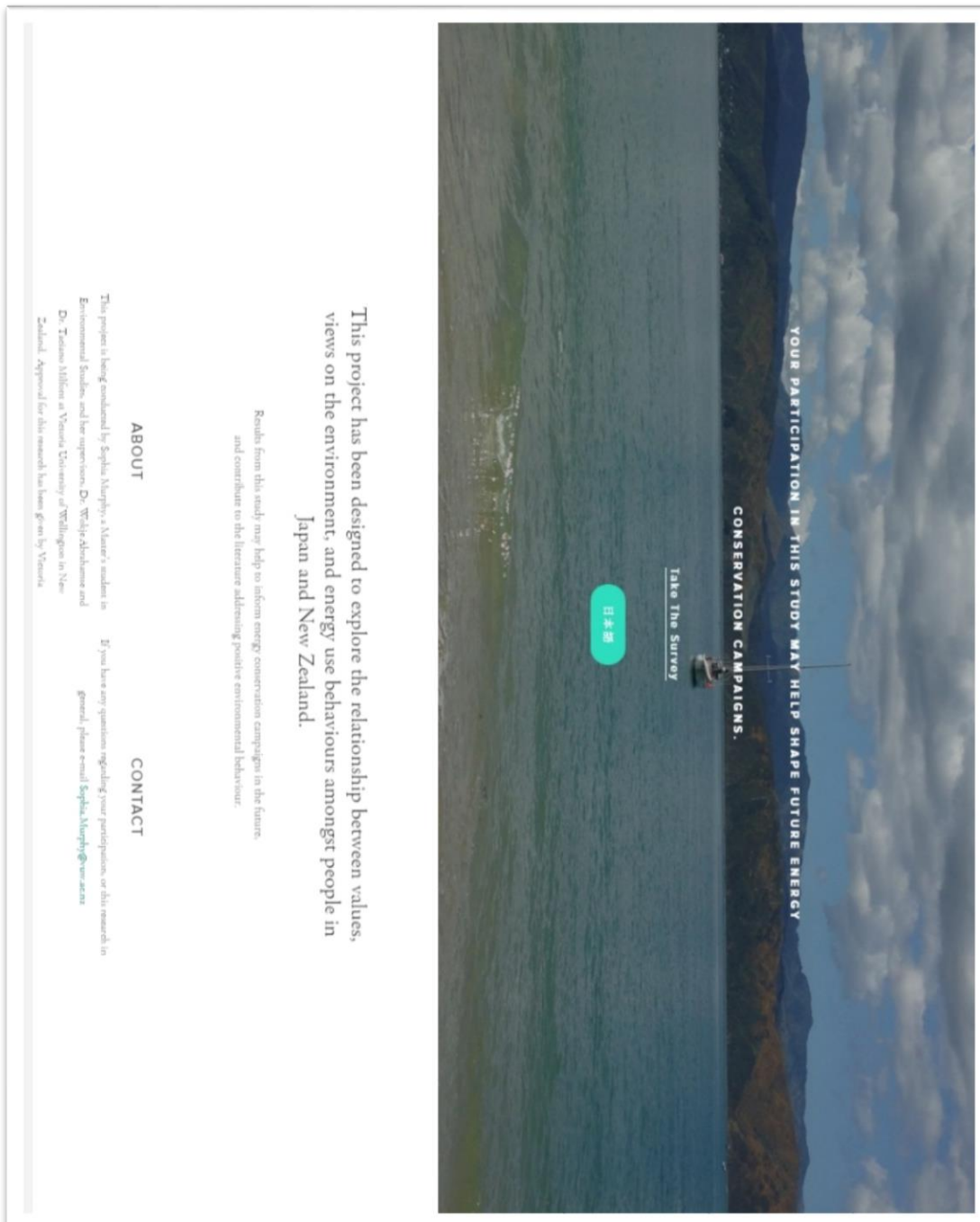
[2] All images used on the site are those taken (and owned by) the researcher during time spent in both New Zealand and Japan.

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Figure 3.2: Japanese Landing Page www.valuesandenergy.com/japanesesurvey

あなたがこの調査に参加していただくことは、省エネキャンペーンの改善にきっと役立つでしょう。

日本語版アンケート

この調査は人の価値観と電力消費にどのような関係があるか、また文化の違いに影響されるかなどを検証する為に作られました。

このアンケートは日本ニュージーランド両国で実施されます。

プロジェクト

私の名前はソフィア・マーフィーです。ニュージーランドのビクトリア大学で大学院生です。

この調査は環境問題研究の修士号をとるための研究をします。

もしご質問があればお知らせください。Sophia.Murphy@vuw.ac.nz

指導教員主事：

アブラハム ウォキ 博士 (Dr. Wokje Abrahamse)

ミルフォント タシアノ 博士 (Dr. Taciano Milfont)

3.2.2 Participant Sampling and Recruitment

I endeavoured to attain participants for the questionnaires that cover a range of general population characteristics, including a variety of geographic locations, age, levels of income, and educational background. There is some difference in the sample size between the two countries. One reason for this might be that the New Zealand survey was online for a longer period, while the Japanese translations were being completed. A difference in sample size numbers across different countries however, is not uncommon. Vignoles and Brown's (2011) study had sample sizes ranging from 69 to 318. For comparison, they had 185 respondents from New Zealand, and 204 from mainland Japan.[3]

Participants were recruited through a number of channels online; Facebook, LINE app, and e-mail. The benefits of time efficiency, population reach, and feasibility of undertaking cross-national studies for a small-scale project were vital to this study coming to fruition. New Zealand and Japan are both widely connected internet nations. As such, issues pertaining to skewed results due to internet access was not a principal concern. However, one concern which does arise from internet usage, is that of self-selection bias, whereby there may be differences in terms of who is willing to participate and spend time completing an online survey (Ritter & Sue, 2007). Karlin et al. (2014) report that participants recruited through online methods can easily be as diverse compared to more traditional methods and no method of sampling and recruitment comes without limitations.

A public Facebook page was created in order to use a *suggested post* (a form of paid advertising) to reach a wider audience across NZ and to help diversify the sample. This was run over a 48 hour period falling on weekend days (see Figure 3.3 for an image).

A similar method, but through a more culturally specific channel was used to reach participants in Japan. The Japanese founded and widely used "LINE" app is a social media, messaging, video calling, and advertising smartphone platform (McCracken, 2015). Two separate posts which attempted to capture participants were made, with a few weeks between the executions.

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[3] Vignoles and Brown (2011) also captured data from Hokkaido in the far North of Japan, with 74 respondents from this region.

Contact was made via e-mail with professors and students at Universities across both New Zealand and Japan, who then forwarded the link to their networks. In these instances, contacts were encouraged to share with family and friends so as not to have an over-representation of respondents from a University affiliated segment of the population. For this reason, contact was also made directly with friends from various prefectures across Japan, accompanied by the request to be sent to a wider network.

Figure 3.3: Facebook Suggested Post and LINE Timeline Post
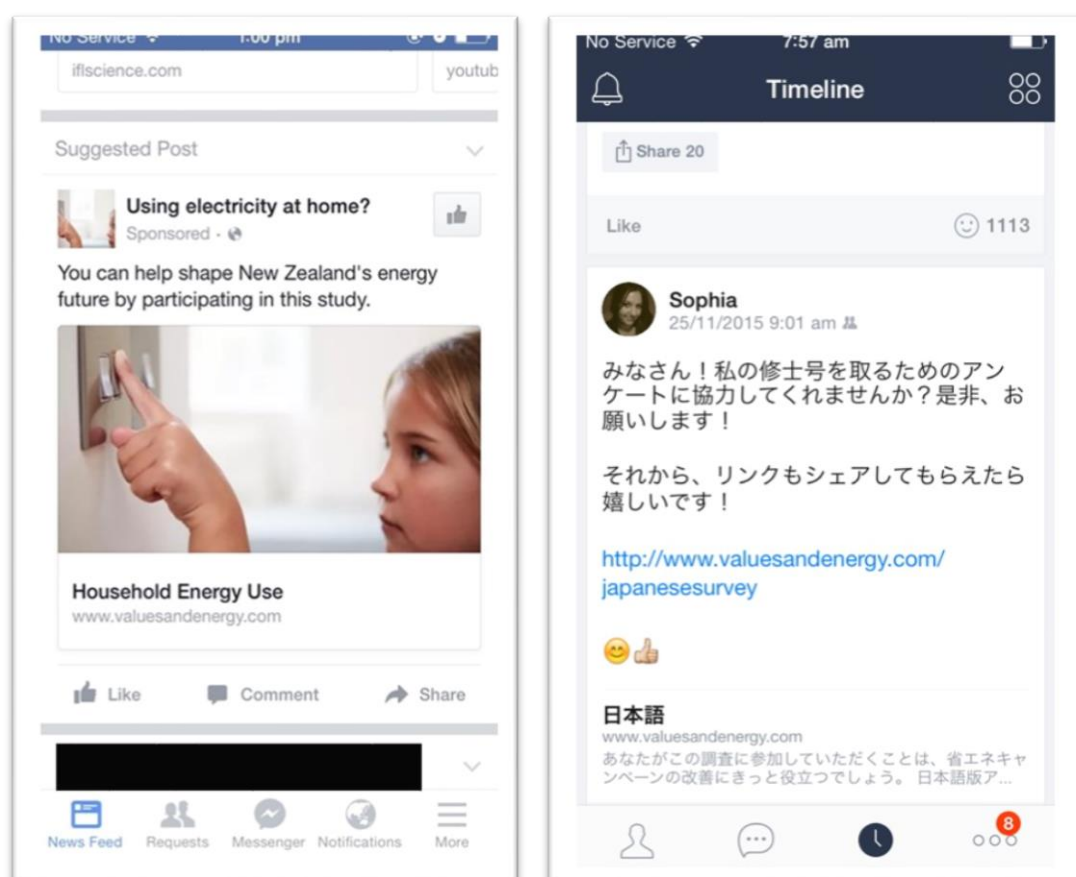
Facebook Suggested Post   Line App Post

3.2.3 Questionnaire Design

Questionnaire Flow

The first page of the questionnaires provided information for the participant as discussed in the ethics subsection of this chapter. The opening question in both New Zealand and Japan was that of the participant's location of residence. This acted as a qualifying question. In a situation where participants were not normally residing in the respective target country of the questionnaire, they were automatically redirected to the end of the survey and provided with a brief explanation for why the survey was redirected and thanking them for their time. This provided assurance that data would only be captured by those targeted.

The values measure was crucial, and typically the most time consuming to respond to. For these reasons, it was placed early on in the survey following qualifier questions. The only difference in terms of the flow of the survey for participants was a result of the gendered versions of the PVQ (see Figures 3.4 and 3.5). The English version utilises a male and female version of the questionnaire; however, this gendering of language was not used in the Japanese version. This is discussed further under Limitations.

New Zealand participants were asked their gender immediately following their location, and from here were redirected to either the male or female version of the values questions. Japanese participants were asked their gender at the end of the questionnaire along with other socio-demographic questions.

A full copy of the English survey is provided in Appendix 8.2.2.

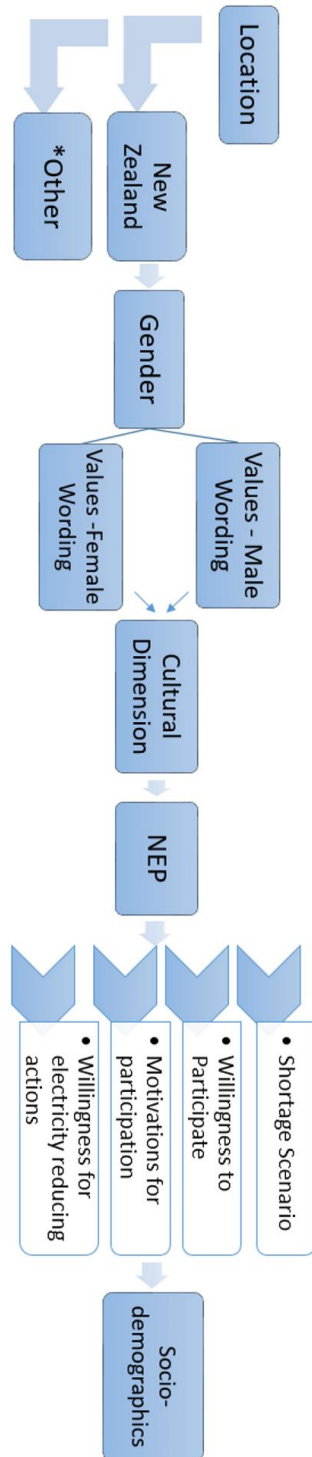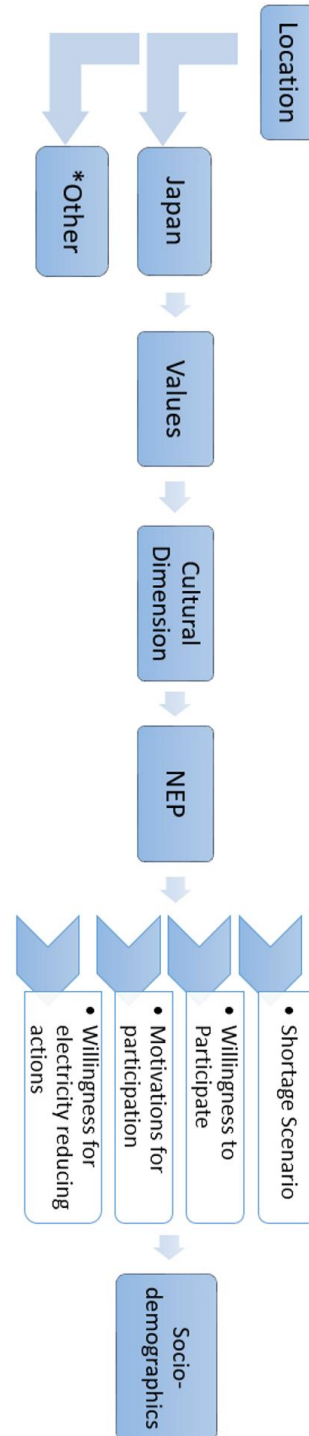Figure 3.4: New Zealand Survey Flow   Figure 3.5: Japan Survey Flow

* If 'Other' was selected, participants were redirected to the end of the questionnaire.

3.2.4 Measures and Analysis

Value Orientations

A measure of individual values was captured through the use of Schwartz' 56-item Portrait Value Questionnaire (PVQ). The PVQ format is recommended for cross-national studies and most especially, when being conducted through an online platform (Schwartz, 2012). 'Portrait framing' poses each question from a third person perspective. This way, participants' values can be inferred without making this goal explicit. A person is described in terms of their goals, aspirations, and what is important to them; for example "It is important to him to be humble". Participants are then asked to indicate how much that person is or is not like him or her on a 6-point Likert scale, 1 being 'not like me at all' and 6 being 'very much like me'.

The qualitative study uses the 10 underlying values (as outlined in Chapter 2) as a basis for analysing the interview content. Capturing a more comprehensive picture of the underlying value structures was useful for informing discussion of the participants' views. All 10 value sets had acceptable internal reliability scores ($\alpha > 0.61$, the majority having $\alpha > 0.70$). Additionally, slightly lower reliability scores have been found in other studies and were deemed to be acceptable (e.g., Beierlein, Davidov, Schmidt, Schwartz, & Rammstedt, 2012; Schwartz, 2001).

The environmental literature typically measures value orientations at the four higher-order dimension level, namely the 'conservation versus openness to change' and 'self-transcendence versus self-enhancement' dimensions (Poortinga et al., 2004). These dimensions are used in the correlation and regression analyses of this study. Internal reliability for each of these four higher order dimensions in both samples was acceptable ($\alpha > 0.77$), suggesting that the items and scale used are an internally consistent measure of value orientations.

It is important to note that at the time of conducting the questionnaire in this study, an authenticated and finalised Japanese translation of the PVQ had not yet been completed. Through contact and introduction via Professor Schwartz, a team of researchers from the Department of Psychology at the University of Münster, Germany, Professor Manabe from Aoyama Gakuin University in Tokyo, Japan and myself, collaborated on producing the first iterations of a Japanese translation of the PVQ framework.

Researchers from the University of Münster provided the basis of the translation. From this, I coordinated group workshops, individual meetings and discussions with a number of native Japanese speakers [4] while in Japan to test the wording and conceptual translatability. A number of draft iterations[5] were produced and alterations made were shared with the team in Germany. Together, we collaborated to produce the first Japanese version of the PVQ framework, and each used this in our respective studies. As such, there are methodological limitations implied through the use of a new tool, some of which are discussed in the 'Limitations' subsection of the 'Discussion' chapter.

To investigate if biospherism and altruism value orientations provided any unique contribution in explaining willingness, the items comprising self-transcendence were re-categorised into altruism and biospherism and used in the correlation and regression analyses. The categorisation of each item into biospheric or altruistic values aligns conceptually with de Groot and Steg (2008); concern for nature items make up biospheric values and the remaining[6] items relate to altruistic values. Reliability scores for both of the biospheric (New Zealand α = 0.88; Japan α = 0.80) and altruistic dimensions (New Zealand α = 0.78; Japan α = 0.72) are acceptable. Table 3.2 below lists the items comprising the bioshepric and altruistic value orientations used in this study.

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[4] For a full list of those involved in the translation process, please refer to the acknowledgments section of this thesis.

[5] The different versions of the translated PVQ are not provided in the appendix of this research. Please contact the researcher to request these if desired. Sophiamurphy.nz@gmail.com

[6] de Groot and Steg (2008) used three items for each value; however, because biospheric and altruistic values replace the self-transcendence value entirely in the final regression analysis of this study, I have used all self-transcendence items to construct biospheric and altruistic values to reduce methodological overlap.

Table 3.2: Self-Transcendence Items Comprising Biospheric and Altruistic Values

Schwartz's Value	Item		Biospheric or Altruistic
Universalism			
	8	It is important to him to care for nature.	Biospheric
Universalism Nature	21	It is important to him to take part in activities to defend nature.	Biospheric
	45	It is important to him to protect the natural environment from destruction or pollution.	Biospheric
	5	It is important to him that the weak and vulnerable in society be protected.	Altruistic
Universalism Concern	37	It is important to him that every person in the world have equal opportunities in life.	Altruistic
	52	It is important to him that everyone be treated justly, even people he doesn't know.	Altruistic
	14	It is important to him to be tolerant toward all kinds of people and groups.	Altruistic
Universalism Tolerance	34	It is important to him to listen to and understand people who are different from him.	Altruistic
	57	It is important to him to accept people even when he disagrees with them.	Altruistic
Benevolence			
	11	It is important to him to take care of people he is close to.	Altruistic
Benevolence Care	25	It is very important to him to help the people dear to him.	Altruistic
	47	It is important to him to concern himself with every need of his dear ones.	Altruistic
	19	It is important to him that people he knows have full confidence in him.	Altruistic
Benevolence Dependability	27	It is important to him to be a dependable and trustworthy friend.	Altruistic
	55	It is important to him that all his friends and family can rely on him completely.	Altruistic

Cultural Dimension: Measures of Independence versus Interdependence

Cross-cultural scholars recommend researchers to empirically measure dimensions of cultural variability (Vijver & Leung, 1997); without which one can wrongly appropriate differences or similarities between samples based on their geographic location or ethnicity, and reinforce unsupported cultural assumptions (Oyserman et al., 2002; Vignoles & Brown, 2011). Vignoles and Brown's (2011) study delineated the multi-dimensionality of self construals into seven different domains. These domains reflect varied personal and social contexts and one's independent or interdependent mode of being may vary between these domains.

From their seven different domains tested, I have chosen to report the two most theoretically relevant to this study and each with acceptable reliability scores; the 'decision making domain' (α_{NZ} = 0.69; α_{JP} =0.69), and 'dealing with conflicting interests' (α_{NZ} = 0.67; α_{JP} =0.71). Participants were asked questions in a similar format to the PVQ, worded with a "you" rather than an "I" frame of reference so that responding feels "less introspective, despite focusing on the participant's self-image" (Vignoles & Brown, 2011, p. 27). Participants then indicate how well each of the items describes them, using a 9-point Likert scale with 1 being "Does not describe me at all" and 9 being "Describes me exactly". The 'decision making' domain includes items such as "You prefer to do what you want without letting your family influence you" and "You follow personal goals even if they are very different from the goals of your family". Higher scores reflect a more independent response. A more independent or personal response in the 'decision making' domain reflects 'self-direction' (versus 'receptiveness to influence' from others) when making decisions, more importance is placed on one's own needs rather than those of their family.

Items within the 'dealing with conflicting interests' domain included "You value personal achievements more than good relations with the people close to you" and "Your own success is very important to you, even if it disrupts your friendships". Items in this domain pertain to situations of conflict between one's personal interests, and those interests of a wider social circle. An independent response in this domain reflects a greater importance placed on one's own self-interest (versus a 'commitment to others').

Mean scores were computed after reverse coding relevant items. Responses for these dimensions are not used in statistical analysis in this study. Instead, the data collected combined with insights from Vignoles and Brown's study are used to inform discussion of the findings.

Environmental Concern

Dunlap's 'New Ecological Paradigm' (NEP) 15-item scale was used to measure individuals' environmental concern (Dunlap et al., 2000). A Japanese version of the NEP scale was obtained by contacting Mizobuchi, who used this in a 2013 study of energy use and economic incentives in Japan (Mizobuchi & Takeuchi, 2013). Participants were asked to indicate how much they agree or disagree with each statement on a 5-point scale (5 = strongly agree, 1 = strongly disagree). Examples of items included are "The earth has plenty of natural resources if we just learn how to develop them", and "Plants and animals have as much right as humans to exist." Mean scores were computed by averaging over items after reverse coding relevant items. Higher scores indicate pro-NEP responses. Analysis revealed quite a divergence between samples on one item in particular: 'Despite our special abilities humans are still subject to the laws of nature' (NZ = 4.48 ± 0.66; JP = 2.60 ± 0.97 respectively). Removing this item increased the overall reliability score for Japan's scale to α = 0.73. Removal of this item from New Zealand's scale to ensure comparability resulted in a reliability score of α = 0.83.

To obtain Japanese translations of all remaining questionnaire content, firstly, I drafted translations of each measure and their items. Then, a number of colleagues and friends provided invaluable text translations and suggestions to improve the readability and grammar from a native speaker's perspective. All content used in the final version of the questionnaire was reviewed by a small team of native Japanese speakers.

Electricity Shortage Scenario

Respondents were given information about an electricity shortage scenario. This scenario was crucial to provide context to frame the responses for willingness and motivation measures in a conservation scenario context. Although both New Zealand and Japan have seen nation-wide electricity official conservation campaigns in the past decade, it was important not to assume that each participant would recall this campaign and what was entailed. The shortage scenario was designed to reflect the circumstances and campaign

approaches used in the past. Information pertaining to the campaigns was gathered from various sources (Blackwell, 2009; IEA, 2011a; Ocheltree, 2011), and the final scenario description was reviewed for accuracy by a market analyst at New Zealand's *Transpower.*[7]

The English and Japanese scenarios provided brief information regarding the countries' electricity generation profiles. This was done to set the context for why the past conservation campaigns were called. For example, the New Zealand scenario mentioned that New Zealand's electricity supply relies heavily on rainfall, and that generation is therefore particularly vulnerable to severe dry spells. The scenario further mentioned that in 2008, a severe dry spell led to a conservation campaign being called, with campaign advertisements appearing on TV, in print, and on the radio, encouraging people to conserve electricity. (The full English scenario can be found in Appendix 8.2.2).The Japanese scenario followed a similar pattern, although the exact reason behind a future scenario of a conservation campaign being called was not specified. An excerpt from the scenario reads as "Japan relies heavily on electricity generation. Many things can disrupt the energy supply, for example natural disasters, import supply and weather." This was because I did not want respondents to only associate a conservation scenario with the 2011 Fukushima incident, the most recent cause of a conservation campaign.

Willingness

The measure of willingness was derived from a 12-item list of individual curtailment behaviours. This willingness is a measure of one's *willingness to adopt* curtailment behaviours. Examples of these actions included "Restricting the length of showers", "Using cold water instead to wash dishes" and "Switching lights off when not in use". The items included were synthesised from previous energy savings studies as well as some developed for this study with the aim of covering a range of curtailment behaviours, and that could reflect actions that might occur across both countries (Blackwell, 2009; Karlin et al., 2014; Mirosa et al., 2013).

Participants were asked to indicate how often they would be willing to do each of the 12 curtailment behaviour listed. The "how often" framing was purposive, to align with attributes of curtailment behaviours, previously defined as those needing to be repeated in order to achieve energy savings (Karlin et al., 2014). A 5-point Likert scale was used,

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[7] The state-owned enterprise maintaining and operating New Zealand's electricity transmission network.

ranging from 1 being 'never', 5 being 'often'. Reliability scores for this measure in both samples are adequate (α_{NZ} = 0.73; α_{JP} = 0.75).

A one-item measure of willingness was also captured in the survey. Following the electricity conservation context provided, participants were asked to indicate their *willingness to participate* in such a campaign. This question was initially included to align with previous studies exploring willingness to participate in a conservation campaign (Blackwell, 2009). This measure was not included in subsequent analysis however because the multi-item question was deemed sufficient to capture willingness more than the single-item question.

Motivations

Participants were presented with a list of motivations for their willingness to participate in an electricity conservation campaign. Examples included "It would help reduce the risk of a more severe electricity shortage", "To save money", and "Because the government would be asking me to." Each motivation was rated by importance to the participant on a 5-point scale, 1 being "very unimportant", and 5 being "very important". Blackwell's (2009) study pertaining to conservation campaigns in New Zealand formed the basis of the motivation items. Subsequently, a number of extra items were added after pilot-testing and feedback prior to the launch of the questionnaire.

Socio – Demographic Information

Lastly, participants answered a short list of demographic questions, including age, ethnic background, levels of income and education, and gender (in this section for the Japanese survey). These were included to help determine the characteristics of the sample to indicate the representativeness of the sample to the wider population. A question pertaining to household size and makeup was also included as literature has shown some relationship between household size and energy consumption (Abrahamse & Steg, 2009).

Ultimately, these variables were not included in the analysis related to willingness and curtailment behaviour because studies have shown that while socio-demographic variables are often strongly correlated with home energy use in general, the relationship with energy savings behaviour is not as strong (Abrahamse & Steg, 2009; Karlin et al., 2014). Initially, correlation models to test socio-demographic variables and willingness were run, and as expected, no significant relationships were found. For both of these

reasons, no further analysis was done with inclusion of socio-demographic variables. Sample population characteristics are presented in Table 3.3 below.

Table 3.3: Sample Population Characteristics

		New Zealand	Japan
Gender	Male	31%	59%
	Female	69%	41%
		100%	100%
Age	18-29	55%	22%
	30-39	19%	35%
	40-49	9%	20%
	50-59	11%	16%
	60+	6%	7%
		100%	100%
Ethnic Background	NZ European	67.0%	
	NZ Māori	16.0%	
	Chinese	0.4%	
	Indian	1.8%	
	Japanese	0.4%	100.0%
	Other	14.7%	0.0%
		100%	100%

New Zealand (n = 266), Japan (n = 188).

3.2.5 Data Preparation and Summary Statistics

Responses to the completed questionnaires were entered and coded into IBM's Statistical Package for the Social Sciences (SPSS22) for analysis.

Centred Scoring

Scores for value orientations and self-construal measures were adjusted in the same manner to help reduce response bias. This is especially important to do with cross-national samples as scale use and response bias can differ between cultural groups as well as individuals (Schwartz, 2001; Vignoles & Brown, 2011). By generating the relative importance of each value over its absolute score, we are able to infer priority relationships between values. This trade-off between values as guiding behaviour was discussed in the previous chapter.

For both measures, first, mean scores were calculated by combining item means for the relevant dimensions. Next, the mean score across all items was calculated and subsequently subtracted from mean scores of each dimension. Centred scores are used for correlation analysis but uncentred scores are used for independent variables in regression analysis.

Normality

The data from both samples were also tested for normality using the Shapiro-Wilk test. Japanese results were normally distributed; however, some of the variables from the New Zealand sample were not. A Spearman's correlation coefficient (a non-parametric statistic) was run to assess whether the non-normality of the data would affect the analysis. Only marginal differences between the Spearman's and Pearson's coefficients were found. Thus, correlation analysis proceeded with the use of Pearson's coefficients. T-tests were used to assess statistical significance between mean scores in both samples, and further to test for significance of correlation coefficients between samples

Summary statistics from the measures used in the questionnaire are shown in Table 3.4 below. Note that biospherism and altruism are grouped under the self-transcendence value.

Table 3.4: Summary Statistics

| Construct | Dimension Item | NEW ZEALAND | | | JAPAN | | | | | |
		n	mean score	SD	n	mean score	SD	t	df	p
Value orientations	**Self-Transcendence**	241	0.72	0.43	120	0.43	0.32	0.290	359	0.0001
	Universalism		0.68	0.66		0.37	0.47	4.596		0.0001
	Benevolence		0.76	0.44		0.52	0.41	4.992		0.0001
	Biospherism*		0.45	1.01		0.48	0.67	0.295		0.7685
	Altruism*		0.94	0.78		0.20	0.76	0.740		0.0001
	Self-Enhancement	241	-1.07	0.64	120	-0.76	0.48	4.689	359	0.0001
	Achievement		0.01	0.79		-0.03	0.71	0.363		0.7168
	Power		-1.57	0.78		-1.07	0.56	6.262		0.0001
	Conservation	241	-0.34	0.53	120	0.06	0.37	7.414	359	0.0001
	Security		0.15	0.59		0.41	0.49	4.164		0.0001
	Conformity		-0.41	0.90		-0.18	0.65	2.494		0.0131
	Tradition		-1.21	1.13		-0.19	0.84	8.754		0.0001
	Openness To Change	241	0.41	0.48	120	0.47	0.41	1.173	359	0.2417
	Self-Direction		0.64	0.62		0.62	0.55	0.300		0.7647
	Stimulation		-0.03	0.82		0.02	0.69	0.574		0.5662
	Hedonism		0.39	0.73		0.94	0.68	6.896		0.0001
Cultural dimensions	**Making Decisions**	205	0.39	1.26	92	0.20	1.01	0.204	295	1.2739
	Dealing with Conflicting Interests		-0.62	0.98		-0.63	0.78	0.076		0.9395
Environmental Concern	**Overall NEP****	201	3.89	0.54	81	3.70	0.45	2.798	280	0.0055

|		n	mean score	SD	n	mean score	SD	t	df	p
ECB WILLINGNESS	**ECB Willingness Combined**	199	4.29	0.49	81	4.27	0.42	0.322	278	0.7475
	Lights off when not in use.		4.96	0.34		4.81	0.39	3.205		0.0015
	Pull the curtains before dark.		4.87	0.49		4.06	0.87	9.856		0.0001
	Only heat rooms in use.		4.87	0.51		4.80	0.46	1.071		0.2853
	Use cold water when washing clothes.		4.77	0.74		4.27	1.03	4.550		0.0001
	Unplug appliances when not in use.		4.74	0.70		4.26	0.74	5.117		0.0001
	Air-dry clothes		4.74	0.80		4.63	0.68	1.088		0.1100
	Heat only one communal room.		4.43	1.00		4.60	0.68	1.403		0.1618
	Restrict length of showers.		4.38	0.93		3.89	0.98	3.936		0.0001
	Reducing use of heating/cooling appliances.		3.98	1.17		4.54	0.55	4.123		0.0001
	Use entertainment devices less.		3.86	1.26		3.85	1.05	0.063		0.9498
	Head to communally heated spaces.		2.97	1.44		3.33	1.13	2.011		0.0453
	Use cold water when washing dishes.		2.89	1.42		4.14	0.89	7.352		0.0001
Motivations	It could reduce the risk of the electricity shortage worsening.	197	4.57	0.72	82	4.35	0.82	2.230	277	0.0265
	It would be good for the environment.		4.42	0.89		4.18	0.82	2.099		0.0367
	It would be the right thing to do.		4.28	0.89		3.48	1.17	6.210		0.0001
	It could help reduce demand for my region.		4.24	0.95		3.66	1.04	4.516		0.0001
	My reduction in electricity use could help someone who needs it more.		4.10	0.98		3.72	1.11	2.836		0.0049
	To save money.		3.60	1.25		3.45	1.07	0.951		0.3424
	It is expected of me.		3.28	1.12		2.84	1.06	3.036		0.0026
	Because the government is asking me to.		3.04	1.15		3.28	1.09	1.612		0.1081
	It is what my peers would be doing.		2.82	1.21		2.61	1.07	1.365		0.1734

3.3 Results

To provide an overview of the measure responses, a summary of the data is presented first in this section. Following this, a series of bivariate correlations and regression models are presented to analyse the data and help answer the research questions. The results of these are presented in the following section.

3.3.1 Summary of Measure Responses

The New Zealand sample scores marginally higher than the Japanese sample on the self-transcendence dimension (0.72 ± 0.43 compared to 0.43 ± 0.32 respectively). In contrast, all other higher order dimensions; openness to change, conservation, and self-enhancement value scores were lower for the New Zealand sample than the Japanese sample. Significance testing reveals that differences in the mean scores for three of the four values are statistically significant between countries ($p < 0.0001$) as can be seen in Table 3.4 above; whereas openness to change is not ($p = 0.2417$). The lowest mean scores in both countries were on self-enhancement values (NZ = -1.07 ± 0.64; JP = -0.76 ± 0.48). Figure 3.6 below provides a visual representation of the relationship among the four higher order value dimensions across both countries.

Figure 3.6: Relationship Among Higher Order Values
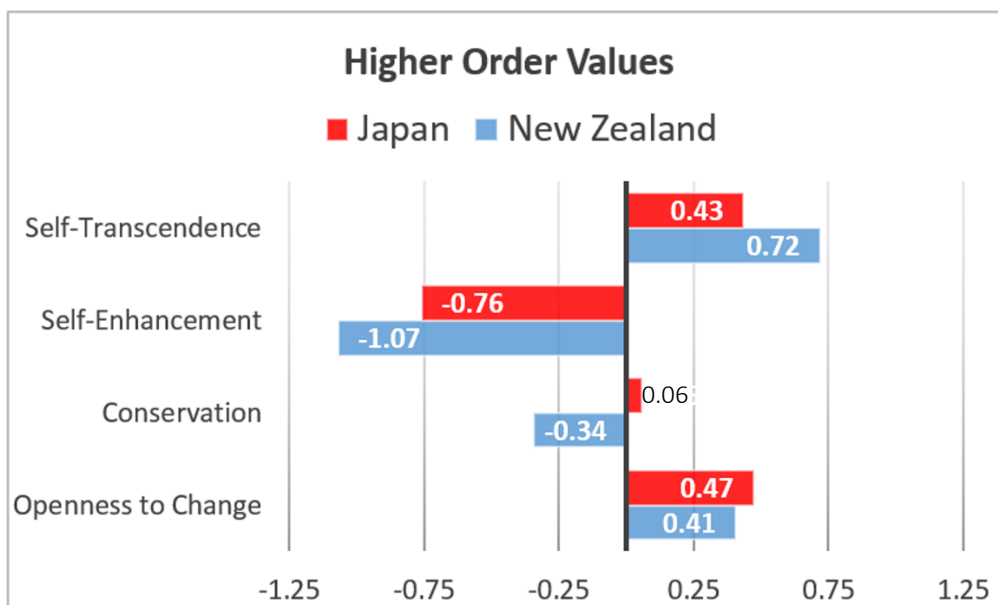
The self-transcendence values and self-enhancement values form one bipolar dimension as they emphasize theoretically opposing motivations. This can be seen in Figure 3.6

above as New Zealand's self-transcendence value scores (0.72 ± 0.43) significantly contrasts with its self-enhancement value [-1.07 ± 0.64; t(480) = 36.040, p = .0001].

Japanese results also reflect this significant divergence between self-transcendence (0.43 ± 0.32) and self-enhancement [-0.76 ± 0.48; t(238) = 22.597, p = .0001]. Similarly, we see generally opposing scores between 'conservation' and 'openness to change' along another bipolar dimension. Although the contrast between Japan's conservation (0.06 ± 0.37) and openness to change values (0.47 ± 0.41) is significant [t(238) = 8.132, p = .0001], they are more closely related than conservation and openness to change in the New Zealand sample (-0.34 ± 0.53; 0.41 ± 0.48 respectively; t(480) = 16.283, p = .0001).

For the decision-making domain, both New Zealand and Japan's responses (NZ = 0.39 ± 1.26; JP = 0.20 ± 1.01) reflect a slight preference for an independent, self-directed mode of decision making. By contrast, in the dealing with conflicting-interests domain, both samples scored towards interdependence, (NZ = -0.62 ± 1.14; JP = -0.63 ± 0.81) reflecting an importance placed on social cohesiveness and goals over an individual's achievements. Statistical significance was not found between mean scores on either dimension [t(295) = 0.204, p = 1.2739; t(295) = 0.076, p = 0.9395].

The difference in mean environmental concern scores is statistically significant [t(280) = 2.798, p = 0.005], with the New Zealand sample scoring higher (3.89 ± 0.54, out of 5) than Japan (3.70 ± 0.45).

Overall, the motivations identified as more and less important for one's willingness to participate in a conservation campaign were similar across both samples. The motivation ranked as most important for both samples was that which would '…help reduce the risk of a more severe electricity shortage'. Both samples also ranked 'It would be good for the environment' as their second most important motivation. The least important motivation across both samples was 'It is what my peers would be doing'.

3.3.2 Correlation Analysis

Correlation analysis was used to help answer research questions one and two. Firstly, to identify what relationship exists (if any) between values and willingness to engage in curtailment behaviour. Secondly, to investigate how environmental concern is related to willingness. Furthermore, the aim is to identify how these relationships may differ across both samples. A Pearson's product-moment correlation coefficient was calculated (Field, 2000). Results from the New Zealand sample correlation analysis are presented first in Table 3.5, followed by results from the Japanese sample in Table 3.6.

Table 3.5: Correlation Matrix Table for New Zealand Sample Variables

		M	SD	n	1	2	3	4	5	6	7	8
1	Self-Transcendence	.71	0.43	241								
2	Self-Enhancement	-1.07	0.64	241	-.535**							
3	Conservation	-0.34	0.53	241	-.562**	-.114						
4	Openness to Change	0.41	0.48	241	.227**	-.088	-.711**					
5	Biospherism	0.45	1.01	241	.735**	-.397**	-.465**	.238**				
6	Altruism	0.79	0.39	241	.885**	-.478**	-.458**	.158*	.342**			
7	Environmental Concern	3.89	0.54	201	.404**	-.183**	-.262**	.035	.488**	.232**		
8	Motivations	3.82	0.52	197	.049	-.021	.148*	-.216**	.077	.018	.127	
9	Willingness	4.29	0.49	197	.334**	-.160*	-.155*	.099	.305**	.256**	.116	.294**

*Correlation is significant at the 0.05 level (2-tailed).**Correlation is significant at the 0.01 level (2-tailed).

Table 3.6: Correlation Matrix Table for Japanese Sample Variables

		M	SD	n	1	2	3	4	5	6	7	8
1	Self-Transcendence	0.43	0.32	120								
2	Self-Enhancement	-0.76	0.48	120	-.588**							
3	Conservation	0.06	0.37	120	-.217*	-.314**						
4	Openness to Change	0.47	0.41	120	.000	.066	-.682**					
5	Biospherism	0.48	0.67	119	.278**	-.071	-.267**	.266**				
6	Altruism	0.42	0.39	120	.900**	-.571**	-.097	-.126	-.177			
7	Environmental Concern	3.70	0.45	81	.155	-.095	-.009	.029	.268*	.039		
8	Motivations	3.51	0.66	82	-.058	-.128	.294**	-.204	.195	-.150	.280*	
9	Willingness	4.27	0.42	81	.143	-.091	.146	-.187	.174	.071	.252*	.327**

*Correlation is significant at the 0.05 level (2-tailed).**Correlation is significant at the 0.01 level (2-tailed).

Both countries show positive correlation between self-transcendence values and willingness to adopt curtailment behaviour, although this relationship is significantly stronger for the New Zealand sample ($r = 0.334**$) than the Japanese [$r = 0.143$; $t(276) = 3.074$, $p = 0.0023$]. This result aligns with general findings from the literature as self-transcendence is typically associated with positive environmental behaviours. This is the strongest positive correlation with willingness for the New Zealand sample but not for the Japanese. Given the polarisation of self-transcendence and self-enhancement values, it was to be expected that a negative relationship was found between self-enhancement values and willingness for both samples ($r_{NZ} = -0.160*$; $r_{JP} = -0.091$). However, this difference is not statistically significant [$t(276) = 1.110$, $p = 0.2678$].

Conservation values were negatively associated with willingness to curtail for New Zealand respondents ($r = -0.155$) and positively associated with willingness for Japanese respondents ($r = 0.146$). The difference between the correlation coefficients was statistically significant [$t(276) = 4.844$, $p = 0.0001$]. These results indicate that conservation values such as tradition, conformity, and security are positively related to willingness in Japan; however, these same values are negatively associated with willingness in New Zealand. Furthermore, of the values, conservation was the most strongly correlated with participants' motivations for willingness in Japan ($r = 0.294**$).

In line with the theoretical structure of value dimensions, the relationship between openness to change and willingness is therefore the reverse of that found for conservation. Openness to change is positively related to willingness in the New Zealand sample ($r = 0.099$), yet negatively correlated for Japan ($r = -0.187$). Openness to change is also often overlooked in research examining values and energy saving behaviour.

In summary, using Schwartz's four higher order values revealed some responses which align with expectations from the literature.

As expected, both biospherism and altruism were positively related to willingness in both samples. In both countries, biospherism values were more strongly correlated with

willingness (r_{NZ} = 0.305**; and r_{JP} = 0.174 respectively) than altruism values (r_{NZ} = 0.256**; and r_{JP} = 0.071); however, this difference was not statistically significant [t(392) = 1.56, p = 0.1206, and t(392) = 0.99, p = 0.322 respectively].

The positive association between holding altruistic values and willingness (r_{NZ} =0.256**; and r_{JP} = 0.071 respectively) was significantly stronger for New Zealand respondents than those from Japan [t(276) = 2.98, p = 0.003]. This indicates that New Zealand respondents with altruism values are more likely to engage in curtailment behaviours than Japanese participants who also hold altruism values. Additionally, the association of holding biospheric values and willingness was significantly stronger among New Zealand respondents compared to Japanese respondents who hold biospheric values [t(276) = 2.11, p = 0.036]. Given that biospherism and altruism value constructs are comprised of self-transcendence items, the generally high correlations with the self-transcendence value, and also therefore willingness, is to be expected.

One unexpected result was the weak but negative relationship of altruism and biospherism in the Japanese sample (r = -0.177) and the strong positive correlation with one another in the New Zealand sample (r = 0.342**). This difference was statistically significant [t(359) = 11.91, p = 0.0001] and seems to indicate that in the Japanese sample, concern for nature (biospherism) and concern for others (altruism) are distinct constructs. By contrast, these were strongly positively related constructs in New Zealand. This is explored further with the regression analysis.

Also noted, biospherism is more strongly correlated with environmental concern (r_{NZ} = 0.488**; and r_{JP} = 0.268*) than is altruism (r_{NZ} = 0.232**; and r_{JP} = 0.039). The strength of this relationship is significant in both samples [t_{NZ}(400) = 4.75, p = 0.0001; t_{JP}(160) = 3.24, p = 0.0015 respectively]. A biospheric value orientation, or one which places importance on costs and benefits for the ecosystem, should theoretically be more associated with environmental concern, and this is seen here.

Question 2: What is the relationship of environmental concern to willingness to curtail in the two countries?

As expected from the literature, a positive correlation between environmental concern and willingness for curtailment behaviour was found in both samples. The strength of these relationships however, differs between New Zealand and Japan.

The relationship between environmental concern and willingness is significantly stronger for Japanese respondents (r = 0.252*) than those from New Zealand [r = 0.116; t(276) = 2.189, p = 0.029]. Other than self-reported motivations to engage in curtailment behaviour, environmental concern is the most strongly correlated variable to willingness in the Japanese sample.

By contrast, environmental concern was the variable with the lowest positive correlation to willingness for the New Zealand sample. Biospherism orientation showed a significant, positive relationship with willingness in the New Zealand sample (r = 0.305**; [t(392) = 3.828, p = 0.0002].

Correlation analysis is useful as it helps illuminate in this instance, what variables are associated with willingness and the direction of the relationship, either positive or negative. Correlation analysis cannot however, explain the predictive power of each of these variables, most specifically the role of each when others are all held constant. For this reason, regression analysis is also performed and the results are outlined in the subsequent section.

3.3.3 Regression Analysis

Correlation analysis revealed a mixed set of variables related to willingness between the New Zealand and Japanese sample results. For reasons of consistency and comparability between the two samples, the same predictor variables are used in the regression models for each sample. Hierarchical multiple regression analysis is used to better understand the role each predictor plays (motivations, environmental concern, the four value domains, and additional biospheric and altruistic values) in affecting willingness. This is particularly useful as isolating the role of predictors in the different models of the regression allows us to determine any additional variance in willingness for each new predictor added to the model. Table 3.7 below summarises the results from this analysis in both samples using the overall willingness measure as the dependent variable.

When interpreting the table, R^2 shows what percent of the variation in willingness the models account for. Each model used adds another predictor variable or set of variables. The additional variance this accounts for is represented with the $R^2 \Delta$ coefficient. If a variable significantly predicts willingness, then its beta weight (β) will be significantly different from zero. The t- statistic (t) represents this level of significance; thus, if 't' is statistically significant, we can assume the relevant predictor variable contributes to estimating levels of willingness (Field, 2000).

Table 3.7: Regression Model for New Zealand and Japan Willingness

M		New Zealand				Japan			
		R^2	$R^2 \Delta$	β	t	R^2	$R^2\Delta$	β	t
1	Motivations	0.087	0.087	0.273	4.300***	0.077	0.077	0.182	2.526**
2	Motivations	0.093	0.006	0.263	4.122**	0.110	0.032	0.148	1.988*
	NEP			0.071	1.156			0.174	1.650
3	Motivations	0.223	.131	0.220	3.360***	0.234	0.124	0.036	0.437
	NEP			-0.076	-1.176			0.160	1.559
	ST			0.362	4.335***			0.266	2.176*
	SE			-0.025	-0.540			0.005	0.046
	OTC			0.023	0.338			0.033	-0.287
	CONS			-0.108	-2.215*			0.073	0.692

M = model; *p < .05; **p < .01; ***p < .001; NEP = environmental concern; ST = self-transcendence; SE = self-enhancement; OTC = openness to change; and CONS = conservation. β = unstandardized coefficients.

Model 1

Immediately we can see that the set of predictor variables in each model account for different levels of variance in the willingness measure. The first model shows how influential motivations alone are as a predictor of one's willingness to engage in curtailment behaviours. In the New Zealand sample, motivations explained 8.7% of the variation in willingness $(r^2 = 0.087)$. The Japanese sample model explained 7.7% of the variation $(r^2 = 0.077)$.

Model 2

To test the relationship of environmental concern when the effect of motivations are held constant, model 2 includes the NEP measure as a second predictor variable. In the New Zealand model 2, the predictive value of environmental concern was practically negligible, with an added variance of only 0.6% $(r^2 = 0.006)$. This was also reflected by the weak association found in the correlation analysis.

On the contrary, inclusion of the environmental concern predictor in model 2 for the Japanese sample increased predictive variance by 3.2% $(r^2 = 0.032)$. Thus, we can infer that motivations held constant, environmental concern does have an effect on willingness for Japanese sample participants, and more so than those in New Zealand.

Model 3

In both instances, model 3 had the highest level of predictive variance with the addition of the four higher order values; self-transcendence, self-enhancement, conservation, and openness to change. Self-transcendence values in particular add predictive variance well over environmental concern and motivations alone for both New Zealand and Japan.

This suggests that when motivations and environmental concern are held constant, individuals with higher levels of self-transcendence values are more likely to be willing to engage in curtailment behaviours. This relationship is stronger for the New Zealand participants and self-transcendence values are their strongest predictor variable (β = 0.362; t = 4.335***). This is reflective of the stronger correlation between self-transcendence and willingness for the New Zealand sample than the Japanese as revealed through correlation analysis.

Model 3 also shows that for New Zealand participants, conservation values are negatively related to willingness when other values are controlled for, yet these positively predict variance for the Japanese sample (β = 0.073, t = 0.692), reinforcing the positive relationship revealed through correlation analysis.

Environmental concern is a stronger predictor of willingness for the Japanese sample compared to that of New Zealand. The negative relationship shown for environmental concern may be a suppressor effect of the model as correlation analysis showed this measure of environmental concern was not statistically correlated with willingness.

Additional Values

Correlation analysis revealed different associations among biospherism and altruism and other variables. Using overall willingness as the dependent variable, a second regression analysis was run to assess whether the inclusion of biospheric and altruistic value orientations (instead of self-transcendence) contributes uniquely in explaining willingness.

Table 3.8: Regression Model with Biospheric and Altruistic Values

M		New Zealand				Japan			
		R^2	$R^2\Delta$	β	t	R^2	$R^2\Delta$	β	t
1	Motivations	0.087	0.087	0.273	4.300***	0.077	0.077	0.18	2.526*
2	Motivations	0.093	0.006	0.263	4.122***	0.110	0.032	0.15	1.988
	NEP			0.071	1.156			0.17	1.650
3	Motivations	0.209	0.116	0.175	2.785**	0.225	0.115	0.055	0.714
	NEP			-0.074	-1.143			0.143	1.418
	BIO			0.136	3.600***			0.072	1.213
	ALT			0.180	2.499*			0.222	2.359*

M = model; *p < .05; **p < .01; ***p < .001; NEP = environmental concern; ST = self-transcendence; SE = self-enhancement; OTC = openness to change; and CONS = conservation. β = unstandardized coefficients

In Japan and New Zealand, with environmental concern and motivations held constant, both altruism and biospherism contribute positively to explaining variance of willingness. Altruistic values are found to have higher predictive variance ($β_{NZ}$ = 0.180; t = 2.499*; and $β_{JP}$ = 0.222, t = 2.359*) than biospheric values ($β_{NZ}$ = 0.136; t = 3.600***; and $β_{JP}$ = 0.072, t = 1.213) in both samples. Minor differences exist where biospheric values have higher predictive variance for willingness in New Zealand than in Japan. Moreover, the converse

is true; altruistic values have higher predictive ability to explain variance in willingness to conserve among Japanese participants compared to New Zealand participants.

Overall, the addition of biospheric and altruistic variables contributes to explaining variance, above motivations and environmental concern alone in both samples. Inclusion of these values increased predictive ability by 11.6% of additional explained variance for the New Zealand sample ($r^2 = 0.116$) and 11.5% for the Japanese sample ($r^2 = 0.115$). This indicates that when motivations and environmental concern are held constant, individuals with higher levels of these values are more likely to be willing to engage in curtailment behaviours. Given that both values comprise self-transcendence value items, and this regression model shows their unique contribution, a final full regression analysis was run, replacing the self-transcendence value with biospheric and altruistic values.

Table 3.9: Full Willingness Regression Model with Biospheric and Altruistic Values

Step		New Zealand				Japan			
		R^2	$R^2\Delta$	β	T	R^2	$R^2\Delta$	β	t
1	Motivations	0.087	0.087	0.273	4.300***	0.077	0.077	0.182	2.526*
2	Motivations	0.093	0.006	0.263	4.122***	0.110	0.032	0.148	1.988
	NEP			0.071	1.156			0.174	1.650
3	Motivations	0.231	0.138	0.216	3.305***	0.234	0.125	0.033	0.399
	NEP			-0.103	-1.538			0.155	1.485
	BIO			0.123	3.088**			0.072	1.007
	ALT			0.224	2.750**			0.201	1.856
	SE			-0.018	-0.380			0.005	0.048
	OTC			0.015	0.218			-0.043	-0.356
	CONS			-0.098	-2.002*			0.071	0.665

M = model; *p < .05; **p < .01; ***p < .001; NEP = environmental concern; ST = self-transcendence; SE = self-enhancement; OTC = openness to change; and CONS = conservation. β = unstandardized coefficients.

With the insertion of biospheric and altruistic values in this regression, some differences from the first regression analysis can be inferred. Initially, self-transcendence values were the overall strongest predictor of willingness for the New Zealand sample. In this regression analysis however, this relationship can be further and uniquely delineated. While both altruistic values and biospherism significantly contribute to the predictive variance of willingness, altruistic values contribute more (β = 0.224, t = 2.750**) than do biospheric values (β = 0.123, t = 3.088*) in the New Zealand sample other determinants

held constant. Overall, the values still contribute the most predictive power in both samples, (r^2_{NZ} = 0.138; r^2_{JP} = 0.125), and the model adding only environmental concern contributes more to the variance of willingness in Japan than in New Zealand (r^2_{NZ} = 0.006; r^2_{JP} = 0.032).

Question 3: Are there differences in the curtailment actions individuals are willing to adopt in both countries?

In order to investigate whether there were differences in willingness to undertake different curtailment behaviour between the samples, the mean scores for each item were calculated and compared (see Table 3.4 for summary statistics or Figure 3.10 below). Independent sample t-tests were run to test for significance of the differences in mean scores from the two samples. The difference between overall willingness between the two samples was not significant [t(278) = 0.322, p = 0.7475]. When analysing differences between scores across all twelve items, eight curtailment behaviour items were found to have statistical differences between the mean scores (refer to Table 3.4 for individual t-test statistics of each item).

Figure 3.10: Mean Scores of Willingness for Curtailment Behaviours in Both Samples
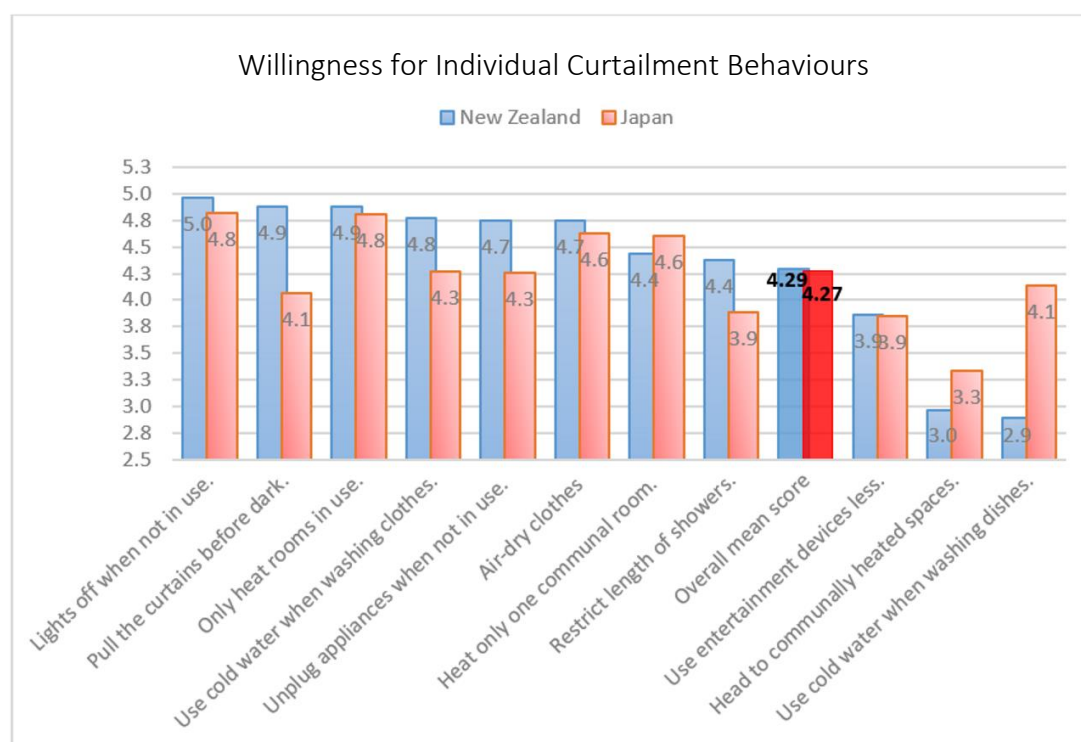
Two actions with significant statistical differences in mean scores are related to using cold water over warm water (when washing dishes and when washing clothes). Japanese respondents were significantly less willing to use cold water to wash clothes than New Zealand respondents [t(278) = 4.550, p = 0.0001]. However, they were significantly more likely to use cold water when washing dishes [t(278) = 7.352, p = 0.0001]. Interestingly, a similar finding was uncovered by Wilhite et al. (1996) who noted Japanese participants in

their study were much more willing to use cold water for washing dishes than their Norwegian counterparts. They noted that this difference was related to culturally significant services, routines or circumstances.

A statistically significant difference in mean scores for willingness [$t(278) = 9.856$, $p = 0.0001$] was found in 'Pulling the curtains before dark' to help with insulation. New Zealand respondents were more willing to do so than Japanese. The other action with the highest statistically significant difference between sample means was found in 'Unplugging appliances when not in use', [$t(278) = 5.117$, $p = 0.0001$] again with New Zealand respondents more willing to do so.

Another action with statistically significant differences in mean scores was in the willingness for 'Reducing use of heating (or cooling) appliances, [$t(278) = 4.123$, $p=0.0001$], with Japanese participants more willing to do so.

Overall, there are some curtailment behaviours which elicit similar willingness scores and no statistically significant differences were found between the two samples, such as air- drying clothes, [$t(278) = 1.088$, $p = 0.1100$] or only heating rooms in use [$t(278) = 1.071$, $p = 0.2853$]. Importantly however, there are significant differences in willingness for some curtailment behaviours.

Chapter 4. Study Two – Qualitative Methods and Findings

4.1 Introduction

Responsible and reflexive research is characterised by recognition, acknowledgment, and transparency of the decisions made throughout the research processes (Braun & Clarke, 2006; Elliott, Fischer, & Rennie, 1999; Seale, 2012). Therefore, this chapter begins with a discussion of the rationale for including qualitative methods and illustrates the benefits of a mixed methods approach for this study. Next, an overview of decisions made throughout the qualitative research process will be presented and implications of these are discussed where relevant. Following this is an outline of the method for analysing the interview data, and finally, a summary of the findings from the interviews.

4.1.1 Rationale

The interviews in this study are not used as supplementary anecdotes to the quantitative survey. From a pragmatic perspective, a mixed-methods approach was chosen as it was deemed most appropriate to answer my research questions (Mertens, 2005), the choice to use both qualitative and quantitative approaches was deliberate in order to build an understanding of public responses to energy shortages. Our understanding of this issue can be enhanced through analysing it from more than one perspective.

The quantitative component of this project investigated what relationships exist between individuals' values, environmental concern, motivations, and willingness to adopt curtailment behaviours. The dialogue of the qualitative interviews provides a way to explore the underlying value motivations when participants discuss electricity conservation and facets of curtailment behaviour. The combination of methods therefore provided the opportunity to gain a broader, culturally contextual understanding of the relationship of values, motivations, and the processes through which participants make their energy savings decisions.

A number of researchers note the dearth of qualitative research in this field and consequently, more research with a mixed methods or qualitative approach is encouraged (Mirosa et al., 2013; Stern, 2008). In isolation, too heavy a focus on quantitative research may result in theory being "disconnected from social reality" (Park,

1967, p. 79). Similarly, relying on qualitative methods alone may generate theory which is not supported through empirical findings. Our current understanding of this topic can benefit from being developed concomitantly through findings from both quantitative and qualitative research (Karasz & Singelis, 2009).

4.1.2 Aim

Through the use of semi-structured interviews, the aim was to explore the underlying values expressed by participants when talking about electricity conservation campaigns and adopting curtailment behaviours.

Although I have had experience living in Japan, I acknowledge that it would be naïve of myself as a researcher, to presume I have an understanding of what motivates the Japanese participants and their willingness to conserve electricity, and that I could place these as similar or different to those related to New Zealand participants. Another aim of the interviews therefore, is to enable the opportunity to explore and comprehend some of these multifaceted associations, allowing insights to unfold through conversation that may not have been necessarily expected. Allowing for flexibility throughout the research process is crucial in this way, most especially in a cross-national context where the relationships of different factors and culture on behaviour may be different from those of the researcher.

Although there has been an increase in the number of studies interested in environmental behaviours of people in the Asia region (e.g., Cho, Thyroff, Rapert, Park, & Lee, 2013; McCarty & Shrum, 2001), there are not many which specifically explore and compare the perspectives of New Zealand and Japanese participants. In this study, the two countries are compared in terms of the determinants of their willingness to conserve. Therefore, it is important to allow these factors to be uncovered as participants voice their own opinions and beliefs. To this end, interviews were conducted in New Zealand and Japan.

4.2 Methods

4.2.1 Semi-structured interviews

Described as a 'conversation with a purpose' (Burgess, cited in Mason, 1996), semi-structured interviewing involves having a pre-determined framework of questions or discussion points for the interview, yet allowing for some divergence from this. Its semi-structured nature lets the dialogue develop in unexpected directions. This combination of structure and flexibility is useful in a cross-national study because it allows for the same topics to be discussed, whilst simultaneously capturing individual and culturally distinct perspectives through unexpected turns in the dialogue (Kvale, 1994; Peterson, 1997; Seidman, 2006).

4.2.2 Study Design

Sampling

It is important to consider epistemological considerations in any discussion of methodology. In other words, the methods should align with the objectives of the study. The most appropriate technique is in essence the one which best enables the researcher to capture what they want to know, and within the context and confines that they find themselves in (Elliott et al., 1999; Kvale, 1994; Palys, 2008; Polkinghorne, 1983; Seidman, 2006).

The purpose of the qualitative interviews is not to generalise findings to the wider populations in both countries, but instead aims to understand and deconstruct and represent participants' views. For this reason, a smaller number, of in-depth discussions was sought. When deliberating about what number of participants constitutes a sufficient number, Kvale (1994) points out that the number would be "so many subjects that you find out what you need to know" (p. 165). What he refers to here is a level of saturation, to conduct as many interviews until this point where little new insights are gained (Seidman, 2006).

A purposive sampling technique was utilised in this study. This means that I purposefully and strategically chose the participants based on their characteristics (i.e. being teachers) and the place in which they resided (Palys, 2008). The reasons for these choices are outlined in the subsequent section.

Teachers as Participants

Theoretical reasoning

Past studies using Schwartz' values framework have also interviewed teachers, noting their role in society as relevant to understanding values (Schwartz & Bardi, 2001). Teachers have been referred to as "value transmitters" or the carriers of values in their respective societies (Schwartz & Bardi, 2001, p. 182). Teachers have a highly influential role in guiding the next generation in a society. Through extensive and constant communication with students, they are naturally instilling the values and reinforcing what is deemed socially and culturally appropriate behaviour. Schwartz and Bardi (2001) also note that they are typically one of the largest occupational groups and as such, are grounded in established social institutions.

Practical Reasoning

My time in Japan to conduct this research was limited to six weeks. To ensure that I could gain access to participants and complete data collection in this limited timeframe, choosing teachers was the most suitable option for me conducting this research. I spent a year from August 2013 to August 2014 living in Japan and working as an English teacher, contracted to the city council of Uwajima in Ehime Prefecture. During this time I taught at many schools in the city which allowed me to establish and maintain professional and personal relationships with a number of the teachers there. Having an established network that I could access was ultimately the determining factor for choosing teachers as participants.

As a first-time and solo researcher abroad, being confident that I could (re)enter this place through my existing networks, and thus minimising the difficulties one might face as an *outside* researcher coming in was absolutely crucial. This cannot be understated. A number of researchers comment on the essential nature of having an established relationship in order to conduct research in Japan as an *outsider* (Fetters, 1995; Martinus & Hedgcock, 2015)*.* In a culture that places large emphasis on trust and mutual connections, tapping into this existing network seemed the most fruitful in terms of securing participants for the study. The decision to interview teachers in New Zealand was therefore a follow on effect to maintain consistency and comparability across both samples. More than just the prerequisite of access however, returning to Uwajima City

was also beneficial for the interview dialogue, where long and free-flow conversations were possible.

I felt it was necessary to interview participants with whom I had some level of connection already. My intentions were to converse about personal details of the participants' daily and home lives, and motivations for their actions. By having a mutual connection already between us, I felt that a relationship of trust was more easily established, helping the participants to open up during the interviews. This is particularly the case for when I was conducting research in Japan, most especially as a non-Japanese researcher (Martinus & Hedgcock, 2015; Suzuki & Yamagishi, 2004).

Participants are likely to speak more freely if they believe that the researcher will understand their positionality and opinions. Japan's emphasis on *insider trust* was pertinent to my decision to return to the Japanese city where I lived and worked previously, and to utilise these existing relationships to secure interview participants. In the end, two of the seven participants I interviewed had a previous working relationship and friendship with me prior to the interviews. The remaining five were all mutual connections found through existing networks.

Martinus and Hedgcock (2015) highlight the unique challenges that arose during their cross-national qualitative study in Australia and Japan. Noting that the different language, culture, and "philosophical bases" (p. 374) can impact on the interpretations of the research methods used, they emphasise the importance of transparency regarding the methodological process in order to maintain the integrity of the data collected. Recognising the importance for such a reflexive, accountable, and culturally appropriate approach to research, it is important that the challenges and differences in the process and manner of data collection are acknowledged here. For this reason, the remaining methods pertaining to the interviews in New Zealand and Japan will be discussed separately in the following sections. Although the specifics about the process of recruiting participants differed slightly in the two countries, the underlying ethic and outcome was comparable. Discussing them separately also provides an opportunity to illuminate the culturally unique practices and norms I encountered surrounding access, process, and ethics while undertaking this part of the research project.

4.2.3 New Zealand

Place and Timing

The New Zealand interviews took place prior to those in Japan. Three interviews were conducted across the Wellington Region in the latter half of July (see figure 4.1) during winter. This timing was purposive to try and ground our discussion in the context of an energy shortage during a time of high demand.

Figure 4.1: Wellington Region, New Zealand

The interviews took place in a one-on-one, face-to-face arrangement between myself, the interviewer, and the interviewed participants. They were conducted at a time and place most convenient for each participant's schedule.

It is not uncommon for teachers to be engaged in a number of after-school activities throughout the school term. Consequently, in order to lessen the hindrance for participants, interviews were scheduled within the timeframe of the school holidays where possible.

Source: "Boundary Map of Wellington Region", (2006)

Equally crucial to the timing of the interview, is to agree upon a suitable place where both participant and researcher feel "relaxed, able to talk, and undisturbed" (Byrne, 2012, p. 218). The rationale behind this generally recommended practice is that a suitable environment can support a more trusting, open communication and is conducive to a free-flow of dialogue and opinions to be shared more freely. Two of the three interviews in New Zealand took place in the participants' classroom outside of class hours, while the other took place in a café near to the participants' school.

Recruitment methods

As a researcher based in Wellington, I reached out to existing networks who know teachers in the surrounding area. Participants were contacted prior to the interviews to arrange a meeting time and place. At this stage, the interview information sheet and schedule were sent to participants (see appendix 8.3.1 and 8.3.3), as well as a reminder that they were able to contact me with questions at any stage. Figure 4.2 below provides summary information about the participants.

Figure 4.2: New Zealand Interview Participant Profiles

Participant A	Participant B	Participant C
• July 22nd 2015 • Primary School Teacher • Female • Teaching in Wellington	• July 23rd 2015 • Primary School Teacher • Female • Teaching in Wellington	• July 31st 2015 • Primary School Teacher • Female • Teaching in Wellington

Ethics

The information explained that names and associations would not be used and pseudonyms were offered to each participant. Participants were also made aware that the interview would be electronically recorded, transcribed, and would be kept in a password protected file for up to five years before being erased.

Upon meeting participants, prior to turning on the recording device and beginning the interview, the information sheet, schedule, and consent form were discussed in person. Participants confirmed that they had read through the information and none of them had questions pertaining to the study. Lastly, there were no issues with regards to signing the consent forms.

4.2.4 Japan

Place and Timing

Four interviews were conducted in Uwajima City, Ehime Prefecture in late August. With a prefectural population of 1.5million, Ehime prefecture is located on the island of Shikoku (Figure 4.3), one of the four main islands which Japan is comprised of ("Prefecture of Ehime, Japan," n.d.).

Figure 4.3: Ehime Prefecture, Japan

Source: ("Japan External Trade Organization," 2015)

At the time of the interviews, the New Zealand participants taught at primary schools, and the Japanese participants were teaching at junior high school (students typically aged 13-15). Their current placements however, are not necessarily indicative that their teaching qualifications are substantially different from one another. This is because Japanese teachers are often qualified to teach at multiple grade levels and may be moved between schools and grade levels.

Overall, I recognise that there may be differences between the two groups' characteristics, which is to a certain extent, unavoidable. The intention with the interviews was not to gain a population representative sample. The aim rather was to look for common themes between the two countries and understand how the different cultural environments are related to willingness.

The challenge of gaining access to conduct research in Japan as a foreign researcher should not be ignored (Fetters, 1995; Martinus & Hedgcock, 2015; Yamaguchi, 1994). Having an established relationship with the network of teachers in Uwajima was pertinent to choosing to conduct interviews there. The process of regaining access and the implications of this are discussed below.

The practice of *nemawashi* (根回し) is important when conducting cross-cultural research in Japan. *Nemawashi*, or "going around the roots" (Jisho, 2015), (*ne* '根' meaning root and *mawashi* '回し' meaning to go around), stems from a gardening technique thought to ease the process of change, or transplanting. It refers to a considered, gentle preparing of the roots compared to a sudden uproot and big change. It is regarded as crucial for successful transplanting.

As Fetters (1995) explains, this concept is applicable to many spheres of decision making in Japan, from research, to politics, and to bypassing bureaucratic tape where possible. It is the informal process of laying the groundwork. This involves approaching relevant parties to decision making, discussing your proposal, and seeking approval, *prior* to officially seeking change or requests. It is considered necessary for successful relationship building and a precursor to favourable decisions. In the context of this research, *nemawashi* was an important component to consider and it helped plant the seeds for participant recruitment, prior to me returning to Uwajima. To this end, frequent contact was maintained with a number of staff in my previous workplace, the Uwajima Board of Education, a department of the Uwajima City Council. As soon as funding for the research trip was secured, I informed colleagues at the Board of Education and a few teachers of my research trip. In doing so, these contacts helped inform other teachers of my intention to return for research and that I would soon be seeking interview participants.

I arrived in Uwajima in August so that my research would coincide with the school year summer holiday. This was crucial for being able to approach teachers and afford them giving their time to participate in the study. While there, I attended a one-day workshop hosting a selection of teachers from around the city. While my presence at this workshop was not necessary in the literal sense, with regards to the concept of *nemawashi*, it provided an opportunity to reconnect with many teachers in the area. Furthermore, my

interpreter who was coordinating the event, scheduled a formal introduction for me at the workshop. This allowed me to establish myself and my purpose for returning, to introduce the study, and to legitimise my role as a researcher to potential interview participants.

Following this workshop, I visited the director and staff at the board of education. Moreover, at each school visited, I personally introduced myself to the principals and vice principals. This was particularly important to do so at the schools where the interviews took place. Gaining the informal approval from the principals and board of education meant that teachers were more likely to participate knowing that the research project had already been discussed, and informally *approved* by those in their employment circles. This is the practice of *nemawashi.*

In the end, all four interviews in Japan were organised verbally, face-to-face, and alongside my interpreter (see figure 4.4 for profiles). They also took place one after another on the same day. The teachers agreed to the interviews on the morning of, and as such, the information sheet and schedule were instead discussed only in person prior to each interview taking place. Each participant was given the opportunity to ask questions at this time.

Figure 4.4: Japan Interview Participant Profiles

Participant D	Participant E
• August 20th 2015 • Junior High School Teacher • Male • Teaching in Uwajima	• August 20th 2015 • Junior High School Teacher • Female • Teaching in Uwajima
Participant F	Participant G
• August 20th 2015 • Junior High School Teacher • Female • Teaching in Uwajima	• August 20th 2015 • Junior High School Teacher • Female • Teaching in Uwajima

Ethics

While in Japan, I prepared a translated version of the participant consent form (see appendix 8.3.2). Matters pertaining to confidentiality, anonymity, and the participants' rights to withdraw were outlined. The interpreter and I checked the Japanese translation, and minor amendments were made so as to make sure the wording would be easily understood in Japanese.

Momentarily preceding the interviews, we discussed ethics and the signing of the consent form. During this time, to my surprise, the participants seemed somewhat perplexed by the conversation including details of confidentiality, anonymity, and the ability to withdraw participation. The interpreter and I clarified that these are requirements for ethical research practice at my University, for the protection of the participants. My interpreter informed me during the discussion that "we don't have such a thing in Japan."

The necessity of the discussion taking place and of having a signed consent form was translated and explained. When this was explained to New Zealand participants, it seemed to provide a sense of comfort, security, and protection. However, upon having this conversation with Japanese participants it appeared that openly drawing attention to the requirement of protecting participants, led some of them to express that such a thing seemed unusual. Martinus and Hedgcock (2015) recount a similar experience; "the consent forms appeared to stand in conflict with an underlying implicit Japanese cultural philosophy of a binding code of conduct and trust" (p. 379). In a sense, having to formally recognise and sign a form to consent to the research seemed to undermine the inherent trust expected between researcher and participant.

Martinus and Hedgcock (2015) further argue that differences may also stem from the framing of the consent forms, and with whom responsibility ultimately lies. English language consent forms typically frame the message with an "*I*" frame of reference, from the participants' point of view. For example, "*I* understand that any information *I* provide will be kept confidential. [8] Our understanding of this process is that it provides participants with confirmation of their *ethical rights* afforded them in the process.

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[8] Emphasis added here to stress the point of the "*I*" framing.

Ideally, this provides participants a sense of security about how the information they provide will be handled. However, this contractual relationship is understood differently in the Japanese context. Through framing the consent forms from the participants' point of view, it seems to place an onus of responsibility onto the participant. In a Japanese context, the responsibility ought not to be placed on the participant to understand the risks involved; on the contrary, the responsibility lies with the researcher to conduct the research with ethical standards. In essence, the message of the agreement could be reframed, to better suit the Japanese frame of reference and philosophical standpoint of responsibility in upholding an agreement. In this context, it is therefore *my* responsibility, as the researcher, to keep the information provided confidential and to conduct the research responsibly.

Were I to conduct interviews in Japan again, I would consider negotiating a more culturally appropriate frame of reference, and ultimately, reword the consent agreement through dialogue with Victoria's University's Human Ethics Committee. Due to the time sensitivity of the interviews taking place, and the fact that there was already an established trust between the interpreter, myself, and the participants, fortunately we were able to proceed without any discomfort. It is not uncommon for *agreements* and the implications of them, to be realised in person through discussion in Japan. As such, from the perspective of my participants[9], the agreement between us and their trust in me as a competent and honest researcher was established at the time of our verbal agreement, prior to the ethical discussion immediately preceding the interview. In earnest, it seemed that ultimately the signing of the form was regarded as fulfilling an unnecessary formality at my request. I encourage researchers to contemplate this further when wishing to engage in qualitative interviewing in Japan in the future. Martinus and Hedgcock's (2015) paper provides some useful examples of more culturally appropriate wording to consider.

Language

The interviews in Japan were conducted predominantly in Japanese, and electronically recorded. Although there are teachers in Japan whose level of English fluency is high enough to have participated in a predominantly English interview, I felt it was necessary

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[9] Confirmed by a number of participant's post-interview.

to conduct the interviews in the native language of the participants, reasons for which are outlined below.

Firstly, the intention was for the participants to feel comfortable, and to be able to express themselves freely. I wanted their speech to reflect their thoughts and feelings as easily as possible. This was very important as many questions throughout the interview asked about their opinions, behaviours, and reasoning processes. More unfiltered responses allow for more rich perspectives to be gained (Brislin, 1970; Sechrest, Fay, & Zaidi, 1972). Secondly, as this is a cross-cultural research project, I aim to capture information which most closely reflects any distinct attributes of both cultures. Socio-cultural context not only influences behaviour, but also imbues language, resulting in differences in syntax, meanings, and styles of communication (Seale, 2012). In short, the overall goal during the interviews in Japan was to capture the highest quality data in the moment by having participants speak in Japanese.

Some comments and translation occurred between myself and the interpreter throughout the interview in English; however, we attempted to keep our dialogue to a minimum. This was possible to achieve because my level of listening and comprehension of the Japanese language meant that I could usually follow the conversation well enough to know when to clarify a participant's response, or prompt for more information. One reason we aimed to keep dialogue to a minimum is because it was important not to interrupt the flow of the participants' speech as they verbalised their behaviours and opinions.

Another reason for aiming to minimise English conversation between myself and the interpreter was to lessen any instance of participants feeling a need to accommodate for my being there. I did not want English dialogue to distract their train of thought. Knowing that a Japanese transcription would be done post-interview followed by a translation into English, allowed me the ability to focus my attention on the participants' dialogue and our conversation during the time of the interview (Hay, 2010).

Post-interview translation

Given that the interviews were conducted primarily in Japanese, translation from Japanese back to English was necessary for presenting the overall findings of the research. The interview transcriptions and translations were carried out by myself and a

translator[10]. The translator is a native Japanese speaker, who recently relocated from Japan to New Zealand. A confidentiality agreement pertaining to the interview recordings and transcripts was signed (see Appendix 8.3.5). Between us, we were able to check each other's translations and discuss instances of either Japanese or English that one of us did not understand alone. Additionally, the interpreter whom I worked with while in Japan, also checked the transcriptions and translations via a secure, online editing and file share platform.

Difficulty finding vocabulary and idiomatic equivalence may occur when translating, and perhaps more critically, problems conveying meaning, experiences, and constructs can arise (Brislin, 1970; Sechrest, Fay, & Zaidi, 1972). To help reduce this, our interpreter added to the understanding of the transcript text by providing context and a similar expression in English to clarify some of the Japanese. This is where the difference between *translation* and *transliteration* is important. Rather than merely changing the Japanese into English word-for-word (transliteration) the essence and meaning is captured and conveyed through an English representation (translation). Quotes from the interviews originally spoken in Japanese, are consequently presented in the findings as English translations. This better maintains the integrity of our participants' views, whilst allowing for analysis in this primarily English research project.

However, sometimes participants expressed themselves in English. This mostly occurred in one particular interview, because that participant is qualified to teach English. In other instances, participants sporadically used English words that have become popularised in Japanese culture, such as 'cleaning', or 'energy'. Quotes originally spoken in English are quoted in this thesis verbatim. If we had tried 'cleaning up' their speech and grammatical idiosyncrasies, the rich texture of their expression could have been lost, and the reader would be removed another step further from their point of view. This verbatim representation is a technique sometimes utilised by cross-cultural journalists and reporters in order to help preserve the interviewees' perspective and maintain a level of authenticity to the experience (Fadiman, 2012). This explains inconsistencies in the sense of natural English use in quotes from the different participants.

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[10] This translator is a different person from the interpreter I conducted the interviews with in Japan.

4.2.5 Interview Structure

An interview schedule was developed, and used with all interviews in both countries. However, during the interviews, the aim was to allow for the questions to follow on as much as possible from what the participants shared during the interview. The purpose of this approach is two-fold: to establish and encourage a safe and fluid interaction between the participants, myself, and the interpreter (in Japan) (Seidman, 2013). Secondly, through frequent use of open-ended, and somewhat directed questions, participants were given time to share what they deemed important and relevant in our discussion of electricity conservation and adopting curtailment behaviours. The prepared interview schedule can be found in Appendix 8.3.3, and the general topics that were covered during each of the interviews are discussed below.

1. Electricity use and behaviour

The interviews began with what Seidman (2013) calls the "grand tour" technique which involves participants talking freely and somewhat extensively about a particular thing. This was done to establish rapport, and to encourage their free dialogue. Participants were asked to reconstruct a typical day in their home, and to tell me about what activities they do that use electricity. As this part of the interview developed, participants often expressed that sometimes their daily actions are already done with the purpose of reducing electricity consumption. Where relevant, I prompted participants to verbalise reasons for doing so.

2. Electricity shortage scenario

After discussing participants' activities in relation to in home electricity usage, the conversation was guided towards an electricity shortage scenario. I provided participants with some context about what an electricity shortage and subsequent conservation campaign might entail. Firstly, I asked participants what their initial reaction to this would be, and following that, whether they would participate. Particular interest was taken in their *gut reactions*, the responses of which are discussed in the findings section.

3. Electricity shortage scenario behaviours and value links

Participants were asked what behaviours (if any) they would be willing to change during a conservation campaign. I wanted first to give them the opportunity to tell me

what behaviours they could think of that in their mind would be contributing to electricity savings. Following this, I prompted participants to offer any further actions they could think of which they could do, as well as what are some actions they would not do. I provided examples if necessary. This was done to get an idea of to what degree, and what curtailment behaviours participants deemed acceptable and unacceptable to do under conservation circumstances, as well as the reasons for these.

4. Social Expectations

This part of the interview was not included in the schedule as it was not an anticipated topic of discussion. It developed from the natural conversation with the first participant and became a topic that I wanted to explore in each subsequent interview. The decision to include this topic reflects the iterative nature of a reflexive research process. Participants were asked whether or not they felt other people should also participate in the conservation campaign, and (if relevant), to what extent. As discussed in earlier chapters, the literature highlights some differences with regards to social expectation, group cohesion, and ideas of responsibility by other societal members. Some differences that arose during the interviews are discussed further in the findings and discussion sections.

5. Reflection and Comments

At the end of each interview, I relayed back to the participants some reflections from the interview and invited their comments. The purpose of this was to clarify the main insights from the interview and check if my interpretation was acceptable to them. It also allowed participants to reflect on what they had shared, and to elaborate or clarify on any of the points raised. Closing the interview by inviting comments and more questions also seemed to open up further and more personal discussion in some cases. Sometimes, this was related to our discussion of electricity use, and other times it was not. Maintaining rapport throughout the length and conclusion of the interview is an important aspect of qualitative interviewing. This reinforced to participants my interest in their opinions, and built trust in my ability to represent our discussion in a responsible way (Seidman, 2013).

4.3 Methods of Analysis

Irrespective of which methodological approach is used, researchers are advised to be transparent with their methods, process of analysis, and the assumptions that inform these decisions (Karasz & Singelis, 2009; Mertens, 2005). As qualitative research methodologies have become more prevalent, so too has the concurrent call for "methodological stringency" in order to legitimise findings from this approach (Kvale, 1994, p. 2). This allows for one's technique to be compared with others in the literature, critiqued, replicated, or improved upon (Attride-Stirling, 2001; Braun & Clarke, 2006; Kvale, 1994). In the following section, the overarching approach, and subsequently, the specific methods of analysis taken in the qualitative study are therefore discussed.

4.3.1 Thematic Analysis Approach

Thematic analysis was utilised in the qualitative study. This method is the process of "identifying, analysing and reporting patterns" or themes from the data (Braun & Clarke, 2006, p.79). It involved familiarising myself with the content, coding transcripts, and identifying and reviewing themes. A simplified representation of this process is shown in Figure 4.5 below.

Figure 4.5: Process of Thematic Analysis
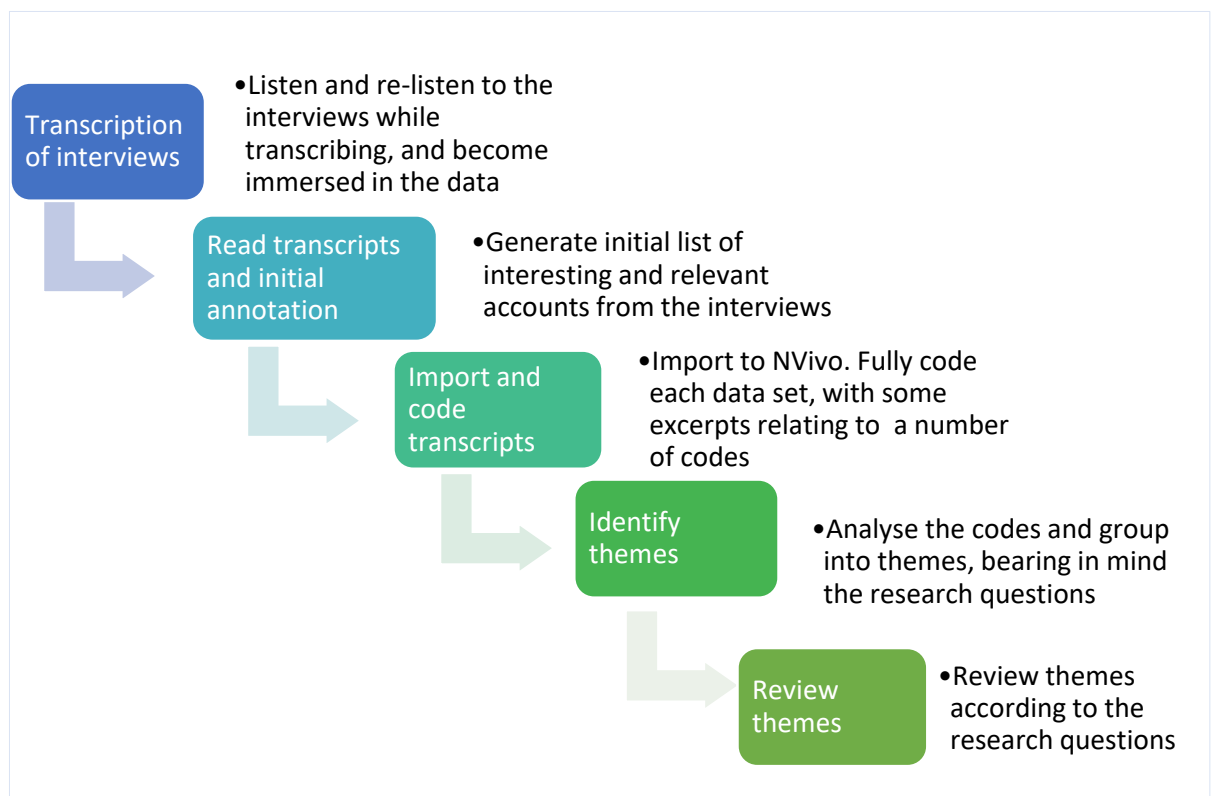
Adapted from Braun and Clarke (2006)

The process of transcription and translation was a good opportunity to re-listen to the interviews and become very familiar with the dialogue. Once they were fully transcribed, I read and re-read the transcripts and made annotations about the topics that arose, and any patterns that were present among the interviews.

4.3.2 Coding Methods

English transcriptions (and translations of the Japanese interviews) were imported into and coded in NVivo10 software. The aim here is to briefly outline the content in a manner that reflects the discussions that took place. Initially, transcripts were coded in full with most topics of discussion being coded even if they were not specifically relevant to the research questions. This means that initial codes were inclusive of the various topics that arose during the interviews, based on the schedule, and what developed organically throughout the discussion. The purpose of this is to have a full account of the discussion, and to not exclude data (Braun & Clarke, 2006) because at this stage of analysis, final themes had not yet been defined. Table 4.1 below lists some of the topics from the first stage of coding.

Table 4.1: Codes for Analysis

Codes Related to Interview Content	
Electricity Use Actions	**Social Expectations**
General	Should everyone do the same?
Typical electricity use activities	Willingness to say something to others.
Participant-identified habitual actions	Heating at schools
Conservation Campaign Scenario	
Voluntary conservation actions	**Miscellaneous**
Conservation actions after probing	Household structures
	Routine versus flexibility
Motivations for energy actions	What if less renewable generation? (NZ)
Motivations for electricity use actions	Fukushima incident (JP)
Motivations for conservation actions	Initial reaction to campaign

The flexibility of the semi-structured interview complemented an inductive approach, where I could explore firstly, pre-determined themes, and secondly, also comprehend themes and patterns that arose during data collection as participants voiced their own opinions and beliefs, and post-interview during the process of analysis. It is important to acknowledge that not all of the dialogue fitted into predetermined codes and themes. From the first stage of coding, themes identified as most relevant to the research questions were then coded for. Table 4.2 provides a list of the themes, sub-themes, and the number of instances each theme was referred to in the interview dialogue.

Table 4.2: Themes and Sub-Themes Identified through Discussion and Analysis

Themes and Sub-themes	New Zealand N(instances)	Japan N(instances)
Willingness to Participate		
Initial reaction to campaign	3	4
Voluntary actions willing to do during campaign	7	13
Conservation actions willing to do after probing	5	0
Motivations for energy actions		
Environment	1	6
The 'right' thing to do '	6	3
No choice	0	4
Fukushima Incident	0	4
To help others	0	2
Social Expectations		
Should everyone do the same	0	4
Should others do more	2	0
Should others do less	0	4

These themes were linked to their associated values (where relevant). Framing the behaviours from a values perspective allowed for comparability with another study which has also explored values and electricity saving behaviours through a qualitative interview approach (Mirosa et al., 2013). This process is outlined below.

4.3.3 Use of the Value Lexicon

Typically, individual values are measured through a self-reported approach such as the PVQ framework used in the questionnaire for this project. There are a few studies however, which have assessed values through interviewing or content analysis (Bardi et al., 2008; Mirosa et al., 2013). The 'value lexicon approach' to analysis developed by Bardi et al. (2008) was used as a basis for the second stage of coding the interview transcripts. This approach identifies the occurrence of Schwartz's 10 values through the use of lexical indicators. Lexical, derived from lexicon, means language or words. As such, lexical indicators are a set of chosen words that indicate the occurrence of - in this case - the predetermined values.

A corresponding set of lexical indicators to use in analysis of the Japanese interview transcripts were developed with a small team of translators in Japan. The lexical indicators are not necessarily synonyms of the values; but they form the "broad value construct rather than merely expressing the same concept with multiple but equivalent terms" (Bardi et al., 2008, p. 486). The rationale for this approach is similar to that of having multiple questions in a questionnaire that together combine to give a measurement of a particular construct.

The indicators represent and help identify what Bardi et al. term "value-expressive" behaviours; these refer to behaviours that express a value (Bardi et al., 2008, p. 487). For example, 'dominating' behaviours typically express power values (Bardi et al., 2008). An example of the analysis process is as follows; a participant uses words such as 'pleasure' or 'indulgence' when verbalising motivation for taking a long shower. These are lexical indicators of a 'pleasure-seeking' behaviour that express hedonism values. In this example, a long shower is the (pleasure seeking) behaviour, and hedonism is the value being expressed in this behaviour.

The predictive validity of the value lexicon approach was tested by Bardi et al. by corroborating their results with self-reported values studies. For example, they analysed American newspaper content with their lexical indicators, and then compared their results with self-reports of values from an American sample population. They found remarkable comparability and thus recommend the use of the value lexicon approach in other 'real-world' contexts and mediums. I have extended the use of their value lexicon

approach to analysing the interview content from this study. The list of lexical indicators used in Bardi and colleagues' (2008) study to represent each of the values, and the frequency of incidence are provided in table 4.3.

Table 4.3: Lexical Indicators and Frequency Table

Value	Lexical Indicators	NZ N(frequency)	JP N(frequency)
Power	Power, strength, control	1[11]	0
Achievement	Achievement, ambition, success	0	0
Hedonism	Luxury, pleasure, delight	1	1
Stimulation	Excitement, novelty, thrill	0	0
Self-direction	Independence, freedom, liberty	0	0
Universalism	Unity, justice, equality , environment[12]	1	8
Benevolence	Kindness, charity, mercy	0[13]	1
Tradition	Tradition, custom, respect	0	1
Conformity	Restraint, regard, consideration	0	0
Security	Security, safety, protection	3	0

Source: Adapted from Bardi et al. (2008) and Japanese indicators developed for this study.[14]

4.3.4 Interpretive analysis

Bardi and colleagues (2008) note the lack of "natural language" found in the content they analysed (printed and internet publications), to be a limitation of their study. They do however, encourage the application of their approach to a wider context and to recognise natural language use in different applications.

People may not be able to easily and explicitly delineate and verbalise relationships, in terms of how or why one does what one does. Consequently, the pre-determined lexical indicators were not always spoken in the conversations (refer to frequencies presented in Table 4.3 above). The low frequencies may be due to two things; first, the variability in 'natural language' vocabulary between participants, and second, the indicators having been developed from print and online content rather than from natural dialogue. The

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[11] 'Power' was referenced 39 times in the New Zealand interviews. However, almost all instances, 'power' was used to refer to 'electricity'.

[12] 'Environment' was also included as a lexical indicator under Universalism as this was specifically relevant to this study. The frequency of 'environment' was one time from each sample

[13] 'Kind' was referenced 17 times in New Zealand interviews, but this referred to 'kind' in 'kind of'.

[14] In Japan, I worked with a group of four native Japanese teachers of English to develop the corresponding set of lexical indicators.

translatability of the indicators from the content Bardi and colleagues (2008) used, to interview dialogue was not direct. As such, I recognised their recommendation for extending their lexical approach in analysing natural language content, and use some interpretation. To do so, associated words and phrases that reflect the value concepts are recognised. In my role as a researcher, I interpreted these relationships, based on the implicit reasoning and lexical patterns and associations that I observed in the conversations.

This stage of the analysis required interpretive work by me, to relate participants' dialogue to the value that I felt was represented the most. Braun and Clarke (2006) note the importance of recognising such interpretive work. They argue that simply stating that themes *emerge* from the data as if they were objectively waiting to be found, does not sufficiently acknowledge the role and work of the researcher throughout the process of analysis and in recognising themes in the data.

In light of the low frequency of the specific indicators as discussed, this study does not use word frequency analysis to identify the prevalence of a particular theme or value. In terms of the 'keyness' of a value being present in the discussion, Braun and Clarke (2006) note that the salience of a theme is not captured necessarily by a computable degree, but on whether and how it "captures something important" in relation to what you are looking for (p. 82). In most cases, the themes presented in the findings are those which arose in a number of interviews. Moreover, participants from the same country had relatively similar views to one another, and there was similarity in the values I related to their discussion. This level of congruence between participants in each culture also helps support the inference of commonality at a wider societal level. The findings from the interviews and analysis are presented in the following section.

4.4 Findings

The purpose of the interviews was to explore the ways in which values are related to different aspects of electricity use behaviours in a conservation campaign situation. The layout of the findings section is as follows. Each research question is discussed separately. For example, 'Willingness to participate in an energy conservation campaign' is discussed first. For each question, an overview of the content of the interviews is presented. Next, the values associated with the discussion are presented for New Zealand first, followed by those of Japan. Content from both New Zealand and Japan is presented under each question to more easily illustrate the differences and similarities between the two places, relative to each question.

4.4.1 Willingness to Participate in a Conservation Campaign

New Zealand participants were willing to participate to some extent, although there was a sense of reluctance at times. Participation seemed to be conditional on whether others would also do the same. There seemed to be a certain sense of distrust about whether other people would also participate and undertake curtailment behaviours. In this way, their responses tended to be framed from a personal and prevention of loss perspective, where one is willing to make sacrifice contingent on assurance that others will also make (similar) sacrifices. It was not uncommon for New Zealand participants to state this explicitly. Three values identified from the New Zealand interviews were achievement, power and hedonism and these will be explained in more detail below.

In contrast, there was some difficulty in identifying underlying values for Japanese participants' willingness until we further discussed their motivations for doing so. This is because often their responses were not immediately qualified or conditional on other things, the answer was simply that yes, they would participate.

New Zealand Values

Power

Motivations reflected in power values stem from a sense of control, in this case, over other people and their actions. Schwartz (2012) notes that most interpersonal relationships reflect a dominant/submissive dimension to a certain extent. In the interviews, notions of power values illustrated a reluctance to relinquish comfort and amenity, as well as an expectation of others to do so. Power values do not only manifest in a sense of control of other people, but also over one's owns habits and behaviours. This was reflected in a reluctance to change one's own habits and behaviours.

> *"I...would not myself, personally. But, I would probably push it more on people I live with. Yeah...I'd probably think --It'd probably annoy me, 'cause I know people who use heaps of electricity to start off with, and I'd feel a bit like...well, they have heaps and I have limited, like I try and cut it down anyway. Like, 'why me?' Type thing." - Participant A*

> *"I dunno...if I'm told, we're running low, here's some ideas to go about saving...I might...I'm not saying I wouldn't completely...I mean, like I already turn things off when I leave the room and stuff, so maybe I'd just make sure that the other people I live with do that as well. –Participant B.*

Achievement and power values are closely related, sharing similar underlying motivational bases. An instance of this is seen here, where both values are informing this discussion.

> *"I like things in a set way, at certain times...Easy, like, order, like I have to get up at this time and I have to start getting ready at this time...I think because I'm more like, time-structured, and I have like, how my mornings and evening flow, to get everything done. Like I feel, if it was a big change, I'd probably not like it." - Participant A*

Achievement

The underlying motivation of the achievement value is described by Schwartz (1992) as attaining success through "demonstrating competence according to social standards" (p. 8). Achievement values comprise concepts like being capable, personal success, and ability. Such efforts are intertwined with the convenience and services that electricity can provide us. Engaging in curtailment behaviours would require losing one's control over their own actions and therefore, restrict their ability to achieve their goals. In particular,

the need to have everything in a set way, in order to "get everything done". The participants' reluctance seemed to stem from concern about this loss of control.

Mirosa et al. (2013) also found an association between achievement values and more routinised and habitual behaviours, and noted this conflicted with participants' willingness to alter behaviours. What became apparent throughout the interviews is the usefulness, convenience, and amenity that electricity provides.

Hedonism

The hedonism dimension reflects an importance placed on enjoyment, pleasure, and satisfaction (Schwartz, 1992, p. 8). Hedonism values seemed to limit the degree to which participants would be willing to participate,[15] and this is unsurprising when we consider the services that electricity provides, in particular when it comes to the comfort and pleasure of heating and cooling. New Zealand participants typically qualified a willingness to sacrifice on actions that bring immediate pleasure such as showering and heating in winter, with a contingency resting upon the level of necessity. For example:

> *"Yeah, I could change my shower time. I could just have one shower a day. I have two."*
>
> ***Is there a reason, you ...do both? [Interviewer]***
>
> *"Uhm, I think in the morning it wakes me up, and in the evening, it warms me up"* - Participant B
>
> *"I guess we'd stop like the heaters, if it was...a national emergency."* - Participant A

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[15] In some instances, hedonism values promote energy conserving behaviours, such as a preference for the feel of natural air and wind over the use of air conditioning.

Japan

There were instances where underlying values could not be easily identified from the interview dialogue. One circumstance where this occurred was when being asked about willingness to participate, there was little or no hesitation in their response, and they said they would participate. One particular instance stands out where a participant answered the question almost simultaneously as the interpreter asked whether they would participate:

> *For example, if it became a kind of power saving situation this summer...would you participa--? [Interpreter]*

> *"--I would. I would. I would be willing to participate." - Participant D*

This instantaneous type response was common amongst the Japanese participants.

> *"Ah, if we're told to save power, straight away, I would stop using power where I could." - Participant F*

It seemed as though there was no consideration that one would not participate.[16] This expectation was also implicitly and explicitly expressed to the wider national community.

> *"Like, if it is Japan's situation, if they say that power saving is necessary, then definitely everyone, all people of Japan should do so."- Participant G*

Somewhat surprised by the general acceptance of this obligation, I asked participants about the degree to which they would change their energy use behaviour. I gave examples of turning off heating or cooling completely, even turning off the fridge for a period of time, things which by my own standard, I thought were high sacrifice behaviour changes.

> *"Sometimes, it's necessary to stop electricity for one hour...there isn't something I wouldn't do." - Participant G*

Participants from Japan did not hesitate in their responses when asked whether they would be willing to participate in a conservation campaign. Furthermore, they did not immediately qualify their willingness to be contingent on other circumstances.

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[16] Everyone was expected to participate, unless they were unable to for some reason, as is discussed in the *Expectations of Others to Participate* section.

4.4.2 Motivations for Participating in a Conservation Campaign

The usefulness of knowing whether or not people will participate and reduce electricity consumption is limited without an understanding of why people would participate. Each participant was asked to discuss the reasons why they would be willing to participate.

The majority of New Zealand participants discussed the notion of 'doing my bit' as a motivation for willingness to participate and reduce energy consumption. This desire is grounded in values of benevolence, where participants felt a responsibility to others (Schwartz et al., 2012). However, they were unsure of how their individual actions would contribute to the problem at large. The inability to visualise how their efforts would make a difference seemed to demotivate them, and may also partly explain why they were overall more hesitant to engage in curtailment behaviours. Additionally, the same behaviour may also be related to motivations shared by achievement and hedonism values. This association is discussed further in the New Zealand values subsection.

Motivations of Japanese participants fell broadly under socially focused values where "subordination of self in favour of socially imposed expectations" is an important factor in shaping choices (Schwartz, 2012, p. 9). Their responses reflected a sense of trust that those who could reduce electricity use, would do so. Reference was made to a collective effort and to a national situation by nearly all Japanese participants directly during this conversation. An assumptive cooperation by others was implied. Specifically, values of tradition, security, and conformity framed their motivations to participate.

Does the environment matter?

While there are different energy profiles between the two countries as discussed in the Introduction of this thesis, New Zealand's larger renewable base does not exempt it from environmental impacts. Given that energy use and environmental effects are so closely related, I wanted to explore whether or not environmental concern was a motivating factor for participants. Overall, New Zealand participants did not express environmental concern as a motivation for changing their behaviour in a campaign context and generally were unaware of New Zealand's large proportion of renewable electricity generation. Universalism values are discussed in this context.

The nuclear incident at Fukushima, Japan had two main effects that are related to this study: firstly, there was instability of electricity supply and secondly, there were

disastrous environmental effects on the surrounding area. These effects were a combined result of the tsunami itself, and the waste from the nuclear plants damaged from the tsunami. Where the New Zealand participants had trouble connecting with environmental impacts of their electricity usage, Japanese participants were more able to do so, likely in part as a result of this experience. The Japanese participants' discussion about motivations highlighted an interesting link between security values and universalism values.

New Zealand Values

Benevolence, Hedonism, Achievement

New Zealand participants' motivations appeared to be related to a number of value motivations, benevolence, hedonism, and achievement. Aspects of the benevolence value stems from one's requirement for the smooth-functioning of one's "in-group" and from a "need for affiliation" (Schwartz, 2012, p. 12). This drive is rooted in a need for meaning and belonging to something greater. New Zealand participants wanted to help, and 'do their part', there was a desire to contribute to something. However, at the same time, one participant expressed a sense of self-gratification from doing one's part. This "self—centred gratification" is shared by hedonism and achievement values (Schwartz, 2012, p. 9).

When explaining motivations, one participant discussed this in the context of an example related to reducing water usage during a recent water conservation campaign:

> *"Yeah, and, so I cut down on showers, and I think it was just me, wanting*
> *to do my bit. Whether it had any impact or not, I have no idea, but you*
> *know, I think, yeah, I just…it would make me feel better, doing my bit…"*
> *- Participant B*

I asked participants to try and elucidate further what this notion of 'doing one's bit' meant to them, but participants seemed to have some difficulty verbalising this concept.

> *"And, I would just feel better about myself, knowing that I was doing my*
> *little bit. But, then, like I said before, I have no idea, if it made any impact.*
> *- Participant B*

While this desire to contribute to an overall benefit was recognised, the ways in which their efforts would be effective and could help in a critical situation was unclear. This ambiguity seemed to leave participants feeling unmotivated to make big changes.

However, the opposite seemed to also hold; being made aware of the benefits of their actions would encourage them to make changes.

> *"And just like, like if --if to see the effects that some things have…, yeah, that would be quite motivating. Like, what effect it would have for us…"*

> **And by us, you mean…? [Interviewer]**

> *"New Zealand." - Participant C*

Related to their desire to know that their actions would be a part of something bigger, the participants also alluded to a stronger willingness and motivation to alter their behaviour if the conservation campaign provided clear directions and expectations for what actions people should take. Providing them with direct expectations and goals seemed to indicate that their efforts were necessary and consequently they were likely to be more motivated in this situation.

> *"I feel like, if I'm told I have to do something I will do it. But if I'm told, we're running low, here's some ideas to go about saving…I might…I'm not saying I wouldn't completely…But I can't say for sure that I would (laughs)." - Participant B*

> *"I guess it depends how serious it was. And where we were and what everyone else was doing. If it was like made a big thing that we're all meant to do stuff. Like in here [the café], like all these lights are on, why don't we do something else?" - Participant A*

> *"In Nelson, there's a water restriction in summer sometimes, and you're not allowed to use your hose if you're an odd number on the street, on Mondays, and that's like a, yeah, a regulation. So if, if I was told that I was only allowed that much amount of electricity, I would listen to that. And I would react to that. But I don't think if I just saw an ad, I don't think I would…sorry (laughs)." – Participant B*

Most participants' motivation seemed to be contingent upon a clear and direct signal that the problem was serious enough to warrant their efforts to change.

Universalism

Universalism values include an underlying motivation to protect nature (and the welfare of others). Instances of concern for the environment as a motivating factor to participate did not particularly emerge amongst New Zealand participants. In most cases, when we discussed New Zealand's energy profile, most participants were not really aware of our largely renewable electricity generation.

We have a large renewable source of energy in New Zealand, so about 60% is from hydro... [Interviewer]

"Oh wow... Like, I didn't know what you just told me, so." – Participant B

There were instances where participants were asked whether their motivations or willingness to participate would change if New Zealand did have a very different mix of energy, for example if New Zealand had a more intensive reliance on fossil-fuels.

Like I mentioned before, hydro is a large proportion of how we generate electricity, which is a more renewable source of generation...is that something you were really aware of? [Interviewer]

"Mmm...not really, no. To be honest."

If we had, say, a really different mix of energy, and it wasn't very renewable, and it was, say, more coal, or more fossil fuel usage...do you think that would impact how you use power? [Interviewer]

"Uhm...probably not to be honest. I guess it's kinda like one of those things you don't really think about when you're using it...Yeah. Like if you're not, living in the effects, then—which is quite selfish but—I think most people would be the same." - Participant C

One of the participants had an educated awareness of New Zealand's energy profile. When asked about motivations in this instance, money was mentioned as more motivating than environmental impacts. The respondents seemed to presume that prices might go up during a campaign time, which can occur, although not necessarily always.

"Yeah. Probably money, slightly environmental but...I'd say money is more motivating, for the power side of things I guess. 'Cause I don't really...see any bad stuff, like day to day. Bad like, I guess, if we're wasting electricity—but I guess New Zealand has...slightly better renewable stuff happening." – Participant A

Overall, universalism values, and motivations particularly related to the environment were not present in the discussion of motivations for New Zealand participants. This seemed to be largely a result of not having a connection to the effects of environmental impacts.

Tradition

A respect for tradition and lived experiences of others who have been through hardship appears to still be present in the Japanese psyche. Traditional values are described as "respect, commitment, and acceptance of the customs and ideas that one's own culture imposes on the individual" (Schwartz, 1992, p. 10). Within this notion, individual dimensions include being humble, accepting one's position and "portion in life" (Schwartz, 2012, p. 6). The idea of accepting portion relates to moderation and acceptance of practices and expectations.

Traditional values came up in all of the Japanese participants' discussion of motivations, and were typically characterised in two ways. Firstly, aspects of tradition such as moderation and portion were discussed. Participants alluded to being able to live with restraint because people of the generations before them had endured such restraints in daily life. Therefore, modern Japanese could also accept one's portion as many Japanese of previous generations did. Secondly, respect for past cultural practices and knowledge were discussed. Participants drew insights on what kind of changes they could make, based on the wisdom and customs of those who had been through hardship before them.

> *"But maybe, for like people my age -- like my father and my mother were children during the war, and at the time of the war they didn't have things like this [many appliances which use electricity]...--Because they have told me a bit about this... like if I don't have these things, I feel like I can do that too -- because I would think that I too can become accustomed to that kind of life [like they had]. Then I would say, I feel like it wouldn't be something that could be done easily, but I would be willing to do so straight away."- Participant E*

A number of participants verbalised that so much of their daily lifestyle now rests upon the convenience of products that use electricity. They acknowledged that changes in housing and modern conveniences have subsequently altered Japanese lifestyles.

> *"Now the system of the house has changed from old days, because before we had tatami[17] rooms, most of the house had tatami room, so it is easy*

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[17] Tatami mats are straw mats traditionally used for flooring in Japanese homes. Many homes still use tatami flooring, as do all places where traditional cultural practices are performed, such as martial arts dojos and tea ceremony rooms.

> *to use a brush, but now flooring is-- we cannot, -- it's difficult to gather*
> *the dust, so we use it, 'soujiki' [vacuum cleaner] instead." - Participant F*

Yet, at the same time, people drew motivation and wisdom from experiences and practices used traditionally, before such prevalence of modern conveniences. One participant talked about how instead of using vacuum cleaners, there are more traditional ways of cleaning tatami mats and if people had to save electricity, these practices could still be used today.

> *"But if they try to do, to use old people's 'chie' [wisdom] for example, if*
> *they wet newspaper we put [on the mats] -- and after that we brush off,*
> *we can get the dust, it's the old people's one -- or after we dry the green*
> *tea, we have the leaves, we wet leaves, so usually we put the leaves on*
> *tatami and we brush off, so we don't need to use the electric cleaner. So,*
> *we don't need to use -- the usage of the energy can be decreased. We*
> *can, a little, maybe a little, but it's not impossible, someone can do many*
> *things." - Participant F*

Each participant expressed a sense that there is a 'Japanese way', which people today can still do, and can live as their ancestors could. Since they have grown accustomed to modern conveniences, they did not say that it would be easy, but that it was possible for them to do so, because they were also Japanese. In other words, while the context and lifestyle that modern Japanese live in is different to generations before them, the participants recognised that their families had lived simpler, more traditional lives; and in acknowledging this, was the belief that they could as well. Thus, their motivation was in part drawn from a sense of fulfilling and respect for customs, wisdom, and hardship that traditional lifestyles embodied.

Security

After the Great East Japan Earthquake in Fukushima, there is a sense of public consciousness that people should not be wasteful with electricity, with the importance of electricity being discussed more and more (Aldrich, 2013; Chang, 2012; Fackler, 2014). There is a nuclear plant in Ikata, a town in the same prefecture only one hour's drive from Uwajima where the interviews took place. The plant at Ikata has been given approval to re-open in early 2016, one of the earliest to be reopened in Japan ("Japan Nuclear Update," 2015).

Security values embody one's need for national, community, and family security. A desire for stability and safety are motivating factors for these values (Schwartz, 1992). A sense of threat to safety and stability was also relevant to the energy saving motivations of most of the Japanese participants.

> *"The issue of electricity became a big problem right after the earthquake. At that time, it was the first time that I started to think about it more and more. Electricity is important, I have to save (electricity). And, although there is a nuclear plant in Ikata, personally, I don't want it. I was thinking that I don't want it to work. Because of that too, I think it's best to restrict electricity use as much as possible...yeah, it's a difficult problem isn't it..."*
> *- Participant E*

The recent experience that Japan went through after the earthquake in Fukushima was naturally related to the motivations of participants to reduce electricity consumption. Through such an experience, the threat seemed more visceral, more real, and was therefore usually mentioned in the context of participating in a campaign.

> *"During that time of Fukushima -- because of that, I am happy to participate." - Participant D*

> *"In such a situation, like after the big earthquake in Fukushima, in that kind of situation, we should make every effort to reduce the amount of energy." - Participant G*

Universalism

In discussion of regular electricity use habits, one of the Japanese participants identified environmental concern as a reason for reducing consumption.

> ***When using the fan, or opening the windows for natural wind instead of the aircon, is there a reason for that? [Interviewer]***

> *"Shou-ene." (Energy saving).*

> ***He wants to save electricity, this is called 'shou-ene'.[18] [Interpreter]***

> ***What is the -- are there reasons for that, like normally? [Interviewer]***

> *"Ah, why 'shou-ene'? The environment, well this is the most important. The economy is also a part of that [why saving electricity is important], but it's not my money that I'm conscious of when I say the economy. Basically, I try to reduce*

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[18] 'Ene' is a shortened version of the English word 'energy', and 'Shou' means to save.

greenhouse gases as much as possible. My partner thinks the same, we have the same opinion. That is the number one reason. I'm not just trying to be cool." – Participant D

He means, he is not just pretending, he's really trying to do best to protect the earth. [Interpreter]

When this same participant was asked about participating in an energy conservation campaign, the Fukushima incident was also mentioned. For this participant, after that incident, there was a concrete understanding of the link between energy choices and potential environmental impacts.

Conformity

Values of conformity are related to "self-restriction" and regulating one's actions, being dutiful and avoiding conflict to maintain a sense of social order (Mirosa et al., 2013; Schwartz, 2012). How this related to reducing electricity consumption amongst Japanese participants was that there was a clear sense of obligation to do as they were asked through the campaign.

> *"Mmm, my feeling would be like, because it can't be helped…I would be willing to do [it], but that isn't what I would be thinking about." – Participant G*

And the interpreter further summarised:

> **So, it's not voluntary, and of course she's not so happy, but in that situation, she has to do that. [Interpreter]**

The words used in this dialogue, both in the Japanese and English translation conveyed a sense that there was no choice for the participants to change their behaviour or not; "It, *can't* be helped" and "she *has to* do that.", "it's not voluntary". These indicate a strong sense of obligation and expectation.

> *"I would think that the people around me, like for work at example, would also be aware of this [situation] regardless… but even if it is not being said directly, we must do it." – Participant G*

With further clarification by the interpreter:

> **Instead of working individually, working as a group can be more effective, so this is the way she reacts. [Interpreter]**

Given this absolute level of conformity and sense of required action expressed by Japanese participants, I was surprised by the following discussions that normally followed this. From a stark and clear sense that everyone should adopt curtailment behaviours, there consistently came one qualifying remark. This theme is discussed in more detail below.

4.4.3 Expectations of Others to Participate

The topic of whether others should also participate in a conservation campaign and adopt curtailment behaviour was not a pre-determined question that I had. It developed from the first interview and then carried through to the rest.

The general response from New Zealand participants was that everyone should participate in a conservation campaign and everyone should reduce their electricity consumption. This expectation of others to do the same (if not more) was discussed directly by participants, in the initial responses to my question of willingness to participate. As illustrated earlier, some participants were wary that others would not do so, and this seemed to make them hesitant initially to sacrifice their own comfort and amenity without assurance that others would do the same. As this was previously discussed, their answers are not reiterated in this section.

My own surprise as to what was uncovered during the interviews with Japanese participants here reinforces the need to shelve presumptions as a researcher where possible, most especially in the phase of data collection and analysis.

When the interpreter and I discussed a *setsuden* (electricity conservation) campaign situation, Japanese participants had very clear expectations of who could or could not reduce their electricity consumption and engage in particular curtailment behaviours. Without fail, they each discussed exceptions, where not everyone should be expected to participate. Motivations underlying these exceptions may be related to universalism and benevolence values.

Universalism and Benevolence

Universalism and benevolence values share a similar underlying motivation, where self-interests are transcended for the "enhancement of others" (Schwartz, 2012, p. 9). Participants expressed that those who are able to reduce consumption, of course they need to (and there was an expectation that they would), but furthermore, and critically, those who cannot, should not. And that is equally accepted and expected behaviour. Special circumstances were consistently mentioned, where people should not be held to the same expectations as others, typically this was in relation to people who needed the services of electricity for health reasons.

> *"For instance, if the situation is serious, then if it is up to the person, then some people can save electricity, and some people can't… -- that's ok because,-- that's acceptable."*

> **Like, if someone really needs it, they should use it? [Interviewer]**

> *"Yeah, yeah, that's right, especially in hospitals." —Participant D*

Most of the participants mentioned hospitals, or those that need special care, should not be made to reduce electricity if they are unable to do so.

> **Do you think everyone should change? [Interviewer]**

> *"I think so. But, maybe, everyone cannot do that one, because some people need the air conditioner for example in the hospitals…" -Participant F*

It was possible for people in different circumstances to be cared for because of the assumption that those who are able to make sacrifice will do so, in order to allow comfort for those who cannot.

> *"…but the people who live in the place, (where) they can get the wind from the nature, they can open the windows and get the 'kaze' (wind), the wind, so it's easy to do that one. --So, not all of everyone, can do that (reduce electricity)"   —Participant F*

4.5 Summary

Different value associations were found between New Zealand and Japanese participants with regards to willingness to, motivations for, and expectations of others to participate in a conservation campaign and to reduce electricity consumption. These different values are generally reflective of whether participants' responses were grounded in more of a personal, or a social focus. In both countries, the values associated with each theme were inter-related in unique and complex ways. For this reason, a brief summary will be given by country rather than each question separately, in order to encapsulate these relationships.

4.5.1 New Zealand

New Zealand participants were overall willing to participate and gave examples of ways in which they were willing to reduce their electricity consumption. Willingness was often talked about in the context of achievement and hedonism values and an air of hesitation to sacrifice too much of the amenity and comforts provided by electricity services. It was found that this reluctance was rooted in the lack of trust that others would be doing the same. Generally, participants said they would be more motivated if they felt that they were contributing to something larger, where they could see their efforts were worth something. They had a desire to 'do their part', which is related to values of benevolence, but they seemed to have some trouble identifying how their part would contribute to a whole. Perceiving more of a necessity or urgency for their efforts seemed to motivate them to change behaviours while also having the potential to fulfil a desire for social belonging.

4.5.2 Japan

Overall, there were relatively consistent responses between the Japanese participants. Each participant was very willing to participate in conservation actions. It is not to suggest that Japanese participants were more or less happy to participate than the New Zealand participants, and in some cases it was made explicit that naturally, such restrictions are not enjoyable. Their willingness and motivations were found to be grounded in more socially focused values such as conformity, tradition, and security. Expectations about behaviour and responses were clear, from the individual level, to the collective, national level. A distinct motivation to maintain social stability, and national security provided

guidelines for expected behaviours. Uniformity for behaviour was expressed, except in relation to those in special circumstances. From the sacrifice of the many who are able to restrict their consumption, arises the ability for those who cannot, to use electricity as they need it, typically for health reasons. In this way, it seems they had a very tangible and clear understanding of what doing their part does for the whole, and this conceptualisation of the whole collective and everyone's part in it, framed their responses to questions of willingness, motivations, and expectations of others.

Chapter 5. Discussion

The thing that gives a community the character of a society is not its structure, but its capacity for concerted action." (Park, 1967, p. 186).

5.1 Introduction

This thesis had the aim of identifying and exploring the determinants of New Zealand and Japanese individuals' willingness to adopt curtailment behaviour during a conservation campaign. Determinants explored include value orientations, levels of environmental concern, and participant-identified motivations to participate in an electricity conservation campaign. The overarching aim was to evaluate whether the specific combinations of determinants differ between these two societies, and if so, how these differences were related to cultural dimensions.

Two sequential studies were employed to help achieve these aims. Together, the quantitative and qualitative studies gathered and presented data related to each determinant, established links between them and willingness for curtailment behaviours, and helped build an understanding of how participants' respective cultural contexts are reflected in these relationships. Based on the literature, results within each study revealed some expected, and some unexpected findings related to the research questions guiding this thesis and these were briefly outlined in each respective chapter.

The aim of this chapter is to draw together the relevant findings from both the quantitative and qualitative study, and present a discussion illuminating the differences in determinants and willingness relationships between the two countries. This discussion also relates the findings on each question to the relevant literature, and highlights the ways this research builds on current knowledge.

This chapter is structured around the order of the research questions outlined previously. The questions are each answered separately. Previous chapters presented full results of all selected measures for each country. In this discussion, the aim is to draw the most pertinent results together and answer the research questions in a comparative analysis between the two countries. Under each research question, first, a general overview of

the results is provided. Second, results from the quantitative and then qualitative study in New Zealand are discussed. Then, results from the quantitative and qualitative study in Japan are discussed. After answering the research questions, the consequent limitations of this thesis are addressed, and then avenues for future research are suggested. To conclude this chapter, I present some insights that may be useful for policymakers to consider.

5.2 Values

What values are associated with willingness to conserve in both countries?

Schwartz's theory of basic values was used in two different ways in this thesis. The quantitative study assessed the four higher-order value orientations along two bi-polar dimensions; self-transcendence versus self-enhancement, and conservation versus openness to change, and further analysed their relationship to willingness. These higher-order value orientations are comprised of combinations of ten underlying values. Overall, quantitative analysis revealed no significant difference between countries in the combined willingness measure. Within that measure however, were some significant differences in which actions participants were willing to undertake, and this is discussed further in section 5.4 of this chapter. Although the overall willingness scores were similar between countries, there were differences in the value orientations underlying individuals' willingness.

The qualitative component of this thesis explored these underlying values expressed by interview participants when freely talking about electricity conservation campaigns and curtailment behaviours. Throughout the interviews, discussion around willingness in the interviews was characterised in unique ways between countries. In New Zealand, this unfolded in two ways; firstly, a reluctance to participate in a campaign and adopt curtailment behaviours, and secondly, moving towards acceptance of participation and willingness to adopt curtailment behaviours. This is in contrast to the Japanese participants who did not show hesitation in their immediate acceptance to participate; discussion or mention of not participating did not occur.

The following paragraphs discuss the value orientations associated with willingness in New Zealand from the quantitative study, and then from the qualitative interview dialogue. Following this, the values associated with willingness in Japan are discussed, first in relation to the quantitative study, and second, from the interviews.

5.2.1 New Zealand

Quantitative Study

The self-transcendence versus self-enhancement value dimension were the strongest positive and negative predictors of willingness respectively. Quantitative analysis revealed a negative association between willingness and a self-enhancement value

orientation. As expected by the nature of the value structures, the self-transcendence value orientation, was positively associated with willingness. This suggests that individuals with higher importance on self-transcendence values, are likely to be more willing to participate in a conservation campaign and adopt energy saving behaviours. By extension, the converse is also suggested, where a higher importance on self-enhancement values is related to lower levels of willingness and engagement. This is to be expected as generally, motivations which enhance benefits to the self, typically conflict with enhancing the welfare of others (Schwartz, 2012). This is an example of conflict between values. This importance of the self-enhancement values as negative predictors of willingness aligns with Poortinga and colleagues' results (2004) who found that the lower the importance of self-enhancement, the more accepting individuals were to in-home energy saving behaviours.

In study one, self-transcendence was separated into biospheric values (comprised of the ecologically concerned values of universalism) and altruism values (derived from socially concerned universalism items and benevolence items). As discussed in the findings of study one, these values were strongly positively correlated with one another. This shows that concern for nature and concern for others are related constructs for New Zealand respondents, which suggests that an individual holding altruistic values also typically holds biospheric values. Environmental concern in the New Zealand sample is suggested to stem from a combination of these value orientations together.

When investigating relationships with willingness, analysis revealed that both biospheric and altruistic values were positively related to willingness for New Zealand participants. Furthermore, regression analysis showed that altruistic values contributed more in predicting willingness than biospheric values did.

Qualitative Study

Initially, New Zealand participants showed some reluctance to participate in a conservation campaign and adopt curtailment behaviours. Both power and achievement values which contribute to a self-enhancement orientation were illuminated in these discussions. Discussion was framed through an anxiety-based and loss-prevention perspective (as referred to in the value structures in Figure 2.1), where they did not feel

compelled to participate because they appeared to be anxious about doing more than others would.

There were also instances where losing control over their habitual electricity behaviours and routines seemed to affect their ability to achieve personal goals. Mirosa and colleagues also. (2013) found that achievement values can hinder participants engaging in energy reducing actions, especially when the actions represent a big change from normal behaviour. However, achievement values did not only hinder, but also promoted willingness in some circumstances.

As the interviews developed and participants elaborated on what would motivate them to participate, the underlying values I inferred from their dialogue were comprised of achievement, hedonism, and benevolence values. In this way, there was some overlap in underlying values for the same behaviour. Benevolence values motivated participants' need for affiliation and contribution to wider social goals by doing one's part. This is also reflected in the cultural dimension findings, where New Zealanders showed a socially-focused preference when faced with an instance of conflicting personal or social goals. Participants wanted to contribute to a national conservation campaign and 'do their part'. However, there was also a sense of disillusionment because participants did not feel a sense of an explicit or commanding expectation of them and they did not know how doing their part would help wider societal goals during a campaign context.

Achievement and hedonism values also promoted participants' willingness to participate. They articulated that they felt a sense of self-gratification from doing one's part. This indicates that a number of values, and even those with opposing underlying motivations can promote a willingness to participate in a campaign and adopt energy saving behaviours. These findings suggest that the relationship between values and willingness to engage in energy conservation behaviours is not always straight forward. Mirosa and colleagues (2013) also found that different values can underlie the same behaviour, and that the same value (such as achievement) can both promote and hinder in-home energy saving behaviours. The complexity of associations between underlying values were inferred through the qualitative component of this research. Therefore, my findings support Mirosa and colleagues' (2013) findings that qualitative analysis can lend a level

of complexity to the relationship between values and energy saving behaviour in ways previously found through quantitative research (Mirosa et al., 2013).

5.2.2 Japan

Quantitative Study

In the Japanese sample, the quantitative results show conservation values to be the most strongly positively correlated with willingness. In contrast to much of the literature's findings, the self-transcendence values were not strongly associated with willingness for Japanese participants. The relationship found in this study between conservation values and willingness in the Japanese sample is surprising, and the significant degree to which conservation values were related to willingness in Japan is important. Research using Schwartz's values framework typically identifies and focuses on the self-transcendence versus self-enhancement dimension to be the most significant in explaining energy saving behaviour (Mirosa et al., 2013). One reason the 'conservation versus openness to change' dimension is not typically focused on, or found to be empirically significant in other studies may be related to an under-representation of studies in non-Western nations, and specifically, in Japan. Research may potentially be overlooking the significance of conservation values in places where these values are culturally significant, of which Japan is one example.

As discussed in study one, the creation of biospheric and altruistic values revealed an interesting relationship for the Japanese sample. There was not a positive correlation between altruistic and biospheric values. These results suggest that concern for nature and concern for others are distinct constructs for the Japanese respondents. In other words, Japanese respondents can hold either biospheric or altruistic values, without necessarily holding the other (more so than the New Zealand sample). With relation to environmental concern, biospherism values were significantly positively correlated with environmental concern. On the other hand, altruism values were only marginally positively correlated with environmental concern. This suggests that environmental concern motivations stem more from biospheric values than altruistic values for Japanese respondents.

In terms of associations with and for predicting willingness, regression analysis was useful for assessing the unique contribution of both biospheric and altruistic values. This analysis

revealed that holding biospheric values constant, an altruistic orientation contributed more to explaining the variance in willingness. This reflects findings by Milfont and colleagues' (2006) study which found altruistic values to be better predictors of engaging in environmental behaviours, with biospheric values held constant.

Qualitative Study

In the interviews, Japanese participants consistently spoke of a ready willingness to participate in a conservation campaign. Identifying values underpinning their sense of immediate willingness proved difficult, until further discussion about their specific motivations for willingness. The value I identified as underpinning their willingness are those of the conservation value orientation; tradition, conformity, and security. Congruity between values is illustrated here, as all three underlying values to the conservation dimension appeared in participants' discussion of willingness. This congruity is expected as these values share a similar motivational basis. Conformity values were inferred by participants' sense of obligation to participate. They conveyed that sometimes they would not be happy about participating and sacrificing the comforts and amenities provided by electricity, but they would adopt energy saving behaviours regardless because they *had to*. This reflects a sense of anxiety accompanying their willingness to participate.

The underlying commonality between the value associations that are relevant to the Japanese sample, is that they are all socially focused values. This suggests that the most pertinent underlying motivational basis for Japanese participants is this shared social focus and desire to maintain social harmony and social order. This finding is supported by the cultural level dimension discussed in the previous section, where Japan scored interdependently in their manner of placing the interests of others over their own. This reflects a subordination of one's individual interests in order to align with "socially imposed expectations" (Schwartz, 2012, p. 12). This strict adherence to social expectations combined with an overall socially focused disposition underpins what becomes a socially "concerted effort" (Park, 1967, p. 187). What Japan managed to achieve during the *setsuden* (energy-saving) campaigns following the Fukushima event was a significant achievement in terms of energy reductions, and the strength of the socially-focused conservation values with a willingness to engage in curtailment behaviours may have played a part in this collective action.

5.3 Environmental Concern

What is the role of environmental concern in shaping willingness to adopt curtailment behaviours in both countries?

Concern for the environment is often measured in research aiming to understand determinants of in-home energy conservation. This was discussed in chapter two of this thesis. Generally, studies investigating the role of environmental concern in determining energy conservation behaviours find a positive association between the two, where higher environmental concern contributes to adopting energy conservation behaviours (Karlin et al., 2014; Poortinga et al., 2004). However, this thesis finds mixed results for the significance of environmental concern in shaping willingness to engage in energy saving behaviours in a conservation campaign context between the two countries. Some differences were found between Japan and New Zealand in the strength of association between environmental concern and willingness. Quantitative analysis revealed environmental concern was a much stronger predictor of willingness for the Japanese sample than New Zealand. This also appeared to be the case from the interview dialogue as well. The findings from the quantitative and then qualitative studies are discussed first for New Zealand, and then second, for Japan in the following sections.

5.3.1 New Zealand

Quantitative Study

Quantitative analysis revealed a significant difference in overall levels of environmental concern between the two samples, with New Zealand scores reflecting higher environmental concern. Interestingly, although New Zealand respondents scored higher in environmental concern, it was not significantly correlated with willingness. Regression analysis also showed that it was not a strong predictor of willingness to adopt curtailment behaviours in the New Zealand sample. Overall, there was a positive, but weak association between environmental concern and willingness. This contrasts somewhat with studies by Poortinga and colleagues (2004) and Mirosa and colleagues (2013) who found stronger relationships between environmental concern and adoption of energy saving behaviours.

Qualitative Study

The qualitative component of this study seemed to reflect the somewhat weak association identified in the quantitative study. None of the New Zealand participants interviewed mentioned environmental concern as a motivation to undertake curtailment behaviour. Actually, participants specifically stated that they were not motivated by environmental concern. This was an unanticipated aspect of environmental concern arising during the interviews. There seemed to be a disconnection between energy use and related environmental impacts among New Zealand participants in this study. Referring to the New Zealand participants' dialogue, they themselves identified that they are not "living in the effects" of the environmental impacts associated with electricity generation (Participant C) and "don't really see any of the bad stuff" (Participant A). They identified that their disconnection between their electricity usage and being able to see the associated negative environmental impacts meant that environmental concern was not a motivating factor for them. This disconnection of usage and environmental effects presents an interesting avenue for further exploration in future research.

5.3.2 Japan

Quantitative Study

By contrast, environmental concern was the strongest positively correlated variable to willingness in the Japanese sample. In other words, Japanese respondents with stronger environmental concern were likely to be more willing to participate in a campaign and adopt curtailment behaviours. Further regression analysis revealed that environmental concern was a stronger predictor of willingness in the Japanese sample compared to New Zealand. These findings suggest that while overall levels of environmental concern are similar between the two countries, it is a stronger motivator for willingness to engage in curtailment behaviours for Japanese participants.

Qualitative Study

In contrast to New Zealand participants who did not have a sense of connection between their usage and environmental impacts, Japan has in recent years experienced a significant environmental catastrophe associated with its electricity generating infrastructure. While it was not a specific pre-determined theme to explore, the relationship between environmental concern and the incident in Fukushima in 2011 was

made explicit by Japanese participants in the interviews. All of them were of the opinion that they did not want nuclear generated electricity. At the same time however, some did comment on the difficult nature of that matter because Japan has little natural resources to develop for renewable generation. In this way, their concern for the environment was also uniquely related to their security concerns. A number of participants discussed that after this incident, they began to think about electricity generation more, and how their consumption impacted both the environment, and the stability of electricity supply on a national level. The event seemed to serve as a catalyst for some people, to viscerally associate their electricity consumption with negative environmental impacts. Their concerns for the environment and national energy supply stability reflects back on the socially-focused orientation of their values. By each participant being willing to reduce consumption to help steady supply and in particular to support the electricity needs of those who need it most, they appear to be placing importance on wider social interests over their own.

5.4 Culture and Curtailment Behaviours

Are there any cultural level differences in which curtailment behaviours individuals are willing to adopt?

This thesis also aimed to explore whether there are any differences between New Zealand and Japan in which curtailment behaviours participants are willing to do. As mentioned in the findings of study one, no significant difference between overall willingness was established between respondents in both countries. However, there were significant differences in mean scores of willingness among the twelve individual actions between samples. First, I outline the actions respondents are more willing to do in New Zealand, and then second, those in Japan. Following this, I discuss examples with significant differences in willingness between the two countries. In this section, cultural practices and beliefs associated with these examples are discussed. Overall, it is then suggested that different cultural contexts and associated beliefs and practices can shape energy saving behaviours.

5.4.1 New Zealand

In order of the most common actions participants identified taking, participants reported switching off lights, using cold water for washing clothes, and heating only rooms in use were among the top five actions respondents were willing to do the most often. Although this was not a pre-determined topic for the qualitative interviews, two out of the three New Zealand interview participant verbalised a reluctance to use cold water when washing dishes. They verbalised that they believed using hot water to clean dishes was necessary for hygiene reasons. This connection with 'cleanliness' meant that they would not be willing to compromise on this behaviour.

Wilhite et al.'s (1996) study found their Norwegian interview participants to hold a similar association with cold water usage and concerns for hygiene. Furthermore, they posited this to be a belief shared by many western societies. The findings in this thesis, and by Mirosa et al. (2013) support this assumption. Mirosa and colleagues' study revealed that New Zealand participants who placed high importance on 'cleanliness', were reluctant to adopt certain energy savings behaviours associated with reducing hot water use. This included a reluctance to use cold water to wash dishes or to wash hands (Mirosa et al., 2013).

5.4.2 Japan

The actions Japanese respondents were most willing to adopt included switching lights off when not in use, only heating (or cooling) rooms in use, only heating (or cooling) one communal room, and air drying clothes. A significant difference was found in willingness to use cold water for washing dishes; Japanese respondents were more willing to use cold water when washing dishes than New Zealand respondents. In contrast to New Zealand participants' concerns with cold water usage and 'cleanliness', the Japanese participants were found to be more willing to use cold water to wash dishes. This finding also aligns with Wilhite and colleagues' research, the Japanese participants in their study did not share the same association between hot water and hygiene. They noted that hot water use was "not cognitively connected to cleanliness or hygiene"; and its use was "not to kill germs" (Wilhite et al., 1996, p. 802). They did however illustrate that hot water use was associated with 'comfort' for Japanese participants. The association of hot water and comfort found in Wilhite and colleagues' study was reflected in their Japanese participants' reluctance to reduce hot water usage for bathing rituals. The results from the questionnaire in this study support this finding as Japanese respondents were significantly less willing to restrict the length of showering (and/or bathing) than the New Zealand respondents.

The procedure of and importance placed on bathing practice in Japan differs from what is typically found in many other countries. Most bathrooms in Japan are fitted with a shower and a tub and often times, these are separate units in the bathroom ("furo | Japanese bath," n.d.). Individuals usually rinse themselves in the showering unit, then proceed to soak in the bath tub. After some time, people leave the tub, step back to the shower unit to soap and rinse off, before finally entering the tub again. This procedure helps to keep the bath water clean and free of soaps. Therefore, the purpose of the shower unit is for rinsing and soaping, whereas the purpose of soaking in the bath tub is for relaxation, indulgence, and comfort (Wilhite et al., 1996). This practice stems from the traditional (and still commonly performed) practice today of having a number of people in a household bathing in the same (clean) bathwater. Typically, there is an order of bathing, with the eldest family members bathing first ("furo | Japanese bath," n.d.). Wilhite and colleagues found this bathing ritual to be deeply rooted in cultural practices, one shared by all of their interview participants. In this instance, hot water use associated

with bathing habits are culturally significant and as such, participants were reluctant to change this behaviour.

5.4.3 Summary

Overall, these findings illustrate that the presence of cultural practices and beliefs can shape energy use behaviours. Furthermore, this can affect an individual's willingness to engage in certain curtailment behaviours. For some curtailment behaviours, no significant difference in mean scores for willingness was found between countries. This includes behaviours such as 'Turning off lights when not in use'. However, for other actions, significant differences in willingness were found; and these were often related to the beliefs and cultural practices related to the use of hot water.

In terms of electricity usage, the items in this scale vary, some being relatively insignificant in terms of energy savings, such as 'turning lights off when not in use'. In contrast, some have a greater electricity saving capacity with adoption such as 'reducing use of heating, or cooling, appliances'. It is important to consider the impact of each of these actions when discussing benefits of willingness to adopt them. This point is discussed further in the recommendations and implications for policy subsections.

5.5 Independent versus Interdependent Preferences

Are there differences between New Zealand and Japan's independent or interdependent preferences?

The diversity of ways one culture may be independent and interdependent supports the use of a multi-dimensional approach to capture cultural characteristics (Vignoles & Brown, 2011). These varied relationships reinforce the point cross-cultural researchers make, to resist trying to characterise a culture as unidimensional and then positing 'East' versus 'West' as opposites. Therefore, this study does not suppose cultural characteristics based on New Zealand and Japan's often unidimensional grouping, into individualistic and collectivistic categories respectively (Hofstede, 2012). This study aimed to measure and consider the independent or interdependent ways individuals in each culture behave in the domains of functioning that are theoretically relevant to this study; how they make decisions, and how they make decisions in instances with conflicting personal or social interests. In doing so, the unique differences and similarities can be more effectively explored.

Vignoles & Brown's (2011) study measured responses to these self-construals in over 3,500 high school student participants in 16 countries, including New Zealand and Japan. This thesis extends their instrument by measuring responses from adult participants. Results are discussed below for New Zealand respondents first, followed by Japanese sample results.

5.5.1 New Zealand

Results from the decision making measure revealed no statistically significant differences between the two countries. Results from New Zealand respondents reflect a slight tendency for an independent, self-directed mode of decision making (versus receptiveness to influence of others). This aligns with Vignoles and Brown's (2011) findings, showing an independent mode of decision-making in New Zealand.

The items included in the decision making measure each investigate whether one makes choices based more on their own, or the extent to which their family influences them. For example, an item reads "You follow your personal goals even if they are different from the goals of your family". Upon reflection, it is possible that having these items framed as either personal or social within the bounds of one's family may not capture a

level of social connectedness to the wider community. For this reason, the second measure of 'dealing with conflicting interests' was also included and is considered the more relevant of the two.

The measure of how one deals with conflicting interests includes items that incorporate a wider social circle than just one's family. This measure was important to help capture a sense of how one relates to others, as conservation campaigns are often employed at a region-wide, if not national level. In this measure, New Zealand scored towards the interdependent, socially focused end of the spectrum, This socially focused response reflects a preference for placing more importance on maintaining social relations over one's own achievements when presented with a situation where these choices conflict with one another.

5.5.2 Japan

Similarly to New Zealand's responses, Japan scored towards an independent preference for the decision-making domain. Aligned with New Zealand's responses again, Japan scored interdependently in the dealing with conflicting interest's domain. This suggests that when faced with a situation where their personal goals conflict with wider, social goals, respondents tended to favour attaining social goals and achievements over their own.

5.5.3 Summary

In summary, both countries scored independently in the 'decision-making' domain and by contrast, both scored interdependently in the 'dealing with conflicting interests' domain. There was no significant difference found between the two countries' scores for each measure. The combination of independent and interdependent responses from both New Zealand and Japan aligns with Vignoles and Brown's (2011) results for both countries on these measures. The conflict between independent preference in one domain and an interdependent preference in the other domain found in this research, supports the position that one culture can be independent and interdependent in a multi-faceted way. This supports Vignoles and Brown's (2011) argument for the need to move away from a unidimensional classification of a culture, and instead empirically unpack the cultural layers in which one culture may be independent and interdependent.

Furthermore, given that both countries responded similarly in their preference for placing more importance on social over personal interests when these interests conflict with one another, this suggests that New Zealand and Japan are more similar in this way than might have been expected. This is an unexpected and important finding, given the traditional individualistic and collectivistic characterisations usually given to each society respectively.

Despite the general commonality in their interdependent manner of resolving instances of conflicting interests by placing more importance on commitment to others, there are remarkably diverse ways this social (rather than personal) focus affected their willingness to participate and engage in curtailment behaviours. Variability existed in the values underpinning New Zealand and Japanese participants' motivations to participate in a conservation campaign. Discussion of Schwartz's value orientations in both countries illustrated these unique relationships.

5.6 Limitations

5.6.1 Sampling

One set of limitations with this study are methodological. The samples which these results are based on are not representative population samples. While attempts were made to target groups of different age, income, and geographical spread, a truly representative sample is difficult to achieve in a small-scale project. However, the sampling recruitment techniques utilised in both places were similar, and therefore somewhat comparable. Moreover, as well as respondents from major urban centres, this thesis specifically aimed to also capture responses from areas outside of the major urban regions of both countries, the Greater Tokyo region in Japan, and Auckland and Wellington city in New Zealand. Cross-cultural researchers argue for the importance of having responses come not only from major urban centres where populations are concentrated, but also from a variety of regions within a country. This helps capture a representation of each nation as a whole, including representing any diversity from this technique (Fischer, Milfont, & Gouveia, 2011).

The sample sizes in both populations could be increased to better infer patterns and relationships at a national level. For future research aiming to explore similar themes and measures, achieving better population representativeness and higher sample size numbers is advised. Utilising probabilistic sampling techniques involving random selection, or survey distribution which can reach higher respondent numbers would help achieve this.

5.6.2 Translations

This project helped produce one of the first iterations of the PVQ's translation into Japanese. Some difficulty was found in the process of translating the PVQ's explanation to participants about the third-person framing of the questions. For example, the English version reads as:

> *"Here we briefly describe some people. Please read each description and think about how much that person is or is not like you."*

Theoretically and practically, such a framing technique is beneficial and a third-person framing is often utilised in Western questionnaires. However, this was found to be less familiar to Japanese respondents. A number of alternative versions were prepared and

suggested throughout the translation process, varying from direct translation from English, through to dropping the third person framing. The latter explanation was a more direct mode of questioning, roughly translated as:

> *"Please read the following descriptions and choose the one closest to your way of thinking."*

Although most Japanese who tested with this explanation understood it clearly, I felt this was too far removed from the original conceptual framing that the PVQ utilises. In the end, a version was used which was conceptually similar to the English PVQ, and reflected natural language use as suggested through pilot testing with native speakers. While similarities in structure are important in translation work, achieving conceptual equivalence is fundamental (Sechrest et al., 1972). Further iterations are advised to improve the translation through wider testing.

Another notable difference between the English and Japanese version is the gendering of the language in the questions. The English version utilises a male and female version of the questionnaire. This gendering of language however was not used in the Japanese version. Simply from a grammatical point of view, subjects are frequently dropped from sentences in spoken and written Japanese and a third person framing can still be achieved. However, this is more difficult to do in English. Feedback from pilot-testing revealed that some respondents felt priming effects from the gendered nature of some questions. For example, the item "It is important to her to care for her family" was mentioned as invoking notions of gender role expectations when females answered this question in that they felt they should agree with this statement. While a response bias may be a possible result of priming for some respondents due to the gendered nature of the items, it is not possible at this stage to gauge whether this invokes a different response bias than Japanese respondents, or whether associations with gender roles would have been invoked regardless of the gendered items.

5.6.3 Inter-Rater Reliability

Inter-rater reliability refers to the process of independent raters coding data, and comparing results with the aim of increasing overall rigour of the findings. As a solo researcher conducting the analysis for this thesis, subjective bias is present when

analysing underlying values and themes from the interview dialogue. The findings would benefit from a team of researchers to analyse the data and compare thematic findings.

With the aim of minimising bias as the researcher analysing the content, I highlighted the importance of transparency in the methods of the qualitative study. To help accomplish transparency, first, I documented and demonstrated the steps taken in coding, and analysing the data; and second, direct quotes form participants were included in the findings to illustrate participants' opinions. Furthermore, the combination of qualitative and quantitative methods helped to inform and establish themes and associations present in both studies (Armstrong, Gosling, Weinman, & Marteau, 1997). Drawing together findings from both studies, helps lend weight to the overall inferences discussed in this research.

5.6.4 Self-Reported Responses

A further limitation of this study that needs to be acknowledged is that inferences drawn are about individuals' *willingness* to participate in a conservation campaign and adopt curtailment behaviours. This research did not employ a longitudinal study or experimental design component to test curtailment actions taken and instead relies on self-report measures of individuals' own willingness to change behaviour.

Similarly to the limitations of self-reported willingness, are self-reported response biases associated with the measurement of Schwartz's values. Sometimes, individuals may respond to questionnaire items in a way that would reflect the values they think they should, or desire to hold in high regard. One reason the PVQ format was chosen, was because it does not assume the typical "I" frame of reference sometimes utilised in self-reported questionnaires. Respondents are instead asked to compare the goals of the portrait to themselves. In theory, this should help minimise individuals' propensity for the self-reported response bias of responding in a way that reflects a desirability for what values they feel should be, or want to be important.

Overall, this thesis was primarily concerned with exploring determinants of willingness to participate in a conservation campaign and adopt curtailment behaviours in this context. Therefore, the findings may not necessarily translate to adoption of energy saving measures in 'everyday' circumstances. Little research has explored determinants in a conservation campaign scenario, and this study contributes to building understanding in

this context. However, the findings are not suggested to be applicable in other energy saving contexts.

Although the set of determinants predicting willingness may be specific to curtailment behaviour in this context, the results do suggest that differences in the sets of determinants may be related to the different socio-cultural contexts of New Zealand and Japan. For this reason, it is plausible to suggest that research investigating determinants of behaviour in any context, may benefit from recognising the role of culture in shaping determinants.

5.7 Recommendations for Research

This thesis identified differences in levels of willingness for twelve curtailment behaviours or actions across both countries. Recommendations for further research are two-fold; to further investigate willingness for certain energy saving actions, and to consider and calculate the energy savings potential for these actions. Together, it would be beneficial to investigate those actions that individuals are willing to do, and that also have the greatest potential for energy savings.

As presented in this discussion, participants are more willing to engage in some curtailment behaviours over other curtailment behaviours. Particular energy saving actions were found to be related to culturally specific beliefs and practices. Behaviours that are grounded in cultural practices or particular beliefs, such as New Zealanders' tendency to associate hot water with hygiene, and Japanese respondents' tendency to associate hot water with comfort, are likely to be relatively difficult to change. These findings warrant further investigation to identify which energy behaviours are significant to a particular culture and individuals may therefore be less likely to change.

On the other hand, individuals were more willing to engage in some individual curtailment behaviours. In determining net energy savings potential, I suggest considering first, the actions which individuals are partial to undertake and second, those actions which have greater energy saving potential in kilowatt-hours. It is the combination of willingness and potential energy savings that is essential to achieving the highest potential net energy savings in a conservation campaign scenario.

For example, this thesis identified high willingness in both countries to switch lights off when not in use. However, the energy savings impact of this action is relatively small and is therefore likely to have a low net impact. To illustrate this point of willingness and impact further, consider an example from the New Zealand findings. There was quite a disparity between willingness for using cold water when washing dishes (low willingness) and using cold water for washing clothes (high willingness). This was inferred to be related to people's belief about hygiene concerns when washing dishes, and therefore changing these beliefs is likely to prove demanding.

In contrast, respondents were much more willing to use cold water when washing clothes, and it is plausible that both actions have similar energy savings potential. In this example,

the potential for net energy reduction is more likely to come from the action of using cold water to wash clothes (instead of when washing dishes) because the energy savings are comparable, and the willingness to do one over the other is significant. Research would benefit from further investigation into determinants of specific actions identified in this project which people are willing to do, and which have greater energy savings potential.

Additionally, some interesting relationships were identified between Japanese respondents' environmental concern and willingness to adopt curtailment behaviours. It appeared that they were more ready to participate due in part to the incident in Fukushima having associated their electricity usage with environmental impacts. It would be worth exploring further, the potential impact of such crisis scenario events in strengthening the connection of one's electricity consumption behaviours and wider environmental concerns.

5.8 Insights for Policy

Using findings identified in this thesis, and in combination with further research, policy makers and intervention campaign designers can target actions which have potential to elicit the greatest energy savings during a conservation campaign, a time when reductions are needed in a short time-frame.

This research identified underlying value orientations associated with individuals' willingness to adopt energy reducing behaviours. Campaign designs could benefit from aligning their messages more closely with these underlying value orientations, and recognise that different values may underlie willingness to participate in a conservation campaign. For example, specifically related to electricity conservation campaigns in New Zealand, it is inferred that appealing to both socially-focused values such as benevolence, and personally-focused values such as achievement and hedonism are likely to motivate individuals to participate.

New Zealand participants shared that they understand there may be expectations to engage in energy savings actions over and above what they would do normally. They indicated that in some way, their willingness hinged on a sense of urgency and expectation of them, without which they didn't feel very compelled to 'sacrifice' amenities and services provided by habitual uses of electricity. Furthermore, participants expressed a desire to know specific actions they could do, and additionally, to understand how doing these actions would contribute to overall energy savings. Promoting how their sacrifice would contribute to wider social benefits seemed to switch on their motivation to advance benevolence and altruistic goals. Moreover, through knowledge of how one is helping achieve wider social goals, participants' sense of self-gratification can also be tapped into, which in turn further motivates individuals' willingness to participate in a campaign scenario.

This thesis also identified individual energy saving actions that respondents are more willing, and those they are less willing to adopt. In some instances, actions were found to be associated with certain values, or practices of cultural significance. Policymakers are advised to recognise that values are difficult to change. Therefore, by extension, it may be more fruitful to target actions which individuals identified they would be more willing to change, these are likely to be met with less resistance to uptake.

5.9 Other considerations

Electricity use provides important health and comfort amenities, and in many instances provides necessary services to support individuals' health and quality of life. This was alluded to in the findings of the qualitative chapter as Japanese participants discussed the need for having differing expectations as to what degree people can and should reduce consumption based on their personal situations. Every participant qualified that individuals who need electricity for health reasons should not be held to the same expectations. Looking ahead to an undefined energy future where conservation campaigns may continue to be called, I suggest these considerations should not be overlooked.

Chapter 6. Concluding Remarks

A nation's energy supply can be destabilised in a very short time frame. Such a situation tests the resilience of a society, challenging its ability to adapt and manage the disruption. To help reduce overall energy demand and aid recovery, populations can be called upon to adopt energy saving behaviours. One way nations have encouraged this change in behaviour is through executing nation-wide electricity conservation campaigns. Both New Zealand and Japan have called electricity conservation campaigns in the past decade as a result of supply destabilisation. A number of factors continue to pose a risk to a stable electricity supply, and the occurrence of conservation campaigns is likely to continue.

Under these circumstances, there is an impetus to investigate what the determinants are of an individual's willingness to participate in a conservation campaign scenario, and to adopt electricity curtailment behaviours. The overarching aim of this thesis was to identify and explore the determinants which promote and hinder this willingness. Specific determinants investigated in this thesis are that of value orientations and environmental concern. A cross-cultural comparison between determinants of New Zealand and Japanese respondents was undertaken to establish if different combinations of determinants emerged in different socio-cultural contexts. A further aim of this thesis was to examine if there were cross-cultural differences in which curtailment behaviours individuals were willing to adopt. A sequential, mixed methods approach was utilised to help achieve these aims. The following subsections will outline the key outcomes from each country in relation to the aims of this thesis.

Different sets of determinants were found to be related to willingness in the two countries. In New Zealand, willingness was most strongly positively correlated with self-transcendence values which include universalism and benevolence. Within this, biospheric and altruistic values (comprised of items from self-transcendence) were also investigated to further delineate these relationships. New Zealand respondents typically held both biospheric and altruistic values concurrently, and both were positively associated with willingness. However, an altruistic value orientation was a stronger positive predictor in explaining willingness. This suggests that although willingness was positively related to both a concern for the biosphere (a biospheric orientation) and concern for others (an altruistic orientation), concern for others was a stronger predictor

of an individual's willingness to participate. Moreover, environmental concern was only marginally positively associated with willingness and did not significantly predict this behaviour.

Conversely to self-transcendent values promoting willingness, self-enhancement values were negatively associated with willingness. This suggests that individuals with higher importance placed on personally-focused, self-enhancement values, are less likely to participate. The qualitative interviews helped provide insight into the relationships between values and willingness and how participants felt about participating in a conservation campaign. Overall, New Zealand participants initially showed some hesitation or reluctance to participate. In particular, there was reference to not wanting to sacrifice amenities and comforts, most especially so if there was not some kind of assurance that other people would do the same. In this way, achievement, power, and hedonism values were recognised as hindering their willingness. These values all have an underlying similarity in that they are personal-focused values. However, despite initial reluctance, all participants did discuss actions they would be willing to undertake in order to reduce their electricity consumption. When we discussed what would motivate them to participate and adopt certain curtailment behaviours, the conversation tended reflect values that are socially-focused, such as benevolence. Participants wanted to feel that they were contributing to a greater societal good by helping achieve social goals. However, they often had difficulty articulating how they could achieve this. Within this desire to do good, it appeared that a sense of self-satisfaction would be attained in doing so.

In aligning with another study which explored values and energy saving behaviour through a qualitative methodology (Mirosa et al., 2013), it appears that values are related to curtailment behaviours in complex ways. In particular for New Zealand participants, the conflict between personal and social interests appears to reflect a simultaneous reluctance, and desire, to participate in a conservation campaign. The implication of this may be that appealing to individuals' socially-focused values such as self-transcendence, and in particular those which reflect an altruistic nature, may help elicit a willingness to engage and adopt curtailment behaviours.

Findings from this thesis also suggest certain curtailment behaviours that New Zealand participants are more (and less) willing to adopt in a conservation campaign scenario. Taken together with findings from previous research, it appears that some behaviours which are less likely to be adopted are related to beliefs held in New Zealand culture, in particular beliefs about hygiene and hot water. Policymakers can benefit from targeting behaviours which are not strongly connected to people's beliefs and practices. Individuals were willing to adopt other curtailment actions which do not appear to have specific cultural practices or beliefs associated with them.

As mentioned previously, a different set of determinants were associated with Japanese participants' willingness to engage in a campaign and adopt curtailment behaviours. The conservation value dimension was particularly strongly positively correlated with willingness for Japanese participants. In contrast to New Zealand, the self-transcendence value orientation was only marginally positively related to willingness.

Given that the self-transcendence orientation was not strongly correlated, the results from analysis of its constitutive biospheric and altruistic orientations was initially surprising. The two orientations appear to be distinct constructs in the Japanese sample, suggesting that a concern for others and a concern for the biosphere were not strongly related concepts. An individual could have one and not the other. In contrast to New Zealand participants, a biospheric orientation was more strongly positively related to willingness than an altruistic orientation was. This is somewhat supported by the findings on environmental concern as well.

Environmental concern was found to be one of the strongest predictors of willingness for the Japanese participants. In saying that, the overall level of environmental concern between respondents in both countries (as inferred through testing for significance between mean scores), revealed no significant difference in levels of environmental concern between New Zealand and Japan. In other words, the levels of environmental concern were comparable, yet the degree to which that concern was associated with and predicted willingness to adopt curtailment behaviours was stronger for Japanese participants than individuals from New Zealand.

Some discussion from the interviews sheds light on this relationship. Every Japanese participant in the interview discussed concern for the environment as one reason to

participate. Interestingly, their concern for the environment appeared to be related to the incident that happened in Fukushima, just five years before this research. This event seemed to create a stronger connection between participants' electricity use, the resulting impacts on the environment, and their motivation to change energy behaviour.

Further insight from these interviews was found in the overlap between the quantitative findings of a conservation value orientation being positively related to willingness. Through participants' discussion, conservation values such as tradition, security, and conformity appeared to be particularly motivating for their participation. These values share an underlying socially-focused motivational basis. This suggests that the Japanese participants were particularly motivated to participate and change behaviour through their desire for smoother social functioning and harmony.

Previous research has found that energy behaviours and practices may be culturally distinct and related to beliefs and practices unique to a particular culture (Wilhite et al., 1996). As an extension of this, this thesis established that some differences were found in which curtailment behaviours individuals in New Zealand and Japan were willing to adopt. In relation to previous findings, some of these behaviours are inferred to be related to cultural practice, and as such, some behaviours may be more difficult to encourage individuals to change than other behaviours. It is suggested that a useful approach would be to target curtailment behaviours identified in this thesis that individuals are more willing to adopt, and which have greater energy savings potential.

The determinants between New Zealand and Japan were in contrast to one another in a number of ways. Findings from New Zealand align more with previous literature related to this topic, than do those from the Japanese sample. I posit that this may be due to a relative imbalance in the literature which investigates these relationships cross-culturally, and in Japan in particular. I would strongly encourage further research to continue to develop knowledge in this field in a variety of different socio-cultural contexts. Through comparison, it is possible to understand the ways different contexts may affect determinants of behaviour. The benefit of such insights increases as many societies are likely to face similar disruptions to energy supply in both the short and the long-term future.

7. References

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8. Appendices

8.1 Human Ethics Approval

TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI

VICTORIA
UNIVERSITY OF WELLINGTON

Phone   0-4-463 5480
Email   susan.corbett@vuw.ac.nz

MEMORANDUM

TO	Sophia Murphy
COPY TO	Wokje Abrahamse
FROM	AProf Susan Corbett, Convener, Human Ethics Committee

DATE	17 July 2015
PAGES	1

SUBJECT	**Ethics Approval: 22111** Electricity conservation: A cross-cultural study of values, environmental concern, and behaviour

Thank you for your application for ethical approval, which has now been considered by the Standing Committee of the Human Ethics Committee.

Your application has been approved from the above date and this approval continues until 6 March 2016. If your data collection is not completed by this date you should apply to the Human Ethics Committee for an extension to this approval.

Best wishes with the research.

Kind regards
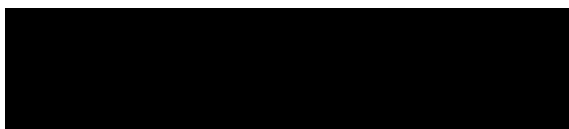
Susan Corbett
Convener, Victoria University Human Ethics Committee

8.2 Study One Appendices

8.2.1 Study Information and Consent Sheet

New Zealand

Values and Energy Use Questionnaire

Welcome to the Values and Energy Use Questionnaire and thank you for taking the time to participate.

My name is Sophia Murphy and this questionnaire is part of my Masters of Environmental Studies research project at Victoria University of Wellington. This project is being supervised by Dr Wokje Abrahamse and Dr Taciano Milfont, and has been approved by Victoria University's Human Ethics Committee.

This survey has been designed to explore the relationship between values and in-home electricity use behaviours. This research is being conducted among adults residing in both New Zealand and Japan. Your participation in this research may help to improve energy conservation campaigns. There are no right or wrong answers, we're interested in your opinions.

Before you start, please note that there is more than one section, and it may take between 10-12 minutes to complete. The information you provide is anonymous and confidential. The data collected will be stored in a secure, password-protected file for up to five years, after which time it will be erased.

You may withdraw your participation during any time while taking the survey.

By clicking 'next' and completing this questionnaire, you are giving your consent to participate and confirm that you are over the age of 18.

If you would like to see an aggregate summary of the results, or have any questions regarding this study, please send me an e-mail on Sophia.Murphy@vuw.ac.nz

Your help is much appreciated.

Sincerely,
Sophia Murphy

Dr Wokje Abrahamse
Lecturer Environmental Studies

Dr Taciano Milfont
Senior Lecturer School of Psychology

私はソフィア・マーフィーというニュージーランドにあるビクトリア大学の大学院生です。この調査は環境問題の研究をし、修士号を取得するため行っています。

この調査は人々の価値観と電力消費にどのような関係があるか、また文化の違いに影響されるかなどを検証する為のものです。

このアンケートは日本、ニュージーランド両国で実施されます。あなたがこの調査に参加していただくことは、省エネキャンペーンの改善にきっと役立つでしょう。

いつかの質問に、節電に対するあなたの考え方や想いを答えていただきます。

それぞれの質問をよく読んでご回答ください。あまり深く考えず、直感を大切にし、あなたの考え方に一番近いものを選びください。

これらの質問に正しい答えや間違った答えはありません。最初の印象を大事にして下さい。あなたの意見や考え、気持ちを一番表しているものをお答え下さい。この調査は無記名で行われ、調査者のみが分析を行います。

私は次のことを理解しました：
参加者が調査への参加を辞退したい場合、辞退することができる。
参加者はオンラインアンケート調査の中にでも調査を辞退することができる。その際、辞退の理由を述べる必要はない。

集められたデータはパスワードで管理された安全なファイルに最長5年間保管され、その後破棄されます。

もしご質問があればお知らせください。Sophia.Murphy@vuw.ac.nz
下にある「次」をクリックすると、あなたはこの調査への参加に同意したことになります。

調査にご協力いただき誠にありがとうございます。

実験担当学生：マーフィーソフィア （Sophia Murphy）
指導教員主事：アブラハムサ ボキア博士 (Dr. Wokje Abrahamse)
ミルフォント タシアノ博士 (Dr. Taciano Milfont)

Q1.2 What country do you currently live in?

○ New Zealand
○ Other

Q1.3 Please choose which gender you most strongly identify with. From here, you will be directed to the associated version of the questionnaire.

○ Male
○ Female

Q2.1 Here we briefly describe different people. Please read each description and think about how much that person is or is not like you.

	Not like me at all	Not like me	A little like me	Moderately like me	Like me	Very much like me
It is important to him to form his views independently.	○	○	○	○	○	○
It is important to him that his country is secure and stable.	○	○	○	○	○	○
It is important to him to have a good time.	○	○	○	○	○	○
It is important to him to avoid upsetting other people.	○	○	○	○	○	○
It is important to him that the weak and vulnerable in society be protected.	○	○	○	○	○	○
It is important to him that people do what he says they should.	○	○	○	○	○	○
It is important to him never to think he deserves more than other people.	○	○	○	○	○	○
It is important to him to care for nature.	○	○	○	○	○	○
It is important to him that no one should ever shame him.	○	○	○	○	○	○
It is important to him to always look for different things to do.	○	○	○	○	○	○
It is important to him to take care of people he is close to.	○	○	○	○	○	○
It is important to him to have the power that money can bring.	○	○	○	○	○	○
It is very important to him to avoid disease and protect his health.	○	○	○	○	○	○
It is important to him to be tolerant toward all kinds of people and groups.	○	○	○	○	○	○
It is important to him never to violate rules or regulations.	○	○	○	○	○	○

	Not like me at all	Not like me	A little like me	Moderately like me	Like me	Very much like me
It is important to him to make his own decisions about his life.	O	O	O	O	O	O
It is important to him to have ambitions in life.	O	O	O	O	O	O
It is important to him to maintain traditional values and ways of thinking.	O	O	O	O	O	O
It is important to him that people he knows have full confidence in him.	O	O	O	O	O	O
It is important to him to be wealthy.	O	O	O	O	O	O
It is important to him to take part in activities to defend nature.	O	O	O	O	O	O
It is important to him never to annoy anyone.	O	O	O	O	O	O
It is important to him to develop his own opinions.	O	O	O	O	O	O
It is important to him to protect his public image.	O	O	O	O	O	O
It is very important to him to help the people dear to him.	O	O	O	O	O	O
It is important to him to be personally safe and secure.	O	O	O	O	O	O
It is important to him to be a dependable and trustworthy friend.	O	O	O	O	O	O
It is important to him to take risks that make life exciting.	O	O	O	O	O	O
It is important to him to have the power to make people do what he wants.	O	O	O	O	O	O
It is important to him to plan his activities independently.	O	O	O	O	O	O

	Not like me at all	Not like me	A little like me	Moderately like me	Like me	Very much like me
It is important to him to follow rules even when no-one is watching.	○	○	○	○	○	○
It is important to him to be very successful.	○	○	○	○	○	○
It is important to him to follow his family's customs or the customs of a religion.	○	○	○	○	○	○
It is important to him to listen to and understand people who are different from him.	○	○	○	○	○	○
It is important to him to have a strong state that can defend its citizens.	○	○	○	○	○	○
It is important to him to enjoy life's pleasures.	○	○	○	○	○	○
It is important to him that every person in the world have equal opportunities in life.	○	○	○	○	○	○
It is important to him to be humble.	○	○	○	○	○	○
It is important to him to figure things out himself.	○	○	○	○	○	○
It is important to him to honor the traditional practices of his culture.	○	○	○	○	○	○
It is important to him to be the one who tells others what to do.	○	○	○	○	○	○
It is important to him to obey all the laws.	○	○	○	○	○	○
It is important to him to have all sorts of new experiences.	○	○	○	○	○	○
It is important to him to own expensive things that show his wealth.	○	○	○	○	○	○
It is important to him to protect the natural environment from destruction or pollution.	○	○	○	○	○	○

	Not like me at all	Not like me	A little like me	Moderately like me	Like me	Very much like me
It is important to him to take advantage of every opportunity to have fun.	○	○	○	○	○	○
It is important to him to concern himself with every need of his dear ones.	○	○	○	○	○	○
It is important to him that people recognize what he achieves.	○	○	○	○	○	○
It is important to him never to be humiliated.	○	○	○	○	○	○
It is important to him that his country protect itself against all threats.	○	○	○	○	○	○
It is important to him never to make other people angry.	○	○	○	○	○	○
It is important to him that everyone be treated justly, even people he doesn't know.	○	○	○	○	○	○
It is important to him to avoid anything dangerous.	○	○	○	○	○	○
It is important to him to be satisfied with what he has and not ask for more.	○	○	○	○	○	○
It is important to him that all his friends and family can rely on him completely.	○	○	○	○	○	○
It is important to him to be free to choose what he does by himself.	○	○	○	○	○	○
It is important to him to accept people even when he disagrees with them.	○	○	○	○	○	○

Q4.1 Below are some statements of what you might be like. Probably some will describe you well and others will not describe you well.

	Does not describe me at all		Describes me a little		Describes me moderately		Describes me very well		Describes me exactly
You like being different from other people.	○	○	○	○	○	○	○	○	○
You behave the same way at home and in public.	○	○	○	○	○	○	○	○	○
If someone in your family is sad, you feel the sadness as if it were your own.	○	○	○	○	○	○	○	○	○
You try to avoid being reliant on others.	○	○	○	○	○	○	○	○	○
You behave differently when you are with different groups of people.	○	○	○	○	○	○	○	○	○
Your own success is very important to you, even if it disrupts your friendships.	○	○	○	○	○	○	○	○	○
You try to avoid being noticeably different from others.	○	○	○	○	○	○	○	○	○
You value good relations with the people close to you more than your personal achievements.	○	○	○	○	○	○	○	○	○
You feel uncomfortable in situations where you have to rely only on yourself.	○	○	○	○	○	○	○	○	○
You see yourself differently in different social environments.	○	○	○	○	○	○	○	○	○
You always ask your family for advice before making a decision.	○	○	○	○	○	○	○	○	○
You see yourself as unique and different from others.	○	○	○	○	○	○	○	○	○
You prefer to rely completely on yourself rather than depend on others.	○	○	○	○	○	○	○	○	○
You always see yourself in the same way even when you are with different people.	○	○	○	○	○	○	○	○	○

You try to adapt to people around you, even if it means hiding your inner feelings.	○	○	○	○	○	○	○	○	○
You follow your personal goals even if they are very different from the goals of your family.	○	○	○	○	○	○	○	○	○
Your happiness is unrelated to the happiness of your family.	○	○	○	○	○	○	○	○	○
You show your inner feelings even if it disturbs the harmony in your family.	○	○	○	○	○	○	○	○	○
You behave in the same way even when you are with different groups of people.	○	○	○	○	○	○	○	○	○
You prefer to say what you are thinking, even if it is inappropriate for the situation.	○	○	○	○	○	○	○	○	○
Being different from others makes you feel uncomfortable.	○	○	○	○	○	○	○	○	○
You prefer to do what you want without letting your family influence you.	○	○	○	○	○	○	○	○	○
You value personal achievements more than good relations with the people close to you.	○	○	○	○	○	○	○	○	○
You prefer to ask other people for help rather than rely only on yourself.	○	○	○	○	○	○	○	○	○
You act very differently at home compared to how you act in public.	○	○	○	○	○	○	○	○	○
When someone in your family achieves something, you feel proud as if you had achieved something yourself.	○	○	○	○	○	○	○	○	○

Q5.1 We are interested to know your opinion about the environment.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
We are approaching the limit of the number of people the earth can support.	○	○	○	○	○
Humans have the right to modify the natural environment to suit their needs.	○	○	○	○	○
When humans interfere with nature it often produces disastrous consequences.	○	○	○	○	○
Human ingenuity will ensure that we will not make the earth unlivable.	○	○	○	○	○
Humans are severely abusing the environment.	○	○	○	○	○
The earth has plenty of natural resources if we just learn how to develop them.	○	○	○	○	○
Plants and animals have as much right as humans to exist.	○	○	○	○	○
The balance of nature is strong enough to cope with the impacts of modern industrial nations.	○	○	○	○	○
Despite our special abilities, humans are still subject to the laws of nature.	○	○	○	○	○
The so - called "ecological crisis" facing humankind has been greatly exaggerated.	○	○	○	○	○
The earth is like a spaceship with very limited room and resources.	○	○	○	○	○
Humans were meant to rule over the rest of nature.	○	○	○	○	○
The balance of nature is very delicate and easily upset	○	○	○	○	○
Humans will eventually learn enough about how nature works to be able to control it.	○	○	○	○	○
If things continue on their present course, we will soon experience a major ecological catastrophe.	○	○	○	○	○

Q6.1 In this section, we would like to know about your electricity behaviours in an electricity shortage scenario. Please read the following information about electricity in New Zealand before answering the questions in this section.

Electricity in New Zealand

New Zealand's electricity supply relies on several different forms of generation, each with their own variability and risks. Infrastructure also plays a critical role for reliable supply. Disruption to the energy supply can create acute or chronic shortages, and can occur with little or no warning. There are a number of potential threats that can affect the supply of energy to New Zealand homes and businesses, such as severe droughts, transmission or generator failures, or natural disasters.

In 2008, New Zealand was at risk of an energy supply shortage due to a severe dry spell. An Official Conservation Campaign (OCC) was called, with advertisements through TV, print, and radio encouraging people to conserve electricity. Voluntary conservation measures help to mitigate the risk of a supply shortage.

Q6.2 Timing

Q6.3 Imagine that during winter time, New Zealand faces an electricity supply shortage and a campaign like the one described above is called. Given this shortage, how willing would you be to participate by conserving electricity at home?

O Not at all willing
O -
O Somewhat willing
O -
O Very willing

Q6.4 The following is a list of statements about why you might conserve electricity during a shortage scenario. Please indicate how important each reason to conserve electricity during a shortage scenario is to you. There is also space provided to describe your own reason.

	Very Unimportant	Somewhat Unimportant	Not sure	Somewhat Important	Very Important
To save money.	○	○	○	○	○
Because the government would be asking me to.	○	○	○	○	○
It is what my peers would be doing.	○	○	○	○	○
It would help reduce overall electricity demand for my region.	○	○	○	○	○
It would be good for the environment.	○	○	○	○	○
It would help reduce the risk of a more severe electricity shortage.	○	○	○	○	○
My reduction in electricity use could help someone who needs it more.	○	○	○	○	○
It would be expected of me.	○	○	○	○	○
It would be the right thing to do.	○	○	○	○	○
Other:	○	○	○	○	○

Q6.5 Imagine that a campaign to reduce electricity usage during winter is called. Please indicate from the list below how willing you would be to do each of the following conservation activities.

	Very unwilling	Somewhat unwilling	Not sure	Somewhat willing	Very willing	Not Applicable
Turn the lights off in rooms that are not being used.	○	○	○	○	○	○
Unplug appliances or switch them off at the wall when not being used (i.e. avoiding leaving appliances on stand-by).	○	○	○	○	○	○
Pull the curtains before dark to keep the heat in.	○	○	○	○	○	○
Only heat rooms which are in use.	○	○	○	○	○	○
Air-dry clothes instead of putting them in a clothes dryer.	○	○	○	○	○	○
Restrict the length of your showers.	○	○	○	○	○	○
Use electrical devices for entertainment less often (such as TVs, computers, game consoles).	○	○	○	○	○	○
Use cold water instead of hot or warm water when washing clothes.	○	○	○	○	○	○
Heat only one communal use room in the house (i.e. avoiding heating separate rooms)	○	○	○	○	○	○
Use cold water instead of hot or warm water when washing dishes.	○	○	○	○	○	○
Refrain from or reducing use of heating appliances.	○	○	○	○	○	○
Head to communally heated spaces, such as cafes, instead of heating personal space.	○	○	○	○	○	○

Q7.1 Finally, please answer a few questions about your background. Remember that your responses are anonymous and confidential.

Q7.2 What is your age in years?

Q7.3 What is your country of birth?

○ New Zealand
○ Other Please specify _____

Q7.4 For how many years have you lived in New Zealand?

Q7.5 Which ethnic group(s) do you belong to? Please tick all that apply.

❑ New Zealand European
❑ Māori
❑ Samoan
❑ Cook Island Māori
❑ Tongan
❑ Niuean
❑ Chinese
❑ Indian
❑ Other. Please state. _____

Q7.6 Which of these best describes your highest educational qualification?

○ Secondary school incomplete
○ NCEA, School Certificate, or other secondary school qualification
○ Polytechnic qualification or Trade Certificate
○ Undergraduate Degree
○ Postgraduate Degree

Q7.7 Please estimate your own personal earnings from paid employment (before tax) for the year 2014.

○ less than $19,999
○ $20,000 - $39,999
○ $40,000 - $59,999
○ $60,000 - $79,999
○ $80,000 - $99,999
○ $100,000 and over

Q7.8 Who lives in the same household as you? Please tick all that apply.

❑ My flatmate(s)
❑ My husband or wife
❑ My civil union partner
❑ My boyfriend, girlfriend, or de facto partner
❑ My mother and/or father
❑ My son(s) and/or daughter(s)
❑ My brother(s) and/or sister(s)
❑ Other. For example: my grandmother, my mother-in-law _____

Q7.9 What region do you live in?

_____

8.2.3 Value Types and PVQ Items

Value Dimension *Value*	n*	PVQ Item
Openness To Change		**Emphasize readiness for new ideas, actions, and experiences**
Hedonism		*Pleasure and sensuous gratification for oneself.*
	3.	It is important to him to have a good time.
	36.	It is important to him to enjoy life's pleasures.
	46.	It is important to him to take advantage of every opportunity to have fun.
Stimulation		*Excitement, novelty, and challenge in life.*
	10.	It is important to him always to look for different things to do.
	28.	It is important to him to take risks that make life exciting.
	43.	It is important to him to have all sorts of new experiences.
Self-direction		*Independent thought and action-choosing, creating, exploring.*
	1.	It is important to him to form his views independently.
	23.	It is important to him to develop his own opinions.
	39.	It is important to him to figure things out himself.
	16.	It is important to him to make his own decisions about his life.
	30.	It is important to him to plan his activities independently.
	56.	It is important to him to be free to choose what he does by himself.
Self-enhancement		**Emphasize pursuing one's own interests.**
Achievement		*Personal success through demonstrating competence according to social standards.*
	17.	It is important to him to have ambitions in life.
	32.	It is important to him to be very successful.
	48.	It is important to him that people recognize what he achieves.

Power		Social status and prestige, control or dominance over people and resources.
	6.	It is important to him that people do what he says they should.
	29.	It is important to him to have the power to make people do what he wants.
	41.	It is important to him to be the one who tells others what to do.
	12.	It is important to him to have the power that money can bring.
	20.	It is important to him to be wealthy.
	44.	It is important to him to own expensive things that show his wealth.
Face[19]		*Security and power through maintaining one's public image and avoiding humiliation*
	9.	It is important to him that no one should ever shame him.
	29.	It is important to him to protect his public image.
	49.	It is important to him never to be humiliated.
Conservation		**Important to uphold harmony, tradition, and safety.**
Security		*Safety, harmony and stability of society, of relationships, and of self.*
	13.	It is very important to him to avoid disease and protect his health.
	26.	It is important to him to be personally safe and secure.
	53.	It is important to him to avoid anything dangerous.
	2.	It is important to him that his country is secure and stable.
	35.	It is important to him to have a strong state that can defend its citizens.
	50.	It is important to him that his country protect itself against all threats.

---

[19] Optional Value; not included in final measurements to align with measures used in previous literature.

Conformity		*Restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms.*
	15.	It is important to him never to violate rules or regulations.
	31.	It is important to him to follow rules even when no-one is watching.
	42.	It is important to him to obey all the laws.
	4.	It is important to him to avoid upsetting other people.
	22.	It is important to him never to annoy anyone.
	51.	It is important to him never to make other people angry.
Tradition		*Respect, commitment and acceptance of the customs and ideas that traditional culture or religion provide the self.*
	18.	It is important to him to maintain traditional values and ways of thinking.
	33.	It is important to him to follow his family's customs or the customs of a religion.
	40.	It is important to him to honor the traditional practices of his culture.
Humility[20]		*Recognizing one's insignificance in the larger scheme of things*
	7.	It is important to him never to think he deserves more than other people.
	38.	It is important to him to be humble.
	54.	It is important to him to be satisfied with what he has and not ask for more.
Self-transcendence		Importance placed on the well-being of, and admiration for others.
Universalism		*Understanding, appreciation, tolerance and protection for the welfare of all people and for nature.*
	8.	It is important to him to care for nature.
	21.	It is important to him to take part in activities to defend nature.

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[20] Optional Value; not included in final measurements to align with measures used in previous literature.

45.	It is important to him to protect the natural environment from destruction or pollution.
5.	It is important to him that the weak and vulnerable in society be protected.
37.	It is important to him that every person in the world have equal opportunities in life.
52.	It is important to him that everyone be treated justly, even people he doesn't know.
14.	It is important to him to be tolerant toward all kinds of people and groups.
34.	It is important to him to listen to and understand people who are different from him.
57.	It is important to him to accept people even when he disagrees with them.

Benevolence	*Preservation and enhancement of the welfare of people with whom one is in frequent personal contact.*
11.	It is important to him to take care of people he is close to.
25.	It is very important to him to help the people dear to him.
47.	It is important to him to concern himself with every need of his dear ones.

*Source: Adapted from (Schwartz et al., 2001) *n = Item number in PVQ Questionnaire*

8.3 Study Two Appendices

8.3.1 Interview Participant Information Sheet[21]

New Zealand

SCHOOL OF GEOGRAPHY, ENVIRONMENT AND EARTH SCIENCES
TE KURA TĀTAI ARO WHENUA
VICTORIA UNIVERSITY OF WELLINGTON, PO Box 600, Wellington 6140, New Zealand
Phone + 64-4-463 5337 **Email** geoenquiries@vuw.ac.nz **Web** www.victoria.ac.nz/sgees

Interview Participant Information Sheet

In-home energy use:
A cross-cultural study of values, environmental concern, and behaviour

Dear Participant,
Thank you for considering participation in this interview. My name is Sophia, and this interview is part of my Masters of Environmental Studies research project at Victoria University of Wellington. This project is being supervised by Dr Wokje Abrahamse and Dr Taciano Milfont, and has been approved by Victoria University's Human Ethics Committee.

Project
We're interested to know more about the relationship between motivations and electricity behaviours, and whether there are differences across cultures. These interviews are being conducted in both New Zealand and Japan. Your participation in this research may help to improve campaigns promoting energy efficiency in the home.

What's involved?
The interview will be conducted in a semi-structured format. This means that there are a few questions that I would like to cover, however, I am most interested in what you think is relevant to the discussion. Therefore, other relevant topics may be covered as well.

A schedule for the interview, including the topics to be covered are available prior to the interview. Please let me know if you would like to view this beforehand. The interviews will take no longer than 45 minutes, at a time and place that is convenient for you.

Privacy and Confidentiality
All of the information discussed during the interview is entirely confidential. Your name will not be recorded and no direct association will be made between yourself and the information that you provide. The information you provide will be coded by a pseudonym only, as requested by you on the consent form.

Use of Data
The overall findings will form part of a Master's thesis that will be submitted for assessment. General findings may be submitted for publication in a scientific journal, or presented at conferences. Some scientific journals may require the interview data to be shared with other competent researchers. A copy of the coded data will remain in the custody of Sophia Murphy and Dr Wokje Abrahamse for up to five years after conclusion of the research for this purpose only. Remember that all of the information we discuss is confidential, and no presentation of this work will be directly associated with your identity.

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[21] Information sheets were discussed orally, face-to-face between myself, the interpreter, and each participant in Japan, prior to conducting the interviews. Written information sheets were not used.

Storage and Disposal of Data

The interviews will be recorded digitally and electronically transcribed. Access to the data will be restricted to myself and Wokje. All electronic material will be password protected. Any written material will be destroyed, and all electronic recordings will be erased within five years of the completion of this research project.

Right of Withdrawal

If you would like a transcript of our interview, you can request one by contacting me via e-mail. If you would like to make any changes to your statements, please advise me of this prior to 31/10/2015. You may also request to withdraw your participation and to have the interview data erased and not used in this study. If you wish to withdraw participation, please inform me of your withdrawal within 3 weeks after the date of the interview taking place.

Provision of Feedback

If you would like to see the overall results of this study once the study is completed, you can request this by sending me an e-mail.

If you have any further questions regarding this study, please contact myself, or Dr Wokje Abrahamse using the contact details provided below.

Your help is much appreciated.

Sincerely,
Sophia Murphy

Sophia Murphy	Wokje Abrahamse, PhD	Taciano Milfont, PhD
Masters Student	Lecturer Environmental Studies	Senior Lecturer School of Psychology
Sophia.Murphy@vuw.ac.nz	Wokje.Abrahamse@vuw.ac.nz	Taciano.Milfont@vuw.ac.nz

If you have any concerns about the ethical conduct of the research you may contact the Victoria University HEC Convener: Associate Professor Susan Corbett. Email susan.corbett@vuw.ac.nz or telephone +64-4-463 5480.

8.3.2 Interview Participant Consent Form

New Zealand

SCHOOL OF GEOGRAPHY, ENVIRONMENT AND EARTH SCIENCES
TE KURA TĀTAI ARO WHENUA
VICTORIA UNIVERSITY OF WELLINGTON, PO Box 600, Wellington 6140, New Zealand
Phone + 64-4-463 5337 **Email** geoenquiries@vuw.ac.nz **Web** www.victoria.ac.nz/sgees

Participant Consent Form

In-home energy use:
A cross-cultural study of values, environmental concern, and behaviour

Researcher: Sophia Murphy, Victoria University of Wellington

I have been given and have **understood the explanation of this research** project. I have had an opportunity to ask questions and have them answered to my satisfaction.

I understand that **I may withdraw** myself (or any information I have provided) from this project without having to give reasons. I understand that I shall contact Sophia at Sophia.Murphy@vuw.ac.nz before 9/30/2015 if I wish to do so. In this instance, the information I have provided will be deleted.

I understand that any **information I provide will be kept confidential** to the researcher and supervisor of this project. I understand the published results will not use my name, and that no opinions will be attributed to me in any way that can foreseeably identify me. I understand that the electronic recording of this interview will be wiped within 5 years following the completion of the project.

I fully understand the information presented on this document and agree to take part in this research.

Signed:

Name of participant: **Date:**

Pseudonym of choice for research:

If you would like to receive a summary of the results, or a transcript of our interview please send me an e-mail on Sophia.Murphy@vuw.ac.nz

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ビクトリア大学
インタビュー同意書

指導教員主事：アブラハムサ　ボキア博士 (Dr. Wokje Abrahamse)
　　　　　　　ミルフォント　タシアノ博士 (Dr. Taciano Milfont)

実験担当学生：Sophia Murphy マーフィーソフィア
リサーチプロジェクト名：In-home energy use:　A cross-cultural study of values, environmental concern, and behaviour

私は，２７年８月 ＿＿＿ 日、ビクトリア大学の マーフィーソフィア
から以下のリサーチプロジェクトがどのように執り行われるかについて、また私が参加する
にあたっての条件について説明を受けました。

このリサーチプロジェクトへの参加の範囲とその性質、十分に認識しています。
また私は、いかなる権利の侵害あるいは不利益な対応を受けることなく、いつでも同プロジ
ェクトへの参加を辞退できることを理解しています。
私はここに同リサーチプロジェクトに参加することに同意します。

名前(活字体)：＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

署名：＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿　日付：＿＿＿＿＿＿＿＿＿＿

If you would like to receive a summary of the results, or a transcript of our interview、マーフ
ィーソフィアにメールして下さい。 Sophia.Murphy@vuw.ac.nz

8.3.3 Interview Schedule for Participants

New Zealand

SCHOOL OF GEOGRAPHY, ENVIRONMENT AND EARTH SCIENCES
TE KURA TĀTAI ARO WHENUA
VICTORIA UNIVERSITY OF WELLINGTON, PO Box 600, Wellington 6140, New Zealand
Phone + 64-4-463 5337 **Email** geoenquiries@vuw.ac.nz **Web** www.victoria.ac.nz/sgees

Interview schedule

Electricity conservation:
A cross-cultural study of values, environmental concern, and behaviour

Date: July 2015
Researcher: Sophia Murphy, Victoria University of Wellington

1. Introduction

   Human ethics forms - discuss participant information sheet and sign consent form.

2. Electricity use and behaviour

   How is electricity used in the home?

3. Electricity shortage scenario

   Electricity shortage scenario. Context and visual aids.

4. Electricity shortage scenario behaviours and value links

   Behaviours / actions and motivations during shortage scenario.

5. Reflection and Comments

   Discuss the main reflections from the interview and invite comments. Ask participants if anything in particular stood out for them during the interview.

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Interview schedule

Electricity conservation:
A cross-cultural study of values, environmental concern, and behaviour

Date: July 2015
Researcher: Sophia Murphy, Victoria University of Wellington

1. Introduction

   Human ethics forms - discuss participant information sheet and sign consent form.

2. Electricity use and behaviour

   Want to gain an understanding of how people use electricity in their home.

3. Electricity shortage scenario

   Describe to the participants what an electricity shortage scenario would involve. Can use prompts and information regarding recent electricity shortages and conservation campaigns to provide context.

4. Electricity shortage scenario behaviours and value links

   How do participants' electricity behaviours change during a shortage scenario?
   What types of conservation activities would be undertaken?
   What motivations or values are implicitly or explicitly mentioned in this discussion?
   The aim here is to promote conversation which helps identify the underlying drivers for the conservation behaviours.

5. Reflection and Comments

   At the end of each interview, I will relay back to the participants some reflections from the interview and invite their comments. At this stage, I would like to clarify the main insights from the interview and check if my interpretation is acceptable to the interviewee. I will also use this opportunity to ask participants if anything in particular stood out for them during the interview.

8.3.5 Interview Translating and Transcribing Confidentiality Agreement[22]

SCHOOL OF GEOGRAPHY, ENVIRONMENT AND EARTH SCIENCES
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Translating and Transcribing Confidentiality Agreement

Electricity conservation:
A cross-cultural study of values, environmental concern, and behaviour

Principal Investigator: Sophia Murphy

I, _____, agree to ensure that 1). the information I

translate during the interview process, and 2). the audiotapes I help transcribe will remain

confidential to Sophia Murphy and myself.

I agree to take the following precautions:

1. I will ensure that no person, other than myself and Sophia Murphy, hears the recording.

2. I will ensure that no other person has access to my PC.

3. I will delete the files from my pc once the transcription has been completed.

4. I will not discuss any aspect of the recording with anyone except Sophia Murphy.

Signature: _____

Date: _____

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[22] An agreement was not needed for the New Zealand interviews as only I carried out the transcription process. Furthermore, there was not a Japanese version of the agreement, given the level of English both the interpreter and the transcriber have. Additionally, because they assisted me in translations, translating a document for themselves seemed redundant.