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Towards Sustainability:
Household consumption and lifestyles in the Republic of Ireland and Northern Ireland.

By
Mary J. Lavelle B.A., M.A.

A dissertation submitted to the
Department of Geography,
National University of Ireland, Galway.

Submitted in fulfilment of the degree of
Doctor of Philosophy
to the
National University of Ireland, Galway.

July 2014

Research Supervisor: Dr. Frances Fahy

Head of School: Dr. Aaron Potito

Internal Examiner: Dr. Henrike Rau

External Examiner: Prof. Stewart Barr
DECLARATION

I hereby declare that this thesis has not been submitted as an exercise for a degree at this or any other university. This thesis is entirely my own work; any inclusion of the unpublished and/or published work of others is duly acknowledged in the text. I agree to deposit this thesis in the University’s open access institutional repository or allow the library to do so on my behalf, subject to Irish Copyright Legislation and National University of Ireland’s Library conditions of use and acknowledgement.

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Abstract

Increasing levels of global household consumption, particularly in developed countries, represent a significant sustainability problem. Although emissions across certain sectors – most notably transport and construction – have experienced a temporary decrease due to the economic downturn, overall consumption levels are escalating steadily across the island of Ireland. Increased economic activity, rise in population levels and expanding rates of urban sprawl during the ‘Celtic Tiger Era’ resulted in a deterioration of environmental quality across the island, as well as increases in greenhouse gas (GHG) emissions. This thesis explores important sustainability challenges in the areas of water, energy and transport consumption – sectors which have large environmental impacts per individual household. The research provides greater understanding and insight into present consumption patterns by providing a comprehensive analysis of expressed attitudes and reported behaviours concerning consumption and lifestyles in an all-island context.

Through the development and implementation of an extensive survey instrument, this research collated and identified broad trends in attitudes and behaviours concerning household consumption behaviour and lifestyles. The tool generated extensive large-scale quantitative data concerning consumption patterns on the island. Building on previous behavioural change research, these data are presented and discussed in relation to an adapted framework of environmental behaviour that unpacks the generic term 'environmental behaviour' to reveal different temporal strands of environmental activities. Employing this conceptual framework provides a more nuanced understanding of consumption behaviours. In order to further advance knowledge in this field, this study constructed an innovative typology of respondents according to their expressed attitudes and reported environmental behaviours. This pioneering tool, which was specifically designed for this research, explores respondents’ reported undertaking of habitual and occasional pro-environmental behaviours. The study highlights the potential benefit of using different tailored tools to address different groups of actors in relation to specific behaviours.
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<tr>
<td>10YFP</td>
<td>10 Year Framework of Programmes</td>
</tr>
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<td>CSO</td>
<td>Central Statistics Office</td>
</tr>
<tr>
<td>CLS</td>
<td>CONSENSUS Lifestyle Survey</td>
</tr>
<tr>
<td>CSD</td>
<td>Commission on Sustainable Development</td>
</tr>
<tr>
<td>DEFRA</td>
<td>Department of Environment, Food and Rural</td>
</tr>
<tr>
<td>DOE</td>
<td>Department of Environment</td>
</tr>
<tr>
<td>DEHLG</td>
<td>Department of Environment, Heritage and Local Government</td>
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<tr>
<td>EAP</td>
<td>European Action Programme</td>
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<tr>
<td>EC</td>
<td>European Commission</td>
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<td>EEA</td>
<td>European Environmental Agency</td>
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<td>EFA</td>
<td>Exploratory Factor Analysis</td>
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<tr>
<td>EMT</td>
<td>Ecological Modernisation Theory</td>
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<td>EPA</td>
<td>Environmental Protection Agency</td>
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<td>ESRI</td>
<td>Economic and Social Research Institute</td>
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<td>European Quality of Life Survey</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GPP</td>
<td>Green Public Procurement</td>
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<td>GHGs</td>
<td>Green House Gases</td>
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<td>HESS</td>
<td>Home Energy Saving Scheme</td>
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<tr>
<td>IPCC</td>
<td>Intergovernmental Panel on Climate Change</td>
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<td>IRGC</td>
<td>International Risk Governance Council</td>
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<td>IOFGA</td>
<td>Irish Organic Farmers and Growers Association</td>
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<tr>
<td>KMO</td>
<td>Kaiser–Meyer–Oklin Index of Model Fit</td>
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<tr>
<td>NGO</td>
<td>Non-Governmental Organisation</td>
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<tr>
<td>NI</td>
<td>Northern Ireland</td>
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<tr>
<td>NI SDS</td>
<td>Northern Ireland Sustainable Development Strategy</td>
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<td>NI NSDC</td>
<td>Northern Ireland National Sustainable Development Commission</td>
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<tr>
<td>Acronym</td>
<td>Full Form</td>
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<td>NIRSA</td>
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<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
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<td>PCA</td>
<td>Principal Components Analysis</td>
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<td>PSAW</td>
<td>Statistical Product and Service Solutions</td>
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<td>ROI</td>
<td>Republic of Ireland</td>
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<td>SC</td>
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<td>SPSS</td>
<td>Statistical Package for the Social Sciences</td>
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<td>UN</td>
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<td>UNCED</td>
<td>United Nations Conference on Environment and Development</td>
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<td>UNGA</td>
<td>United Nations General Assembly</td>
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<tr>
<td>UN-DESA</td>
<td>United Nations Department for Economic and Social Affairs</td>
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<tr>
<td>UNEP</td>
<td>United Nations Environment Programme</td>
</tr>
<tr>
<td>UN-DESA</td>
<td>The United Nations Department for Economic and Social Affairs</td>
</tr>
<tr>
<td>UNDSD</td>
<td>United Nations Division of Sustainable Development.</td>
</tr>
<tr>
<td>WSSD</td>
<td>World Summit on Sustainable Development</td>
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<tr>
<td>WCED</td>
<td>World Commission on Environment and Development</td>
</tr>
<tr>
<td>WDC</td>
<td>Western Development Commission</td>
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‘There is enough for everyone’s need, not for everyone’s greed’

Mahatma Gandhi
CHAPTER ONE:

INTRODUCTION
1.1 Overview

There is growing concern for ever-increasing levels of consumption in ‘a world of finite resources and delicate natural ecosystems’ (Gabriel and Lang, 2006: 9). The need to alter current consumption patterns to reconcile economic growth with environmental protection and social development is now a key priority if emission reduction targets are to be achieved. Given the increasingly global scale of environmental challenges, household consumption in particular is being highlighted as an area requiring urgent attention (Spangenberg and Lorek, 2002; Michaelis and Lorek, 2004).

Households represent a key site of consumption, as well as a key arena in which negotiations and discussions over (un)sustainable practices take place. Domestic, or household, consumption is defined as ‘the consumption of goods and services by households including the selection, purchase, use, maintenance, repair and disposal of any product or service’ (Organisation for Economic Co-operation and Development (OECD), 2002). A number of international organisations have noted that household consumption will grow significantly over the next two to three decades unless action is taken (EEA, 2005). These growth predictions are not surprising given that contemporary Western societies have increasingly been redefined as ‘consumer societies’ (McKendrick et al., 1982; 9; Bauman, 2007). The act of consuming has penetrated into cultural norms, forming significant components of an individual’s attempt to find meaning, status, social distinction, social cohesion and identity formation; as well as facilitating a wide range of complex, deeply engrained, social conversations and social processes (Princen et al., 2002). This philosophy of consumerism has gained considerable momentum throughout the twentieth century due to rapid economic globalisation and diffusion of the growth logic of modern capitalism. Indeed, consumption activities have been defined as ‘a cultural universal’ (Douglas and Isherwood, 1979) or the ‘vanguard of history’ (Miller, 1995) with many scholars arguing that consumption is a practice constituted a major component of social life in all societies.

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1 The Intergovernmental Panel on Climate Change (IPCC) has stated that in order to avoid dangerous climate change, developed countries must achieve greenhouse gas emission reductions of 80-95% relative to 1990 levels by 2050 (IPCC, 2007).
throughout history (Douglas and Isherwood, 1979). The reality of this consumerist ‘throw-away’ society – with its constant need to satisfy an ever-increasing demand for goods and services – is that excessive consumption levels are exerting immense strain on the environment globally.

Overconsumption, like numerous other environmental issues has its origins in individual and collective human behaviours (DuNann Winter and Koger, 2004). Hence, the solution to the problem of overconsumption partly lies in the power that resonates within individuals’ behaviours and ultimately their decision-making processes. A strong focus in research and policymaking on individuals as agents for change has emerged in recent times. A change in individual consumption behaviour or lifestyles can play an important role in helping to achieve reductions in carbon emission targets. While this focus on the individual can help improve our understandings of causes and consequences of (over)consumption, it nevertheless is problematic because it ignores many structural and social dimensions of consumption. Consumption behaviour is influenced by a wide array of complex, interrelated factors such as demographics, income and prices, policies and infrastructure, as well as social, cultural and psychological factors. Hence, an appreciation of this complexity, together with an improved understanding of how and why people consume is a crucial initial step towards ensuring that steps taken to shift consumption behaviour towards greater sustainability are both effective, appropriate and just.

While there are complex relationships between production processes and consumption practices, and acknowledging that individual behaviours are constrained by historical and cultural context, the combined impact of households creates significant environmental pressures (UNEP, 2008; EEA, 2012). Across the island of Ireland, household consumption has risen dramatically over the past decade (EPA, 2006). While growth rates significantly reduced post-2008, policy issues associated with over a decade of intense development demands and consumption remain (Kitchin et al., 2012). With mounting pressure on policymakers to meet reductions in carbon emission targets, the promotion of sustainable household consumption should be gaining importance in global political arenas. Unfortunately, due to changing economic climates sustainable household consumption appears to be taking a back seat in many political arenas.
While a notable shift has taken place in recent years towards the need to gain better understanding of human consumption behaviours on an international scale; in the context of Ireland, a complete lack of baseline data has meant that household sustainable consumption has remained a black box for policymakers across the island (O’ Gallachóir et al., 2007). This research is the first of its kind to examine the factors that influence consumption behaviours and lifestyles in an all-island context. It captures individuals’ expressed attitudes towards household consumption, reported consumption behaviours across three areas with significant environmental impacts – water consumption, energy use and transport.

The empirical part of the research presents large-scale primary data on expressed attitudes and reported behaviours regarding consumption and lifestyles in the Republic of Ireland and Northern Ireland. Using detailed factor analysis of these data, this thesis reports on the development of an innovative typology of consumers based on their expressed attitudes and reported behaviours towards consumption and lifestyles. This analysis of household consumption from a behavioural perspective may provide invaluable insight into the current overconsumption patterns in Ireland, and inform future policy recommendations that may be more successful in predicting environmental behaviour change.

This opening chapter provides an overview of the scale of the task of achieving a transition towards sustainable consumption and sustainable lifestyles (see Section 1.2). This is followed by an exploration of the critical issues involved in undertaking sustainable consumption research, focusing in particular on the contested terminology surrounding ‘sustainable consumption and lifestyles’ and the challenges encountered when researching expressed attitudes and reported behaviours (Section 1.3). Section 1.4 discusses the theoretical underpinnings and approaches to behaviour change. The Irish context in which he research is conducted is examined (Section 1.5) as well as sustainable consumption policy to date (Section 1.6). A core aim of this chapter is to clearly outline the overall research questions (Section 1.7) and methodology (Section 1.8). A description of

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2 Food consumption issues, and increasing levels of food waste, are important obstacles in terms of achieving a shift towards sustainable consumption across the island of Ireland. Although CONSENSUS Project focused on food consumption issues, this thesis focuses on water, energy and the consumption of distance as these areas were identified as being priority areas for the island by the OECD (2009).
the approach and scope of the study is then provided (Section 1.9). The chapter concludes with an overview of the structure and content of the subsequent chapters of this thesis (see Section 1.10).

1.2 The scale of the ‘sustainability’ task

Overconsumption, and what has been termed ‘unsustainable’ household consumption patterns, dominate many sustainability debates especially in developed countries (Michaelis and Lorek, 2004). Escalating levels of global domestic consumption have been identified as a major factor concerning environmental harm and pressures (Hubacek et al., 2009). For example, the household consumption domains of eating and drinking, mobility, and housing and infrastructure – have been identified as being responsible for up to 74% of greenhouse gas (GHG) emissions and other air emissions and 70% of direct and indirect material input in the EU (EEA, 2012). In terms of environmental impact, transport, energy, and water consumption sectors have the largest impact per individual household with regard to carbon dioxide emissions, use of natural resources, and production of waste (UNEP, 2008). Although emissions across certain sectors – most notably the transport and construction sectors – have experienced a temporary decrease due to the economic downturn, overall domestic consumption levels in Europe and Ireland, as well as subsequent emissions are increasing in line with global domestic consumption trends (OECD, 2011). Domestic consumption in the European Union (EU), for example, has increased by one-third between the years 1990-2002 (EEA, 2005).

Understanding the interconnectedness of behaviours and global environmental issues is an imperative goal. Overconsumption not only affects local and global ecosystems today but also has implications for the ecosystems of future generations (Cohen and Murphy, 2001). In addition to environmental harm and impacts (Guinee, 2002; Princen et al., 2002), escalating consumption rates can negatively and detrimentally affect the chance for communities to live sustainably (Belk, 1985, 1988). Critics of consumerism argue that materialism, as well as strong affiliations with status-enhancing brands or products and consumer
cultures, can adversely affect the social values of society and communities (Kasser, Ryan, Couchman and Sheldon, 2004). Davies (2005) argues that whether sustainable consumption policies as seen as (un)just or (un)fair will influence people’s reaction to them. This is because inequities (which can occur across space, at different scales and through time), fairness and equity issues are crucial to sustainability debates (*ibid*). Hence, there is a serious need to understand the social meanings and significance of sustainable consumption and lifestyles. A more expansive understanding of consumption, in particular one that recognises the impact of context, the social and psychological objectives of individuals, is needed. A broader understanding of consumption would offer considerable potential for creative policymaking in this field.

1.3 Defining sustainable consumption, lifestyles and pro-environmental behaviours

One central difficulty in conducting research on sustainable consumption is that interpretations vary greatly to the extent to which sustainable consumption involves lifestyles and behavioural change (Michaelis and Lorek, 2004; Hinton and Goodman, 2010). Sustainable consumption can relate to various forms of consumption, and operates through a multitude of consumption-related behaviours and scales (Hinton and Goodman, 2010: 3). Advocates of more radical solutions to the problem of unsustainable consumption argue that only a drastic reduction in consumption levels deserves the label ‘sustainable consumption’ (Hinton and Goodman, 2010). Yet others, who prefer more moderate and incremental changes, imply that different forms of consumption, (such as consuming more green products and services or opting for fair-trade products) can reduce the negative social and environmental impacts of consumption. This has become a major issue of contention in current academic literature.

Indeed, sustainable consumption has become the subject of many political and theoretical debates and contestations. As the term has grown in popularity over the past two decades, various commentators have conceptualised and defined sustainable consumption (for good reviews see UN 1992; Jackson, 2006; Schor,
Princen (1999) stresses the importance of defining consumption in a way that is useful for both social-scientific analysis and public policy, and notes that any definition of consumption should emphasise its material impacts, as these are of primary concern from a sustainability perspective.

Chapter 4 of Agenda 21 explicitly discusses consumption and sustainable development; however it has been critiqued extensively. The following definition from the Norwegian Ministry for the Environment was deemed most apt for this study as this important definition has been credited with advancing sustainable consumption as agenda item in international deliberations:

‘the use of goods and services that respond to basic needs and bring a better quality of life, while minimising the use of natural resources, toxic materials, and emissions of waste and pollutants over the life cycle, so as not to jeopardise the needs of future generations’ (Norwegian Ministry for the Environment, UN 1994).

One pivotal issue for sustainable consumption advocates is the need for further insight into lifestyles. Barr and Prillwitz (2013: 28) argue that the use of the concept of lifestyles, and green lifestyles in particular, can be problematic as they represent a broad range of concepts, which can encompass numerous academic disciplines with a wide range of definitions employed to conceptualise these constructs. Particular lifestyles are often closely intertwined with specific patterns of consumption. For example, the term ‘green’ or ‘sustainable’ lifestyle can be used interchangeably with notions of ‘pro-environmental behaviour’, ‘environmental practice’ and ‘environmentally responsible behaviour’. Pro-environmental or ‘green’ behaviours encompass any action that minimises harm to the environment as much as possible can or even benefit the environment (Steg and Vlek, 2009). Examples often include reducing waste or minimising energy consumption.

Within the broader literature on pro-environmental behaviour, it is regularly assumed that there is one type of pro-environmental behaviour. This thesis challenges this notion and contends that pro-environmental behaviour is a multi-
dimensional, encompassing activities ranging from habitual everyday activities to occasional ‘once-off’ isolated behaviours. This thesis posits that a renewed focus on pro-environmental behaviour is needed to achieve a shift towards sustainability. From a temporal perspective, two categories of green behaviour have been adopted in the context of this study: habitual and occasional ‘once-off’ isolated behaviours.

Habitual actions, often described as ‘doing without thinking’ behaviours, are a series of recurrent actions that are often not the outcome of an individual’s planning process (Barr et al., 2005: 1426). They tend to be performed without complete conscious awareness on the part of the individual concerned. Although habitual actions are initially under conscious control, once internalised by the individual they become automatic responses in specific situations and form parts of habits and routines. Examples of habitual actions include heating and ventilation behaviours, driving styles, or using the washing machine only when it is full. Habitual behaviours require changes to an individual’s daily routine or lifestyle as opposed to major infrastructural changes often necessary for occasional behaviours (Abrahamse et al., 2005).

Occasional or consumption-oriented behaviours tend to be complex and require extensive time and commitment to complete (Barr et al., 2005). Accordingly, occasional behaviours tend to involve conscious planning and decision-making processes by the individual in question, which contrasts with habitual actions. Examples of occasional one-shot behaviours include technology choices (which involve behaviour decisions related to the purchase of energy-efficient technologies and appliances), the purchase of energy efficient cars, as well as insulation of roofs or facades or solar thermal heating systems. As is evident from this list, such behaviours may involve structural changes to the individual’s home which can require extra financial resources on behalf of the individual to implement e.g. installing insulation in one’s home would incur a financial cost to the homeowner. Similarly, these behaviours may also require extra financial resources on behalf of the individual to implement, e.g., infrastructural or internal changes to a home such as installing insulation or solar panels. As noted earlier, many of these consumption-oriented behaviours are classified by Gatersleben et
al., (2002) as having a high psychological and financial impact on people’s daily lives and are often the behaviours that have a high environmental impact. This conceptual divide of pro-environmental behaviour into two robust categories has been associated with a range of environmental actions, such as energy-saving behaviours (Barr et al., 2005), water conservation (Gilg and Barr, 2006), waste reduction and reuse, green consumerism and energy saving behaviours (Black et al., 1985).

An appreciation of the complexity of consumption behaviours is required; improving understandings of the different types of pro-environmental behaviours that exist is an important aspect to ensure a shift towards more sustainable consumption is achieved. Recognising the need to examine the ‘black box’ that is pro-environmental behaviour; this thesis unpacks the previously unexplored temporal aspects of pro-environmental behaviour. This study focuses on the propensity of respondents to engage in both occasional and habitual pro-environmental behaviours, such as reducing water and energy use in the home, or purchasing reusable products and ‘green’ technology. Moreover, it explores why respondents decided to adopt certain large-scale occasional behaviours such as home improvements to reduce energy consumption.

1.4 Researching consumption and lifestyles

Numerous theoretical approaches and discussions regarding different means to promoting green or pro-environmental behaviour have been proposed by psychological and sociological disciplines. Neoclassical economic theory predominantly influenced approaches to behaviour change in the 20th century. This theoretical framework proposes that individuals are rational in their decision-making processes and act rationally based on information provided to them. This theory posits that individuals are independent of society and its exerted social norms and pressures.

Towards the latter part of the 20th century, behavioural economics emerged arguing that ‘bounded rationality’ is important. This theory argues the importance of paradoxes of choice. The complexity of green or pro-environmental behaviour
heightens such a paradox, as it is difficult to gauge what sustainable consumption entails due to its conceptual ambiguity. The importance of norms in terms of pro-environmental decision-making cannot be overlooked. In particular, social norms (i.e. collective rules of how one should behave) and personal norms (our own expectations of how we ourselves should behave) are put forward as important factors to consider in terms of pro-environmental behaviour with many behavioural models and theory including such variables.

Many commentators now shift the discourse towards the need to develop more sustainable lifestyles (Jackson, 2008). Numerous studies have identified how lifestyles can have an important effect on consumption behaviour (see Tudor et al., 2011); with many now arguing that any shift towards more sustainable consumption will be ineffective unless radical lifestyle change is incorporated on a global scale. Lifestyle approaches have numerous advantages in the context of social scientific environmental research (e.g., McKenzie-Mohr, 2000). Firstly, lifestyles are multi-dimensional concepts. According to Star and Griesemer (1988), lifestyles are important boundary concepts and hence, permit communication and understanding across disciplines. In other words, the employment of lifestyles as a framing device to understand environmental behaviour is very important. The term or concept is familiar to many and hence, can provide common ground across disciplines and cultures promoting greater understanding of pro-environmental behaviour on a wider global scale.

Another advantage is that lifestyle framework approaches do not assume society to be a homogeneous entity, but instead acknowledge the fact that society is comprised of segments of different lifestyle groupings, with behaviours varying according to these specific social groupings or lifestyle segments (Mackenzie-Mohr, 2000). Hence, the use of segmentation methods enables comparisons between different lifestyle groupings on a range of consumption issues. For example, segmentation analysis can indicate which groups are actively seeking to influence their friends and family to be more environmentally friendly or which groups are most hesitant towards increased environmental taxes and levies.
This is not to say that lifestyle approaches are without criticisms. This study recognises that lifestyle research tends to view lifestyles as relatively unproblematic. The greater part of segmentation groupings are context specific and hence, they are developed for particular practical applications (Sharp and Darnton, 2006). This makes results difficult to compare and generalise to populations as a whole. More importantly, some critics have challenged the concept of lifestyles because they argue that the term over-emphasises individual choice and responsibilities. Individuals are often locked into unsustainable consumption patterns for numerous reasons. Structural constraints, for example infrastructure, lack of services and inequalities in access to certain services, contribute to consumer lock in (Jackson 2005; Evans and Abrahamse, 2009).

While acknowledging these limitations, segmentation was still deemed the most appropriate method to frame this research. This thesis posits that a segmentation approach could provide a useful analytical tool for the analysis of attitudes and behaviours towards consumption. Lifestyle segmentation provides richer redefinition of target audiences and the barriers these groupings of individuals face when carrying out consumption behaviours. Lifestyle segmentation instruments enable the identification of different segment groupings of individuals who may differ from one another with regard to attitudes, barriers, motivations and current behaviours (Kahle, 1999). The underlying rational of such an approach to behaviour change is based on the logic that the more you know and understand about consumers, the more effectively you can communicate and market to them (Plummer, 1974). The development of a segmentation model is regarded as an important tool in any framework or influencing behaviour (DEFRA, 2010). Based on this rationale, this thesis focuses on individual consumption behaviour and lifestyles.

While acknowledging that individuals are only one actor within the broader spheres of sustainable consumption and production, the author believes it is critical to explore individual lifestyles. This thesis contends that the scale of the challenge of overconsumption is so significant on a global level that techno-efficiency and economic measures alone will not suffice to address it. In line with commentators such as McClenaghan (2008), this study argues that there is urgent
need for changes in individual consumption. Hence, a ‘sound evidence base’ is one crucial factor for the development of successful sustainable consumption policy (Scholl et al., 2010: 46). Baseline data on consumption patterns and lifestyles are essential to assist policymakers; researchers and other actors influence consumption behaviours (OECD, 2013; Gatersleben et al., 2012). However, baseline data on consumption are often inadequate and inaccurate. This is particularly the case for the island of Ireland, where a gap in baseline knowledge towards sustainable consumption and lifestyles was identified by this study. A sustainable lifestyles approach is utilised in this research as a focus to determine key barriers and motivators to environmental action across the island of Ireland. The author adapted an innovative approach to segmentation modelling, based on a Swedish study (e.g., Martinsson and Lundqvist, 2010) who developed and implemented a similar typology model to identify different segments of Sweden’s population according to consumers’ scoring on attitudinal and behavioural scales. Martinsson and Lundqvist’s (2010) research postulates that structural variables, not attitudes, are important for pro-environmental behaviours to take place. Such an approach provides data on segments of the population in relation to their expressed attitudes and behaviours towards three identified consumption areas above and promotes greater understanding of pro-environmental behaviour.

1.5 Situating sustainable consumption in an Irish context

With the exception of broader research on sustainable consumption policy and governance (Doran, 2007; Pender and Dunne, 2007; Barry, 2009) and ecological foot-printing (Lammers et al., 2008), the area of sustainable household consumption is relatively under-explored on the island of Ireland. Yet the two policy regions (the Republic of Ireland and Northern Ireland) face numerous sustainable consumption challenges. Drawing from analysis of OECD’s reports (2009) and EAP (EC, 2008), energy, water and transport were identified as priority areas in terms of sustainable consumption. Many of the challenges in these three sectors can be partially, if not fully, linked back to an increase in dwelling size since the mid-1990s, as well as the property boom of the so-called
‘Celtic Tiger era’ (Davies et al., 2010). Prior to this Celtic Tiger period, the Republic of Ireland (ROI) maintained a relatively undamaged environment due to lack of heavy industry (Pape and Fahy, 2010). Rapid changes in economic activity, population levels and settlement patterns during the Celtic Tiger era resulted in a deterioration of environmental quality across the island as well as increases in greenhouse gas (GHG) emissions. For example, ROI’s combined emissions between 2008 and 2011 were 1.77 million tonnes above its Kyoto limit, when EU Emissions Trading Scheme (ETS) and approved forest sinks that absorb carbon dioxide are taken into account (EC, 2013). Energy (predominantly power generation), agriculture and transport are the top three emitters of GHGs (EC, 2013). Overall, emissions have decreased 15% in Northern Ireland since 1990, compared to 24% across the UK. An increase was noted in these emission levels in 2010. However, Northern Ireland’s emissions increased 3% in 2010, predominantly due to increased demand for energy for heating. The contribution of Northern Ireland (NI) to global (and UK) GHG emissions is small but significant. For example Northern Ireland’s emissions of methane and nitrous oxide both exceed 7% of the total UK figure (DOENI, 2011). In 2011, Northern Ireland’s executive agreed to reduce emissions by 35% on 1990 levels by 2025.

Despite these challenges, the island has been excluded from a number of large-scale international survey studies (e.g., OECD, 2012; National Geographic and Globescan, 2012). Although there have been numerous sustainable consumption research studies undertaken on an international scale (see Quist et al. 2003; DEFRA 2005; 2011; OECD, 2011), research in this critical sector is still in its formative years on the island of Ireland. This study aims to address this gap in knowledge and produce extensive large-scale data concerning baseline attitudes and behaviours towards sustainable consumption and lifestyles in an all-island research context.

The island of Ireland was selected as a case study region for a number of reasons. A recent Living Planet report (WWF, 2012), states that Ireland now has the 10th

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3 The Celtic Tiger era in Ireland was circa the mid-1990s until early 2008. It was a period of unprecedented economic growth and development, which saw the economy significantly outperform all other economies in EU (Sweeney, 2008). According to the UNEP (2008), Ireland had the fourth highest GDP per capita in the world during that period.
largest ecological footprint in the world, and the 4th largest ecological footprint\textsuperscript{4} in the European Union. On average, individuals in Ireland consumed over six global hectares per person\textsuperscript{5} (6.22gha) in 2008. As noted above, over the past two decades levels of consumption in the Republic of Ireland are increasing in line with global rates regarding water, energy, food and transport. While growth rates reduced after 2008, significant policy issues associated with over a decade of intense development demands remain (Kitchin \textit{et al}, 2012).

Similarly, household consumption levels in Northern Ireland also escalated at a rapid pace. This growth in consumption has contributed to a number of environmental problems including rapid rises in CO2 emissions, as well as an over-reliance on landfill for escalating levels of waste (EPA, 2008). For these reasons, both the Republic of Ireland (ROI) and Northern Ireland (NI) were chosen as the case study areas for this research.

\section*{1.6 Policy to date}

Policy is necessary to support and promote sustainable consumption and pro-environmental behaviour (EEA, 2003; Lehner \textit{et al}., 2011). Sustainability policy across the island of Ireland has been predominantly led by international initiatives in the environmental field. As will be discussed in detail in Chapter Two, current responses by policymakers across both policy regions have tended to focus on economic and technological solutions to unsustainable consumption. Over the past ten years, specific areas of consumption have been targeted by the introduction of economic and communicative instruments mostly aimed at individuals and households. Economic instruments include waste charges, the proposed introduction of water charges (in 2015), and changes in vehicle registration tax (VRT) in 2008 to reflect car emissions. A very successful economic measure, which attracted considerable attention from international policy makers and sustainability researchers, was the plastic bag levy introduced in 2002. The main purpose was to reduce the consumption of disposable plastic bags by influencing

\textsuperscript{4} The ecological footprint (EF) figure is based on built-up land, fishing, forest, grazing cropland and carbon (Global Footprint Network, 2012).
\textsuperscript{5} The world average EF is 2.7 GHA per person (based on 2008 figures). The earth itself can only support a footprint of 1.8 hectares (WWF, 2012).
consumer behaviour. Figures from the Department of the Environment (Dáil Eireann, 2013) stated that the 22 cent plastic bag levy has amounted to €7.2 million in revenue in 2013. The levy has contributed €203.4 million in the last 11 years since its introduction to the government and has been channelled to an environmental fund which funds environmental projects across the island. One European survey, entitled Sustainable Consumption and Production in the European Union, estimates that this levy has reduced consumption of plastic bags in Ireland by 92% (UNEP, 2004). However, the rationale underlying this policy initiative focused on reducing litter rather than sustainable consumption.

Communicative measures include a range of home energy savings schemes, media campaigns to save energy and environmental programmes such as the Green Schools initiative\(^6\) (An Taisce, 2013), all of which have been introduced in the past decade. In the Republic of Ireland, the Government has over the past decade invested heavily in mass media environmental awareness campaigns as a tool for encouraging behaviour change. For example, ‘The Power of One’ campaign was aimed at changing attitudes and actions towards energy consumption by promoting the idea that individual environmental actions can have a positive effect on the wider environment. The effectiveness of this communicative initiative is questionable. Although the campaign cost 2.9 million euro for the first two years in operation, no positive effect of the campaign was noted on self-reported energy-saving behaviour (Diffney et al., 2009).

Policies tend to be based on prevailing rationalistic viewpoints, which stipulate that consumers are fully rational and autonomous when making consumption decisions. In addition, many of these policies assume that the public will ultimately change their behaviour by absorbing the information being provided to them. In fact, this assumption is increasingly being questioned as research indicates that increased information does not necessarily lead to behavioural change (Cohen and Murphy, 2001; Davies, 2005). There has been a dearth of research in Ireland that measures the effectiveness of these policies at promoting pro-environmental behaviours (Davies et al., 2010). Moreover, the vast majority

\(^6\) The Green-School initiative is an international environmental education programme, environmental management system and award scheme that promotes whole school action towards achieving a sustainable environment through the implementation of the seven-step methodology (An Taisce, 2013).
of funded projects tend to focus on sites of consumption outside the home, such as schools and local authorities (e.g., An Taisce’s Green Schools Programme). The success of more effective and appropriate ways to encourage more sustainable consumption behaviours relies on an understanding of the drivers and barriers behind household consumption behaviours (Princen et al., 2002). This thesis aims to gain further insight and understanding into present household consumption behaviours and sustainable lifestyles through the use of a social marketing approach towards sustainable consumption behaviour, which could yield both positive political and knowledge outcomes for the field of sustainability.

1.7 Research aims and objectives

Based on these conceptual and operational gaps identified in current research, this research presents a theoretically informed and methodologically rigorous quantitative investigation of householders’ expressed attitudes and reported behaviours towards household consumption and sustainable lifestyles across the island of Ireland. The overall aims of this research are as follows:

1. Conduct a critical review of existing national and international policy developments in the area of sustainable consumption and production;

2. Collect large-scale data for the island of Ireland on expressed attitudes and reported behaviours towards consumption behaviours and lifestyles, using a specifically designed and developed survey questionnaire in order to produce a sound evidence base for the development and promotion of pro-environmental behaviour; and capture temporal dimensions of pro-environmental behaviour.

3. Identify trends and potential gaps between expressed attitudes and reported pro-environmental actions in three critical sectors of household consumption - transport, water, and energy consumption – across Northern Ireland and the Republic of Ireland.
4. Construct an innovative typology of environmental attitudes and pro-environmental behaviour using empirical data from all-island survey on 1,500 household consumption and lifestyles, to establish lifestyle groupings and to unpack potential nuances between socio-demographic characteristics of each grouping.

In order to achieve these study aims, five key research objectives were developed:

1. To critically review existing policy and academic literature to identify the current gaps in existing knowledge.

2. To develop and test a survey instrument to generate baseline data on (un)sustainable consumption and lifestyles in Ireland.

3. To undertake an all-island household survey to explore the expressed attitudes and beliefs that play a role in shaping an individual’s consumption patterns; as well as to examine the barriers and incentives that can impel or inhibit a sustainable lifestyle.

4. Develop a typology framework of consumers and conduct a comparative analysis of attitudes and behaviours concerning sustainable lifestyles based on key socio-demographic factors (e.g., gender, age, education, income and housing tenure status).

Overall, this thesis aims to provide novel insights into present household consumption patterns and lifestyles across the island. This research is essential as it is the first to establish a large-scale comprehensive dataset of consumption and lifestyles in both the Republic of Ireland and Northern Ireland. These data aim to capture current consumption trends across the island, as well as highlight key opportunities and obstacles towards achieving more sustainable consumption practices and lifestyles. The thesis strives to make an important contribution to empirical social-scientific sustainability research, by devising an innovative typology instrument with the aim of permitting greater understanding of various segments of respondents.
1.8 Methodology employed

One difficult and important challenge facing researchers seeking to unpack attitudes and behaviours towards sustainable consumption and lifestyles is to develop methodologies that accurately capture the intricacy of environmental practices in different consumption contexts. To achieve its aims, this study utilises a cross-sectional research design. In contrast to longitudinal research designs that extend beyond a single moment in time, cross-sectional studies enable a ‘snapshot’ of trends at a specific point in time. The latter is particularly matched to the generating of large scale data on trends in a given population.

In terms of research methodology, an extensive survey instrument was developed and administered across three sample areas in Northern Ireland and the Republic of Ireland, obtaining data from 1,500 households across 30 Electoral Districts (EDs). A survey methodology was deemed the most fitting research tool as an extensive review of the international literature on sustainability and environmental behaviours revealed the undisputed use of questionnaire surveys both within and across countries (e.g., DEFRA, 2001; Quist et al. 2001; OECD, 2011; Tudor et al., 2011; National Geographic and Globescan, 2012).

An adapted version of Barr’s framework of environmental behaviour structures the analysis under the headings of ‘environmental concern variables’, ‘situational variables’ and ‘psychological variables’. A theoretically informed approach to segmentation (see Martinsson and Lundqvist, 2010; DEFRA, 2008; Csutora, 2012) is deployed to enable greater exploration of nuances between expressed attitudes and reported environmental behaviours. This research provides a comprehensive response to international calls for action on sustainable consumption and will make a major contribution to the development of Irish policy aimed at promoting sustainable consumption patterns in key areas such as transport, energy, and water.
1.9 Research approach and scope

Understanding human behaviour and its transformation is a complex task. Within this context, the manner in which individuals perceive and practically deal with a critical environmental issue such as sustainable consumption is grounds for significant social scientific and interdisciplinary research.

As advocated by Barr (2008), a holistic approach towards environmental behavioural change is needed to achieve a significant shift towards sustainable consumption. This thesis posits that it is impossible to understand consumption behaviours by examining individuals as solely autonomous actors. Consumption behaviours are determined by the complex interplay of factors, other than attitudes alone, such as a wide range of situational factors (e.g., structural variables, socio-demographics variables, and psychological factors). Hence, this thesis applies a modified individualistic approach to the study of consumption behaviour, in that the individual is still posited as the main unit of analysis; however the crucial role of situational circumstances is not overlooked.

This thesis builds on a framework approach to sustainable consumption, one that has its theoretical foundations embedded in a number of different disciplines; including geography, sociology, psychology, and social marketing. This research utilises a social scientific lens to explore attitudes and behaviours towards household consumption. Building on Barr’s framework of environmental behaviour, this thesis discusses variables of pro-environmental behaviour under three broad categories: environmental concern, situational variables and psychological factors. It acknowledges the importance of various factors that can influence or impede a sustainable consumption decision; including socio-demographic variables, structural variables like infrastructure and the built environment, as well as individuals’ psychological characteristics such as self-efficacy, issues of responsibility, and societal norms and social pressures. This research also draws on lifestyle approaches to understand nuances between groupings of individuals who undertake green environmental behaviours on a once-off or everyday temporal scale.
There are advantages and disadvantages to amalgamated ideas from different perspectives. A focus solely from a social science perspective may be somewhat critical of the idea of employing lifestyle groupings to the examination of pro-environmental behaviours. Sociologists tend to be critical of the notion of lifestyle, instead arguing that structure is important to influencing individuals’ actions (e.g., Shove, 2010; Martinsson and Lundqvist, 2010).

Households are complex spatial and temporal arenas where multiple meanings of sustainability emerge (Lane and Gorman-Murray, 2011; Barr and Prillwitz, 2013). It is at this level of societal organisation that segmentation and social marketing strategies have arguably achieved the most success because calls to change lifestyles to incorporate environmental concerns are closely related to existing everyday practices (Shove, 2003). In addition, the household scale fronts a variety of networks within which sustainable can also occur (Barr, 2008). Overall, households and the day-to-day choices made by their members, both in terms of products and services purchased and the way these are used, are essential sites where negotiations over sustainable practices continue (Davies et al. 2010).

1.9.1 CONSENSUS Project

This research forms the foundations of a wider large-scale research project in the Republic of Ireland and Northern Ireland entitled the CONSENSUS Project (see Appendix One for overview of CONSENSUS Project structure). The seven year research project is funded by the Environmental Protection Agency (EPA) in the Republic of Ireland. The CONSENSUS Project (CONSumption, ENvironment and SUStainability) is an interdisciplinary, collaborative cross-border research project involving researchers from Trinity College Dublin and the National University of Ireland, Galway. The aim of the project is to generate baseline data in the pivotal areas of consumption which impact negatively on the environment: food, transport, energy and water. The project aims to develop recommendations for policymakers by identifying the underlying reasons for and barriers towards more sustainable consumption. It is envisaged that these recommendations serve as guidelines for policy-makers in Ireland who are tasked with introducing policies that enhance a transition to sustainable consumption patterns. The
CONSENSUS Project was granted full approval by the NUI, Galway Research Ethic Committee on 14 April 2009. This analysis of household consumption behaviour through the lens of sustainability aims to provide an invaluable and in-depth exploration into the current overconsumption patterns on the island.

1.9.2 An all-island focus

An all-island focus on attitudes and behaviours towards sustainable consumption and lifestyles was identified as an important gap to address in terms of current research. One political challenge that influences the implementation of sustainable consumption policies on the island of Ireland is the relationship between Northern Ireland and the Republic of Ireland (Pape and Fahy, 2010). Greater collaboration between these two policy regions is needed to address sustainable consumption and production challenges. The establishment of the North-South Ministerial Council (NSMC), which argues for enhanced co-operation in terms of strategies to produce all island approaches to sustainable development, has initiated improved cross-border co-operation in terms of environmental policy (Barry, 2009: 48). An all-island approach to environmental governance has much merit insofar it can articulate the transition from environmental protection to sustainable development (Pape and Fahy, 2010).

In order to develop roadmaps towards more sustainable consumption, up-to-date information on attitudes and consumption behaviours is required. Although understanding what individuals consume is important, assessing the impact that that consumption has, or indeed understanding why people consume what they do, and how it makes them feel, is equally as important (Princen, 2002). Although a number of studies exist on general attitudes towards the environment in an Irish context (see Drury 2000; Motherway, Kelly, Faughnan and Tovey, 2003) and waste in particular (see Fahy, 2005), many of them are now somewhat outdated. This is especially the case in relation to the dearth of data pertaining to the recent economic downturn, which occurred across the island of Ireland from 2008. In particular, the impact this recession might have had in terms of respondents’ consumption behaviours is important to bear in mind. This thesis addresses this identified need for extensive baseline data. The survey instrument generates large
data on the underlying motives or rationale given for undertaking certain types of pro-environmental behaviours, such as habitual everyday actions and occasional behaviours.

1.10 Structure of the thesis

This introductory chapter established the rationale for researching household consumption in Ireland (both Northern Ireland and the Republic) and the need for attitudinal and behavioural research into this critical area. The remainder of this thesis comprises of eight chapters. The following chapter – Chapter Two – positions the research in the wider academic debates concerning sustainable consumption and lifestyles. Chapter Three grounds the reader in the methodological assumptions of the research. Chapter Four, the initial results chapter, provides findings of a desk-top policy analysis of developments in the field of sustainable consumption and production. Empirical results from the CONSENSUS Lifestyle Survey are presented in Chapters Five to Eight. Finally, Chapter Nine reflects on the research in its entirety. The chapter discusses limitations, recommendations for future research agendas and also potential policy implications of this research.

Chapter Two sets out the conceptual foundations of this research. This chapter explores the subject of human consumption behaviour, as well as behaviour models and framework approaches, to provide an overview of the state of the literature. This thesis includes a review of literature from a wide variety of sources including environmental psychology, sociology as well as geographies of consumption. This chapter ends with a review of current work on segmentation of lifestyle groups and typologies of consumption behaviour.

Chapter Three presents the methodological framework for this research, setting out the rationale for the selection of a quantitative approach. This is complemented by a detailed overview of the methodology employed for this thesis. The development of the CONSENSUS Lifestyle Survey questionnaire, which was designed specifically for this project, is discussed. A detailed
description of each of the three sample areas is provided; in particular in terms of the socio-economic profile of each of the sample areas selected. The procedure employed to collect these data is outlined as well as ethical considerations and the researcher’s positionality. In addition, Chapter Three examines the difficulties and limitations involved in utilising this kind of methodology. Challenges pertaining to administered surveys are discussed, as well as potential biases related to such methods. Finally, this chapter discusses how the resultant data are analysed, including the preparation and coding of data prior to analyses. Challenges associated with inferring conclusions from survey data are addressed. The development of attitudinal and behavioural indexes are outlined using factor analysis techniques, as well as discussions on subjective thresholds required to qualify respondents for certain typology segments based on their reported undertaking of habitual and occasional pro-environmental behaviour. In order to construct these scales, this chapter outlines the testing of various items using inter-item correlations to evaluate patterns in participants’ responses. Results of Cronbach’s alpha are reported to demonstrate how this research constructed its attitudinal and behavioural scales to measure and report respondents’ attitudes and behaviours in subsequent chapters.

Chapter Four comprises the initial results chapter, based on a desktop policy analysis of sustainable development policy more generally, and sustainable consumption in particular in the Republic of Ireland and Northern Ireland, as well as an overview of international policy in this important field of sustainability. Challenges facing sustainable household consumption in an all-island Ireland context are discussed to provide a situated analysis of water; energy use; and transport. The chapter concludes by identifying key gaps regarding sustainable consumption research and policy to date in the Irish context.

Chapter Five, the second results chapter, captures dominant trends in empirical data collected, regarding expressed attitudes regarding reported household consumption behaviour and lifestyles in Northern Ireland and the Republic of Ireland. Following an overview of respondents’ socio-economic and demographic profile, results are compared to recent census data in the Republic of Ireland (Central Statistics Office (CSO), 2011) and Northern Ireland (Northern Ireland
Statistics and Research Agency (NISRA), 2011). This chapter examines variables that affect environmental behaviours in accordance with three prime areas of relevance identified in Chapter Two. These broader categories of variables include: environmental concern variables, situational variables (structural, socio-demographic and knowledge, awareness and experience) and psychological variables (e.g., self-efficacy, perceptions of environmental responsibility, social norms and social-desirability, and intrinsic motivation).

**Chapter Six** explores reported behavioural trends and patterns of behaviour – that emerged from the collected survey data – in relation to three consumption areas, namely water, energy and transport. This chapter provides an overview of behavioural bases of the sample. This results chapter explores respondents’ reported consumption behaviours, in terms of an adapted version of Barr’s framework for environmental behaviour. The variables are environmental concern, situational variables and psychological factors. This initial exploration reveals what behaviours are currently being practiced across the island of Ireland. It provides an overview of trends and patterns in terms of consumption behaviours.

Following on from the establishment of baseline trends and emerging patterns in terms of reported water, transport and energy consumption activities, **Chapter Seven** furthers the analysis of consumption behaviour through an examination of the undertaking of two different types of pro-environmental behaviours: occasional ‘one-shot’ behaviour and habitual everyday behaviours. The chapter dissects the notion of pro-environmental behaviour as a single entity, and sets the scene for further investigation of these two behaviour categories. Overall, this chapter focuses on the propensity of respondents to engage in both occasional and habitual pro-environmental behaviours, such as reducing water and energy use in the home, or purchasing reusable products and ‘green’ technology. Moreover, it also explores why respondents adopt large-scale occasional behaviours such as the installation of insulation or purchasing an energy-efficient car or appliance.

**Chapter Eight** develops two typologies of respondents, based on their environmental attitudes and their undertaking of occasional and habitual actions. By adopting a novel segmentation approach developed exclusively for this study,
the chapter constructs eight groupings of respondents. The chapter explores how these groupings of individuals either diverge or mirror one another according to their socio-economic and demographic characteristics. This investigation critically explores the notion of tailored behavioural change initiatives for targeted audiences. An extensive profile of the different lifestyle groupings is provided. It is anticipated that these profiled segments of respondents may inform future sustainability research and policy making across the island.

Chapter Nine summarises the key findings from the research and provides a detailed and critical discussion of the results. Overall, Chapter Nine draws together the research findings, before putting forward recommendations for future research agendas and potential policy implications for sustainability of household consumption across the island of Ireland. Lessons are drawn out based on conclusions that could be relevant to the international field of sustainable consumption and production. Recommendations for developing local and national sustainable consumption policies and programmes across the island are put forward, thereby enabling policymakers to develop more effective sustainable consumption strategies that are closely aligned with the attitudes and behaviours of certain identified lifestyle groupings.
CHAPTER TWO:

THEORISING ENVIRONMENTAL ATTITUDES AND BEHAVIOURS
2.1 Introduction: Why look at consumption from a behavioural perspective?

Building on from the previous chapter – which discussed the importance of sustainable consumption globally – one main task posited by sustainable consumption advocates is the need to expand our understanding of individuals’ consumption behaviours (Jackson, 2008; EEA, 2012; OECD, 2013). A change in consumer behaviour can play an important role in meeting reductions in carbon emission targets (Gatersleben et al., 2012). In particular, new insights are needed into the underlying reasons for why individuals currently consume in the manner in which they do.

This chapter situates this study within the body of research on pro-environmental behaviour change. It examines and classifies different approaches to pro-environmental and lifestyle framework approaches. Grounded in debates between cognitive and contextual approaches, this chapter explores the suitability of different perspectives as a theoretical anchor for the empirical research conducted in this study.

With regard to understanding householders’ consumption behaviours, the chapter commences by outlining and critically examining key cognitive approaches to pro-environmental behaviour (see Section 2.2). Existing neo-liberal approaches to ‘behavioural change’ tend to rely on linear models of human behaviour that focus predominantly on individuals and their decision-making processes. A particular focus centres on how neglect of contextual and situational factors by traditional cognitive models has resulted in the transition towards the development of more recent framework approaches to understanding pro-environmental behaviour. This study adapts Barr’s framework of environmental behaviour to frame and critically discuss and examine variables and factors that influence pro-environmental behaviour change (see section 2.3).
environmental behaviour is then utilised in Chapters Five and Six, which comprise the empirical analysis of survey data to explore attitudes and behaviours towards sustainable consumption in an all island context. The chapter concludes by critically examining social marketing techniques, specifically lifestyle segmentation, as a method of influencing and understanding sustainable consumption behaviours (see Section 2.4). The chapter concludes with reflections on the usefulness of segmentation analysis as a tool to further our understandings which shape consumption behaviour and lifestyles. Overall, this critical literature review identifies the key bodies of existing literature in the field as well as identifies research gaps, which informs and structures the empirical analysis of survey data in Chapters Five to Eight.

2.2 Theorising environmental attitudes and behaviour

This section explores mainstream approaches in research on environmental attitude and behaviours to ground the reader in the ongoing debates between cognitive and contextual approaches. This chapter centres on challenges and opportunities associated with different perspectives. The section commences by outlining key cognitive approaches to pro-environmental behaviour (see section 2.2.1). Next consumer motivation theories are examined (section 2.2.2), followed by a reflection on the utility of both approaches to promoting greater understanding of pro-environmental behaviour change (section 2.3).

2.2.1 Cognitive approaches to pro-environmental behaviours

Rationalist Choice Models (RCM), which are considered the original models of pro-environmental behaviour, assume human behaviour to be the outcome of rational decision-making (Harrison and Davies, 1998). These theories adopt a positivist linear model of human behaviour; whereby individuals are deemed reasonable, rational, and autonomous in decision-making. Within this perspective, decisions concerning consumption practices are not influenced by others but
instead, the individual in question is only concerned with maximising their own personal welfare and self-interest.

The underlying principles of Rationalist Choice Model assume a linear progression; whereby the provision of information is assumed to directly generate behaviour change by increasing awareness and changing attitudes. The assumption is that individuals will automatically utilise knowledge provided to them to make more sustainable decisions regarding their consumption choices. Figure 2.1 illustrates this proposed linear progression of environmental action resulting from awareness and information provision.

![Figure 2.1: Example of linear model of pro-environmental behaviour change](image)

However, consumers’ choices are not isolated acts of rational decision-making (Princen, 2002). Indeed, human beings are not always rational in terms of their decision-making processes. This is evidenced in Festinger’s cognitive dissonance theory, which posits that when new information ‘creates dissonance’ with existing cognitive schemata, individuals have been shown to rationalise their otherwise irrational decision making processes in order to fit this new information within their current schemata (Festinger, 1957). The role of information in bringing about sustained behaviour change has long been debated (Blake, 1999). Although information is an important foundational concept of behaviour models – as well as an important precursor to action – it is not a sufficient condition on its own to ensure behaviour change without attention to other factors (McKenzie-Mohr and Smith, 2000; Burgess et al., 2002).
Many commentators challenge these simplistic model structures and their belief in the existence of a linear path from information provision to consistent behaviour patterns (Princen 1999; Røpke 2009; Burgess et al., 2002). A value-action gap exists between individuals’ knowledge about environmental issues and their corresponding consumption behaviour (see Blake, 1999; Burgess et al., 2002). This discrepancy, also known as the ‘intention-behaviour gap’ or ‘attitude-behaviour inconsistency’ (Eiser, 1986), refers to increased value placed on the environment, yet relatively low levels of action by individuals to counter the problem. For example, people who advocate green values do not always act in accordance with them (Blake 1999; Kollmuss and Agyeman 2002; Jackson 2005; Martinsson and Lundqvist, 2010). Yet others go even further to argue that these models provide a somewhat impoverished view of behaviour (Macnaghten and Urry, 1998). Nevertheless RCM cannot be dismissed. These models have dominated both academic and policy approaches to changing environmental attitudes over the past number of decades (Fahy, 2005; Davies et al., 2010). These models form the foundational structures on to which more robust framework models of environmental behaviour have been adapted.

In response to critiques of information limitations in basic linear structures, two dominant alternative approaches to pro-environmental behaviour emerged. The first of these dominant alternative approaches focused on the role played by individuals’ attitudes when predicting behavioural outcomes. These alternative approaches are referred to as attitude behaviour choice (ABC) models (Shove, 2010) or attitude behaviour correspondence (Olli et al., 2001). Continuing in the tradition of the Rational Choice Models, these approaches presuppose attitudes to be main drivers of environmental behaviour.

The Theory of Reasoned Action (Fishbein and Ajzen, 1975) is an extremely popular and renowned example of a linear model of behaviour change that incorporates attitudes to bridge this value-action gap (see Figure 2.2). The Theory of Reasoned Action (TRA) is a model that adopts the expectancy-value element of the rational choice model to predict human behaviour. The core relationship of note in this widely acclaimed model is the association between behavioural intention and corresponding action. According to this theory, both attitude and
subjective norms predict behavioural intention; which is the key determining factor and ‘the immediate antecedent, to carrying out the actual behaviour (Jackson 2005). The TRA deduces that a person’s behaviour can be predicted once an individual’s attitudes are known. In conjunction with attitudes, TRA incorporates ‘subjective norms’ (Jackson 2005, 48) to strengthen its predictive powers. Subjective norms involve ‘normative beliefs’ concerning the prescriptions of others (Ajzen and Fishbein, 1980: 239). A person’s normative beliefs interact with a person’s attitudes that emerge from the expectations and values held concerning the behaviours’ outcome.

Figure 2.2: The Theory of Reasoned Action (Source: Fishbein and Ajzen, 1975)

The Theory of Reasoned Action model was later updated to form the Theory of Planned Behaviour (Ajzen, 1991). This new theory incorporated another variable of behaviour, perceived behavioural control, to increase its predictive capabilities. Perceived behavioural control (PBC) is considered a predictor of behavioural intention and measures the perception of individuals towards their ability to act. TPB is a particularly useful model as it enables the addition of different variables to explain environmental behaviours (Jackson, 2005a). The Theory of Planned Behaviour (TPB) has been the foundation for a vast proportion of psychological
research on pro-environmental behaviour. Indeed, the model has been adapted in numerous ways to develop more nuanced explanations for the attitude-behaviour relationship, as well as to explain certain consumption behaviours (Bamberg, 2003; Knussen et al., 2004; Mannetti et al., 2004).

Many authors in the field of environmental psychology rely on various forms of the ‘attitude-behaviour model’ to explain and understand individual consumption behaviour (Spaargaren, 2003). The TPB has been particularly popular with researchers attempting to explain recycling and energy related behaviours (Bamberg, 2003). The essential component of this model’s success and utility to environmental researchers is the proposed relationship between behavioural intention and action; which enables a conceptualisation of the gap between rhetoric and reality in the context of a range of influencing factors such as demographics and other contextual factors, such as supportive structures and beliefs concerning environmental responsibility and governmental trust. These influencing variables are discussed in greater detail in Sections 2.3.

However, these linear models are critiqued for proffering a predominantly undisciplined approach to understand environmental behaviour; one that is grounded in a predominantly psychological perspective (Barr, 2008). Limited to certain number of predictor variables, these linear ‘expectancy-value’ models are quite rigid in structure and oversimplify the complexity of environmental behaviours by assuming a limited number of universal characteristics (EPA, 2007). Such approaches are often highly constrained conceptually and offer a very limited understanding of behaviour.

The importance of these models cannot be overlooked. These linear models are important building blocks on which more holistic models and frameworks of environmental behaviour can be developed. While this thesis critiques these dominant academic and policy approaches to behaviour change for their overemphasis on attitudes and internal conditions in shaping behaviours, it must be noted that environmental attitudes still play a significant role in shaping behaviours, as part of a suite of influencing factors, and therefore also merit indepth investigation.
2.2.2 Consumer motivation theories - environmental values and beliefs

A second strand of theories focuses on environmental values and beliefs and their influence on pro-environmental behaviours. These models are referred to as Consumer Motivation Theories or alternative value-expectancy models. In line with earlier attitudinal models, Consumer Motivation Theories (CMT) are grounded within a cognitive tradition of behaviour change, which emphasises the rationality of human action. Situated in the dominant paradigm of ‘attitude, behaviour, and choice modelling’ (ABC modelling\(^7\)), these models propose that pro-environmental behaviours are dependent upon values that are intrinsic to the individual. Research purports that individuals who engage in pro-environmental activities tend to have stronger self-transcendent or altruistic values (Stern and Dietz, 1994; Stern, Dietz, Kalof, and Guagnano, 1995). In other words, pro-environmental individuals tend to be more concerned about the impact of environmental problems on both themselves, and the broader ecosystem (Schultz, 2001) compared to non-pro-environmental people. Research also found that pro-environmental individuals to be more pro-social than non-pro-environmental individuals (Schultz, 2001). Pro-environmental individuals are more likely to be ideologically and politically liberal in their political views (Allen, Castano, and Allen, 2007). Individuals who support the status quo through justification of current socioeconomic systems and inequalities tend to perform less pro-environmental behaviours (Feygina et al., 2010). The role of environmentalist tendencies can vary greatly with ‘the behaviour, the actor, and the context’ (Stern, 2000:415).

There is a lack of clarity surrounding terminology related to values, beliefs and attitude (Schultz et al., 2005). There are a wide range of studies on environmental values, attitudes and concern, which use the term environmental ‘values’ as a measurement instrument. Many studies may use the term ‘attitude’ scale or ‘environmental concern’ scale interchangeably. However, it is important to distinguish between these terms. Values are guiding principles that stem from beliefs (Schwartz, 1992). A person’s beliefs are the assumptions one makes about

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\(^7\) ABC modelling posits that individuals’ attitudes and values (the A) are believed to drive the kinds of behaviour (the B) that individuals choose (the C) to adopt.
themselves, about others and about how things should be. Values are viewed as underlying determinants of more specific attitudes and behaviours (Schultz and Zelezny, 2003). In other words, attitudes stem from the beliefs and values that a person holds. Values tend to be quite stable over time and act as guiding principle for individuals’ behaviours. However, attitudes are more specific and tend to be less stable over time. A large quantity of psychological research on environmental behaviour has concentrated on values.

Although CMT models mimic the simple information-deficit approach of earlier models, these models also attempt to take into account the complexity of behaviour by providing a more contextually (social and culturally) embedded understanding of environmental action (Hargreaves et al., 2008). For example, the Needs-Opportunity-Ability Model of Consumer Behaviour (Gatersleben and Vlek, 1998) is an example of CMT that acknowledges that any assumed causal link between values and behaviour is mediated by other factors. Examples of mediating variables include cognitive processes, beliefs and values, contextual factors and situational variables (Burgess et al., 2002).

Some CMT stress the influence of social norms in terms of defining what is considered the correct manner in which to behave or consume (Sustainable Consumption Roundtable, 2006). Schwartz’s (1970, 1973, 1977) Moral Norm-Activation Theory of Altruistic Behaviour is an example of a model that posits that altruistic behaviour (including pro-environmental actions) occur as a result of personal moral norms being activated in individuals who believe that particular conditions pose threats to others and that the outcome of their actions could avert those consequences. There is substantial evidence supporting the application of moral norm-activation theory to a range of environmental issues (e.g. Black, Stern, and Epworth, 1985; Guagnano, Stern, and Dietz, 1995; Schultz and Zelezny, 1999). Indeed, Schwartz’s model has been employed in recent years by value research studies across many different cultures (see Schwartz, 1992; Oishi, Schimmack, Diener, and Suh, 1998; Spini, 2003).

Certain threads of CMT utilise Maslow’s (1954) hierarchy of human needs to understand what motivates environmental action because human needs are drivers
of consumption behaviours. One such example is Max-Neef and colleagues’ (1992) Taxonomy of Needs Model, which purports that needs range from basic requirements of subsistence and protection through to needs related to affection, understanding, participation, leisure, creation identity and freedom. These motivational needs are expressed in a matrix form with different categories of ‘experiential encounters – such as being, having, doing, and interacting – recognised as being equally important in satisfying them’ (Burgess et al., 2002; 11). The Taxonomy of Needs Model has no hierarchy of needs other than the basic need for subsistence or survival. This is in contrast to Maslow’s hierarchy of needs, which has a hierarchy as the title suggests. Instead, the Taxonomy of Needs Model postulates that needs are a system; they are interrelated and interactive.

Human needs can comprise of both material and non-material needs (Burgess et al., 2002). In fact, the distinction between material needs and non-material needs is a key starting point to conceptualise the complex relationship between human needs and consumption patterns. Human needs are only partially driven and fulfilled by material goods. Research suggests that consumers are ‘locked-in’ to social and cultural consumption habits, which are shaped by the media and advertising. There is a distorted message being conveyed by media that increased consumption will result in the satisfaction of non-material needs. These findings are reflected in Jackson and Mark’s (1999) research in the UK, which found that individuals were consuming material objects’ in an attempt to satisfy non-material needs with material objects’ (Jackson and Marks, 1999: 437).

Many needs that material goods attempt to satisfy are socially constructed. Modern consumer society equates rapid appropriation and disposal of more and more material goods and services with the pursuit of happiness (Bauman, 2007). The ability to consume at will, as well as the act of consuming itself, is seen as a means of satisfying consumer wants and needs, through the sense of self-fulfillment and enhanced quality of life (Smith, 1937; Donovan and Halpern, 2003; Bauman, 2007). Increased consumption of material goods and services (often in conjunction with escalating economic growth of a society) is thought not to have a direct correlation with improved levels of happiness or
enhanced quality of life (Lane, 2000; Jackson, 2004; Layard, 2005; Diener and Seligman, 2004; Doran, 2007).

Although a certain level of consumption is necessary in order to address basic human needs, excessive consumption has not been found to be synonymous with increased happiness or improved wellbeing or enhanced quality of life (De Geus, 1999). Commentators, such as Veenhoven (1993, 1999) and Inglehart (1997), argue that the association between increased consumption (brought about by increased wealth) leading to increased happiness is curvilinear in character; with the effect of income diminishing once a saturation point is attained. Others expect the relationship between economic growth and happiness to level off or for a plateau to be reached (see Wilkinson and Pickett, 2009). Cross-country studies of happiness consistently demonstrate that after certain minimum levels of per capita income are reached, average levels of happiness do not increase as countries grow wealthier (Easterlin, 1974, 1995, 2005). These findings are echoed in the economist Richard Layard’s book on happiness (Layard, 2005), which suggests that only up to a certain threshold does the reported sentiment of happiness grow with increases in income. Above this reasonably modest threshold, the association between increased levels of consumption and happiness and increased wellbeing disappears (e.g. Frey and Stutzer, 2002; Graham and Pettinato, 2002; Blanchflower and Oswald, 2004; Diener and Seligman, 2004; Kenny, 2005).

Consumer culture, with its ever-changing and expanding states of consumption, is argued to materialise only at the cost of higher levels of stress, anxiety and a reduced work-life balance on behalf of the consumer (Lane, 2000; Smart, 2002; Binswanger, 2006; Ahuvia, 2008). Western society’s materialist values and culture of consumerism have failed to improve wellbeing and quality of life (Jackson and Mark, 1999). Tim Jackson’s (2009) Prosperity without Growth, criticises the ‘iron cage of consumerism’ in which modern society consumes relentlessly (2009:8). This is in reference to Max Weber’s thinking about modernity and modern capitalism as an iron cage, which has the potential to trap individuals in constant struggle. The idea of needs is neglected in previously discussed cognitive models of environmental behaviour.
The issue of methodological individualism still exists with many models positioning the individual as the central focus of research. There is a failure by these CMT approaches to acknowledge the (often unequal) structural, institutional and cultural frameworks within which individuals make decisions. The impact of broader social context is increasingly recognised in relation to its role in influencing pro-environmental behaviour. Consumer Motivation Theories attempt to take into account the complexity of behaviour by providing a more contextually (social and culturally) embedded understanding of environmental action.

2.2.3 Reflections on value and attitudinal model approaches to environmental behaviour change

Environmental behavioural models, whether values or attitudinal-based, are increasingly expanding, often encompassing a wide range of variables in order to understand environmental behaviour and increase predictive power. These mainstream socio-psychological and economics-based theoretical approaches (discussed above) continue to be widely applied in the study of environmental attitudes and behaviours. However these theories are not without limitations.

Firstly, these approaches are similar in the manner in which they position the individual as the focal point of any model. Across the spectrum of sustainable consumption research, there is an overreliance on research undertaken at the individual level. Such positioning implies individual responsibility and personal blame for non-compliant environmental action.

Similar to attitude-based models, interventions based on value theories tend to rely also on information provision in the belief that individuals will respond rationally to increasing evidence of environmental degradation because of their values (Hargreaves et al., 2008). The dominance of these ‘information-deficit’ models has resulted in many academic and policy approaches to changing environmental attitudes and values primarily driven by the provision of education and information, which may fail to lead to pro-environmental action (Gardner and Stern, 2002; Fahy, 2005; Davies et al., 2010). As discussed earlier, the value-
action gap is one such explanation for this gap between attitudes and values and lack of behaviour change.

There is still a quest to overcome the value-action gap that persists between information, attitude and action (Kollmuss and Agyeman 2002). A wide range of complex, interacting variables are thought to influence behavioural intention and engagement in pro-environmental behaviour. Many of these factors change over time (Kollmuss and Agyeman, 2002; Rau and Edmondson, 2013). Scholars increasingly emphasise the importance of internal and external conditions (or constraints), which shape human behaviour (Thøgersen, 2005; Barr, 2008; Jackson 2009). While internal conditions have an influence on people’s knowledge and motivation to act, external or contextual conditions strongly affect people’s ability to participate in environmental action, regardless of the motivation to act (Tanner et al., 2004). These external conditions represent possible barriers to linear transitions from values and attitudes towards sustainable consumption decisions (Hargreaves et al., 2008). Addressing them may thus help reduce the value-action gap. Hence, attention to wider structural, societal and personal factors is vital (Burgess et al., 2002; Hinton and Goodman, 2010).

Previously discussed models neglect many of these variables – such as ‘perceived moral obligation’ and ‘perceived right to resources’; ‘behavioural experience’ and ‘environmental knowledge’ – and therefore they are contested as reliable models to accurately predict environmental action (Barr, 2008). Ölander and Thøgersen (1995) proposed a motivation–ability–opportunity–behaviour model as a frame for studying consumer behaviour. Motivation leads to the required behaviour only if the actor commands the abilities and opportunities to carry out the expected behaviour. Research highlights that recycling behaviour will not happen without the proper infrastructure available to consumers (Martinsson and Lundvist, 2010; Csutora, 2012). In each case, situational or contextual variables have been found to have a significant relationship with pro-environmental behaviours, at times overruling attitude-behaviour and value-behaviour relationships in certain cases (Guagnano et al., 1995; Olli et al., 2001 as cited in Hargreaves 2008). Social

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8 External (or contextual) conditions relate to socioeconomic conditions (education, employment status, occupational level), living circumstances (place of residence, household income, household size), as well as to social norms, infrastructures or so-called ‘systems of provision’ (Southerton et al., 2004).
scientists are increasingly advocating the need for more holistic approaches to sustainable consumption in order to provide a more culturally and socially nuanced understanding of pro-environmental behaviours (see Barr, 2008).

2.3 Framework approaches to behaviour change

Authors in various social-science disciplines, geography in particular, propose that a framework model could provide a much more comprehensive picture of consumption and its drivers (Barr, 2008). Such approaches address the limitations of linear behavioural models. In particular, framework approaches address the problematic constrained nature or structure of TRA/TPB models. Interestingly, many of these framework models do not reject the traditional socio-psychological view of behaviour change. Instead, they offer a more holistic approach to understanding environmental behaviour. Framework approaches are useful as they permit integration of a range of modifying variables while also maintaining the essential intention-behaviour relationship of linear models of behaviour change (ibid) Framework approaches recognise that environmental behaviours are influenced by socio-economic contexts, such as politics and society. In other words, framework approaches provide a more ecologically and socially attuned framework for examining urgent issues surrounding overconsumption.

Framework approaches also acknowledge the existence of a value-action gap between an individual’s personal knowledge or values and their corresponding behaviour. Barr’s conceptual framework of environmental action (Barr, 2002, 2006) – which is based on TRA and TPB – is an excellent example of a framework that acknowledges the gap which exists between intentions and actions by focusing its theory on this essential intention-behaviour relationship (DEFRA, 2005). Barr’s framework model of environmental behaviour, although focused specifically on waste management behaviour, can be applied to other environmental actions. Although this framework is based on the Theory of Reasoned Action, it is more flexible in its structure and as a result it offers a more advanced perspective on environmental behaviour.
Barr’s framework model (2002) provides a more nuanced perspective on environmental behaviour by proposing three key sets of factors that influence intentions and environmental behaviours: social and environmental values, situational variables and psychological variables. Social and environmental values are thought to influence an individual’s intentions and behaviour towards the environment, and both situational and psychological variables then intervene to modify this relationship (see Figure 2.3 below).

![Figure 2.3: Barr's framework of environmental behaviour (Barr, 2002).](image)

Stern (2000) – in a similar line of argument to Barr – describes four broad types of causal variables linked to environmental action: attitudinal, contextual, personal capabilities and habit or routine. A comparison of Stern’s framework of environmental variables to Barr’s conceptual model illustrates that there are a myriad of interacting and complex variables that can impact on an individual’s acting in a pro-environmental manner. Fahy (2006) posits that four key sets of variables (personal, demographic, practical and contextual) mould waste management behaviours specifically. However, other commentators (see; Blake,

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Similar to Barr’s ‘psychological’ category, Stern’s attitudinal classification entails variables such as norms, beliefs, values, personal norms, and also attitudes. Stern also details a category entitled ‘personal capabilities’, which encompasses knowledge and skills, as well as demographic variables, and also issues such as time and money. Stern’s category entitled ‘personal capabilities’ corresponds with Barr’s ‘situational category’, with the exception of time and money variables. Stern has a contextual category – including interpersonal influences, community expectations, government regulations, monetary incentives and costs, built environment, public policy and wider social and economic context – and also a habit or routine section.
1999; Stern, 2000; Carlsson-Kanyama et al., 2003) classify variables for environmental action into different subcategories. The positioning of variables into neat categories is a subjective task and hence, different researchers could propose various subcategories. Overall the main variables identified are the same yet simply classified in different subcategories. Many factors could be considered to fit under different headings depending on the category definition. Categories are not definitive or exhaustive. Indeed, some variables could be included under more than one category.

For the purposes of this thesis, Barr’s framework of environmental behaviour is adapted to discuss drivers of environmental behaviour change. Although this author recognises that the different variables identified are interrelated and do not occur in a vacuum, three distinct groups of variables are discussed separately to develop a concise framework for analysis. Table 2.2 summarises the three different sets of environmental behaviour variables (grouped according to Barr’s classification), which are discussed in the next section. Barr’s recent framework was selected to structure the empirical part of this thesis, as this author deemed his subjective categories had potential to explore the many variables underpinning consumption behaviours in an Irish context.
Table 2.1: Structure of variables that can affect environmental behaviour (based on Barr’s framework of environmental behaviour, 2002, 2006).

<table>
<thead>
<tr>
<th>Classification</th>
<th>Examples of variables</th>
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<tbody>
<tr>
<td>Social and environmental values</td>
<td>❖ Social values</td>
</tr>
<tr>
<td></td>
<td>❖ Relational values</td>
</tr>
<tr>
<td></td>
<td>❖ Operational values</td>
</tr>
<tr>
<td>Situational variables</td>
<td>❖ Structural (services, built environment)</td>
</tr>
<tr>
<td></td>
<td>❖ Socio-demographic (age, gender, household size; income; education)</td>
</tr>
<tr>
<td></td>
<td>❖ Knowledge and experience</td>
</tr>
<tr>
<td>Psychological variables</td>
<td>❖ Social influences</td>
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<tr>
<td></td>
<td>❖ Subjective norms</td>
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<tr>
<td></td>
<td>❖ Intrinsic motivation</td>
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<td></td>
<td>❖ Threat and severity</td>
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<td></td>
<td>❖ Response efficacy</td>
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<td>❖ Self efficacy</td>
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<td>❖ Environmental responsibility</td>
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<td></td>
<td>❖ Beliefs</td>
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<td></td>
<td>❖ Personality traits</td>
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<td></td>
<td>❖ Satisfaction levels</td>
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</table>
2.3.1 Social and environmental values

Barr’s framework (2002) identifies social values, relational values and operational values. Environmental values refer to underlying orientations held by individuals towards the environment. These values include environmental concern and environmental attitudes. Research suggests that high percentages of people globally believe that environmental problems are among the most important social problems of our modern world (Dunlap, Gallup, and Gallup, 1993).

Barr’s (2008) states that three types of values are important for the occurrence of pro-environmental actions. They are altruistic values (Stern et al., 1995), intrinsic values (Dunlap and Van Lierre, 1978) and the need for collaboration with nature and environment as a precondition to solving environmental problems as opposed to technological solutions (Thompson and Barton, 1994). Egoistic values must be accompanied by or linked to altruistic values and biospheric values, to produce stable pro-environmental behaviours (De Groot and Steg, 2009).

A body of related work examines the role of environmental identity in produce pro-environmental action. Nisbet, Zelenski, and Murphy (2009) have shown that individuals who feel a stronger affective connection to nature and who include nature in their self-concept are more likely to be pro-environmental individuals. Schultz (2001) found that pro-environmental individuals tend to be more concerned about the impact of environmental issues on themselves and their immediate family and other members of the human population, not to mention the impact on broader ecosystems more generally.

Dunlap and Van Liere’s scale for environmental actions – The New Environmental Paradigm (NEP) – conceptualises pro-environmental behaviours in relation to worldviews. Research on basic values (e.g., honesty, individualism) and pro-environmental behaviour consistently reveals that individuals who endorse self-transcendent values (e.g., universalism) are more likely to exhibit such behaviours (e.g., Stern, Dietz, Abel, Guagnano, and Kalof, 1999; Dietz, Fitzgerald, and Shwom, 2005). Likewise, pro-environmental individuals (PEIs) are considered to be relatively more pro-social than non-PEIs (Cameron, Brown,
and Chapman; 1998; Schultz, 2001; Garling, Fujii, Garling, and Jakobsson, 2003). Certain theories posit that individuals value the environment for its intrinsic worth, are inclined to behave in an environmentally-friendly manner. The Value-Belief-Norm model proposes a link between biospheric-value orientations and acceptance of NEP (Jackson 2005), which in turn associates positively with awareness of consequences or outcomes of one’s actions and the sense of personal responsibility for those consequences.

For the purposes of this study, environmental concern and willing to pay variables are discussed under this heading of environmental and social values. Unlike Barr’s (2002, 2006) research, the NEP scale was not utilised in the design of the survey instrument (see Chapter Three for details). Hence, altruistic values and intrinsic values were not addressed directly. However, Dalton and Rohrschneider’s (1998) study found that environmental concern was more associated with social values (for example materialism) than any objective assessment of the environment. Pro-environmental individuals are more likely to show concern about the state of the natural world (see Bamberg and Moser, 2007). Increased concern for the environment is reflected by consumer’s willingness to pay (WTP) relatively higher prices for products that have been produced in an environmentally friendly manner. WTP higher prices for environmental goods is viewed as altruistic behaviour as the extra money people pay provides environmental benefits that could be deemed as public goods (Guagnano et al., 1994). Hence, this research adapts Barr’s framework of environmental behaviour using the alternative category title of ‘environmental concern variables’ as opposed to social and environmental values.

There is strong evidence to suggest that consumers are willing to pay relatively higher prices for various eco-labeled products (Roe et al., 2001; Loureiro and Hine, 2002; Loureiro et al., 2002; Shen and Saijo, 2007). However, there is little evidence to exhibit what determines the amount of consumers’ willingness to pay. With respect to the issue of the determinants of consumers’ WTP for eco-labelled products, economists and psychologists have developed a number of factors; such as consumers’ environmental concern, perceived consumer effectiveness, faith in others, perceived compromise, and consumers’ socio-demographic characteristics (Shen, 2008). Whitmarsh (2009) found that a marked discrepancy was observed
between respondents who stated that they engaged in pro-environmental action specifically out of concern for climate change (31%) and those respondents who performed energy conservation behaviours (96%). Financial motivations tended to play a key role.

A study by Shen (2008), which explored socio-demographic characteristics that affect consumers’ WTP for eco-labelled products, found that younger people in China are willing to pay more for eco-labelled products. In addition, the magnitude of this parameter implies that as consumers get one year older, they are less willing to pay 0.1% of the price for those eco-labelled products (ibid). This could imply that younger generations are more environmentally-friendly compared to previous generations. In addition, income seems to be an important factor to determine a person’s willingness to pay for eco-labelled products with consumers with higher household income more willing to pay more for eco-labelled products. Also education was found to be significantly and positively correlated with WTP responses in four of the seven categories (i.e., appliance, building material, glass tableware and battery). WTP provides a positive incentive for producers to choose techniques that minimise the adverse effects on the environment and improve the quality of final products (Basu et al., 2003). There is lack of research examining and comparing the consumers’ willingness to pay (WTP) among various kinds of eco-labelled products.

Some economists doubt the validity of stated WTP based on the situation commonly known as the free-rider hypothesis (see Guagnano, Dietz and Stern, 1994). This proposes that individuals may strategically overstate their WTP for public goods in the hope of eliciting higher payments from other people and then enjoying disproportionate benefits that result from the provision of the collective good.

In conclusion, many accounts of environmental values and their connections with environmental behaviour in the literature could be critiqued for failing to consider the role of other various other factors such as structural or contextual issues, which could hinder (or impel) the uptake of pro-environmental behaviours. The following sections explore situational factors, such as structural factors, socio-demographic variables, as well as a person’s knowledge or experience.
2.3.2 Situational variables

This thesis posits that it is impossible to understand consumption behaviours by examining individuals as solely autonomous actors. Consumption behaviours and activities are greatly affected and determined by a broad range of situational influences. Fliegenschnee and Schelakovky (1998 as cited in Kollmuss and Agyeman, 2002) propose that at least 80% of the motives for pro-environmental or non-environmental behaviour are situational factors and psychological factors. Situational characteristics are those variables that define a given personal situation, or relate to the objective circumstances of the individual. As the following sections reveal, an individual’s situational context can be influenced by socio-demographics variables, structural issues, as well as environmental knowledge and experience (Barr, 2006). These three situational variables are critically discussed below.

2.3.2.1 Socio-demographic variables

The link between socio-demographics and environmental behaviours is important (Hines et al., 1987). Sociologists (see Van Liere and Dunlap, 1980) started to study associations between socio-demographic variables and environmental behaviour in the 1970s and early 1980s. Socio-demographic variables include age, gender, educational status, income, occupation, political affiliation, household size, residence type and ownership (Hines et al., 1987; De Oliver, 1999).

Research proposes that those individuals who are most likely to be involved in environmental behaviours tend to be young, highly educated, relatively more affluent and more politically liberal females (see Hines, Hungerford, and Tomera, 1986/87; Kalof, Dietz, Guagnano, and Stern, 2002; Olander and Thogersen, 2006). However, Schultz et al., (1995) proposed that this is not always the case. Different environmental behaviours are likely to have varying predictors (ibid). For example, research has since refuted the hypothesis that young people are more likely to engage in environmental behaviours than individuals in older age cohorts. A study by Vining and Ebreo (1992) exploring the characteristics of
recyclers (across 197 households in Illinois) in the United States noted that individuals who reported recycling tended to be older than those individuals who reported that they did not recycle. Likewise, a study by Barr (2002) of household waste behaviours in Exeter (a city which is situated in the southwest of England) found that individuals in the higher age groupings tended to be more likely to reduce their waste than those people in younger age cohorts. The relationship between age and environmental behaviour is not consistent in the sense that age is likely to correlate to some environmental behaviours positively and others negatively.

Gender also plays an important role in many environmental activities and attitudes. Studies have found consistently positive results showing that women tend to be more environmentally concerned compared to men (Van Liere and Dunlap, 1980; Stern et al., 1993; Steel 1996). Women are also more likely to sign a petition and campaign for environmental issues as opposed to men (Steel, 1996). A positive correlation was found between gender and active commitment to certain environmental activities, with women more likely to engage in conservation activities (Schahn and Holzer, 1990); to buy environmentally friendly products consciously (Witherspoon and Martin, 1992; Baldassare and Katz, 1992); to reduce their driving behaviour and conserve water (Baldassare and Katz, 1992; Corral–Verdugo et al., 2006) and to reduce waste (Barr, 2002). Research by Corral–Verdugo and colleagues (2006) on water practices in Mexico found that women reported a higher involvement in water conservation practices than men. Such findings are in keeping with CAP-NET (2006: 13) which reports that women and men tend to reduce environmental sustainability in ‘different proportions’, with women often having higher stakes in productive uses of household water globally. Gender differences are often purported by researchers for reasons linked to traditional household division of labour (Steel, 1996). Women tend to carry out a vast majority of domestic tasks (Buckingham-Hatfield and Matthews, 1999). In contrast to several previous studies (e.g., Hunter et al., 2004; Mohai, 1992; Schahn and Holzer, 1990) and the ‘white male effect’ found in US (e.g., Finucane et al., 2000; Satterfield et al., 2004), Shen and Saijo (2007b) revealed that in China men are more concerned about the environment than
women are. Overall, research on the potential effect of gender on environmental actions is still debatable.

Efforts to control for the effects of income and environmental action are also important to consider. An in-depth analysis of the effect of income, carried out by Dillman et al., (1983) into energy saving measures in the USA, found that there was a differential effect for income on energy saving activities. This research found that those on lower incomes were more likely to carry out direct energy saving measures. However, ‘energy conservation measures’ (that is technological measures) were limited to those individuals with sufficient economic means to invest in roof and wall insulation (ibid). Individual attitudes towards the environment are predicted to have at least some impact. ‘Green’ or ecologically committed consumers may be expected to have significantly lower ecological impacts than ‘brown’ consumers of similar household incomes (Csutora, 2012: 151). However, the environmental burden of consumption tends to increase as income rises. For example, an environmentally committed individual may have a higher ecological footprint than a less committed peer in a lower income bracket. A study by Lenzen and Murray (2001) found that high income green consumers have larger footprints than their less wealthy peers from a non-green grouping.

A low to moderate relationship was noted to exist between income levels and pro-environmental behaviour (Berger, 1997). For example, higher income has been linked to increased levels of recycling behaviour (Lansana, 1992); as well as reduced car use (Baldassare and Katz, 1992). Research by Steel (1996) established that income influenced political participation in environmental actions; with increases in income linking to higher participation levels in political activity. Research has indicated that income may not be a significant predictor of environmental behaviour and recycling activities more specifically (Vining and Ebreo, 1990; Barr et al., 2003). An ever-increasing body of literature purports that structural variables such as accessibility and service provisions may be better predictors of recycling behaviours (Steel, 1996; Barr et al., 2003). The creation of supportive environments as well as emerging research into choice architecture (Thaler and Sunstein, 2008) can promote the uptake of green environmental behaviours.
Results of a large-scale Australian study entitled ‘Tough Times? Rough Times?’ found that individuals in wealthier brackets were twice more likely to install solar panels than individuals in the lowest income brackets (Gorman-Murray and Lane, 2011). Although lower income households were more likely to state a lack of concern for environmental issues, these same households were also less likely to own high-energy consuming items, such as LCD TVs or clothes driers. At the same time low income households were more likely to report undertaking pro-environmental activities such as repairing clothes, buying energy-efficient appliances and reusing items. A number of inconsistencies emerge between different forms of environmental practice according to the context in which they are undertaken. A useful example is provided by CACI (2008) of geographically defined household data on pro-environmental behaviours in the UK. Individuals who resided in some of the ‘greenest’ areas (as defined by activities such as recycling, energy conservation and green purchasing) also tended to have the highest carbon emissions, accounted for by ownership of more or larger vehicles and a tendency to fly further and more frequently for holidays.

Gorman-Murray and Lane’s research (ibid) noted that income, education and length of residency were not consistent in differentiating between households who were actively engaged in normatively constituted pro-environmental behaviours. Households with ‘strong’ ‘modest’ and ‘limited’ commitment to pro-environmental behaviours were represented across diverse social groupings and educational levels. Some pro-environmental habitual behaviours (for example recycling; using green bags and donating clothes to charities) were found across all socio-economic groups. However, even strongly committed households did not report regularly engaging in high impact activities such as walking to shops; growing own vegetables; purchasing organic fair-trade or recycled paper. This illustrates that there are limits to which even strongly committed households are either able or willing to embrace pro-environmental activities.

Research has also been conducted examining the relationship between other independent variables, such as education, housing type and tenure, and environmental behaviour. Positive correlations have been found between levels of formal education and environmental behaviour (Berger, 1997; Steels, 1996;
Schahn and Holzer, 1990). Results found higher educational levels to equate with enhanced undertaking of pro-environmental behaviours. Environmental behaviour may only be predicted by education in certain circumstances. For example, a study of New York recyclers (Lasana, 1992) found a positive (but weak) relationship between educational status and recycling paper. Education along with age and income was found to be a significant predictor of determining who recycled.

In terms of housing tenure, homeowners were found to be more likely to report increased levels of recycling activity (Lansana, 1992). Research indicates that housing tenure positively predicts both kerbside recycling, as well as other environmental behaviour (Oskamp et al., 1991; Lasana 1992; Berger, 1997; Daneshvary et al., 1998). Gamba and Oskamp (1994) found no evidence for this ownership hypothesis. Painter et al. (1983) examined the effect of home ownership on those who conserved heat in the home and conserved petrol consumption in Utah. They found that home ownership was the fourth most powerful variable in discriminating between conservers and non-conservers. Black et al. (1985) gave more detail concerning the effect of home ownership in their study of different energy saving behaviours. They showed that home ownership was the most important factor in explaining large capital investment in energy saving measures. This effect was reduced and made indirect when smaller, direct energy saving measures were considered. Evidently, the effect of home ownership may mask trends in household income, which is expectedly significant and in Black et al.’s (1981) model, as a direct predictor of home ownership.

Political orientation can also play a role in environmental behaviours, with more liberal and socialist individuals scoring higher environmental behaviour scores (Schahn and Holzer, 1990; Daneshvary et al., 1998). Witherspoon and Martin (1992) found that voting green or liberal democrat resulted in the individual in question being more likely to buy environmentally friendly products and to buy with an environmental conscience. Seemingly in line with these and other findings (see Jost, Glaser, Kruglanski, and Sulloway, 2003); some research also suggests that pro-environmental individuals are more likely to be ideologically and politically liberal (cf. Allen, Castano, and Allen, 2007; Feygina et al., 2010).
2.3.2.2 Structural variables and infrastructure

Individuals are often locked into unsustainable consumption patterns for reasons beyond their immediate control. For example, pro-environmental behaviours are often contingent upon the availability of necessary infrastructure. Structural factors, for example the infrastructure in a region, the architecture of incentive structures, institutional barriers, inequalities in access, as well as availability of services, can play an important role in consumer lock in and ultimately lack of environmental action (Sanne, 2002). Lock-in can also result from habits, routines, social norms and expectations as well as dominant cultural values (Jackson 2005). As a result, individuals are almost never fully autonomous in their decision-making processes.

Impacts of pro-environmental behaviour can be fully, or partially, offset by contextual and interfering behavioural factors (Martinsson and Lundqvist, 2010). Their research found that highly restrictive conditions could discourage individuals with extremely positive environmental attitudes. Thus, highly restrictive or supportive external conditions can distort differences between the behaviour of consumers with and without ‘green’ attitudes. This predominantly structuralist view has been tested empirically, with numerous studies demonstrating that people do not need to ‘turn green’ to ‘come clean’ (Martinsson and Lundqvist, 2010). Instead their behaviour may be largely influenced by prevailing pro-environmental (infra)structural conditions. For example, many studies have found access to curbside recycling facilities to be a dominant predictor of recycling behaviour; more so than socio-demographics or values (see Barr, 2002; Berger, 1997). The convenience of curbside recycling makes it relatively easy to carry out on the part of the individual and hence, results in increased participation in pro-environmental action (Guagnano et al., 1995; Blake, 1999).

Guagnano and his colleagues (1995), who developed the ABC model of attitude, behaviour, and structural conditions of behavioural setting, found that the attitude–behaviour relationship is strongest when contextual factors are supportive, yet neither too strong nor too weak. With highly supportive structural
conditions, individuals with negative environmental attitudes have a tendency to behave in an environmentally sound way (Martinsson and Lundqvist, 2010).

Research on theories of practice also emphasise this important relationship between infrastructures and behaviour. Research proposes that related systems of production and provision are important in organising, structuring and sometimes preventing certain practices (Chappells et al. 2005). In other words, infrastructural factors (such as roads, railways, and heating systems) all have an active role in defining, reproducing and transforming people’s practices (Shove, 2010). As a result, research has begun to focus attention to the re-organisation of infrastructure and provision systems in changing environmental behaviours (Spaargaren, 2003; Rubik et al., 2009).

This section illustrates how environmental actions do not occur in a social vacuum. Supportive structural variables are required across different governmental sectors (such as economic, educational, and transport sectors) to promote pro-environmental behaviours. Structural factors may promote longer-term more meaningful intrinsic behavioural change (Ewart, 1991). This following section examines knowledge and experience and the role that these factors play in environmental behaviour change.

2.3.2.3 Knowledge and experience

Environmental knowledge can relate to a person’s awareness of the state of the environment or environmental issues, or refer to knowledge concerning the implementation of one’s environmental behaviour over another. Researchers tend to agree that only a small proportion of pro-environmental behaviour can be directly linked to environmental knowledge and environmental awareness. Environmental knowledge and environmental attitude have a powerful influence on people’s indirect actions than on people’s direct pro-environmental behaviours. Social environmental research has shown that the link between environmental awareness and pro-environmental attitudes, on the one hand, and environmental behaviour, on the other, is generally weak (e.g., Diekmann and Preisendörfer, 1998; Kollmus and Agyeman, 2002; Young and Middlemiss and Young, 2012).
Norgaard (2011) believes that assuming a certain response based on knowledge is just another uncritical reuse of the information-deficit model. As discussed previously ‘knowledge itself is not at issue, but doing the ‘right’ thing with the knowledge’ is what counts (Cohen as cited in Norgaard 2011, 11). There are many inconsistencies between knowledge and environmental action. Indeed, increasing levels of knowledge can be accompanied by decreasing levels of concern (Norgaard, 2011). A study by Motherway et al., (2007) in Ireland found a strong shift away from reported levels of extreme concern between 1993 and 2002. However, no notable change in the level of knowledge on environmental issues was recorded during this same period (Motherway et al., 2007).

A study by Kempton et al. (1995) found average knowledge about environmental issues to be low for groups identified as strong environmentalists and strong anti-environmentalists in the US. These findings posit that environmental knowledge is not a prerequisite for pro-environmental behaviour. However, pro-environmental individuals are more likely than others be well-informed regarding the impact of their actions (Frick et al., 2004).

Behaviour specific knowledge and concrete knowledge can have an impact on self-reported behaviours (Schahn and Holzer, 1990). Pro-environmental behaviour in a certain area can have a positive impact on more behaviour in the same area. For example, an analysis of energy-saving behaviour which revealed past habitual experience of a particular action tended to be a good predictor of current energy saving behaviours. In other words, the more practical experience that individuals have of a certain environmental behaviour, the increased likelihood they will participate in that said behaviour. Taylor and Todd (1995) found that many negative outcomes of undertaking relatively complex household activities – like composting and recycling – can be surpassed by increased experience of undertaking the activity.

To conclude, this review of the literature illustrates the key role that a large number of situational factors including socio-demographic variables, structural factors like infrastructure as well as knowledge ad experience evidently play in terms of environmental behaviour. Different variables impact different behaviours.
and hence, it is difficult to draw any definitive conclusions concerning the impact of socio-demographic factors on environmental behaviour in general. Researchers need to specify which particular environmental behaviour is being examined (Berger, 1997).

Another difficulty in terms of drawing conclusions relates to the fact that contextual factors are missing from the above analyses of socio-demographic factors. Instead associations between socio-demographic variables tend to be viewed in a vacuum, whereby neglecting the complex interactions of contextual factors with any relationship examined. In relation to the structural or contextual variables, the same argument could be put forward as for socio-demographic variables. That is that these factors tend to be researched in isolation. The use of contextual variables in isolation neglects the importance of psychological and cognitive variables, which can impact on an individuals’ decision-making. A framework approach may be more successful in influencing behaviour change; as such an approach enables greater understanding of the range of different factors that impact pro-environmental behaviour. Such an approach would permit a more comprehensive picture of how the various factors interact with one another to impact environmental actions.

2.3.3 Psychological factors

The third broad grouping of factors concerns psychological factors such as an individual’s personality characteristics and their perceptions towards the actions they are undertaking. Factors that come under subheading of psychological factors include; moral obligations to act (Hooper and Nielson, 1991); intrinsic motivation (De Young, 1996); subjective norms (Tukker, 1999); environmental threat (Baldassare and Katz, 1992); response efficacy (Arbuthnot, 1997); self-efficacy as well as logistical factors (Vining and Ebreo, 1990) and rights and responsibilities, associated with ‘ecological citizenship’ (Dobson, 2006)\textsuperscript{10}. Psychological correlates of pro-environmental actions can produce important insights into

\textsuperscript{10} For good overview of psychological factors see Barr 2006.
underlying motives in the process (Stern, 2000). Individuals who could be considered pro-environmental not only tend to have positive environmental attitudes (e.g., Dunlap, Van Liere, Mertig, and Jones, 2000), but they also feel efficacious in the environmental domain.

2.3.3.1 Norms

When individuals reside in groups, there are rules and norms as well as certain assumptions about normal consumption behaviours. Often these norms can exert powerful control over what people do and how they consume. Although people may not always be aware of the extent to which these rules limit and shape personal choices. A study by Josiah Heyman (2010) examined the role of norms experienced by rural Mexican families who migrated from a village to an industrial city to live. The role of national culture can be important for shaping environmental action and can be used to explain differences across nations and countries towards adopting environmentally friendly actions (see Harrison et al., 1996 study of citizens in Nottingham in the UK and Eindhoven in the Netherlands). This implies that a focus on individual-level behaviours or household behaviours may overlook the important role of norms. Although an individual level focus was deemed the most appropriate unit of analysis to explore consumption behaviours across the island of Ireland, limitations and shortcomings of this focus must be considered.

Oksamp et al. (1991) found behaviour of family and peers was noted to be the most significant factors in terms of increasing involvement in curbside recycling and composting. Taylor and Todd (1995) explored social normative influences on recycling and composting activities and stated that both internal (family) and external (neighbours and friends) were important. Respondents in a study by Philip (2000) recorded other people’s inactivity as being a key rationale given for why individuals themselves do not behave in a pro-environmental manner. Indeed, social status was found to be the key motivating factor in environmentally friendly purchases as opposed to financial or environmental considerations (Griskeicius et al., 2010). Jackson’s (2005) research also highlights the importance of consumer goods to help individuals create and maintain social identities.
2.3.3.2 Lack of Perceived Behavioural Control

Despite the fact individuals might feel personally responsible for protecting the environment; their perceived level of control is an important factor for them behaving in a pro-environmental manner (Huebner and Lipsey, 1981). For example, if individuals do not believe that the scale of global environmental problems can be aided by their ‘insignificant’ actions (Harrison et al., 1996; Burgess et al., 1998) then this may well act as a barrier to behaviour change. Research carried out by Hobson (2003, 106) noted that individuals believed that they could not change their purchasing practices due to ‘unequal consumer and producer relations, powers and responsibilities’. For example, perceived lack of control has been found to predict the choice between public transportation and driving options (Heath and Gifford, 2002; Kaiser and Gutscher, 2003). Barr’s (2002) research noted that an individual’s sense of personal efficacy has a direct effect on individual waste reuse behaviour, but not on recycling behaviour. Self-efficacy beliefs are ultimately connected to wider discourses on responsibility and trust.

2.3.3.3 Perceptions of Trust and Responsibility

Social scientists have stressed the importance of addressing issues of trust and responsibility (Blake, 1999; Hobson, 2003). Many of these concepts are interrelated and hence need to be considered in conjunction with each other.

Consumers and the general public are less likely to accept science or the government as authorities on such matters of sustainability. Skepticism of the political forces that are charged with implementing environmental policy has been identified as a key barrier to environmental action due to mistrust of political rhetoric (Macnaghten and Urry, 1998). As the existence of a value-action gap highlights, individuals do not respond to persuasion tactics alone to change environmental behaviours, but instead they expect government bodies to lead by example and make their environmental behaviour interventions both tangible and fair (Doran 2007; 44). Literature has indicated that even though governments are trusted least they are regularly viewed as the cause of environmental problems and
subsequently perceived as responsible for fixing the problem (Macnaghten and Jacobs, 1997; Burgess et al., 1998; Blake, 1999).

Research by Pelletier et al., (1996) found an association between satisfaction with governmental policies in terms of environmental conditions and undertaking pro-environmental behaviours and activism. This study revealed high levels of dissatisfaction with governmental environmental programmes and also environmental conditions could be linked to environmentally friendly actions and activism. Researchers have found that the ‘localisation’ of environmental issues can have significant impacts on the perception and response to policy measures aimed at global environmental issues (Eden, 2000; Macnaghten and Jacobs, 1997; Hajer, 1995).

Psychological variables, such as the extent to which people gain satisfaction or enjoyment from undertaking certain actions, are important predictors of environmental behaviours. Intrinsic motivation to act, which is distinct from environmental motivation, is important. Individuals who feel an increased personal responsibility towards the environment tend to engage in more pro-environmental behaviour. According to De Young (1996) feeling good about participating in an activity plays a large role in shaping individual behaviour. Some individuals may undertake certain behaviour due to the fact it contributes to one's sense of satisfaction (De Young, 1986; Barr, 2002).

To conclude, research on environmental behaviour that explores the position of psychological variables – such as social norms and influences, self-efficacy and personal responsibility – is subject to the same criticism as previous factors discussed above. Research into these variables tends to rely on studies of such factors in isolation with other variables. Stern (2000) proposes that behaviours that are expensive or difficult, contextual factors and personal capabilities are likely to account for a lot of variance. Although the list of variables above is by no means exhaustive, these studies have provided valuable insights in terms of current thinking towards the wide range of variables that can influence consumption behaviours. It is clear that understanding what factors lead to pro-environmental behaviour is crucial in terms of promoting sustainable consumption in the future (Stern, 2000).
2.3.5 Reflections on different research positions

From this review of literature, which explored the different variables that impact environmental behaviours, it is evident that there are inconsistencies between the different research positions. High levels of environmental awareness or the willingness to contribute to environmental solutions do not always provide a sufficient foundation for pro-environmental behaviour. Institutional efforts to establish new and environmental friendly practices encounter many structural barriers. Individual choices are complicated by incomplete and overly complex information, adverse price incentives, poor supply, insufficient infrastructural arrangements, practical inconveniences, contradictory interests values and norms all illustrate the complexity of environmental behaviour (Brand, 2010); as well as the wide range of drivers that can motivate or inhibit decision making processes. Environmental behaviour shows a very inconsistent pattern, even among people with strong pro-environmental beliefs and values (Brand, 2010). For example, elevated levels of reported environmental sensitivity in one domain of action (e.g. use of water or heating in a home) can be often combined with indifference in other domains (e.g. holiday domains).

It is also important to take into account that different types of causal factors may interact and hence, any conclusions or interpretations based solely on main effects due to just one category can be seriously misleading. Pro-environmental individuals have been described in terms of environmental concern variables, socio-demographic and situational variables and sociological and psychological factors in this literature review. Different causal variables appear to work in different ways to influence environmental actions. For example, certain psychological factors may promote an overall inclination to act in a pro-environmental manner. Without certain personal capabilities to act or right situational factors, the action might not occur. Dahlstrand and Biel (1997) propose that contextual variables are essential in that they can lead someone to acknowledge their attitudes and values unambiguously in developing new ones. Stern (1999) exemplifies how economic or monetary incentives that encourage certain actions may not result in the behavioural outcome unless individuals are made aware that the incentive is available through information provision. Studies
that examine only psychological variables fail to incorporate the importance of socio-demographic and structural variables. Similarly, studies that examine only situational or contextual variables fail to understand a person’s capabilities and personality traits as well as their beliefs. Hence, single variable studies may not contribute much to a comprehensive understanding of particular environmentally significant behaviours, which is needed to change them.

Understanding and promoting more meaningful, more consistent and durable pro-environmental behaviour change remains a challenge. Although framework approaches, which are predominantly influenced by social-psychological traditional models, offer a more holistic model to understanding environmental actions, they are not without their critics. Framework approaches still presume that behaviours are clearly defined. Environmental action is broken up into different compartments. However, (as already illustrated) environmental behaviours depend on ‘a broad range of causal factors, both general and behaviour-specific’ (Stern 2000:42). More importantly, these aforementioned causal factors may interact as well as vary greatly across different behaviours and individuals. Questions are still raised over whether or not such approaches to environmental behaviour can produce a reliable means by which to conceptualise environmental action in the context of the majority of research (Macnaghten and Jacobs, 1997; Hobson, 2003; Barr, 2008). Increasing recognition of the potential of social practices for understanding and predicting environmental behaviour is taking place, especially within the discipline of sociology (Shove, 2010; Heisserer, 2012; Doyle, 2013). From a social practice perspective, consumption of resources by households is mainly inconspicuous and takes place in the completion of valued social practices such as washing, heating, eating and transport (Doyle, 2013). These activities are mostly governed by semi-automatic decisions based on social norms, values and goals, as opposed to conscious and rational decision-making (Shove and Warde 2002; Warde 2005).

Another criticism of aforementioned approaches to environmental behaviours is that they tend to assume that populations can be treated as a whole when examining specific barriers to environmental action. The idea that society is not homogenous, but consists of different (lifestyle) groups, needs to be considered.
Many commentators are now starting to utilise this perspective to encourage environmental action across segmented population groups. The final section in this chapter focuses on sustainable lifestyles as the unit of analysis with the potential to further understandings of environmental behaviours.

2.4 A new direction for sustainability: Lifestyle segmentation

The concept of sustainable lifestyles is as an important constructive method to conceptualise approaches to pro-environmental behaviour and sustainable consumption. Lifestyles embody patterns that develop and emerge from the dynamics of living in a society (Lazer, 1963) and are shaped by a range of factors with their roots in politics, culture, economics, as well as social norms (Evans and Abrahamse, 2009). As a concept, lifestyles are highly contested. This thesis views lifestyles as collections of discrete and functional sets of actions or social practices (such as eating, travel, housing and leisure) that can be modified and rationalised.

This definition is in line with other commentators such as Chaney (1996) and Smith, (1996). Gidden’s (1991: 491) conceptualisation of lifestyles is one that proposes that lifestyles are not simply ‘a collection of cognitive thoughts and discrete actions, but instead a network of recursive physical and discursive practices, replete with personal meanings and histories’. Lifestyles in this instance represent a particular way of life and give substance to an individual’s on-going narrative of self-identity and self-actualisation’ (ibid). Sustainable lifestyles are plural in the sense that there are ‘multiple assemblages of social practices’ (Evans and Abrahamse, 2009; 500). Lifestyles are part of our identity; people express their social position, political preferences and psychological aspirations to others through them. This sociological perspective of lifestyles is relatively wide-ranging in contrast to that of other commentators. For example, McKenzie-Mohr and Smith (2000) posit a somewhat narrower conceptualisation of lifestyles stating that society comprises of different lifestyle groupings or segments and that individuals can be ‘clustered’ according to individual differences with respect to a person’s preferences and knowledge, thought processes. These authors research is
based on community-based social marketing and has been successful in transcending the gap between knowledge to action that has characterised many local environmental and sustainability projects to date (McKenzie-Mohr and Smith 2000).

However, there is a lack of clarity surrounding how sustainable lifestyles might work to promote pro-environmental behaviours and sustainable patterns of consumption at the level of the individual. Other studies focused on individuals who embody the concept of living a sustainable lifestyle to address what exactly sustainable lifestyles entails or how it penetrates social and environmental change (see Hobson, 2002; Shove and Warde, 2002). Gatersleben et al., (2010) posit that in order for sustainable lifestyles to enter our cultures and societies and to become part of our daily norms, they must be developed at all. To motivate the uptake of sustainable lifestyles on a wider scale, one must understand the many facets, tensions and difficulties associated with ‘real world’ attempts to live a sustainable lifestyle (Evans and Abrahamse, 2009; 500). Lifestyle changes include not only the adoption of intentional pro-environmental behaviour but also changes in behaviours that people do not necessarily link to the environment. Any research that seeks to elicit beliefs about the environment and environmental change must investigate those beliefs within a larger context.

Regardless of various conceptual underpinnings, numerous studies have identified how lifestyles can have an important effect on consumption behaviours (Shove and Warde, 2002; Tudor et al., 2011). Lifestyles define and differentiate individuals (UNEP, 2011). Research suggests that environmental practices are significantly nuanced according to a series of social or lifestyle groupings (Darnton 2004a; 2004b). Hence, the application of lifestyle framework approaches – which has roots in social marketing – to understand pro-environmental behaviour is based on the assumption that pro-environmental behaviour can only be promoted by considering behaviour patterns of different lifestyle groups (Reusswig 1994). Assessing different lifestyle groups enables a sophisticated approach to addressing sustainable consumption challenges.
Social research has shown that social groupings can be identified that share objectives (e.g. socio-demographic) and subjective traits (e.g. interests, attitudes, opinions, activities) with respect to their tendency towards environmentally friendly lifestyles (Spaargaren and Van Vliet, 2000; DEFRA, 2008). However, there are specific criticisms that can be directed at these lifestyle approaches (Gotz et al., 2008; Barr et al., 2011). Offering snapshots of current situations, such approaches, assume lifestyles and behaviours to be stable entities. Behaviour patterns of different lifestyle groupings differ across demographic groups and behavioural segments and change over time. Lifestyle research has been critiqued for viewing sustainable lifestyles as relatively unproblematic sets of practices in people’s lives (Götz et al., 2008; Barr et al., 2011). The majority of lifestyle segmentation groupings are context-specific and developed for particular practical applications (Sharp and Darnton, 2006). A social segmentation approach to policy addressing sustainable consumption will not translate or generalise to exterior environments, such as work contexts (Barr et al., 2011).

While acknowledging these limitations, an explicit focus on lifestyles and their empirical investigation through segmentation analysis was still deemed the most appropriate method to use in this research. These scales and studies reviewed in this chapter were pertinent to the construction of an Irish specific attitudinal and behaviour scale to explore and understand environmental behaviours and attitudes across the island of Ireland. Although numerous studies exist that utilise scales to examine environmental actions and its influencing factors, such behaviours and variables vary across cultures and no data for ROI and NI existed prior to this research. To advance previous lifestyle-centred research on sustainable consumption, this study uses segmentation analysis to explore lifestyle groupings along two different types of pro-environmental behaviours: habitual and occasional behaviour.

2.4.1 Rationale for segmentation approach

Segmentation was used as a tool in this study as it enables the identification and greater understanding of different segment’s attitudes, barriers, motivations and current behaviours. For example, segmentation analysis can illuminate groups that
are actively seeking to influence their friends and family to be environmentally friendly, or which groups are most hesitant towards increased environmental taxes and levies. A summary of some of the key advantages and disadvantages to segmentation based on lifestyles are outlined in Figure 2.4 below.

Figure 2.4: Summary of segmentation advantages (adapted from Dibb and Simkin, 2010).

**Advantages to segmentation are as follows:**

- **Segmentation allows for a better understanding of consumer needs and wants.**
  Enables a greater understanding of populations for the purposes of developing sustainable consumption policies, interventions and communication campaigns.

- **Segmentation enables more effective use of marketing resources.**
  The targeting of certain groups with tailored messages ensures that budgets are deployed effectively.

- **Segmentation permits better understanding of market demand.**
  For example, better evaluation of initiatives by understanding the limits of the audiences which interventions may be targeting.

- **Segmentation is a more realistic option** as opposed to targeting the whole society could prove difficult.

**Disadvantages to segmentation are:**

- **Segmentation approaches tend to view lifestyles as (relatively) unproblematic discrete sets of practices** that are stable over time.

- **Segmentation groups tend to be context specific** and hence, results are difficult to generalise.

- **Segmentation approaches produce data that describe snapshots in time** as opposed to generating longitudinal data.
Numerous studies have conducted segmentation analysis to attempt to understand pro-environmental behaviours and frame this thesis research, as well as its subsequent scale construction.

The Sinus Milieu approach (Schulze, 1995) has influenced has been a primary influence on research of lifestyles segmentation and consumption behaviours. Developed by Schulze and the Sinus Institute (Schulze, 1995), the Sinus Milieu models group individuals according to their attitudes towards life and their ways of life using a questionnaire comprising of 45 questions. Fundamental value orientations, as well as attitudes towards family, partnership, work, leisure activities, culture, money, and consumption are regarded as being influential on lifestyle typologies. These groupings permit room for analysis of survey results that reflects socio-demographic criteria, and socio-cultural characteristics. To date, 18 Sinus Milieus have been developed for countries and validated individually. However, these models have been critiqued due to lack of information disclosure regarding their clustering and coding procedures. The Sinus-Milieu has been established as a science based model, used for both market research and scientific studies of environmental and social sustainability. The Sinus Milieu approach (Schulze, 1995) has influenced a number of key studies in this field. The individual milieu, employed in Gröger et al., (2010) study, is another example of a segmentation model that comprises individuals into four segments\(^\text{11}\): Social leaders; Mainstream; Traditionalists and Hedonists. This research found that that energy related investments by private households can be clustered and evaluated by using the lifestyle concept (Gröger et al., 2010).

A seven grouping typology was constructed in the English context (DEFRA, 2005). DEFRA’s model offers a framework to examine how different people can be classified according to shared sets of attitudes and beliefs (see Figure 2.5). Following the wider Sustainable Development Strategy (DEFRA, 2005) commissioned by the UK government, this segmented approach can be positioned within what has been termed the ‘4Es’ approach to changing behaviour. This refers to motivating behaviour change through a mixture of ‘enabling’,

\(^{11}\) These four original segments were then divided further into subgroups. These subcategories were labelled as follows: Modern performers, Well-establisheds, Post materialists, Middle class, Consumer Materialists, Upper Conservatives, Traditionalists, Nostalgics, Experimentalists, and Escapists.
‘engaging’, ‘encouraging’, and ‘exemplifying’. This strategy recognises that each group has different potential to do more and differentiated willingness to act to do more. DEFRA (2005) identified seven segments, and mapped them according to its analysis of their ability and willingness to act (that is to adopt their desired behaviours (see Figure 3.4). DEFRA’s approach has been criticised as it explains reported environmental behaviour by reference to attitudes about environmental behaviour, rather than in relation to independent variables.

Figure 2.5: Overview of seven identified segments (DEFRA, 2008)

Barr and Gilg’s study (2006) in the UK identified four lifestyle groups from a quantitative cluster analysis of 36 reported behaviour items from 1,265 questionnaire respondents. The questionnaire survey instrument covered issues of energy and water saving, recycling and ‘green’ forms of consumption. Barr and Gilg (2006) labelled their four lifestyle segments as ‘Committed’, ‘Mainstream’, ‘Occasional’ and ‘Non-environmentalists’ (Barr and Gilg, 2006). Barr (2008) concluded that despite limitations, the findings from segmentation were sufficiently robust to form the basis for a useful contribution to debates on theory,
methodologies and policy interventions in this important field. As a result, this research will utilise lifestyles as a focus to determine key barriers and motivators to pro-environmental behaviour across various groupings of respondents across the island of Ireland. This thesis develops and implements an innovative lifestyle segmentation instrument to identify and profile consumer groupings from the data collated to permit greater understanding of pro-environmental behaviours (see Chapter Three).

Two studies were particularly significant in terms of this research. These studies were Csutora (2010) and Martinsson and Lundqvist (2010). Csutora (2010) did not segment using attitudes, but segmented solely on reported behaviours. In comparison, Martinsson and Lundqvist (2010: p525) constructed a complex attitudinal and behavioural index using Swedish population data to classify respondents behaviour as either ‘green’ or ‘grey’. The purpose of Martinsson and Lundqvist’s research was to empirically examine whether or not practising green virtues is linked to attitudinal shifts as assumed by ecological citizenship theory. To test this empirically, Martinsson and Lundqvist’s (2010) study developed a typology of four major combinations of environmental attitudes and ecological practice. These four groups were labelled believers coverts, hypocrites, diehards. The research assessed the extent to which these four citizen types were found in Sweden using data from nationwide annual surveys. Results indicated the existence of a large group of citizens whose behaviours were green yet who exhibited grey environmental attitudes (i.e. hypocrites). This suggests that individuals can behave in a pro-environmental manner without holding intrinsic green beliefs or attitudes. These results are contradictory to some assertions of proponents of the ecological citizenship view, who contend that our ecological footprints constitute ‘chains of cause and effect that prompt obligations of justice’ (Dobson 2006: 178) which ultimately involve deep rooted ‘green’ shifts in a person’s attitudes towards green.

A Hungarian study (Csutora, 2010) constructed and implemented an environmental behaviour scale to also examine pro-environmental behaviour through the use of segmentation. This research measured the ecological impact of reduced ecological footprints of ‘green’ and ‘brown’ consumers through pro-environmental behaviour. To achieve its aim, Csutora’s study incorporated eight
components listed by the Eurobarometer 217 and 295 surveys (EC, 2009). Questions were asked about actual behaviour practiced during the previous month, namely: ‘Have you done any of the following during the past month for environmental reasons?’ The eight components are shown in Table 2.3. In relation to thresholds, if individuals reported carrying out at least four of the eight behaviours listed they were labelled as ‘green’. Similarly, if respondents reported undertaking between 1-3 behaviours, they were labelled as ‘average’. Those individuals who reported carrying out none of the listed behaviours were categorised as ‘brown’. This study revealed no significant difference between the ecological footprints of the two groups of consumers in question and posited that individual pro-environmental attitudes and behaviours do not always reduce the environmental impacts of consumption.

Table 2.2: Examples of Eurobarometer questions used in Csutora’s survey (2012)

Examples of Eurobarometer questionnaire items

1. Chosen an environmentally-friendly way of travelling
2. Reduced consumption of disposable items
3. Separated most of their waste for recycling
4. Cut down on water consumption
5. Cut down on energy consumption
6. Bought environmentally friendly products marked with an environmental label
7. Chosen locally produced products or groceries
8. Used their car less

2.3 provides an overview of some of the key studies reviewed to inform this research.
Table 2.3: Overview of key studies that employed segmentation that adopted lifestyle approach to sustainability research

<table>
<thead>
<tr>
<th>Authors</th>
<th>Segmentation Categories</th>
<th>Basis of Segmentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Darnton and Sharp (2006)</td>
<td>Segmentation model can be defined by three means:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Causal factors</td>
<td>Segmenting for Sustainability: a review of UK typology segmentation models to influence sustainable behaviours.</td>
</tr>
<tr>
<td></td>
<td>Type of variable</td>
<td>This research assessed the value of applying segmentation models in environmental-related contexts and to identify which models might be best suited to which purposes.</td>
</tr>
<tr>
<td></td>
<td>Attributes</td>
<td></td>
</tr>
<tr>
<td>Bode (2000)</td>
<td>Mainstream Dynamic Green</td>
<td>As part of the Sushouse Project, three broad environmental lifestyle groupings identified as part of back-casting methodological approach.</td>
</tr>
<tr>
<td>Martinsson and Lundqvist (2011)</td>
<td>Believers Hypocrites Coverts Diehards</td>
<td>Based on environmental attitudes and reported behaviours</td>
</tr>
<tr>
<td>Gibson, Waitt, Head and Gill, (2011)</td>
<td>Strong Modest Limited</td>
<td>Based on strength of their environmental attitudes and behaviours</td>
</tr>
<tr>
<td>Study</td>
<td>Segment(s)</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>DEFRA (2008)</td>
<td>Positive Greens, Waste Watchers, Concerned Consumers, Sideline Supporters, Cautious Participants, Stalled starters, Honestly disengaged</td>
<td>‘Framework for Pro-Environmental Behaviours’ UK population can be segmented or divided into seven clusters - based on their willingness to act towards sustainable behaviour and their ability to act.</td>
</tr>
<tr>
<td>DEFRA (2008)</td>
<td>Deep Greens (14%), Light Greens (14%), Shallow Greens (30%), Distanced (30%), Disengaged (14%)</td>
<td>The Scottish typology segments people into a hierarchy of five groupings based on responses provided in the Scottish Environmental Attitudes and Behaviours (2008). This typology was based on expressed attitudes to climate change and the environment (and did not factor in behaviours).</td>
</tr>
<tr>
<td>Csutora (2010)</td>
<td>Green, Average, Brown</td>
<td>Hungarian study; segments were based on behaviours not attitudes.</td>
</tr>
<tr>
<td>Eurobarometer 217 and 295</td>
<td>Green, Average, Brown</td>
<td>Segments were based on behaviours not attitudes.</td>
</tr>
</tbody>
</table>

(*actual questions employed are unknown*)
2.5 Reflections

As discussed in this chapter there has been a notable shift in recent years towards the need to gain better understanding of human consumption behaviours. The importance of analysing consumption from a behavioural perspective in a spatially sensitive manner (i.e. specific to the island of Ireland) is crucial. Following a scoping review of the relevant literature, numerous questions have been raised concerning the neo-classical and predominantly market-based principles of behaviour change that state that consumers are not only autonomous but use rational thinking processes when making consumption decisions (Cohen and Murphy, 2001). A gap exists between knowledge, attitudes and values and environmental behaviours. As was reviewed, environmental behaviour is influenced by a wide range of variables such as values, situational and psychological factors. However, other disciplines (such as geography, environmental psychology and social sciences) also have an important role to play in promoting behavioural change. An interdisciplinary approach is needed to achieve any shift towards sustainable consumption.

A gap for a segmentation model that could have the applicability across many areas of environmental behaviour was identified by this review. The thesis posits segmentation analysis as a useful framing tool to establish lifestyle groupings and inform the development of a conceptual framework to contextualise social, cultural, environmental and political factors, which shape consumption behaviour and lifestyles and to understand the associations between individuals’ expressed attitudes, and their intended reported pro-environmental behaviours. This review of the literature confirms that individuals can be clustered and evaluated by using the lifestyle concept. Hence, this research utilises lifestyles as a framework to assess socio-demographic factors of groupings. Individuals are identified (assigned to a segment grouping) according to their pro-environmental attitudes and behaviours and profiled in depth according to various socio-demographic variables and behaviours. Socio-demographic variables can indicate where environmental attitudes cluster in different populations (Ólafsson and Öhman, 2006).
This research does not intend to disable the traditional socio-psychological models of behaviour change; but instead aims to offer a more holistic approach by adopting a segmentation approach to environmental behaviour. Used in conjunction with wider evidence, a constructed lifestyle model is used in this study to assess which groups of people might be more willing and able to do certain behaviours; which are most opposed and the motivations and barriers for uptake. This research develops and utilises a practical quantitative tool – in this instance a simple attitudinal/behaviour typology – to classify or segment individuals’ into a typology of consumers. Such an understanding could then inform which behaviours have crosscutting or segment specific potential and guidance on types of interventions that may be more or less effective for specific segments. Segmentation analysis is employed to group householders into lifestyle groupings to examine the characteristics of green versus brown consumers. This research develops and utilises a practical quantitative tool – in this instance a simple attitudinal/behaviour typology - to classify or segment individuals into a typology of consumers. The model can then be used to help develop more targeted approaches to policy and marketing communications, particularly in relation to the identified priority projects.

The attitude indices constructed for this thesis will be based on recent research studies conducted in Europe (see Martinsson and Lundqvist, 2010; Csutora, 2012), which also utilised indices to categorise respondents according to their expressed attitudes and/or their reported pro-environmental behaviours. This is a critical tool in the framework for influencing behaviour used to identify a series of lifestyle groupings (based on this Lifestyle Survey dataset) to inform the development a typology of respondents into relatively homogenous discrete groups (in terms of their attitudes towards pro-environmental behaviours as well as their willingness to act in a pro-environmental manner) (see Chapter Eight). The following chapter explores the methodological approach to undertaking this research.
CHAPTER THREE:

REFLECTING ON THE RESEARCH PROCESS – OUTLINE OF THE METHODOLOGY
3.1 Introduction

This chapter addresses the methodological framework employed in undertaking this research project. As explored in Chapter Two, understanding human behaviour is a challenging and complex task due to the myriad of factors that influence attitudes and behaviours. One of the most difficult challenges is developing a methodology that represents accurately the complexity of household consumption. A methodology enables the identification of drivers of sustainable consumption and lifestyles and that is essential. The main purpose of this chapter is to provide a detailed outline of the rationale and structure of the methodology that is used to carry out the fieldwork.

This chapter is primarily composed of two core sections, the first outlines the rationale for the research design adopted in this study and the second examines the data analysis employed. Initially, the chapter describes the research design process undertaken to study environmental attitudes and behaviours (see Section 3.2). The chapter also outlines the method undertaken to conduct a review of policy (Section 3.2.2). The empirical part of this research rests primarily on a quantitative survey tool, which was designed specifically for this study. Section 3.3 provides a detailed description of the development and testing of this research tool. The validity and reliability of the research design is discussed in section 3.4, with details provided of the indices used later in this thesis to construct an innovative typology of respondents. Exploratory factor analysis is conducted on data to examine the factorability of the data set for scale development. All outputs from the typology development are outlined in this section. Piloting of the survey instrument is explored in Section 3.5. The sampling frame is discussed in terms of its distribution and selection criteria (section 3.6) as well as its size (see Section 3.7). Section 3.8 outlines the fieldwork procedure employed to conduct the survey. The initial part of this method chapter ends with reflections on the ethical considerations involved in conducting this research project (section 3.9). Section 3.10 of this chapter outlines the data a preparation procedure and Section 3.11 explains the data analysis employed in this research. Finally, reflections and concluding remarks are made in Section 3.12.

In order to explore contemporary household consumption patterns across the
island of Ireland, a large scale all-island survey of 1,500 participants was conducted between June 2010 and April 2011. This approach argues that existing theoretical constructions of attitudes and behaviour can potentially effect pro-environmental behaviour change. Figure 3.1 illustrates stages of the quantitative research methodology used in this study. Each of these stages is discussed in detail in this chapter.
3.2 Research design processes

This section outlines the methodology undertaken to conduct a review of policy literature and key political agreements. An exploration of the rationale for using a quantitative survey methodology to study environmental attitudes and behaviours is outlined.

3.2.1 Theory and policy review process

This study commences with a review of relevant policy analysis to contextualise the political environment for sustainable consumption. In order to understand challenges to methodology and theory, an overview of international policy in this important field is provided in Chapter Four where key policy agreements on the island of Ireland are identified and critically examined.

To conduct this policy analysis, an extensive review of the existing policy on sustainability and consumption, on both an international and national level was undertaken. This study reviewed the following global policy developments and political agreements: the Brundtland Report (WCED, 1987), Agenda 21 (United Nations Conference on Environment and Development (UNCED), 1992), 10 Year Framework of Programmes (10YFP) initiated at the World Summit on Sustainable Development (WSSD) Conference in Johannesburg, South Africa (UNSD, 2002), and the Marrakech Process (United Nations Environment Programme (UNEP, 2003).

At the European Union (EU) level, the following key policy agreements provided the broad underlying agenda for addressing the challenge of sustainable consumption and production (SCP): the Lisbon Strategy (EC, 2000), the EU Sustainable Development Strategy (EC, 2001) and the European Action Programme (2002-2012) (EC, 2002).

To empirically examine sustainable consumption policy at the national level, this study reviews the National Sustainable Development Strategy (NSDS) in 1997 for the Republic of Ireland and the Northern Ireland National Sustainable Development Strategy (NI NSDS) for Northern Ireland (Department of
Environment Northern Ireland, 2006). Overall, this policy review formed the desk study element of the study, which sets the scene for empirical investigation later on (see Chapters Five, Six, Seven and Eight).

### 3.2.2 Using a quantitative survey methodology

Research on sustainable consumption and lifestyles is still in its formative stages in an Irish context. To address the previously identified gap in knowledge (see Chapter One) and collate comprehensive, systematic and in-depth baseline information regarding individuals’ attitudes and behaviours towards household consumption and sustainable lifestyles in Ireland, a quantitative research methodology was selected. This methodology was deemed most apt as the author aimed to captures large-scale trends rather than individual qualitative interpretations.

For the purpose of this study, a face-to-face questionnaire survey was deemed the most appropriate instrument to use. Surveys are advantageous to researchers interested in attitudes and behaviours in a population for numerous reasons (Williams, 2003, Easter-by-Smith et al., 2004). Firstly, surveys permit the examination and identification of trends in attitudes and behaviour that are essential to enhance understanding of sustainable consumption (OECD, 2013). The research is based on the premise that a quantitative tool can identify broad trends in consumption behaviour across key sectors of household consumption\(^{12}\) (energy, transport and water). Surveys permit a snapshot of current attitudes and behaviours towards sustainable consumption in a relatively short period of time (Robson, 2011). An extensive review of the literature revealed that other key research studies on sustainability and environmental behaviours, on the international scale, have relied on questionnaire surveys (e.g., DEFRA, 2001; Quist et al. 2001; Hobson, 2003; The European Social Survey, 2004, 2006, 2008; OECD, 2011; Tudor et al., 2011; National Geographic and Globescan, 2012).

\(^{12}\) Although the CONSENSUS Project focused on four areas of consumption (water, energy, transport and food consumption), this thesis focuses solely on the areas of water, energy and the consumption of distance. However results on food consumption and food waste data from the survey can be found in CONSENSUS factsheets (Available to download at www.consensus.ie) (see Appendix Six for example of CONSENSUS factsheets).
Secondly, survey methodologies permit data to be generated on more than one case at a single point in time (May, 1997). Numerous large-scale survey studies have also explored household consumption analyses and sustainability from a cross-cultural perspective (OECD, 2001; Peters, 2010; National Geographic and Globescan, 2012). For example, the Environmental Policy and Individual Behaviour Change (EPIC) survey\textsuperscript{13} explored water use, energy use, personal transport choices, organic food consumption, and waste generation and recycling from over 12,000 households in eleven OECD countries\textsuperscript{14} (OECD, 2011) with a survey methodology. Similarly, the National Geographic and Globescan Survey (entitled ‘Greendex 2012: Consumer Choice and the Environment—A Worldwide Tracking Survey’) measures and monitors consumer behaviours that have an impact on the environment in 65 areas relating to housing, transportation, food, and consumer goods across 17 countries through the use of a survey methodology. Likewise, the Gilded Project – a collaborative research project led by the Potsdam Institute for Climate Impact Research that explored energy consumption patterns and climate change perceptions in five European countries through the use of a survey methodology (PIK, 2010) – achieved its aims through the employment of a survey methodology. Comparisons to be drawn between different sample areas. Both the Republic of Ireland and Northern Ireland have not been included in any cross-cultural comparative research to date (such as OECD, 2011, National Geographic and Globescan, 2012). Hence a survey methodology permits comparisons to be drawn between Northern Ireland and the Republic of Ireland sample areas. Comparisons can be drawn between this study and previous studies in the area of sustainable consumption (e.g., Drury, 2000; Motherway \textit{et al.}, 2003).

Thirdly, this face-to-face interaction enables the interviewer to ‘elaborate on and explain any abstract concepts’ (Robson, 2011), so that no confusion remains for the respondents in terms of the questions being asked. This method attempted to overcome another challenge of capturing baseline data on attitudes and behaviours towards sustainable consumption: that is, how to define and present the complex terms sustainable consumption and sustainability. For example, initially, the

\textsuperscript{13} The EPIC survey, which was conducted as an online survey method, identified policies that work to promote ‘greener’ behaviour at the household level. This survey was composed of seven parts; exploring five themes as well as socio-demographic variables and attitudinal characteristics.

\textsuperscript{14} The eleven OECD countries surveyed were Australia, Canada, Chile, France, Israel, Japan, Korea, the Netherlands, Norway, Sweden and Switzerland (OECD, 2011).
survey instrument was titled – a Sustainable Living Survey. In many ways the term ‘sustainability’ has become synonymous with ‘environment’, yet as Barr and Prillwitz, (2013: 28) note ‘defining household practices related to sustainability is fraught with problems and researchers have often adopted flexible approaches for exploring “green” household behaviour’. Following extensive piloting, the CONSENSUS survey was revised and renamed the CONSENSUS Lifestyle Survey. The term ‘lifestyle’ was deemed to be more appropriate to the scope of the survey.

Using an administered survey format also overcomes issues of literacy; ensuring that individuals who traditionally may be marginalised from conventional written or email surveys would be represented fairly in the sample. This is in line with the goals of sustainable consumption and development. Examples of individuals who may be marginalised include persons who are functionally illiterate or individuals with poor eyesight.

### 3.3 Designing the survey instrument

The next section focuses primarily on the design, development, and piloting of the quantitative survey tool.

#### 3.3.1 Review of research and previous studies

The survey questionnaire was constructed over a three-month period. An extensive review of pre-existing research and key studies was conducted to inform its design and development. Examples of databases and archives reviewed in both the Republic of Ireland and Northern Ireland are evident in Table 3.1.
Table 3.1: Examples of archives, databases and other sources of public information reviewed to aid survey construction.

<table>
<thead>
<tr>
<th>Republic of Ireland</th>
<th>Northern Ireland and the United Kingdom.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Statistics Office (CSO)</td>
<td>Northern Ireland Statistics and Research Agency (NISRA)</td>
</tr>
<tr>
<td>Central Survey Unit (CSU)</td>
<td>Department of Environment, Food and Rural affairs (DEFRA)</td>
</tr>
<tr>
<td>Irish Social Science Data Archive (ISS)</td>
<td></td>
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<tr>
<td>Sustainable Energy Ireland (SEI)</td>
<td></td>
</tr>
</tbody>
</table>

A review of relevant environmental research and studies, that utilised survey instruments to achieve their aims, was also conducted to guide the survey development for this research. The survey instrument (see Appendix Two) was constructed using questions and topics adapted from 19 pre-existing environmental and household consumption surveys. Table 3.2 provides an overview of studies and research that informed the development of the survey instrument.
<table>
<thead>
<tr>
<th>Framework Variables</th>
<th>Questionnaire themes</th>
<th>Examples of survey items</th>
<th>Key studies that informed questionnaire design</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environmental Concern variables</strong></td>
<td>Environmental concern</td>
<td>Q1. Environmental concern</td>
<td>Barr, Gilg and Ford, 2001; OECD 2011; Drury Research 2000; 2003; Davies et al., 2001; National Geographic and Globescan, 2009</td>
</tr>
<tr>
<td>Willingness to act</td>
<td>Q7-Q10 willingness to act to protect the environment</td>
<td>Barr et al., 2001; Motherway, Kelly, Faughnan and Tovey, 2003; Eurobarometer, 2009</td>
<td></td>
</tr>
<tr>
<td><strong>Psychological variables</strong></td>
<td>Self-efficacy</td>
<td>Q6A. I feel that my own personal behaviour can bring about (positive) environmental change. Q6B. ‘I can change my behaviour quite easily if I wanted to’</td>
<td>Drury 2000, 2003; Motherway et al., 2003; OECD, 2011</td>
</tr>
<tr>
<td>Environmental responsibility</td>
<td>Q2. In your opinion, who is most responsible</td>
<td>Barr et al., 2001; Davies et al., 2001; Drury Research, 2000; 2003; OECD 2008; National Geographic and Globescan 2009.</td>
<td></td>
</tr>
<tr>
<td>Perceptions of household impact on environment</td>
<td>Q6B. I would rate my household as excellent when it comes to being environmentally friendly</td>
<td>National Geographic and Globescan, 2009</td>
<td></td>
</tr>
<tr>
<td>Intrinsic motivation</td>
<td>Q5. Would you be willing to do any of the following to help protect the environment?</td>
<td>Northern Ireland Statistics and Research Agency, 2008; National Geographic and Globescan 2009</td>
<td></td>
</tr>
<tr>
<td>Perceptions of necessity and luxury items</td>
<td>Q12B. Would you regard the following household items to be luxuries or necessities?</td>
<td>DEFRA, Gatersleben, 2000, 2001)</td>
<td></td>
</tr>
<tr>
<td>Variable</td>
<td>Question</td>
<td>Source</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Life satisfaction</td>
<td>Q14. All things considered how satisfied would you say you are with your life these days? Please tell me on a scale of 1 -10</td>
<td>DEFRA, 2001; European Foundation for the Improvement of Living and Working Conditions, 2009; Eurofound, 2009;</td>
<td></td>
</tr>
<tr>
<td>Social norms and influences</td>
<td>Q33A. I like people to think of me as being environmentally friendly</td>
<td>Environmental Behaviour Research Group Survey questionnaire (Barr et al., 2001); Environmental Behaviour Survey (OECD, 2008)</td>
<td></td>
</tr>
<tr>
<td>Beliefs about Governmental action</td>
<td>Q3. what action should the government be focusing on first; in order to protect the environment?</td>
<td>Northern Ireland Statistics and Research Agency, 2008; OCED, 2008</td>
<td></td>
</tr>
<tr>
<td>Environmental knowledge and awareness</td>
<td>Q28. Have you heard of any of the following that can help make your home more energy-efficient?</td>
<td>OECD, 2008</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Q33C. I am well informed about the environmental impact of products I use (i.e. food miles, packaging lifespan, production methods)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ownership of household goods and appliances</td>
<td>Q12A. How many of the following does your household own?</td>
<td>Gatersleben, 2000; DEFRA, 2007;</td>
<td></td>
</tr>
<tr>
<td>The perceived impact of recession or economic downturn</td>
<td>Q11A. My overall quality of life has been affected because of the recent economic downturn?</td>
<td>European Foundation for the Improvement of Living and Working Conditions, 2009; Eurofound, 2009;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Q11B. If yes, then has your household’s ability to do any of the following been affected?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Six questions were developed to address gaps identified in these previous studies or to address specific issues relevant to the Irish context; for example, one question explored whether or not respondents believed reintroducing water charges would change their current water usage. This question was specific to the Irish context as water charges were discussed in the budget at the time of the study.

This research aimed to facilitate a nuanced investigation of household consumption behaviours. Hence, the survey instrument was designed using an adapted version of Barr’s framework of environmental behaviour (see Chapter Two). The survey included questions that probed into social and environmental concern variables, situational variables and psychological variables (see Table 3.2). In terms of questionnaire format, the survey designed followed Neuman’s (2000) recommendations regarding the sequence of questions, to reduce any discomfort or confusion for respondents.

### 3.3.2 Questionnaire components

The questionnaire itself was broken down into five separate sections for ease of understanding, as well as for ease in answering. Table 3.3 outlines these five sections. Part A of the questionnaire examined respondents’ attitudes towards the environment, towards environmental responsibility as well as their attitudes towards their perceived levels of environmental control, their perceptions of quality of life, and their understandings of what constitutes a luxury or a necessity in daily life.

The second section, Part B, focused on transport and the consumption of transport and drew on previous work by transport geographers and sociologists (see Table 3.3). The questions in this section focused on distance travelled to work, transport mode, availability of public transport, as well as barriers and benefits to different modes of travel.

Section C of the questionnaire concentrated on food consumption. In particular,
issues related to food purchasing decisions such as attention paid to food production and food waste, meat and household composting patterns were explored. Although food consumption and waste are an extremely important aspect of sustainability, due to the scope of this thesis, the areas of energy, transport and water consumption are investigated. A report by the OECD (2009) identified these three areas of consumption as priority areas for the island of Ireland and this influenced the study’s focus.

Section D of the Lifestyle Survey explored the consumption of water and energy in the home. Questions in this section probed whether or not respondents paid attention to the amount of water they consumed. Also issues relating to self entitlement to water and energy use in the house were investigated; as well as whether or not respondents believed that they currently saved as much water as they could. Respondents’ views were asked concerning the impact of reintroducing a water charge on their current water usage. Towards the end of section D, respondents were asked to indicate which lifestyle changes they had actually executed during the past month. Respondents were also asked if they had undertaken a number of habitual and occasional actions in the past month or five years prior to being surveyed. The aim was to explore whether habitual behaviours (such as reducing energy use in the home, cutting down water use, avoiding products with a lot of packaging, buying reusable products instead of disposable ones, and repair items rather than buy new ones) were more frequently undertaken than occasional actions.

The survey concluded with a section on the socio-economic profile of the respondents, including respondents’ age, gender, educational status, employment status, and income. This section also explored the respondent’s household characteristics (e.g. housing tenure and size). In line with traditional survey construction, an ‘office use’ section was included for the researcher to input observational data such as the date of the questionnaire survey, the survey number as well as any personal comments regarding the survey procedure.
Table 3.3: Breakdown of survey instrument according to its five sections.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Key studies reviewed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Section A</strong></td>
<td>General attitudes towards environment, responsibility, self-efficacy, willingness to act, quality of life, and life satisfaction</td>
</tr>
<tr>
<td></td>
<td>Barr et al., 2001; Davies et al., 2001; 2000; 200; OECD, 2008; National Geographic and Globescan 2009</td>
</tr>
<tr>
<td><strong>Section B</strong></td>
<td>Transport and consumption of distance</td>
</tr>
<tr>
<td></td>
<td>Census, 2006; Rau and Hennessy, 2009; NIRSA 2007; OECD 2008; European Environment Agency 2004b.</td>
</tr>
<tr>
<td><strong>Section C</strong></td>
<td>Water consumption and efficiency</td>
</tr>
<tr>
<td></td>
<td>NIRSA 2007; OECD 2008; National Geographic and Globescan, 2009</td>
</tr>
<tr>
<td><strong>Section D</strong></td>
<td>Energy consumption and efficiency</td>
</tr>
<tr>
<td></td>
<td>NIRSA 2007; OECD, 2008; National Geographic and Globescan 2009;</td>
</tr>
<tr>
<td><strong>Section E</strong></td>
<td>Socio-demographics</td>
</tr>
</tbody>
</table>

Overall, the questionnaire included 48 predominantly close-ended questions with a combination of binary answer options and Likert-like scales questions. Of those, 22 questions were answered on a five-point Likert-like frequency scale ranging from ‘strongly agree’ to ‘strongly disagree’; with a neutral midpoint ‘Neither agree nor disagree’. Five-point Likert-like frequency scales were used as research confirms that data from Likert items becomes significantly less accurate when the number of scale points drops below five or above seven. As filter questions were employed, respondents were not required to answer all questions. The administered format utilised meant that the interviewer guided the respondents through the survey structure asking only the necessary questions. The purpose of the neutral midpoint response is to avoid forcing respondents into expressing agreement or disagreement when they may lack such a clear opinion, which may not only irritate respondents, but it also risks data quality.

The questionnaire also included ‘don't know’ responses for each question. The response category of ‘don’t know’ was removed and treated as missing data. The
The author’s rationale for doing this was because a ‘don’t know’ response is different from a ‘neutral’ response in that a neutral response could entail ambivalence (i.e. being torn between opposite ends of a scale) or indifference to the question. However, the author deduces that respondents may not have sufficient information available to them to respond to the question they were asked and hence, responded ‘don’t know’.

The questionnaire contained pre-dominantly closed-ended questions because they ‘have the advantage of achieving greater uniformity of measurement and therefore greater reliability’ (Burns, 2000). In addition, close-ended questions code easily onto PSAW, making the statistical analysis relatively straightforward (Veal, 1997). However, closed-ended questions do not allow for a great level of freedom for the respondent in answering questions (May, 1997). The survey provided respondents with more freedom to express their opinions due to the presence of several ‘other’ response categories (Bryman, 2008), which allowed respondents the opportunity to elaborate in detail on a specific answer than the standardised closed-form question (Robson, 2011) This provided the researcher with greater insight into a respondent’s reasoning. The inclusion of open-form questions does not imply that respondents will actually response in an elaborate manner (Hoggart et al., 2002). These ‘other’ category questions are also quite difficult to code and analyse as opposed to standardized closed-form questions.

Care was taken to minimise response-set bias. In line with best practice (Bryman, 2008), approximately 25% of questions (four questions in this case) were worded negatively to avoid this type of bias. Negative wording also minimises risk of acquiescence set bias, or the tendency for respondents to agree with statements irrespective of their content, which can be a difficulty associated with Likert-like format. Prior to analysis, the positive items were reverse-coded to ensure consistency across the variables. Overall, the questionnaire was quite lengthy. Although four pages is the suggested maximum for a survey instrument, it is argued that an administered survey can be longer if the researcher is present when the survey is administered (Black, 1999). The fact that this survey was quite lengthy could also be viewed as a positive in that often the more questions there are on a survey, the higher its reliability (ibid) (see Section 3.10).
3.4 Validity and reliability of research design

Validity and reliability are important criteria in terms of evaluating research (Gummerson, 1991; Remeyi et al., 2005). Since this research includes quantitative data, statistical validity was paramount to ensure consistency and integrity (Remeyi et al., 2005). In order to produce results that have a high level of reliability, it is essential that the questionnaire is reliable and valid. Reliability refers to the repeatability, stability or internal consistency of a questionnaire (Jack and Clarke, 1998). Many of the questions in the survey were utilised from pre-existing questionnaire instruments. Hence, these questions had high levels of reliability due to the fact they were meticulously tested. In terms of validity, the questionnaire was developed, piloted, amended and then piloted again until the instrument was deemed ready to yield the information necessary for the study.

One way of demonstrating internal reliability is Cronbach’s α. This statistic uses inter-item correlations to determine whether constituent items are measuring the same domain (Bryman and Cramer 2009; Jack and Clarke 1998). If the items show good internal consistency, Cronbach’s α should exceed 0.70 for a developing questionnaire or 0.80 for a more established questionnaire (Bryman and Cramer, 2009). If the variables appear to reflect similar theoretically concepts, there is rationale for combining them in indices. Both factor analysis and reliability testing are utilised to explore the development of an index, test the uni-dimensionality of a scale, and assign weights (factor loadings). Underlying constructs, also known as latent factors, were deduced from the correlations between the measured variables of the questionnaire and provided a basis for data reduction and the development of a new simplified index.

3.4.1 Constructing attitudinal and behavioural indices

Taking into consideration the potential problems associated with over-simplifying

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15 An index (sometimes called composite, inventory, test, or questionnaire) is a set of items (questions) that structures and focuses multiple yet distinctly related aspects of a dimension or domain of behaviour or attitudes into a single indicator or score. Indices are formed when multiple indicators of a variable are combined into a single measure.
human behaviour into neat categories, factor analysis\textsuperscript{16} was employed to develop an attitudinal scale. Despite the Lifestyle Survey dataset comprising of 1,500 cases\textsuperscript{17}, the author still assessed the factorability of the dataset using a number of different statistical tests, prior to performing Exploratory Factor Analysis (EFA). The Kaiser-Meyer-Olkin (KMO) value (which indicates whether or not the dataset is suitable for Factor analysis) was 0.763. This value indicated that the dataset was a good fit for factor analysis, as this value exceeded the recommended threshold of 0.6 (Kaiser, 1974). Bartlett’s Test of Sphericity (Bartlett, 1954) was also employed to assess data suitably. This measure reached statistical significance (i.e. less than .05) thereby supporting the factorability of the correlation matrix. Examination of the correlation matrix also revealed the presence of many coefficients of 0.30 or greater, which further consolidated the author’s decision to employ factor analysis. author acknowledges the need for caution when reporting any significant findings as this latter measure may only be significant due to the large size of the dataset in question (N=1,500).

In order to construct the attitudinal scales, an initial set of possible questionnaire items were tested using inter-item correlations to evaluate patterns in participants’ responses to certain attitudinal items. Inter-item correlations examined how questions performed within and between constructs. Originally all attitudinal items on the Lifestyle Survey were subjected to Exploratory Factor Analysis (EFA) using PSAW 20 (Statistical Product and Service Solutions). EFA was employed as a statistical technique to examine whether (or not) certain variables loaded onto other variables in the Lifestyle Survey dataset\textsuperscript{18}. Based on this first EFA, 16 items were subjected to further EFA. These variables were selected as possible questions addressing similar underlying concepts based on a review of the survey instrument. See Table 3.4 for list of items included in EFA. All 16 items were checked to observe if they were tapping the same construct. All questions utilised a 5-point Likert frequency scale for their responses (except for

\textsuperscript{16} Factor analysis works by grouping together items that correlate with each other. The basic idea is that those items that correlate relatively highly with one another on a particular factor are assumed to reflect the same construct and those that correlate together in a relatively low manner are assumed to reflect a different construct (Kim and Muller, 1994a and 1994b; Pallant, 2007).

\textsuperscript{17} According to Tabachnick and Fidell (2007), a dataset sample which comprises of ‘300 or more cases’ is suitable for factor analysis (p.613).
one item which employed a four-point Likert response scale). Using questions with Likert response scales ensured consistency across all selected variables. Prior to factor analysis, variables were ‘cleaned’ to remove missing and ‘don’t know’ data values and negatively worded survey items were re-worded to ensure they had consistent directional meaning in terms of the construct they were addressing. All variables were first cleaned to remove all missing and ‘don’t know’ values, and then these variables were recoded into new labels for scale construction. Factor Analysis was then employed to explore the loadings of these 16 different questions in relation to one another.

Table 3.4: Variables included in Exploratory Factor Analysis.

Overview of survey items included in Exploratory Factor Analysis

I feel that my own personal behaviour can bring about positive environmental change.

I can change my consumption behaviour quite easily if I wanted to.

I need to behave in a more environmentally friendly way*.

I would be willing to accept cuts in standards of living, if it helped protect the environment.

I would be willing to pay higher prices for goods/services; if it helped protect the environment.

I would be willing to support higher taxes, if it helped to protect the environment.

I would be willing to sacrifice some personal comforts in order to save energy.

My overall quality of life has been affected by the recent economic downturn.

I pay attention to where and how the food I buy is produced.

Food that is organic or fair-trade is not too expensive to buy*.

I pay much attention to the amount of water I use*.

I do not have the right to use as much water and energy as I want*.

I need to save water – there is not plenty of it*.

I already save as much water as I can.

I like people to think of me as being environmentally friendly.

I am well informed about the environmental impact of products I use.
*This item was reverse-coded prior to factor analysis*

Exploratory component analysis identifies five components with Eigenvalues exceeding 1.0, which explained 49.3% of the variance in total (or 18%, 9.9%, 7.8%, 6.9% and 6.4% of the variance respectively) (see Table 3.5). It is evident from this component’s matrix that a majority of the variables load onto component 1; as one of the components accounts for a larger proportion (18%) of variance than the others.

**Table 3.5: Total variance explained**

<table>
<thead>
<tr>
<th>Component</th>
<th>Initial Eigenvalues</th>
<th>Extraction Sums of Squared Loadings</th>
<th>Rotation Sums of Squared Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>% of Variance</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>2.893</td>
<td>18.079</td>
<td>18.079</td>
</tr>
<tr>
<td>3</td>
<td>1.262</td>
<td>7.889</td>
<td>35.908</td>
</tr>
<tr>
<td>4</td>
<td>1.113</td>
<td>6.953</td>
<td>42.861</td>
</tr>
<tr>
<td>5</td>
<td>1.031</td>
<td>6.441</td>
<td>49.302</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.

One limitation of Kaiser’s criterion is that it extracts too many components; in this case five components in total. Hence, due to recommendations from recent literature (see Pallant, 2007), a Catell’s (1966) scree test was examined (see Figure 3.2). A scree plot represents the same data in graphical format; plotting each eigenvalue. Analysis of this test revealed two factors that appeared to contribute greatly to the explanation of the variance. A clear break exists between second and third components. Hence, the first and second component appear to explain much more of the variance than the remaining components. Hence, two components were retained for further investigation. This was further supported by the results of parallel analysis, which showed only two components with eigenvalues exceeding the corresponding criterion values for a randomly
generated data matrix of the same size (20 variables x 1,500 respondents).

Figure 3.2: Scree plot to assess factorability.

The communality of a given item is the proportion of its variance that can be accounted for by the other components. Due to the fact that loadings are correlations between variables and components - and that components are orthogonal – a variable's communality represents the $R^2$ of the variable predicted from the components. As is evident from the table of communalities for this set of variables (see Table 3.6), there are a number of strong loadings onto a number of factors. Loadings are strongest for the item ‘I do pay attention to water’ (0.546), and weakest for the item ‘I need to behave in a more environmentally friendly manner’ (0.056). Removing items with low communality values tends to increase the total variance explained and is very useful when refining a scale\(^9\).

\[^9\] Communalities change dramatically depending on how many factors are retained. It is recommended that interpretation of communality values is carried out after the decision to retain a certain number of factors (using the screeplot and parallel analysis).
Table 3.6: Communality

Communalities table

<table>
<thead>
<tr>
<th>Item</th>
<th>Initial</th>
<th>Extraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. NEWQ6A.BEH__DIFF</td>
<td>1.000</td>
<td>.267</td>
</tr>
<tr>
<td>2. NEWQ6C.Change_Beh</td>
<td>1.000</td>
<td>.168</td>
</tr>
<tr>
<td>3. NEEDToActEnv</td>
<td>1.000</td>
<td>.056</td>
</tr>
<tr>
<td>4. Newq8_HigherPrices</td>
<td>1.000</td>
<td>.457</td>
</tr>
<tr>
<td>5. Newq9_SupportHigherTaxes</td>
<td>1.000</td>
<td>.427</td>
</tr>
<tr>
<td>6. Newq10_SacrificePersonal Comforts</td>
<td>1.000</td>
<td>.345</td>
</tr>
<tr>
<td>7. Newq11A_QoLAffected</td>
<td>1.000</td>
<td>.189</td>
</tr>
<tr>
<td>8. NewQ33A_LikeToBeSeenEnvFriendly</td>
<td>1.000</td>
<td>.110</td>
</tr>
<tr>
<td>9. NewQ33C_InformImpacts</td>
<td>1.000</td>
<td>.067</td>
</tr>
<tr>
<td>10. NEW24a_PayAttentionFood produced</td>
<td>1.000</td>
<td>.183</td>
</tr>
<tr>
<td>11. REVQ24OrgFtrdeNOTTooEXPS</td>
<td>1.000</td>
<td>.143</td>
</tr>
<tr>
<td>12. REV_NEW29A_IDoPayattentionWater</td>
<td>1.000</td>
<td>.546</td>
</tr>
<tr>
<td>13. NEWq7_CutsLivingStandards</td>
<td>1.000</td>
<td>.431</td>
</tr>
<tr>
<td>14. REV_New29B_DontHaveRightWaterEnergy</td>
<td>1.000</td>
<td>.472</td>
</tr>
<tr>
<td>15. REV_NEW29C_IDONeedToSaveWater</td>
<td>1.000</td>
<td>.420</td>
</tr>
<tr>
<td>16. NEWQ29E_ALreadySaveWater</td>
<td>1.000</td>
<td>.202</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis

Table 3.7 shows the component’s matrix output which enables the examination of the five-component matrix. This matrix shows unrotated loadings of each of the items on the four components and highlights a number of unrotated items which load quite strongly on the first two components but not at all on component 4 or 5. A minimum of 3 or 4 loadings on each component is preferable. The Extraction Method is Principal Component Analysis (PCA), which attempts to explain all of the variance by analysing a correlation matrix in which the 1.0s on the diagonal remain.

Inspection of the correlation matrix revealed the presence of many coefficients of 0.3 and above. In other words, results showed that a number of survey items appeared to load strongly onto each other. This would indicate that items that correlated relatively highly with one another on a particular factor reflect the same construct and those that correlate together in a relatively low manner are assumed to reflect other constructs (Kim and Muller, 1994a and 1994b).
Table 3.7: Component Matrix

<table>
<thead>
<tr>
<th>Component Matrix(^a)</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>NEWQ6A.BEH__DIFF</td>
<td>.515</td>
</tr>
<tr>
<td>NEWQ6C.Change_Beh</td>
<td>.262</td>
</tr>
<tr>
<td>NEED To Act Env</td>
<td>.187</td>
</tr>
<tr>
<td>Newq8_HigherPrices</td>
<td>.610</td>
</tr>
<tr>
<td>Newq9_SupportHigherTaxes</td>
<td>.574</td>
</tr>
<tr>
<td>Newq10_SacrificePersonalComforts</td>
<td>.549</td>
</tr>
<tr>
<td>Newq11A_QoLAffected</td>
<td>-.285</td>
</tr>
<tr>
<td>NewQ33A_LikeToBeSeenEnvFriendily</td>
<td>.323</td>
</tr>
<tr>
<td>NewQ33C_InformImpacts</td>
<td>.240</td>
</tr>
<tr>
<td>NEW24a_PayAttentionFood produced</td>
<td>.409</td>
</tr>
<tr>
<td>REVQ24OrgFtrdeNOTTooEXPS</td>
<td>.288</td>
</tr>
<tr>
<td>REV_NEW29A_IdoPayattentionWater</td>
<td>.448</td>
</tr>
<tr>
<td>NEWq7_CutsLivingStandards</td>
<td>.600</td>
</tr>
<tr>
<td>REV_New29B_DontHaveRightWaterEnergy</td>
<td>.479</td>
</tr>
<tr>
<td>REV_NEW29C_IDONeedToSaveWater</td>
<td>.463</td>
</tr>
<tr>
<td>NEWQ29E_ALREADYSaveWater</td>
<td>.148</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.

\(^a\) 5 components extracted.

These results suggest a two-factor solution is most appropriate for this data. Hence, the author rotated the items manually and repeated the factor analysis based on two components. Varimax and Oblimin rotations were performed to aid in the interpretation\(^20\), explaining a total of 39.54% of the variance\(^21\). When repeated without two lowest communality values, two scales emerged from the Varimax rotation. The internal reliability was investigated before combining the items into a scale to explore whether (or not) there was a high degree of internal consistency among the items. All correlations were found to be reasonably strong and statistically significant (P<0.05). Examination of the component correlation matrix indicated that the two components are related, meaning that different solutions may be obtained through an Oblimin rotation. This two-component

\(^20\) As the two components were not related, a Varimax rotation was deemed suitable. However, results of component correlation matrix indicated quite low values (i.e. 0.247 and 0.234 respectively) and hence, the author reported both Varimax and Oblimin rotation to enhance data interpretation.

\(^21\) Component one contributing to 26.55% of the variance and Component 2 contributing 12.98% of the variance.
solution explained 48.15% of the variance, with component one contributing 30.69% and Component 2 contributing 17.46%.

Table 3.8: Total Variance Explained

<table>
<thead>
<tr>
<th>Component</th>
<th>Initial Eigenvalues</th>
<th>Extraction Sums of Squared Loadings</th>
<th>Rotation Sums of Squared Loadings*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>% of Variance</td>
<td>Cumulative % of Variance</td>
<td>Total % of Variance</td>
</tr>
<tr>
<td>1</td>
<td>2.455</td>
<td>30.691</td>
<td>30.691</td>
</tr>
<tr>
<td>2</td>
<td>1.397</td>
<td>17.464</td>
<td>48.155</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

To aid in the interpretation of these two components, direct oblimin rotation was performed. Results of this rotated solution revealed the presence of simple structure (Thurstone, 1947) with both components showing a number of strong loadings and all variables loading substantially on only one component. The first component had 5 items which loaded strongly. The author labeled this scale as ‘pro-environmental attitude scale’ as these questions appear to describe the attributes which have the highest loadings for the first component. A total of three items loaded strongly on component two. The author labeled this component as a ‘water conservation scale’ as the three questions with high loadings appeared to focus on issues of water consumption, conservation and entitlement to unrestricted water use. Note that only the first six-item scale is utilised for typology development in Chapter Eight. The structure matrix, which is unique to oblimin rotation, provides information regarding correlations between variables and factors. See results in Table 3.9.
### Table 3.9: Component Matrix

<table>
<thead>
<tr>
<th>Pattern Matrixa</th>
<th>Component 1</th>
<th>Component 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEWQ6A.BEH__DIFF</td>
<td>.394</td>
<td>.262</td>
</tr>
<tr>
<td>NEWQ6C.Change_Beh</td>
<td>.418</td>
<td>-.117</td>
</tr>
<tr>
<td>NEED To Act Env</td>
<td>.025</td>
<td>.231</td>
</tr>
<tr>
<td>Newq8_HigherPrices</td>
<td>.648</td>
<td>.100</td>
</tr>
<tr>
<td>Newq9_SupportHigherTaxes</td>
<td>.638</td>
<td>.062</td>
</tr>
<tr>
<td>Newq10_SacrificePersonalComforts</td>
<td>.543</td>
<td>.138</td>
</tr>
<tr>
<td>Newq11A_QoLAffected</td>
<td>-.444</td>
<td>.116</td>
</tr>
<tr>
<td>NewQ33A_LikeToBeSeenEnvFriendly</td>
<td>.176</td>
<td>.247</td>
</tr>
<tr>
<td>NewQ33C_InformImpacts</td>
<td>.100</td>
<td>.219</td>
</tr>
<tr>
<td>NEW24a_PayAttentionFoodproduced</td>
<td>.199</td>
<td>.340</td>
</tr>
<tr>
<td>REVQ24OrgFtrdeNOTTooEXPS</td>
<td>.385</td>
<td>-.045</td>
</tr>
<tr>
<td>REV_NEW29A_IDoPayattentionWater</td>
<td>-.113</td>
<td>.754</td>
</tr>
<tr>
<td>NEWq7_CutsLivingStandards</td>
<td>.622</td>
<td>.117</td>
</tr>
<tr>
<td>REV_New29B_DontHaveRightWaterEnergy</td>
<td>-.020</td>
<td>.691</td>
</tr>
<tr>
<td>REV_NEW29C_IDONeedToSaveWater</td>
<td>-.003</td>
<td>.648</td>
</tr>
<tr>
<td>NEWQ29E_ALreadySaveWater</td>
<td>-.206</td>
<td>.444</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 8 iterations.

Results of factor rotation indicated the existence of two scales using exploratory factor analysis. The author assessed internal consistency with factor analysis. All questions included for this factor analysis also utilised a 5-point Likert frequency scale for their responses, except for one four-point Likert response scale.

Component correlation matrix shows the strength of the relationship between the two factors (i.e. 0.260 which is relatively low). The strength of the relationship indicates whether or not it is reasonable to assume that two components are not related. This is the assumption for varimax rotation. Here, the correlation between two components is low (0.260); so we expect very similar solutions using either a varimax or an oblimin rotation. If components were more strongly correlated (e.g., above 0.3), then there would be more discrepancies between results of these two approaches to rotation.
Results of initial reliability testing indicated 11 items yielded the highest Cronbach’s alpha (0.712). This alpha was attained through the removal of items with low inter-item correlations (i.e. >0.30). Once the author removed the low-scoring questions, a six-item scale measuring respondents’ attitudes towards the environment remained. Table 3.10 illustrates these six items which formed the pro-environmental attitude scale.

Table 3.10: Six items from the Lifestyle Survey instrument which loaded strongly onto component one: the ‘pro-environmental attitude scale’.

| Q1. Which one of the following statements best describes how you feel about environmental issues? |
| Q6a. My own personal behaviour can bring about positive environmental change. |
| Q7. I would be willing to accept cuts in my standards of living, if it helped to protect the environment. |
| Q8. I would be willing to pay higher prices, if it helped to protect the environment. |
| Q9. I would be willing to support higher taxes, if it helped to protect the environment. |
| Q10. I would be willing to sacrifice personal comforts in order to save energy. |

The six questions probe respondents’ general attitudes towards environmental concern, as well as the agreement with self-imposed austerity measures in order to protect the environment. Building on previous research which examined environmental attitudes (see DEFRA, 2001; Motherway et al., 2003; National Geographic and Globescan, 2009), this scale captures respondents’ reported willingness to pay higher prices for goods and services, as well as if they supported higher taxes, and also whether they would be willing to reduce personal comfort levels in their house to reduce energy consumption. The six-item scale is designed to tap into issues pertaining to expressed environmental concern, as well as self-efficacy beliefs. The final item on the attitudinal scale explores respondents’ self-efficacy beliefs, in particular whether of not, they believe that
their own personal ability to affect environmental change. Results of Cronbach’s
alpha found relatively good levels of reliability ($\alpha = 0.658$). This concludes the
overview of factor analysis and reliability testing employed with PSAW 20 to
form the attitudinal scale from the Lifestyle Survey dataset.

3.4.2 Constructing behavioural scales

In order to develop the simplified typology tool in later chapters (see Chapter
Eight), two performance indexes were also created from the data. The
methodology employed in constructing the behavioural scales was similar to that
outlined above. The first scale is based on occasional behaviours and the second,
on habitual behaviour. As with the attitudinal scale development, a range of
statistical tests were employed to assess the factorability of the dataset; the Kaiser-
Meyer-Olkin value (0.632); Bartlett’s Test of Sphericity ($<0.05$); and correlation
matrixes. All questions were again ‘cleaned’ and checked for directional meaning
consistency before being transformed into dichotomous scale response variables
to ensure consistency across the variables.

A combination of correlation analysis, as well as theoretical considerations was
employed to select an initial set of behaviour question items to operationalise and
measure pro-environmental behaviours. Inter-item correlations and factor analyses
were employed to evaluate patterns in participants’ responses to certain
behavioural items. Component analysis using Kaiser’s criterion identified three
components with eigenvalues exceeding 1.0, which explained 45.57% of the
variance in total (or 20.1%, 13.47% and 11.97% of the variance respectively). One
of the components accounts for a larger proportion (26.6%) of variance compared
to the other, with a greater number of variables loading onto it. Based on recent
literature (see Pallant, 2007), a Catell’s (1966) scree-test was again examined.
Varimax and Oblimin rotations were again performed, this time using a two-
component solution. Based on the factor analysis discussed above, two
behavioural scales emerged. Results of initial reliability testing indicated the first
four-item scale obtained a score of 0.364, whereas the second six-item
behavioural scale yielded a higher Cronbach’s alpha\textsuperscript{22} (0.554). These two Cronbach’s alpha (Cronbach, 1951) scores are below the recommended threshold (see Nunnaly 1978). However, Pallant, (2007) argued that lower thresholds are still valid to use. After an extensive review of various literature (see Chapter Two), the author decided to use both behaviour scales.

For the purposes of developing a typology (see Chapter Eight), one behavioural scale was utilised at a time in conjunction with the ‘attitudinal scale’. This use of two types of behaviour scales is novel in that it dissects the notion of pro-environmental behaviour as being uniform in character. Other studies (see Martinsson and Lundqvist, 2010) incorporate one behavioural scale in their studies.

3.4.3 First behaviour scale: ‘Occasional one-shot behaviour scale’

The 4-item occasional behaviour scale achieved an extremely low Cronbach’s alpha score of 0.364, which is very low statistically speaking for a new scale (Nunnally, 1978). However, the use of occasional behaviour scale – again based on literature (see Chapter Two), was promising as it taps into individuals’ pro-environmental behaviours and permitted a comparison of the four-lifestyle groups constructed from a habitual and occasional behaviour perspective. As previously discussed, occasional behaviour entails greater conscious thought and planning on behalf of the individual. In contrast, the latter (i.e. habitual behaviours) are ‘do without thinking’ behaviours (Barr, 2005: 1426). All respondents in the study were asked whether they had carried out a number of occasional or once-off behaviours during the five years prior to being interviewed. The four occasional behaviour items from the Lifestyle Survey instrument, which merged into a four-item behavioural scale, are outlined in Table 3.11.

\textsuperscript{22} This alpha was attained through the removal of items with low inter-item correlations (i.e. >0.30).
Table 3.11: Items on the survey that comprised of the occasional behaviour scale

<table>
<thead>
<tr>
<th>Have you undertaken any of the following occasional actions in the past five years? (Occasional behaviour scale)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchased an appliance because it was energy-efficient</td>
</tr>
<tr>
<td>Installed insulation</td>
</tr>
<tr>
<td>Switched to a renewable energy supplier</td>
</tr>
<tr>
<td>Purchased an energy-efficient car</td>
</tr>
</tbody>
</table>

3.4.4 Second behaviour scale: ‘Habitual behaviour scale’

The six-item ‘habitual pro-environmental behaviour scale’ achieved a Cronbach’s alpha score of 0.554; which is quite low for a new scale (Nunnally, 1978). Although this alpha is low (statistically speaking), the author again believes that the amalgamation of survey items - based on a theoretical perspective - into a behaviour scale for analysis is promising as it taps into individuals’ pro-environmental behaviours.

These habitual behaviours are important to address, as they require very little financial effort or structural change to infrastructure on behalf of the individual in question. This makes habitual behaviours extremely important to understand and influence from a behavioural and policy perspective. The employment of lifestyle segmentation techniques (using these scales and typologies) is one method to promote understanding of consumption behaviours. The six-items from the Lifestyle Survey instrument, which merged into a six-item behavioural scale, were as follows:
Table 3.12: Six items from the Lifestyle Survey instrument, which loaded strongly onto one component called the ‘Habitual behavioural scale’

<table>
<thead>
<tr>
<th>Question</th>
<th>habitual behaviour scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q31a. Reduced water use</td>
<td></td>
</tr>
<tr>
<td>Q31b. Reduced energy use</td>
<td></td>
</tr>
<tr>
<td>Q31c. Shopped or paid a bill online</td>
<td></td>
</tr>
<tr>
<td>Q31d. Avoided products with excess packaging</td>
<td></td>
</tr>
<tr>
<td>Q31e. Bought reusable products instead of disposable ones</td>
<td></td>
</tr>
<tr>
<td>Q31f. Repaired items instead of purchasing new ones</td>
<td></td>
</tr>
</tbody>
</table>

Have you undertaken any of the following habitual behaviours during the past month for environmental reasons? (Habitual behaviour scale)

The six questions probe respondents’ general habitual behaviours in the areas of household energy and water usage, individuals’ use of online services. A number of purchasing behaviours were also examined in this scale; for example whether or not respondents made the conscious decision to avoid products with excess packaging; as well as whether or not individuals bought reusable products as opposed to disposable ones.

Methodologically, the exploration of a multidimensional theoretical construct (such as the pro-environmental attitudinal scale and two pro-environmental behaviour indices) requires a substantial number of questions yielding a high Cronbach's alpha score for a question set. Due to lack of prior experience of testing these constructs in an all island context, and wishing to produce a questionnaire of manageable length, the author decided to have a relatively broad range of constructs with relatively few questions per construct. Researchers find trade-offs in tool design in terms of length, number of constructs and number of questions per construct (Bryman, 2008). The longer the questionnaire is the less likely it is to be completed correctly.
3.5 Piloting of developed survey tool

The questionnaire was piloted extensively over a three-month period (January 2010 – March 2010) to ensure all issues of clarity, timing and formatting were addressed. The piloting of this instrument was crucial as it aimed to assess the content and layout of the questionnaire, as well as to ensure that the questions were relevant, valid and culturally sensitive for the population study in question. Similarly, the cover letter (see Appendix Two) was also piloted as it ensured the participants’ anonymity, which may affect the participant’s response rate for the questionnaire. After extensive piloting (see Table 3.13) and feedback, this survey instrument was entitled CONSENSUS Lifestyle Survey.

<table>
<thead>
<tr>
<th>Pilot Stages</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feedback from a ‘judgment group’ of 20 individuals.</td>
<td>Feedback from two focus groups.</td>
<td>Feedback from a panel of academic and experts in sustainable consumption field.</td>
<td>Feedback from a subsample of households in the Galway area.</td>
<td></td>
</tr>
</tbody>
</table>

3.5.1 Stage one of piloting

A ‘judgment group’ of 20 individuals tested the questionnaire. The average time recorded for completion of the questionnaire was between 20-30 minutes approximately. After they had completed the survey, they were asked to provide feedback on the clarity of the questions, as well as the appropriateness of the question sequence and overall layout of the questionnaire. They were encouraged to highlight any questions or sections that were ambiguous or irrelevant, as well as whether or not the instructions were understandable and clear. Following feedback from the respondents, a number of alterations and amendments were made. These included removing some questions, improving the wording of others, as well as adding extra questions and response categories. The timing it took to complete the questionnaire was also deemed inappropriate and hence, certain questions had to be deleted and certain formatting had to be changed in order to reduce the
administering time.

4.5.2 Stage two of piloting

The second stage of piloting involved the use of focus groups. Two focus groups were undertaken consisting of 6-7 post-graduate students from the Schools of Geography and Political Science and Sociology. Issues of question clarity, as well as question content, were explored and discussed in detail by the different focus groups. More importantly, both focus groups examined the different interpretations and meanings taken from certain questions. Based on feedback from this exercise, certain questions were reworded or omitted from the survey. Recommendations on the general layout of the questionnaire were also proposed. The survey was amended accordingly based on suggestions.

3.5.3 Stage three of piloting

Academic experts in the area of sustainable consumption, both nationally and internationally, received copies of the final for feedback via email. An international advisory panel that comprised researchers and policymakers from the Republic of Ireland, Northern Ireland and the UK provided extensive feedback. In addition, the cultural aspects of certain questions were re-evaluated to ensure that the instrument was proofed and sensitive to certain Northern Ireland policy adjustments. The survey was amended accordingly.

3.5.4 Stage four of piloting

The questionnaire was inputted onto an Access interface on the tablet computer and was piloted for a fourth time. This final piloting involved a subsample of households in the Galway area: Menlough Electoral District. This final piloting stage was crucial to ensure that the questions were yielding the required information, but also to ensure that the tablet laptop and Access interface were working correctly. In addition, it was essential to ensure that the inputted data were being recorded successfully and accurately into the corresponding Excel spreadsheet and therefore, this collected data would be able to be exported later into the SPSS template for analysis.
3.6 Sample selection and sampling method

For the purpose of this study, the total population was defined as all adults aged 18 years of age or over, residing in domestic households in both Northern Ireland and the Republic of Ireland. A multi-stage clustering sample was utilised. This is a clustering technique based on probability sampling whereby only selected clusters are studied (May, 1997; Bryman, 2008). Several levels of cluster selection were applied before the final sample elements were reached.

![Visual representation of multi-stage clustering technique](Source: Bryman, 2006)

The primary clusters consisted of three counties: Derry/Londonderry, Dublin and Galway. Appendix Three provides a detailed rationale underpinning the selection of these three counties. The geographical location of these three counties is outlined on Figure 3.4.
Figure 3.4: Three counties for sampling (i.e. the primary clusters)
These three counties (Galway, Derry/Londonderry and Dublin) were examined further based on their Electoral Districts composition. From the information gleaned from the desktop study and discussions with the relevant Local Authorities and County Councils, a number of specific Electoral Districts (EDs) formed the sampling framework for each of the three counties. Thirty of these Electoral Districts\(^{23}\) (EDs) were selected for sampling based on varying social, economic and demographic characteristics, as well as their varying geographical locations. Similarly, consideration involved housing characteristics (such as housing tenure, housing size and housing density in certain areas). These EDs formed the basis of the secondary clusters, with 10 EDs chosen from each of the three counties. Five EDs were rural areas and the other five EDs were urban locations respectively.

In terms of sample sizes of EDs, a directly proportional number of respondents to the population of the ED in question were selected. At the time of survey design, the most recent national census of the population was based on 2006 data (Central Statistics Office, 2006). Appendix Four provides a detailed overview of the thirty EDs selected across the three counties based on their various socio-economic characteristics. The final cluster involved a stratified random sample of households in each of the thirty EDs. 1,500 households were surveyed across the three counties; with a 250 urban and 250 rural divide in each county. Table 3.14 gives a summary of the multi-stage cluster sampling method.

\[^{23}\text{Electoral Divisions are defined as the smallest administrative area for which population statistics are published (formerly called District Electoral Division). In rural areas each Electoral Division consists of an aggregation of entire townlands. There are 3,440 Electoral Divisions in the State.}\]
Table 3.14: Example of clusters used in multi-stage clustering sample

<table>
<thead>
<tr>
<th>Primary Clusters</th>
<th>Secondary Clusters</th>
<th>Tertiary Clusters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Galway</td>
<td>10 Electoral Districts</td>
<td>500 Households</td>
</tr>
<tr>
<td>Derry/Londonderry</td>
<td>10 Electoral Districts</td>
<td>500 Households</td>
</tr>
<tr>
<td>Dublin</td>
<td>10 Electoral Districts</td>
<td>500 Households</td>
</tr>
</tbody>
</table>

A list of all domestic dwellings in each area was obtained from the Geo-Directory in the Republic of Ireland and the equivalent of this directory, which is the Pointer Database in Northern Ireland. The advantage of employing this type of sampling strategy meant that it was not necessary to create a list of every domestic dwelling in a region; but only for a selected ED. In addition, this sampling method meant that the researcher could reduce their time and costs by omitting unnecessary travel.

To avoid selecting household addresses in a disproportionate probability basis, the Geo-directory list was utilised. This meant that larger households were not over-represented. This is in contrast to the electoral register, which was utilised in previous Irish studies (see Motherway et al., 2003). The employment of the electoral register meant that larger households (i.e. households that contained more electors) had a higher probability of being selected than addresses, which contained a lower number of electors.

It is important to note that the list of domestic dwellings obtained through the Geo-directory database in the Republic and the Pointer database in Northern Ireland classify settlements differently due to their different policy contexts. The Pointer database classifies settlements under different bands according to the different urban rural boundaries that are set out by the Settlement Development Limits in Northern Ireland. Criteria such as population size, population density and service provision being are used to assign urban characteristics to settlements.
The distinction between ‘urban’ and ‘rural’ is slightly blurred.

Similarly in the Republic of Ireland, there is no single definition of ‘rural’ either. The Geo-directory uses the OECD classification of rural areas for its divisions. That is any area with a population density below 150 persons per KM\(^2\). The Geo-directory the electoral division, which is the lowest unit of measurement for used by the Census. These 3,440 EDs are then combined into towns (or cities) as well as rural districts, which in turn form counties. Thus, the category of ‘rural areas’ in the Republic includes villages of fewer than 1,500 residents, together with those living in the ‘open countryside’ (CSO, 2011). This made sampling of the different sample areas in Northern Ireland slightly different to those in the Republic.

### 3.6.1 Overview of secondary clusters (Electoral Districts) in each county

The following section provides a brief outline of the 30 EDs that were selected across the three counties.

**3.6.1.1 Sample Area 1 – County Galway (city and county)**

Table 3.15 outlines the ten Electoral Districts (i.e. secondary clusters) selected in sample area one: County Galway. These ten EDs were selected on the basis that they include a diverse range of socio-economic classes as defined by CSO census national data (CSO, 2006). Please see Appendix Four for detailed overview of various socio-economic characteristics of each ED).
### 3.15: Sample EDs selected in Galway City and County

<table>
<thead>
<tr>
<th>Galway City Electoral Districts</th>
<th>Number of Households</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mervue</td>
<td>17</td>
</tr>
<tr>
<td>2. Ballybaan</td>
<td>72</td>
</tr>
<tr>
<td>3. Menlough</td>
<td>39</td>
</tr>
<tr>
<td>4. Bearna</td>
<td>96</td>
</tr>
<tr>
<td>5. Salthill</td>
<td>26</td>
</tr>
<tr>
<td><strong>Total (Urban)</strong></td>
<td><strong>250 households</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Galway County Electoral Districts</th>
<th>Number of Households</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Aran Islands</td>
<td>18</td>
</tr>
<tr>
<td>7. Ardrahan, Gort and Kinvarra</td>
<td>66</td>
</tr>
<tr>
<td>8. Cleggan and Renvyle</td>
<td>43</td>
</tr>
<tr>
<td>9. Oranmore</td>
<td>54</td>
</tr>
<tr>
<td>10. Tuam</td>
<td>69</td>
</tr>
<tr>
<td><strong>Total (Rural)</strong></td>
<td><strong>250 households</strong></td>
</tr>
</tbody>
</table>

Galway City Council’s jurisdiction, five of the city’s twenty-two electoral divisions were pre-selected (see Figure 3.5). The final EDs chosen covered areas of the city that are characteristic of high, moderate and low socio-economic status (relative to each other and also other Galway wards).
Within Galway County Council’s jurisdiction, surveying was undertaken in five rural Electoral Districts (see Figure 3.6). These five rural Electoral Districts were also selected due to a number of varying social, economic and demographic characteristics (see Appendix Four). The ten Electoral Districts selected from Galway sample areas are discussed in relation to each other in Appendix Four.
3.6.1.2 Sample Area 2 - County Derry/Londonderry

County Derry/Londonderry is governed according to a number of Local Government District Councils: Derry/Londonderry District Council, Limavady District Council, Coleraine District Council and Strabane District Council (see Appendix Three for detailed discussion on each of three counties). In line with the other two counties (Galway and Dublin), specific areas in Derry/Londonderry County were selected based on their varying social, economic and demographic characteristics. Similarly, selection criteria included geographic location as well as a number of housing characteristics also such as housing tenure, housing size and housing density in certain areas.
Table 3.16 overviews the 10 ED areas that formed the rural and urban sampling frame for County Derry/Londonderry.

**Table 3.16: Sampling in Derry/Londonderry City Council Area and County Council Areas**

<table>
<thead>
<tr>
<th>Derry/Londonderry’s Local Government District Councils</th>
<th>Local Government District Councils</th>
<th>Number of Households</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. Ballykelly and Greysteel</td>
<td>LDC</td>
<td>29</td>
</tr>
<tr>
<td>12. Castlerock and Macosquin</td>
<td>CDC</td>
<td>23</td>
</tr>
<tr>
<td>13. Dungiven and Claudy</td>
<td>LDC and DDCA</td>
<td>40</td>
</tr>
<tr>
<td>14. Eglinton</td>
<td>DDCA</td>
<td>31</td>
</tr>
<tr>
<td>15. Limavady</td>
<td>LDC</td>
<td>127</td>
</tr>
<tr>
<td>Total (Rural)</td>
<td>250 households</td>
<td>250 households</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Derry/Londonderry Council Area</th>
<th>City District</th>
<th>Number of Households</th>
</tr>
</thead>
<tbody>
<tr>
<td>16. Strathfoyle</td>
<td>(DCCUA(^{24}))</td>
<td>26</td>
</tr>
<tr>
<td>17. Culmore</td>
<td>DCCUA</td>
<td>44</td>
</tr>
<tr>
<td>18. Creggan</td>
<td>DCCUA</td>
<td>48</td>
</tr>
<tr>
<td>19. Kilfennan</td>
<td>DCCUA</td>
<td>61</td>
</tr>
<tr>
<td>20. Lisnagelvin</td>
<td>DCCUA</td>
<td>71</td>
</tr>
<tr>
<td>Total (Urban)</td>
<td></td>
<td>250 households</td>
</tr>
</tbody>
</table>

---

\(^{24}\) DCCUA stands for Derry City Council’s Urban Area
Within Derry/Londonderry Urban Area’s jurisdiction, research was conducted in five areas (see Table 3.16) to comprise the urban sample area. Figure 3.7 below highlights these five areas in relation to each other in the Derry City Council Urban Area (DCCA) jurisdiction.

Figure 3.7: Map of Derry City Council Urban Study Areas (DCCUA)
In terms of the rural sampling frame, fieldwork was conducted within Derry/Londonderry District Council’s Area (DDCA), Coleraine District Council (CDC) and also Limavady District Council’s (LDC) jurisdiction. Figure 3.8 shows an overview of rural sampling areas across Derry/Londonderry’s Local Government District Councils Jurisdictions.

Figure 3.8: Overview of rural sampling areas across Derry/Londonderry’s Local Government District Councils Jurisdictions.
3.6.1.3 Sample Area 2 - Dublin

Fingal County Council was utilised as the rural sampling frame for Dublin (see Appendix Three for discussion). Within Fingal County Council’s jurisdiction, surveying was conducted in five rural Electoral Districts (see Table 3.17). This comprised the ‘rural’ sample for County Dublin. Within Dublin City Council’s jurisdiction, surveying was undertaken in five urban Electoral Districts in the city. Figure 3.9 below highlights these ten urban and rural EDs in relation to each other in County Dublin. The underlying rationale for why these five rural areas and five urban areas were chosen in the Dublin region is evident in Appendix Four. Similar to the previous sample areas, these EDs were selected based on a range of socioeconomic, demographic and housing statistics.

Figure 3.9: Map of Greater Dublin Region showing Fingal County Council’s Jurisdiction and also Dublin City Local Electoral Area boundary divisions
Table 3.17 outlines the 10 EDs for County Dublin and the number of households surveyed within each ED.

<table>
<thead>
<tr>
<th>Dublin City</th>
<th>Number of Households</th>
</tr>
</thead>
<tbody>
<tr>
<td>21. Finglas</td>
<td>32</td>
</tr>
<tr>
<td>22. Clontarf</td>
<td>57</td>
</tr>
<tr>
<td>23. Pembroke</td>
<td>55</td>
</tr>
<tr>
<td>24. Rathmines</td>
<td>73</td>
</tr>
<tr>
<td>25. Crumlin</td>
<td>33</td>
</tr>
<tr>
<td>Total</td>
<td>250 households</td>
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<table>
<thead>
<tr>
<th>Fingal County</th>
<th>Number of Households</th>
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<tr>
<td>26. Swords</td>
<td>87</td>
</tr>
<tr>
<td>27. Portmarnock</td>
<td>54</td>
</tr>
<tr>
<td>28. Blanchardstown</td>
<td>51</td>
</tr>
<tr>
<td>29. Lusk</td>
<td>52</td>
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<tr>
<td>30. The Naul and Garristown</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>250 households</td>
</tr>
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3.7 Sample size

Many authors (for example Veal, 1997; Neumann, 1999) posit that calculating the sampling size depends upon a number of considerations including cost and time. According to Bryman (2008), a decision on sample size should be based on how much sampling error the researcher is prepared to accept. The less sampling error tolerated, the larger the sample size will need to be. If a sample size was too small, then important differences may be overlooked. In other words, increasing the size of the sample increases the likely precision of a sample (Bryman, 2008) and hence, results in the narrowing of the 95 percent confidence interval level. Hence, a quota of 1,500 households was needed for this study, to ensure that the results presented would be accurate and significant. This large sample size is line with other studies that examined environmental behaviours and attitudes (see Table 3.2 for overview of studies employed to develop the survey instrument in this study).

3.8 Surveying procedure

The Lifestyle Survey was conducted over an eleven-month period between June 2010 and April 2011. The researcher approached households to participate. The researcher – who was carrying identification documents – introduced herself and briefly described the nature of the study. The researcher explained what the study entailed before the participant was asked to participate. The adult who answered the door was recruited to participate in the study or any other eligible person within the selected household was invited to participate in the study. The participant read the cover page of the questionnaire and ticked the consent box on the tablet computer screen if they wished to proceed with the survey. This tick acted as their informed consent. The administering of each questionnaire took approximately 20-30 minutes.

If the individual agreed to participate, individuals was informed of their right to withdraw from the study at any time. The cover page stated that the questionnaire was completely anonymous; in order to protect the identity of all the respondents
and information provided. A body of social science research advocate this method of anonymity of collecting data through survey questionnaires (e.g., Colton and Covert, 2007; Evans and Rooney, 2008; Mitchell and Jolley, 2010). Similarly, the participants were reassured that all data collected would be presented at a group level, and not on an individual basis further reassuring their confidentiality. Finally, the cover page also ensured the participants that all data obtained would be secured in a safe area and would be password protected.

Participants were given an information letter after the survey interview was completed. This letter acted as a debriefing session for the survey; in that it described the project and its aims in a little more detail. This sheet provided the participant with the contact details of the principal researcher, in case respondents had concerns about any issues raised. In addition, participants received contact details for the project’s website to access further information on the project.

Issues of non-response were also accounted for (Bryman, 2008; Wheeler et al., 2004), with follow-up procedures in place. In the event of a non-response, the interviewer attempted to contact the selected households at different times of the day and on different days during the week. Afternoons, evenings and weekends were the main times for the data collection. If the researcher could not contact a ‘non-response’ household after repeated attempts (and the dwelling has been verified as not vacant on the Geo-Directory), then the dwellings on either side of this non-response household were contacted instead.

Data collections were carried out using a touch-screen tablet computer (i.e., Lenovo X200 Tablet). This portal technology utilised an Access interface; which was developed based on a unique coding system for each question. The advantage to using this Access interface meant that all survey responses inputted onto the tablet interface were simultaneously inputted onto an Excel spreadsheet behind this interface; which allowed participants’ responses to be recorded immediately as well as reduced the time needed to complete a similar survey by ‘pen and paper’. This technology greatly reduced the researcher’s workload in that data inputting took place simultaneously with data collection. This ‘technological’ method of data collection was more time efficient in comparison to mail or written
survey methods. This Excel spreadsheet exported directly onto the Statistical Packaging Software Systems (SPSS) template for data analysis (PSAW 18 was the software utilised).

3.9 Reflections on positionality and ethical stance

It is crucial to address issues associated with ‘positionality, reflexivity, the production of knowledge and the power relations that are inherent in research processes in order to undertake ethical research’ (Sultana, 2007; 382). In terms of the author’s own positionality as a researcher conducting this study, the author was conscious of her own biased perspectives and how she has been socialised and influenced through her academic studies to think about a range of concepts critiqued in this study. It is critical to also situate the author’s personal position towards sustainability and pro-environmental behaviour as a researcher conducting this study. The author acknowledges that they are not an objective outsider in this research method but instead is the subject of socialisation and is hence strongly influenced to think and perceive the environment and sustainable consumption in a certain manner. However, during the course of this research process, the author has tried to ensure that the analysis and results are represented as faithfully as possible while also acknowledging any position bias that might be present. The author believes that her position as a PhD research student, in particular her association with the National University of Ireland, Galway, increased accessibility to respondents. Many householders reported having children or relatives who were in college (or had recently graduated) or that they themselves had recently undertaken university courses and hence, they understood how difficult it was to gain access to people to survey.

Similarly the author’s association with the National University of Ireland, Galway also strengthened issues of trust and rapport between the researchers and respondents. The author introduced herself as a student carrying out research in the area of household consumption. Cassell (1988; 93) describes gaining access as a two stage process. The first stage involves ‘getting in or achieving physical access and getting on, or achieving social acceptability’. Consequently gaining access is almost always a matter of negotiation and such inevitably turns into a
political process. Hence, by having an association with the university, it was evident that many respondents felt that this brought a certain amount of trust and professionalism to the research process. This supports Bryman’s (2008) assumption that, gaining access is often mediated by gatekeepers who are concerned about the researcher’s motives, what organisation they came from or what the organisation can gain from the investigation and also what they themselves will lose by participating in the research. The interviewer also had relevant identification and proper written identification from the university.

Finally, the fact that author is a female researcher, as opposed to a male, may also have had a number of methodological implications for this study. During the course of data collection, it became apparent that respondents were (understandably) cautious about strangers calling to their door to conduct a survey. This was to be expected, particularly as the interviewer had not given individual notice to each household prior to the visits. However, the interviewer did ensure that a number of press releases were issued in each of the areas in terms of local newspapers, as well as announcements on local radio stations in order to give prior notice that the researcher would be calling to homes in the vicinity between certain dates. These announcements were made two or three weeks prior to the start date of data collection. Numerous individuals stated quite frankly that had the researcher been male they would not have opened their door. This brings up issues of gender, accessibility and security.

Another point which might have influenced individuals’ decision to answer the door was that surveying in the Dublin City areas and Fingal region coincided with the 2011 Census of the Republic of Ireland. Many respondents stated that they had assumed that the author was a member of the Census team who were calling to householders to distribute Census survey forms (CSO, 2011). This meant that potential participants were more willing to open their doors to the researcher and enabled the researcher to introduce herself and explain the research study to the person in question.

It should be noted that the objectives of this research and the subject under investigation did not appear to pose any threat to householders or any other
interest groups. The author considered ethical considerations, prior to commencing the study. The research proposal for CONSENSUS Project was subject to an independent review by the National University of Ireland, Galway’s ethics committee and was granted full approval on April 14th 2009. In order to gain ethical approval, the research study needed to ensure that the intended use, methods and need for participation were clearly understood by informants, as well as respect the privacy of information gathered and anonymity of respondent involved. Likewise the research had to ensure that respondents’ participation in the study was voluntary and free from coercion and without any perceived undue influence, which may cause any form of distress or embarrassment to anyone involved (Remeyi et al., 2005). The study was introduced as being a study of householders attitudes and behaviours towards the environment and sustainable consumption. However the author also stated that they were based in the Geography Department at NUI, Galway and that this study was funded as part of a wider EPA research project called CONSENSUS (see Chapter One for details of the CONSENSUS project), which provided financial support for data collection.

3.10 Data Preparation

Prior to data analysis, the data were imported from Excel and imported onto a SPSS template. A comprehensive coding system was developed for Excel and also for SPSS. In order to achieve consistency in the collected data, the author ensured that all Excel variables corresponded with the SPSS variables when imported. In other words, it was vital to maintain the same order and same numbering on both the Excel and SPSS spreadsheet. The author also ensured that there were no spaces in SPSS labelling by inserting an underscore instead to denote the different question elements (i.e. Q12_A). All survey data (in the form of questionnaire responses) were cleaned and coded before they were statistically analysed. The accuracy of variable view was double-checked thoroughly against the survey document before analyses took place. Data cleaning was also carried out using the frequency run button (Pallant, 2010). Any identified outliers were double-checked against the original survey to explore whether this was the respondent’s or the interviewer’s mistake.
Once imported and cleaned onto this SPSS template, all data were assigned labels and values. For example, Likert-scale responses were coded as a score between 1 and 5; with a score of 5 representing the statement ‘strongly agree’ for positively-worded questions, while negative questions were reverse-coded in the opposite direction, so that a score of 5 represented ‘strongly disagree’. Likewise, missing variables\(^{25}\) were also labelled; so too were questions whereby a non-response answer meant ‘non-applicable’ due to a filter question technique. For gender, the obvious categories of ‘female’ and ‘male’ were employed. For age, the year of birth was recoded into different age groups: 18-33 years; 34-49 years; 50-64 years; 65-79 years; 80+ years. The education variable was coded into three categories: ‘primary level education’=1; ‘second level education’=2 and ‘third level education’=3.

For income, seven options of listed response categories were listed. However, so as not to violate certain statistical tests (for example Chi-square analysis), these seven income categories for both Republic and Northern Ireland were divided into three condensed categories (see Appendix Five) The author used the median incomes (N.I. £26,393 and ROI €38,000) as the midpoint to divide respondents into below or above this threshold cut-off point. In line with other studies, this research also recoded the income cohorts so that each category would comprise of approximately one third of the sample (see Barr, 2001; Inglehart, Basáñez and Moreno, 1998).

If a given variable was a filter question, then a dummy variable was inserted in that location consisting of the missing data code. Most of the variables in the questionnaire are 1-digit, using ‘9’ as the missing data code; if the variable has 8 or more categories, ‘999’ is the missing data code. The ‘don't know’ or ‘neither’ options were never suggested or printed on show cards. The author was particularly cautious of negatively-worded questions. The author kept notes of all coding, labelling and recoding in a codebook to ensure the data management was organised and concise. A mastercopy of the dataset was saved as an original in

\(^{25}\) Missing variables in the dataset do not warrant elimination from the sample, as valuable information may lie within the answered sections that could be used to support or reject hypotheses specific to those sections.
order to have a backup file. Once this was completed, only then did the author commence data analysis. The author was conscious of saving the data file regularly while conducting analyses.

3.11 Data Analysis

Survey instruments permit the examination of variations and patterns of association between different variables in the data collected (Bryman, 2008). The main purposes of data analysis in this research were three-fold. Firstly, analyses describe the prevalence of various attitudes and behaviours in relation to the environment and sustainability across the island of Ireland and within particular sub-groups (see Chapter Five and Six). Secondly, to analyse what drives pro-environmental behaviours: specifically habitual and occasional behaviours (see Chapter Seven). Thirdly, these analyses aimed to explore whether or not certain habitual and occasional behaviours varied greatly across different segments of the population.

Analysis of data occurred over a number of stages. Descriptive analysis and cross-tabulations formed a major component of the initial results section; with a combination of frequency tables and cross-tabulations employed to explore the emerging trends in reported behaviours and attitudes. This stage of preliminary analysis explored the overlying trends and patterns emerging from the data. Note that all frequencies obtained in this study are expressed as percentages. Responses to individual questions were examined by means of frequency distributions, mean and median scores as well as examining whether the direction of response was as anticipated and consistent with responses within and across constructs.

Associations between variables were analysed using Chi-square $\chi^2$ distribution test; which compares the observed frequencies against the expected frequencies (Bryman, 2008). For data analysis, categories were first checked for plausibility and all values of the category which were ‘don’t know’ or ‘refused’ were recoded into missing variables. This information was then represented on graphs and charts. All data were reported in raw frequencies and not percentages to avoid violating the Chi-square assumptions. Likewise, certain questions needed to be re-
coded in order to avoid violating the assumptions of the Chi-Square. The purpose of collapsing categories was to simplify data for analysis and interpretation. This is the case for the Likert scale response categories. Evidence suggests that participants do not make clear a distinction between different levels of Likert scales; in particular the categories ‘strongly disagree’ and ‘disagree’ (Green and Salkind, 2005). Findings were investigated for statistical significance at the 0.05 significance level.

The author utilised bivariate and multivariate statistics. Bivariate relationships were investigated using Chi-square tests of significance ($\chi^2$), and Spearman rank-coefficient to explore associations between framework variables (for example Environmental concern variables, situational variables and psychological factors). Chi-squared tests were used on data which contained at least one nominal variable. Spearman tests were undertaken on data that were were not normally distribution and/or that were measured on an ordinal scale. Measurement of the bivariate relationships between variables permitted initial assumptions to be made concerning the data (see Chapter Six).

The final aim of these data analyses was to construct an attitudinal index of green attitudes, which could later be used in conjunction with two behavioural indices to develop consumer typologies (see Chapter Eight). This simplified attitudinal and behavioural typology tool measures expressed attitudes and reported behaviours across different groupings of respondents; permitting exploration of baseline ‘green-brown’ attitudes and ‘green-brown’ behaviours of householders (see Chapter Eight). In line with other studies, factor analyses are employed to identify these groupings of respondents (e.g., Green-Demers, Pelletier, and Menard, 1997; Martinsson and Lundqvist, 2010; Barr et al., 2001). Rasch analyses (e.g., Kaiser, 1998) were employed to examine the dimensionality of environmental behaviour. To date, factor analyses revealed that individuals are inconsistent in their environmental behaviour. That is, individuals may behave environmentally friendly in one area of consumption such as waste recycling, while behaving in an environment-burdening manner in the transport domain (Gatersleben, Steg, and Vlek, 2002). Hence building on these studies, this research utilised two types of pro-environmental indices (habitual and occasional behaviour scales) to examine respondents’ pro-environmental behaviours and
attitudes. The development of the individual scales that comprised the typology tool were discussed in detail in section 3.4.1 and 3.4.2. This tool was constructed using cut-off thresholds along two scales at a time: an attitudinal scale and an occasional behaviour scale or a habitual behaviour scale. Specific threshold criteria were utilised to group respondents along these scales (see Chapter Eight for overview of criteria).

3.12 Reflections on study design and research process

To summarise, this study employed a quantitative research design to achieve its aims. A survey instrument was developed, piloted and implemented in order to generate baseline information regarding attitudes and behaviours towards consumption and lifestyles in Northern Ireland and the Republic. Subsequently, a typology was constructed to measure expressed attitudes and reported behaviours using cut-off thresholds along two scales at a time: attitudes and occasional behaviours and attitudes and habitual behaviours. Criterion utilised for thresholds along these three indices are discussed in Chapter Eight. This quantitative tool would permit the exploration of baseline attitudes and behaviours of householders towards pro-environmental behaviours and attitudes.

The researcher evaluated the philosophy, strategy and methods adopted for this research as appropriate for achieving the research objectives (discussed in Chapter One). However, this research design and methods selected are not without their limitations. The author was conscious of several challenges involving the use of survey methods and in particular an administered survey instrument. There were a number of methodological difficulties involved in conducting this large-scale study of attitudes and behaviours across the island of Ireland.

Within environmental and sustainability research, the deployment of large-scale attitudinal surveys are often critiqued for their superficial identification of environmental or consumption issues, rather than a deep investigation into the underlying rationale behind the responses. Survey instruments permit a snapshot of

26 Qualitative work will be conducted at a later stage (see www.consensus.ie) to explore in-depth issues around pro-environmental behaviours that would affect the implementation of practice change intervention.
current attitudes and behaviours towards sustainable consumption as opposed to indepth exploration of such actions.

Indeed, the use of quantitative research methods more generally to quantify or measure human attitudes and behaviours are contested in the literature. For example, researchers such as Blake (1999) and Hobson (2003), feel that the use of quantitative methods in the study of human behaviour is overly deterministic. Many advocates (for example, Barr, 2002; Motherway et al., 2003) argue that survey methods permit the examination and identification of trends in attitudes and behaviours. Knowledge concerning attitudes and behaviours in relation to sustainable consumption can have a crucial impact on policymakers at all levels of government and their ability to design and deliver effective sustainable consumption policy and interventions for future shifts towards sustainability.

One of the unique features of this study was the all-island sampling frame. Exploring consumption across two policy regions is an ambitious goal and the research produced significant and original data (see Chapter Five and Six). However, the practicalities of designing a survey to explore two policy regions with different policies across the consumption areas was problematic due to the existence of differing policies regarding consumption behaviours; for example, water and energy policies. This cross border design meant that sampling areas were formulated slightly different (see Table 3.6) due to the varying local government jurisdictions. Similarly, the sampling bases (i.e. Geodirectory and Pointer databases) differed in that they defined rural slightly different in Northern Ireland and the Republic of Ireland. Different currencies are in use across the two regions making the development of the income question on the survey slightly more difficult to design and analyse the demographics.

Issues of inclusion and exclusion of sample criteria may have created somewhat of a restriction in the research design. For example, language barriers which could lead to poor comprehension of the questions on behalf of respondents were encountered due to the fact that the survey questionnaire was administered in English and Irish only. Bearing in mind that latest results from the 2011 census
stated that there were 544,357 non-Irish nationals \(^{27}\) living in Ireland (CSO, 2011), this survey may be excluding a large percentage of the population from participating due to the nature of the survey design. Also sample participation in the study was voluntary and hence may have resulted in a sample of respondents who were already interested in environmental issues. The author attempted to overcome this bias through the relabelling of the survey instrument from ‘Sustainable Living Survey’ to simply ‘Lifestyle Survey’.

Also the study relied on self-reported data, which is susceptible to numerous biases such as recall bias, confidence bias or social desirability bias which may limit the interpretation and generalisation of the study’s findings (Corral-Verdugo, 1997). Administered surveys raise issues of anonymity and confidentiality, which could deter respondents from participating in the study or promote reluctance to divulge personal information (i.e. age or income levels) to the interviewer (Ong and Weiss, 2000). In order to overcome some of these anticipated difficulties, the professionalism of the interviewer is paramount. The interviewer needs to provide reassurance throughout the survey interview that any information provided would be treated as highly confidential. The provision of accurate interviewer identification, as well as a clear but brief project description facilitates the development of a rapport between the interviewer and the respondent; as well as promotes a certain level of trust between the two individuals that helps to overcome certain confidentiality issues associated with administered surveys. One possible way to overcome this issue of refusal to answer is to supply ‘show-cards’ or ‘flash-cards’. A ‘show-card’ is a laminated A4 card that contains the response categories to a particular sensitive question (like income), but with each response category numbered. Therefore, the respondent would say the corresponding letter or number that applies to their response rather than the actual figure or date depending on the personal question being asked. The use of ‘show-cards’ also interrupts the monotony of constant questioning from the interviewer and helped to maintain the respondents’ interest in the discussion.

\(^{27}\) This figure represents 12% of the population of Ireland and is an increase of 124,624 persons from the 2006 census data.
Another challenge related to administered survey methodologies is that respondents may experience social pressure to report attitudes and behaviours towards the environment that are not in conjunction with their actual beliefs and actions. This leads to social desirability bias when answering survey questions. According to Crowne and Marlowe (1964), social desirability ‘refers to the need for social approval and acceptance and the belief that it can be attained by means of culturally acceptable and appropriate behaviours’ (p. 109). Respondents' answers to survey questions may be biased by their notions or beliefs about what constitutes a socially-acceptable answer. These tendencies are problematic as they can bias respondents’ answers of respondents; as well as mask the existence of true relationships between variables (Ganster, Hennessey and Luthans, 1983; Bowling, 2002). Past studies have argued that there is a tendency for respondents to elicit increased social desirability bias when an interviewer is present (Bradburn, Sudman and Wansink, 2004). Research has found that observed levels of social desirability responding tend to vary with the level of anonymity. Results indicated that the more anonymity is assured, the less social desirability responding is detected (Ong and Weiss, 2004; Paulhus, 1984). As discussed in section 3.3, the author attempted to incorporate numerous precautions to minimise the effects of these biases in the research design.

Researchers often take advantage of telephone or mail survey methods to compensate for, or avoid the problem of respondents constructing an account that conforms to a socially acceptable model of belief or behaviour (Bryman, 2008). However, administered face-to-face methods – which are deemed not to be as convenient for respondents as opposed to self-completion questionnaires like mail surveys (Bryman, 2008) – have been found to yield a higher response rate than mail or telephone surveys (Holbrook, Green, and Krosnick, 2003). This may be due to the fact that the researcher has more ‘control over the completion’ of the survey (May, 1997). The problem with telephone recruiting is that, in the event that contact is made it is even easier for a potential respondent to refuse on the telephone than when they are confronted by an interviewer at the door.

Consequently, the reality of achieving a fully representative sample of the population was not possible as a result of the sampling method used. In other
words, a probability sampling method was not used to select participants meaning that the study is not representative of all householders in Ireland. Hence, inferences can not be drawn and generalised based on the results of this sampling method. Similarly, as only one householder was asked to complete the survey on behalf of the household, ‘it wasn’t feasible to examine differences of opinions between householders or to explore dynamics of a household’ (Abrahamse and Steg, 2009: 719).

While acknowledging the potential drawbacks, it is important nevertheless to recognise the significance of large data sets for critically inspired, progressively orientated research agendas (Fahy and Rau, 2013). Advocates argue that these methods permit the examination and identification of trends in attitudes and behaviour, which cannot be undertaken if there is an assumption that all humans are different (for example, Barr, 2002). Despite Survey methodologies are important and their merits are widely recognised (see Bryman 2008; Neuman 2000).

To conclude, this chapter outlined the research methodology concerning the design, implementation and analyses of data to achieve its research objectives. The following chapters present the results of this research and reflect on these results in light of the literature and theoretical approaches reviewed in previous chapters.
CHAPTER FOUR:

POLICY RESPONSES TO SUSTAINABLE CONSUMPTION CHALLENGES
4.1 Overview

This chapter comprises findings from the author’s desktop policy analysis of sustainable development more generally, and sustainable consumption in particular. The chapter opens with a review of sustainable consumption policy development internationally (see Section 4.2). Next, policy is explored at the European level (Section 4.3). Challenges facing the island of Ireland with regard to sustainable household consumption are discussed in Section 4.4. Sustainable consumption policy development and implementation on the island are outlined (Section 4.5). Underlining theory and limitations of current sustainable consumption policy is discussed (Section 4.6). A situated analysis of water, energy use, and transport – all of which are areas of high environmental impact in relation to household consumption internationally (see OECD, 2009; Michaelis and Lorek 2004) – is then provided (see Section 4.7). The chapter concludes by identifying key gaps regarding sustainable consumption research and policy to date in the Irish context, as well as by outlining a number of recommendations for developing local and national sustainable consumption programmes across the island.

4.2 Sustainable consumption policy at the global level

A number of international agreements are in place to address the challenge of achieving sustainable consumption. The first of these global political agreements, entitled Agenda 21, was adopted at the United Nations Conference on Environment and Development Earth (UNCED) Summit in Rio de Janeiro in 1992. Agenda 21 was a comprehensive plan of action for addressing both environment and development goals in the 21st Century. Although Agenda 21 related to sustainable development more generally, Chapter 4 of this framework for sustainable development (SD) was devoted entirely to sustainable consumption. This summit in Rio postulated that:
‘Action is needed to promote sustainable consumption and production that will reduce environmental stress and meet basic human needs’ (Agenda 21, UNCED, 1992, P45)

A total of 179 governments officially signed up to the principles of this Earth Summit’s Framework of Sustainable Consumption and Production, and therefore officially committed to making consumption more sustainable. Their message was clear: ‘Nothing less than a transformation of our attitudes and behaviour would bring about the necessary changes’. The 1992 Summit was a turning point in placing environment and development issues firmly into the policy arena. Because of this summit, governments and NGOs became increasingly concerned with gaining a better understanding of human consumption behaviours (Cohen and Murphy, 2001). The Earth Summit in Rio laid the foundations for many key international agreements, including the Rio Declaration on Environment and Development (UNCED, 1992); the Statement of Forest Principles (UN, 1992); the United Nations Framework Convention on Climate Change (1992); the United Nations Convention on Biological Diversity (1992), as well as the United Nations Convention on Combating Desertification (UN, 1994).

To ensure the implementation of Agenda 21, the Commission on Sustainable Development (CSD) was established in 1992. A five-year review of United Nations Conference on Environment and Development (UNCED) progress, known as Rio+5, was undertaken in 1997 by the United Nations General Assembly (UNGA). Following on from the Rio summit, the World Summit on Sustainable Development (WSSD) Conference (UNDSD, 2002) took place in Johannesburg, South Africa. The WSSD proposed that a renewed global policy focus was needed to accelerate the shift towards sustainable consumption and production (SCP). An agreement was reached to develop a framework of policies on sustainable production and consumption (Clarke, 2007: 493). The WSSD negotiated and adopted the Johannesburg Declaration and a Plan of Implementation to meet the commitments originally agreed at Rio. The Johannesburg Plan of Implementation encouraged and promoted the development of a 10 Year Framework of Programmes (10YFP) to support regional and national initiatives to accelerate this shift (United Nations Environment Programme (UNEP), 2012). Increased public debate occurred at this world summit in
Johannesburg as participating countries decided upon the elaboration of this global framework for action (i.e. the 10YFP). The UNEP also initiated the Marrakech Process to generate support for SCP goals, and develop a framework for national and regional SCP programmes. Since then, the UNEP has produced regular reports on sustainable consumption (see UNEP, 2004). The Marrakech Process also instigated a series of consultations, dialogues, and task forces. For example, since 2005 seven international task forces have been launched on specific SCP themes in order to encourage action and support SCP implementation and provide inputs into the 10YFP. One of these is the international Marrakech Task Force on Sustainable Lifestyles, led by the Swedish Ministry of the Environment. Figure 2.1 details the trajectory of global policy developments on SCP.

Figure 4.1: Overview of global policy developments which led to development of seven Marrakech task forces (Source: UNEP, 2012)
Criticisms of this 10YFP on SCP centre on its apparent lack of clarity. Ambiguity also persists over what exactly the framework wishes to develop. Similarly, there is a lack of clarity concerning who are the key stakeholders involved and how the framework would be evaluated. The success of such initiatives and frameworks arguably depends on leadership from the UNEP and the United Nations Department for Economic and Social Affairs (UN-DESA), as well as active participation of national governments, development agencies, private sector, civil society and other stakeholders. The next section explores sustainable consumption policy across the European Union.

4.3 Sustainable consumption policy at the European level

Europe currently faces numerous important environmental challenges across many sectors of household consumption. Indeed these sectors are responsible for up to 74% of greenhouse gas (GHG) emissions and other air emissions and 70% of direct and indirect material input in the European Union (EEA, 2012). These developments have serious environmental impacts. At the EU level, the following key policy agreements provided the broad underlying agenda for addressing the challenge of sustainable consumption and production (SCP): the Lisbon Strategy\(^1\) (2000-2010) (EC, 2000), the EU Sustainable Development Strategy (EC, 2001) and the European Action Programme (2002-2012) (EC, 2002). This section outlines the summary overview of sustainable consumption policy development and initiatives on the EU level garnered from the desktop policy review.

In 2008, the European Commission published the EU Sustainable Consumption and Production and Sustainable Industrial Policy Action Plan, which forms an important component of the EU’s Sustainable Development Strategy (EC, 2008). This action plan is particularly important in terms of promoting and achieving EU goals for environmental sustainability, economic growth, and public welfare. It recommends measures to improve the environmental performance of products, as well as policies to increase the demand for more sustainable goods and production technologies (Pape and Fahy, 2010). This action plan creates a dynamic framework to improve the energy and environmental performance of products and
to foster their uptake by consumers (Rubik, Scholl, Biedenkopf, Kalimo, Mohaupt, Söebech, Stø, Strandbakken and Turnheim, 2009). By decoupling economic growth from environmental degradation, this action plan aims for resource conservation and efficiency by improving product’s environmental performance throughout their life cycle and supporting the development of more sustainable products and production technologies.

The EU Sustainable Consumption and Production, and Sustainable Industrial Policy Action Plan also complement a number of existing EU and member state actions to promote resource efficiency and the use of eco-friendly products. Examples of other actions that it builds onto are as follows: EU’s Integrated Product Policy, Thematic Strategy on the Use of Natural Resources, and Thematic Strategy on Waste Prevention and Recycling. Together with these initiatives, the EU Sustainable Consumption and Production and Sustainable Industrial Policy Action Plan provide strategic direction for the EU in achieving sustainability goals (Pape and Fahy, 2010: 25).

However, the EU Sustainable Consumption and Production, and Sustainable Industrial Policy Action Plans are not without their shortcomings. The findings of the desktop study conducted for this thesis highlight the absence of mandatory quantifiable targets and deadlines. A reliance on both cross-sectoral and multi-level relationships is likely to weaken the ability of the action plan's fundamental objective of decoupling economic growth from resource use. This is reflective of research undertaken by Nash (2009).

Much of the EU’s SCP policy to date has focused on the production side of the equation, as opposed to the consumption of products and services. The majority of action plans implemented have focused on measures that deal with the supply side of production; with policymakers focusing predominantly on technological solutions, in conjunction with a number of economic incentives. This overreliance on ‘green’ or ‘energy-efficient’ technology reflects a strong orientation towards ecological modernisation (EM) with regard to addressing the challenge of sustainable consumption, which tends to emphasise supply-side initiatives as opposed to reducing consumption activity through changes in lifestyle.
Although the EU provides frameworks for its members states, different states have adopted sustainable consumption policy in various ways, with some states embracing such policy while other states being somewhat slower to act. In parallel with the EU efforts, EU member states started introducing their own SCP activities. Indeed, more than thirty countries have developed or are developing national SCP programmes worldwide. Some national strategic policies are based on conceptual and exclusively SCP-related documents (e.g., in Czech Republic, Finland, Hungary, Poland and the United Kingdom), whereas in other countries, such as Austria, France, Italy, Malta, or the Netherlands, SCP is embedded in the broader national strategies on sustainable development.

4.4 Sustainable consumption policy development and implementation on the island of Ireland

Despite mounting pressure from the EU to achieve emission reduction targets, SCP in the ROI and NI have received little attention to date (Pape and Fahy, 2010; Barry, 2009). Although the ROI was among one of the first EU countries to adopt a National Sustainable Development Strategy (NSDS) in 1997 (Pape et al., 2011), the success rate of this roadmap is debatable in light of findings from an OECD report (OECD, 2009). This OECD report identified energy, water and transport as priority areas, which need addressing in terms of sustainable consumption for the island.

Specific policies to address sustainable consumption and production in the form of a coherent policy framework are still uncommon on both sides of the border in Ireland (see Barry, 2009; Doran, 2007). For example, although revised in 2008, the principal goals and policies defined in the first National Sustainable Development Strategy in 1997 continue to inform sustainable development and environmental protection strategies in the Republic of Ireland (Pape and Fahy, 2010). There is an urgent need for effective sustainable consumption policy, given the lack of a coherent policy framework.
EU environmental policy and initiatives have influenced sustainability policy development across the island of Ireland (Pape et al., 2011). Both policy regions have employed similar sets of regulatory, economic and information instruments to target sustainable consumption. For example, the Northern Ireland National Sustainable Development Strategy (NI NSDS) (2006) incorporates five guiding principles of the UK strategy: living within environmental limits; ensuring a strong, healthy and just society; achieving a sustainable economy; promoting good governance; and applying sound science in a responsible way. The NI NSDS also includes one additional principle: ‘Promoting opportunity and innovation’ (Department of Environment, 2006: 20). This strategy commits to integrating SD principles into all areas of government and to develop a Green Public Procurement (GPP) Action Plan for NI. A stabilisation of the ecological footprint and a goal of 85% resource efficiency by 2025 are outlined in this strategy. Actions to achieve these goals include the implementation of the Waste Management Strategy to reduce the quantity of waste to landfill, the Waste Resources Action Programme promoting material recovery, re-use and recycling, the Green Technology Initiative which involved business loans for investment in clean technologies and a commitment to introducing a water demand reduction strategy (Pape and Fahy, 2010).

This desktop study revealed a number of limitations associated with the Irish policy response to date in the arena of sustainable consumption and production. A review of the documents highlighted the emergence of many of the sustainability initiatives in the ROI and NI has been reactive rather than pro-active; they have been largely driven by international initiatives in the environmental field, as well as a response to increasing environmental pressures caused by the Irish economic boom of the 1990s and early 2000s Celtic Tiger era. The desktop review indicates that the thrust of these initiatives has a narrow economic and technological focus and subsequently argues that they cannot sufficiently address the challenges of sustainable consumption, in particular because they ignore the significance of social and cultural factors. As discussed in earlier chapters, there is ongoing debate over whether or not improved energy efficiency and green technology can actually reduce consumption levels or curb greenhouse gas emissions. Many argue that a policy focus on ‘energy-efficient’ or ‘green’ technologies and production
methods is insufficient as any gains resulting from technical efficiency tend to be exceeded by consumption demand (Midden, Kaiser, and McCalley, 2007).

An in-depth review of both the NSDS in the Republic and NI reveals that they are characterised predominantly by principles of ecological modernisation with emphasis placed on economic growth, production methods, developments in science and technology to tackle ‘green’ environmental issues. For example, although the NI NSDS claims to ‘bring about behavioural changes necessary to progress towards a sustainable society’ (DOE 2006, p. 117), individual consumption behaviour is not mentioned in the strategy. By formulating the aims and outcomes in a vague way, the government is therefore ‘not compelled to challenge individual consumption behaviour’ (McClenaghan, 2008: 810).

This low priority of sustainable consumption across the island of Ireland contrasts with considerable progress made by some other EU member states such as Finland or UK, which have developed comprehensive national SCP programmes (Berg, 2010; UNEP, 2008). For example, programmes in Finland and the UK are considered to be among the most comprehensive national SCP programmes and thus serve as model cases (UNEP, 2008: 22).

Despite the fact that its six counties are under UK policy jurisdiction, Northern Ireland has had less advancement in sustainable development policy than the other UK devolved administrations of Wales and Scotland (Barry, 2009). Barry (2009) posits that the key focus of policy-making on economic growth, policing, security, criminal justice and social policy initiatives has lowered the importance of sustainable development on NI’s administration agenda. The UK Government discontinuing funding for the Northern Ireland Sustainable Development Commission (NI SDC) in 2010 is an example of the downgrading of SD in a period of the economic downturn and subsequent curtailments in budget spending.

The desktop review highlights that a similar situation is evident in the ROI, where sustainable consumption appears to be overlooked in favour of policies that emphasise the creation of jobs and employment due to the recent economic downturn. Traditionally, policies to promote job creation and increase economic growth are perceived to clash with calls for reducing consumption.
The desktop study reveals that efforts to meet EU calls for a sustainable consumption action plan for Ireland have been impeded by the fragmentation of responsibility across different government departments and the lack of explicit policy goals and objectives. For example, responsibility for product labelling frequently involves a plethora of government departments, state agencies and non-governmental organisations. This observation reflects similar findings from recent studies by Doran (2007), Pender and Dunne (2007) and Pape et al., (2011).

4.5 Policy: Underlining theory and limitations

Although the need to develop and promote pro-environmental behaviour and sustainable lifestyles is generally accepted (Jackson, 2005), ambiguity tends to emerge regarding how pro-environmental behaviour and sustainable lifestyles can be promoted or encouraged. It is evident from this desktop review that policy in both regions is still largely grounded in existing neo-liberal approaches to so-called ‘behavioural change’.

Similar to EU policy, many consumption sectors have been targeted by the introduction of economic and communicative instruments to change environmental behaviour. The Power of One campaign is one example of a communication campaign in the ROI aimed at reducing energy consumption in the home. Material incentives in terms of influencing pro-environmental activity play a key role. Certain forms of economic incentives such as taxing and pricing are considered very important in terms of behaviour change (De Young, 1993; Linden and Carlsson-Kanyama, 2003). However, prolonged environmental behaviour change requires ‘intrinsic motivation’ (see Guagnano et al., 1995: 706).

This review highlighted that policy initiatives implemented over the past decade in both policy regions across the island of Ireland are largely informed by an

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28 Examples of Government departments that are responsible for labelling include: The Department of the Environment, Heritage and Local Government, the Department of Health and Children, the ODCA (an agency of the Department of Enterprise, Trade and Employment), and the Department of Agriculture and Food, together with several private inspection bodies, e.g. The Irish Organic Farmers’ and Growers’ Association (IOFGA) and Organic Trust (Pender and Dunne 2007: 13).
information-deficit model of behaviour change. As discussed in Chapter Two, the assumption held by many governments based on these types of models is that the public will ultimately change their behaviour by absorbing the information being provided to them. Increased information does not necessarily lead to behavioural change (Cohen and Murphy, 2001; Davies, 2005; Barr and Gilg, 2006).

Although a key component of any environmental change policy, information provision requires a number of conditions to result in behaviour change. For example, in order for information to be utilised successfully it needs to be provided in a way that is regarded as trustworthy and reliable by consumers. This is accompanied by sociological factors such as the role of social norms and the role of the ‘expert’.

Moreover, information needs to be accompanied by situational variables such as proper legislation and controls. Although ample amounts of information need to be provided for individuals (Davies, 2002); the level of information must not overwhelm individuals either. Many policies tend to be based on this (misguided) notion that consumers are fully rational and autonomous when making consumption decisions. Examples of such policy initiatives across the island of Ireland are detailed below with a focus on the key consumption sectors: energy, water, and transport. Policy approaches based on these linear models tend to place the cost of the environmental damage onto the individual themselves, rather than taking into account the wider structural, societal and personal factors that can result in unsustainable behaviour occurring (Burgess et al., 2002).

The desktop review showed that a theoretical and political shift towards a market-orientated perspective is emerging in terms of environmental policy to encourage pro-environmental behaviour (Sharp and Darnton, 2006; Barr et al., 2011; Gröger et al., 2011). Social marketing techniques are increasingly gaining dominance in many policy spheres. For example such approaches have been implemented in the UK (see DEFRA, 2005; 2008) and New Zealand (Stephenson et al., 2010). As a concept, social marketing ‘underscores the importance of strategically delivering programs so that they target specific segments of the public and overcome the barriers to this segment’s engaging in the behaviour’ (McKenzie-Mohr, 2000: 594).
This development of utilising social marketing specifically for sustainability emerged from concerns about the ineffectiveness of environmental campaigns that relied solely on providing information. The pragmatic approach of social marketing has been offered as an alternative to conventional campaigns, and, in contrast to traditional education methods, has been shown to be very effective at bringing about behaviour change (McKenzie-Mohr and Smith 1999: 15). Adopting such approaches to pro-environmental behaviour change contrasts with traditional socio-psychological perspectives that emphasise individual and psychological factors in explaining the relationship between environmental attitudes and behaviours (Warde, 2005). Social marketing techniques highlight ‘incremental, practical and achievable changes to practices relevant to a specific target audience’ (Barr et al., 2011: 712). Social marketing is a relatively new technique to be utilised in a practical policy context to frame ‘sustainable lifestyles’. Such an approach seeks to use conventional marketing techniques as a means of promoting behavioural change through the identification of audience segmentation and marketing messages (Wheeler et al., 2004; French et al., 2010; Barr et al., 2011). Tailoring interventions to likely responses can give greater policy success (DEFRA, 2008). A segmented approach to sustainable consumption has the potential to enable policy makers to further refine and tailor their approach for specific groups (Sharp and Darnton, 2006; Barr et al., 2011; Gröger et al., 2011).

This desktop review illuminated the fact that sustainable consumption policy to date on the island of Ireland has tended to ignore the employment of such initiatives but instead opts for a one-size fits all approach to behaviour change (Lavelle and Fahy, forthcoming). In order to target marketing efforts or public campaigns to consumers with differing lifestyles, it is first imperative to identify homogenous consumer groups by segmenting consumers into different clusters (Grunert et al., 2001; Gilg et al., 2005; Verain et al., 2012). The ability to recognise what segment of society a person belongs to in terms of their consumption behaviours, attitudes and needs is vital if tailored policy interventions are to succeed (DEFRA, 2006). This analysis is undertaken in Chapter Eight of this thesis.
However, some argue that dividing a population into segments can often broaden value gaps and can undermine a society’s collective effort and commitment needed to form a collective response to the challenge of attaining more sustainable consumption. This type of approach is also critiqued for proffering a somewhat shallow change by targeting specific behaviours and actions and can simultaneously fail to address deeper more intrinsic change by ignoring a person’s worldview and values (Hine, Reser, Morrison, Nunn and Cooksey, 2014).

To conclude, this section provided an overview of the different models of behaviour change that underpin current sustainable consumption policy and their limitations from a behaviour change perspective. The reminder of this chapter presents a critical review of the issues surrounding sustainable consumption and production on the island of Ireland across the three identified priority areas on the island of Ireland: energy, water and transport.

4.6 Challenging sectors and responses for sustainable consumption for the island of Ireland

Sustainable consumption challenges across the areas of energy, water and transport consumption are discussed in the following sections. The first consumption challenge discussed is energy consumption across both the Republic of Ireland and Northern Ireland.

4.6.1 Energy consumption challenges

Across the island of Ireland, domestic energy consumption is increasing continuously; with homes in the ROI accounting for approximately one quarter of all energy used nationally (Sustainable Energy Authority of Ireland (SEAI), 2008). Ireland was found to have higher electricity usage than the EU average; with consumption of electricity 19% above the EU-15 average per dwelling (SEAI, 2005). Indeed the average Irish home in 2008 was consuming almost 40% more electricity than it did in the 1990s (SEAI, 2008). Another report by the Sustainable Energy Authority of Ireland (2008a) attributes increases in electricity
consumption (i.e. 23% in 2008) to an increase in ownership and use of home appliance. Energy accounts for 66% of Ireland’s greenhouse gas emissions (O’Leary et al., 2009).

Ireland was also found to have higher average energy usage per dwelling than the EU average; being 31% above the EU-15 average and 36% above the EU-27 average in 2008 (SEAI, 2008). Ireland was found to have higher than EU average CO₂ emissions also; with Ireland’s average CO₂ emissions 97% above the EU-15 average per dwelling (SEAI, 2005, p. 3). In terms of energy-related CO₂ emissions, the Irish domestic sector (27%) is the second largest sector after transport (32%) in terms of energy-related CO₂ emissions. These figures are partially related to the increase in the size of homes and apartments that have been built since the mid-1990s, as well as changing trends in notions of comfort and convenience for contemporary living.

In the context of Northern Ireland, the domestic sector was the largest consumer of energy in 2005 (Green New Deal Northern Ireland, 2009). Northern Ireland experiences higher energy import dependency than the Republic of Ireland, importing approximately 99% of its fossil fuel supplies, with only 1% coming from indigenous sources (ibid). Approximately 93% of NI’s energy is derived from fossil fuels while the remainder is from renewable energy. The percentage of energy use from renewable energies (1%) is even lower than the 2.7% energy use from renewable sources in the Republic of Ireland (O’Leary et al., 2009). Under the Home Energy Conservation Act (1995), a 34% reduction in the energy consumption of pre-1996 housing stock is called for by 2012 (Carbon Trust, 2005). Despite a 20% improvement in the energy efficiency of the new housing stock from 1996 to 2006, the Green New Deal (2009) estimates that over 90% of the Northern Ireland’s 705,000 dwellings do not meet energy performance standards, similar to the Republic’s housing stock. Homes in NI tend to have larger floor areas, poorer insulation and more inefficient heating systems and boilers than those in the UK. Coupled with poor weather conditions, this makes energy consumption levels in the residential sector higher than elsewhere in the UK (Carbon Trust, 2005).
Poorly insulated housing stock represents another key challenge for a shift towards more sustainable consumption across the Republic of Ireland (SEAI, 2008b). It was estimated that approximately 60% of the 1.7 million homes in the Republic are in need of investment to improve their energy efficiency (SEAI, 2008b). This mirrors the reality in Northern Ireland with over 90% of the dwellings in Northern Ireland failing to meet energy performance standards (Green New Deal, 2009). A number of schemes centred on energy-efficiency and communicative instruments have been implemented across the ROI in the past decade (see Pape et al., 2011).

Many of these schemes are aimed predominantly at individuals and households and often tend to involve financial incentives. Examples include the Home Energy Saving Scheme (HESS) for domestic insulation, heating controls and other efficiency measures and the SEAI’s Warmer Homes Scheme, which aims to reduce fuel poverty by improving energy efficiency for low-income homes. In the Republic of Ireland in 2010, the government pledged €90 million for home energy-efficiency retrofits, with €36 million allocated to lower income houses (Casey, 2010). The aim of this national strategy is to retrofit one million residential, public and commercial buildings\(^{29}\) in Ireland by 2020.

However, at a cost of between €3,000 and 8,000 per home, financing by government and homeowners continues to be problematic (McGee, 2012). Although some improvements with respect to insulating newer homes have occurred, this did not correspond with the speed of dwelling construction, at least up until 2008. The introduction on a national level of smart meters to inform users of their energy usage and in particular, where economic savings can be made, is currently being considered for both businesses and households (CER, 2012). Although energy is the only resource which is priced on a per use basis, existing tariffs reward higher energy use (OECD, 2011). However, there are currently day and night tariffs for domestic and business use.

A recent report published by the International Risk Governance Council (IRGC) (2013) recommends that energy efficiency policies could be enhanced by

\(^{29}\) One quarter of all funding will be focused on the public sector, and the programme will aim to retrofit 1,000 public buildings by 2020.
incorporating rebound effects into future programme design and energy scenarios and models development, arguing that ‘taxes and trade policies would assure that the negative externalities from rebound effects are incorporated’ (p6). Although there is increasing evidence pertaining to their importance (Sorrell, 2007), rebound effects are frequently neglected by policymakers. Many commentators (see Sorrell, 2007) argue for further investigation into rebound effects particularly from an energy services perspective (as cited IRGC report 2013). Druckman et al. (2010) propose that a focus on altering individual lifestyles may be one method to reduce rebound effects. Although there are numerous studies attempting to estimate direct rebound effects in different sectors of the economy (e.g., Brännlund et al., 2007; Mizobuchi, 2008; Frondel et al., 2008, 2010; Madlener and Hauertmann, 2011; Greene, 2012), the design and implementation of successful and effective future sustainable consumption policies which incorporate rebound effects is a key challenge facing a societal shift towards sustainable consumption.

Together these statistics provide significant challenges for moving towards more sustainable consumption of energy in the home in Northern Ireland and the Republic. The following section explores the need for more sustainable consumption of water across both policy regions.

4.6.2 Water consumption

Domestic water consumption has risen dramatically in many developed countries over the past number of decades, with bathing, showering and washing clothes accounting for around one third of domestic water consumption across Europe (EEA, 2001). Household water usage accounts for approximately 60% of total water demand in Republic of Ireland (EPA, 2006). Increasing numbers of households are using ever-increasing numbers of water-consuming appliances at greater frequency and intensity. Estimates suggest that approximately 5% of water consumption is for drinking, with the remainder being almost equally split between washing and cleaning, showering and bathing, and using the WC.

The average daily water consumption across the island of Ireland is above the European average; approximately 148 litres per person per day in Republic of
Ireland and 158 litres per person per day reported in Northern Ireland, in comparison to Denmark which averages 116 litres per person per day (EPA, 2008; Northern Ireland Water, 2009, 2010). Doyle and Davies (2014) in their recent review of household water usage note that large spatial disparities are apparent in per capita consumption of water for household activities, from just 20 litres per day in parts of sub-Saharan Africa to over 330 litres in Canada. Ireland’s domestic water usage is increasing in line with the general upward trend in residential water consumption across other developed countries. This increased demand is as a direct result of population growth (Postel et al., 1996; Gleick et al., 2003), the transition to water-intensive lifestyles (Hubacek et al., 2009; Harlan et al., 2009), poor water governance (Massarutto, 2003) and increased water consumption rates globally (OECD, 2013).

Recent flooding, as well as a number of high profile cases of water pollution and contamination (see Kelly et al., 2006), particularly in the west of Ireland, have resulted in increased demand for bottled water in certain parts of the country. For example in the Republic of Ireland, the Environmental Protection Agency’s (2006b) national survey on ‘Public Perceptions, Attitudes and Values on the Environment’ sought to assess householders’ perspectives on drinking water. The survey found considerable levels of dissatisfaction with supply from group water schemes and the local authorities. This mainly related to discoloration of the water with 40% of those in group schemes and 30% of those supplied by the local authority complaining of this problem (EPA, 2006). This EPA survey found that circa 50% of adults drink tap water, 30% used filter and purification systems on their tap water and 20% used bottle water in the home (ibid).

Thirty-seven percent of those who avoided drinking tap water did so because of issues relating to taste, 34% avoided it as a matter of precaution and 7% suspected that their water supply was contaminated (EPA, 2006). Reported dissatisfaction with drinking water quality is at odds with the EPA’s (2003) assessment of quality.

30 The main causes of poor water quality in Ireland tend to be point source pollution, such as pipe discharge into a river, and diffuse pollution, where contaminants like fertiliser or chemicals seep into water systems (EC, 2013). A European Court of Justice (ECJ) judgment following a case brought to it by the European Commission, Ireland introduced legislation to regulate wastewater discharges from all homes not connected to the public sewer network. The new law meant the registration of all on-site septic tank and domestic wastewater treatment systems to make them easier to inspect so that public health and the environment can be better protected (EC, 2013).
which found that 96.1% of drinking water met overall compliance standards. These incidences can have knock-on effects in terms of bottled water consumption rates across the island.

A lack of investment in infrastructure has resulted in very high levels of water leakage across the country; up to 58.6% in certain areas (Local Government Management Services Board, 2008). Exact figures for water leakages in Northern Ireland could not be obtained. However, aggregated figures estimated leakage of approximately 26% in water mains for UK networks (Pearce, 2012). These figures are stark, especially in comparison to other EU countries like Germany and Denmark where the leakage rate is less than 10% (EPA, 2008). There is a notable lack of information on water consumption levels across the island due to the low levels of water metering that followed the removal of water charges for domestic usage in 1997 in the Republic. Both NI and the Republic of Ireland are two of the very few regions in Europe, and other developed countries across the world, without domestic water charges at the current time (Flannery et al., forthcoming). However, water charges and metering are to be reintroduced for all domestic houses across the Republic in 2015, under new budgetary guidelines (ibid).

In Northern Ireland, all domestic water charges are met by a government subsidy so there is no direct charge to the consumer (NI Water, 2012). However since 2000, the OECD has recommended the reintroduction of domestic water charges and the installation of water meters in new dwellings as key mechanisms for reducing household water consumption. The installation of water meters on average reduces water use by 16 per cent in UK households (UK Environmental Agency, 2013). With the recommencement of water metering across the Republic (Flannery et al., forthcoming), water is a topical consumption issue in Ireland at present.

The installation of water meters in new dwellings has been proposed as a key mechanism for reducing household water consumption (OECD, 2013). A newly created semi-state body entitled Irish Water has been established to manage the re-introduction of water charges and water services across the Republic of Ireland.

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31 Irish Water, the company in charge of installing and charging for water consumption, is planning to calculate water charges on the basis of 150 litres per capita per day use (Irish Times, 5th April 2014). This is above average EU water consumption levels.
Water distribution was a function of local authorities prior to the establishment of this new semi-state agency. Relating national patterns of water consumption solely to economic models of water charging or to levels of access to water mains would be reductionist, according to Doyle and Davies (2014) as an array of societal relations, cultural norms, technological and infrastructural histories, and political contexts play a role. Although economic incentives are an important aspect of environmental policy, pricing alone is unlikely to drive significant and lasting changes in people’s habitual behaviour.

In Northern Ireland, research into public attitudes towards water usage is limited; studies tend to focus on water quality issues in line with recent policy emphasis on the EU Water Framework Directive. The Continuous Household Survey provides some insight into water consumption in Northern Ireland (NISRA, 2013). The examination of public perspectives regarding water quality is a challenging task, but disregard for such perspectives can lead to public discontentment and problems with implementation of water management strategies and policies (Doria, 2010). A greater understanding of the processes involved in public perception of water quality can contribute to improved water services, increased public satisfaction and improvements in water management, acceptability of water reuse and water charges, among other areas (ibid).

This section highlighted the urgency for more sustainable consumption of water across the island of Ireland. The subsequent section examines the need for more sustainable transport consumption and the consumption of distance by exploring this crucial sector in an all island Irish context.

4.6.3 Transport and the ‘consumption of distance’

Globally, the transport sector accounts for around 30% of CO₂ emissions from fossil fuel combustion (OECD, 2010). Within Europe, traffic-related air pollution has been estimated to be responsible for approximately 3% of total yearly mortality (Chanel et al., 2000). Transport, and the consumption of distance, represents another major challenge towards sustainability across the island of Ireland (Heisserer, 2012; Rau and Vega, 2012; Heisserer, 2014; Hynes, 2014; Rau, 2014). Similar to energy emissions, transport emissions are increasing as a
share of total emissions in the Republic of Ireland since the mid-1990s (Howley et al., 2007). Indeed the transport sector is continuously increasing its dominance as the largest energy consuming sector with a share of 42% of the emissions in the Republic. The transport emissions sector is now larger than that of both industry and commercial and public services combined (O’Leary et al. 2009). In Northern Ireland, transport emissions are rising faster than any other sector. Transport is responsible for at least 45% of expenditure on imported fossil fuels, equivalent to at least 28% of total energy use (Green New Deal NI, 2009). Increasing fuel costs are likely to be a key driver for achieving a modal shift towards low carbon options.

Private car transport accounts for approximately 40 per cent of transport emissions in Ireland. With levels of car ownership in the Republic and Northern Ireland growing rapidly in the past decade, Ireland is now one of the most car dependent societies in Europe (Gkartzios and Scott, 2007). Private car transport accounts for approximately 40 per cent of transport emissions in Ireland.

Transport and the consumption of distance are not as straightforward as merely car ownership of private vehicles. Although increasing levels of car ownership has increased individuals’ reliance on the private motor vehicle as the main mode of transport (Clinch et al., 2002), a distinction needs to be drawn between car ownership and actual usage (Rau and Hennessy, 2009).

With regard to policy factors influencing individual decisions, one would expect that enhanced accessibility to public transport leads households to use their cars less. This hypothesis has been confirmed in studies from Austria (Axhausen and Simma, 2004), the United Kingdom (Dargay and Hanly, 2004; Dargay and Giuliano, 2006) and the United States (Dargay and Giuliano, 2006). Higher accessibility to public transport was associated with lower car ownership in the 2008 round of the EPIC Survey (OECD, 2011a). However, the opposite trend was found in terms of car use in that better access to public transport was associated with higher car use (OECD, 2011a). This same study also found that awareness of environmental issues was associated with lower car use. In the studies from the United States and Europe reviewed in (ibid), both car ownership and use were found to be positively influenced by income and household size (OECD, 2013).
The social, cultural, economic and environmental consequences of car-dependency for Irish society are complex and disproportionately affect vulnerable groups such as car-less households and the rural elderly (McDonagh, 2006; Rau and Hennessy, 2009; Rau, 2014). Furthermore, the current economic downturn is exacerbating further some of the transport-related risks to vulnerable households, including rising motoring costs. The relative weighting of the sectors has changed. Transport has continued to increase its dominance (since the mid-1990s) as the largest energy consuming sectors (on a final energy basis) with a share of 42% while the share of industry and residential has decreased. Indeed, transport final energy use is larger than that of both industry and commercial and public services combined (O’Leary et al., 2009).

Personal transport decisions tend to be strongly influenced by cost, which makes financial penalties and incentives popular instruments for policymakers (OECD, 2007; Rau and Vega, 2012). Taxes and charges, including petrol taxes, differential vehicle taxes and congestion charges, can be effective particularly when combined with investments in public transport (OECD, 2007c). In the Republic, carbon taxes have been introduced along with the coupling of vehicle registration tax (VRT) to CO₂ car emissions (Revenue, 2011). Several studies (reviewed in Guagnano et al., 1995) have proposed that while fiscal incentives can play a valuable role in initiating behaviour changes, prolonged transformations in consumption behaviour require intrinsic motivation, rather than enforcement from an external force (Jackson, 2005). There is a need for policy to recognise that consumption behaviour is constantly shaped by contextual factors, as well as structural features (Wilhite and Lutzenhiser, 1999; Cohen and Murphy 2001; Princen et al., 2002).

Societies bear substantial environmental costs from individuals’ local and regional transportation choice (OECD, 2013). Hence, policymakers have started to propose certain economic policy instruments which in some way pass these costs (or the benefits of eliminating them) on to travellers. Examples of such incentives include, congestion charging schemes (Bocarejo and Prud’homme, 2005; Jonas, 2009) and municipal bike-share programmes (Dill et al., 2010). In conjunction with economic incentives, individuals’ attitudes towards the environment and public policy can affect vehicle purchase decisions, propensity to use public
transportation, and support for government policies addressing environmental impacts of transport systems (OECD, 2013). Norway and Denmark are adding charges to car prices based on the level of vehicle CO₂ emissions and at the same time giving tax deductions to cars running on alternative fuels. Canada introduced a transport package consisting of discounts on fuel efficient vehicles, green levies on ‘gasguzzling-vehicles’, increased budgets for vehicle disposal programmes, and incentives to remove older vehicles from roads. These tools may also be combined with congestion charges to influence personal transport choices and manage traffic in urban areas, as in London and Stockholm (Heisserer, 2012, 2014). In 2008, Ireland announced a policy target of 10% electric cars (230,000 vehicles) in the vehicle fleet of the country by 2020 (Brady and O’Mahony, 2011).

4.7 Reflections on sectoral challenges and policy responses

The desktop analysis conducted for this thesis highlighted numerous sustainability challenges facing the island of Ireland and the key role that international sustainable consumption policy has in terms of influencing regional sustainable consumption policy across both policy regions on the island. SC policy in the Republic of Ireland and in the Northern Irish context is characterised by fragmentation, limited resource commitment and weakly developed planning which leads to a lack of clarity in terms of overall sustainable consumption goals and objectives.

This desktop study revealed that across the island of Ireland to date, there has been little comprehensive analysis of consumption patterns and the factors that affect them, including governing mechanisms (see O’Gallachoir et al., 2007; Pape et al., 2011 for notable exceptions). Significant challenges in the areas of energy, water and transport consumption exist. These challenges pose great obstacles for policymakers in terms of achieving a shift towards sustainable consumption in Northern Ireland and the Republic.

A broad review revealed similarities between both policy regions in terms of their policy narratives. Both policy agendas tend to favour ecological modernisation
interpretations of sustainability. The review found that current strategies inadequately address the aims of sustainable development by underestimating the importance of situational and psychological variables which can impact on individuals’ decision-making, as well as the need to empower citizens by involving them in the decision-making process.

This review highlighted the difficulty and complexity associated with changing environmental behaviour. Echoing Jackson’s (2005) findings, policy needs to address the social and institutional context of consumer action and not just attempt to affect individual behaviour directly. Through a critique of current policy, which has predominantly deployed economic and communicative instruments to try to change unsustainable patterns of behaviour, this chapter posits that there is an urgent need for greater understanding and insight into present consumption patterns. This thesis proposes the need for more holistic policy approach, a policy approach that incorporates the pre-existing models of information provision and economic incentives but also incorporates socio-environmental contexts.

A review of key documents for this thesis demonstrated that there are many potential opportunities to develop sustainable consumption policy in both Northern Ireland and the Republic. A crucial step towards this end is to both collate and analyse baseline data concerning attitudes and behaviours towards household consumption and lifestyles. The subsequently chapters (Chapters Five to Seven) in this thesis present these baseline data and focus on these key areas of household consumption identified by this study. These areas include the consumption of energy and water in the domestic sphere of the household, as well as transport and the ‘consumption of distance’. Hence, findings of this research are informative and provide important implications for policy makers, on the promotion and uptake of sustainable consumption behaviours and lifestyles.
CHAPTER FIVE:

RESULTS OF CONSENSUS LIFESTYLE SURVEY ON EXPRESSED ATTITUDES AND REPORTED BEHAVIOURS REGARDING HOUSEHOLD CONSUMPTION AND LIFESTYLES
5.1 Introduction

The aim of this study is to generate baseline data on attitudes and behaviours concerning consumption and lifestyles for the island of Ireland. This initial results chapter outlines the descriptive statistics of these collated data32. Firstly, a general overview of the sample’s profile is given. Results are compared to recent census data in the Republic of Ireland (Central Statistics Office (CSO), 2011) and Northern Ireland (Northern Ireland Statistics and Research Agency (NISRA), 2011) (Section 5.2). Such comparisons permit greater understanding of socio-demographic characteristics of the drawn sample. As previously discussed in Chapter Two, associations between socio-demographics and environmental behaviours are important (De Oliver, 1999).

The subsequent part of this chapter (Section 5.3) focuses on variables that affect environmental behaviours under the headings of environmental concern variables, situational variables (structural, socio-demographic and knowledge, awareness and experience) and psychological variables (e.g., self-efficacy, perceptions of environmental responsibility, social norms and social-desirability, and intrinsic motivation).

5.2 Sample profile

A total of 1,500 households participated in the study. Of these respondents, 1,000 comprised the ROI sample and the other 500 respondents comprised the NI sample. The profile of respondents is outlined in following sections. Comparisons to recent Census data for each of the two policy regions are outlined. Differences related to gender, household size, and education statuses are discussed.

32 Statistics presented in this results chapter have been rounded to the nearest whole number.
5.2.1 Gender of participants

Of the 1,500 individuals who participated in this study, 59% of those respondents were female and 41% were male. Table 5.1 shows the breakdown of respondents according to gender.

Table 5.1: Breakdown of participants based on gender.

<table>
<thead>
<tr>
<th>Profile</th>
<th>Percentage</th>
<th>Frequency</th>
<th>ROI (CSO, 2011)</th>
<th>NI (NISRA, 2011)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>59%</td>
<td>878</td>
<td>53%</td>
<td>51%</td>
</tr>
<tr>
<td>Male</td>
<td>41%</td>
<td>622</td>
<td>47%</td>
<td>49%</td>
</tr>
</tbody>
</table>

The proportion of women in this study is higher than the Republic of Ireland’s and Northern Ireland’s population at large (53% and 51% respectively). Similarly, the proportion of men in this sample (41%) was less than the Republic of Ireland’s population (47%) and Northern Ireland’s population (49%). Gender plays a key role for both environmental behaviours and attitudes. Women tend to express more environmental concern compared to men (Van Liere and Dunlap, 1981; Stern and Dietz., 1994).

5.2.2 Age categories

Respondents were asked what year they were born, with reported ages ranging from 18 to 93 years. The average age of respondents was 45 years, which is higher than the mean age in Northern Ireland (38 years) and the Republic of Ireland (36 years) respectively.

---

33 There are more women than men in both jurisdictions (3.24 million to 3.16 million across the island); with Northern Ireland recording 961 men for every 1,000 women and the Republic of Ireland reporting 981 men for every 1,000 women (CSO, 2011).
34 Although a very accurate means of gaining information about the ages of respondents, this option also leaves respondents open to social desirability bias in that they may not wish to provide such details to an interviewer.
Figure 5.1: Breakdown of respondents according to five age groups.

For analysis purposes, respondents were divided into five categories based on their reported age (see Figure 5.1). As is evident from Figure 5.1, all age categories are relatively similar in size, with the exception of the two oldest age categories. Taken together, the 65-79 and 80+ age groups accounted for 12% of the sample. This figure is reflective of the national demographic profile of the Republic of Ireland. Over 65s accounted for 12 per cent of the Republic of Ireland’s population and 15 per cent of Northern Ireland’s population (CSO, 2011; NISRA, 2011). The Republic of Ireland has a relatively young and growing population; with over one fifth of the population under 14 years of age (CSO, 2011).

Hence, the fact that no over-representation of older respondents occurred as anticipated, adds additional validity to the sampling procedure employed. Although survey methods tend to over-sample individuals in retired age categories – often because retired individuals tend to be at home during daytime hours when many of these studies take place – this was not the case for this study. Instead, the sampling method utilised resulted in a relatively good spread of respondents across all age categories.
5.2.3 Educational status

Research has found positive links between education and environmental behaviour, with higher educational levels frequently coinciding increased likelihood of pro-environmental behaviours (Berger, 1997; Schahn and Holzer, 1990).

As evident in Table 5.2, 5% of respondents described their educational status as having either ‘no formal education’ or ‘primary level education only’, 41% had completed ‘second level education’ and 54% of respondents had attained ‘third level education’. The proportion of respondents in our sample who had attained third level education or higher (54%) is higher than in ROI (51%) and NI populations (24%) (CSO, 2011; NISRA, 2011). There were 1,495 valid responses to this question.

Table 5.2: Breakdown of respondents based on their educational attainment.

<table>
<thead>
<tr>
<th>Educational Status</th>
<th>Percent</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary level education</td>
<td>5%</td>
<td>66</td>
</tr>
<tr>
<td>Second level education</td>
<td>41%</td>
<td>613</td>
</tr>
<tr>
<td>Third level education</td>
<td>54%</td>
<td>813</td>
</tr>
</tbody>
</table>

Educational status was measured in this study by asking respondents to select the highest level of education or schooling that they had attained at the time of interview.

Third level education in Northern Ireland was taken to mean ‘Level 4 or higher’. In other words, it equated to Degree, Higher Degree, NVQ level 4-5, HNC, HND, RSA Higher Diploma, BTEC Higher level, Foundation Degree, Professional Qualifications (i.e. teaching, accountancy, and nursing).
5.2.4 Occupational status

Table 5.3 shows the occupational background of the sample. A total of 59% of respondents stated that they are ‘employed’ (n=881). As was to be expected, the proportion of retired respondents is relatively high, with 17% of the sample (n=261) describing their current employment status as ‘retired’.

Table 5.3: Breakdown of respondents based on their reported occupational status.

<table>
<thead>
<tr>
<th>Employment Status</th>
<th>Percent</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed</td>
<td>59%</td>
<td>881</td>
</tr>
<tr>
<td>Unemployed</td>
<td>8%</td>
<td>115</td>
</tr>
<tr>
<td>Student</td>
<td>9%</td>
<td>128</td>
</tr>
<tr>
<td>Retired</td>
<td>17%</td>
<td>261</td>
</tr>
<tr>
<td>Other</td>
<td>7%</td>
<td>110</td>
</tr>
</tbody>
</table>

The proportion of respondents in our sample who were unemployed (8%) is lower than in ROI (19%) but similar to NI populations (8.5%) (CSO, 2011; NISRA, 2011).

The proportion of respondents in our sample who were employed (59%) is slightly lower than in ROI (62%) but higher than the NI populations (48.73%) (CSO, 2011; NISRA, 2011). The proportion of students in this sample (9%) was substantially lower than in the ROI (16%) but higher than the NI population (6%). Similarly this study under sampled retired persons (17%) compared to the ROI yet higher than NI’s population, 21% and 13% respectively.
5.2.5 Housing Tenure

In terms of housing tenure, 37% of participants ‘owned their house without a mortgage’; a further 35% stated that their house was ‘owned with a mortgage’. 18% of the respondents stated that they were tenants who paid ‘rent to a private landlord’, while another 3% described their housing tenure status as ‘tenants paying rent to a social, voluntary or municipal housing body’. Another 3% stated that the ‘accommodation was provided rent-free’ and a further 4% of respondents described their housing tenure as ‘other’.

![Figure 5.2: Breakdown of respondents according to housing tenure](image)

The sample had a smaller percentage of householders (2.5%) paying rent to social or voluntary or municipal housing bodies compared to ROI (12%) and Northern Ireland\(^{37}\) (15%). It also had a larger proportion of participants living in their accommodation rent-free (3%) compared to ROI (2%) and NI (3%). Moreover, respondents who were ‘tenants paying rent to private property owners or letting agencies’ (18%) was higher compared to ROI (10%) and NI (14%).

\(^{37}\) In Northern Ireland, the Northern Ireland Housing Executive, housing association and charitable trusts were taken to equate to social or voluntary or municipal housing in ROI.
5.2.6 Household Size and Composition

The average number of people living in a household was 3.1 persons. This occupancy figure is higher than the average number of persons residing in private households in the Republic of Ireland (2.7 persons) and in Northern Ireland (2.5 persons) (CSO, 2011; NISRA, 2011). Similarly, this figure is higher than the OECD average household size of 2.63 (OECD, 2013). Table 5.4 illustrates the breakdown of respondents based on reported household occupancy levels.

Table 5.4 illustrates the breakdown of respondents based on household occupancy levels.

<table>
<thead>
<tr>
<th>Household Size</th>
<th>Percentage</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lived alone</td>
<td>8</td>
<td>131</td>
</tr>
<tr>
<td>Two Person Household</td>
<td>29</td>
<td>429</td>
</tr>
<tr>
<td>Three Person Household</td>
<td>22</td>
<td>335</td>
</tr>
<tr>
<td>Four Person Household</td>
<td>24</td>
<td>356</td>
</tr>
<tr>
<td>Five Person Household</td>
<td>14</td>
<td>205</td>
</tr>
<tr>
<td>Six Person Household</td>
<td>3</td>
<td>38</td>
</tr>
</tbody>
</table>

Household occupancy size can present significant consequences for household consumption rates, including the increased use of energy and other resources (SEAI, 2009; Abrahamse and Steg, 2009). For example, a SOER report (EEA, 2010) found that a one-person household consumes, on average, 38% more products, 42% more packaging and 55% more electricity per person than four-person households.

In this sample, approximately 8.3% of participants stated that they ‘lived on their own’. A further 22.6% of the entire sample stated that they shared their house with a ‘partner or spouse’. Two individuals living in two separate households will typically consume more energy and resources compared to two people living in the same household (SEAI, 2008; Abrahamse and Steg, 2009).
As a result, respondents in single household are likely to consume more energy and resources per person than the 22.6% of respondents who stated that they lived with a partner or spouse. See Figure 5.3 for the breakdown of respondents based on household composition.

Figure 5.3: Breakdown of respondents according to their stated household composition
5.2.7 Income

Effects of income and environmental action are also important to consider (Alsamawi, Murray and Lenzen, 2014). Respondents were asked to report their total net household income in the past year after tax and other deductions. Two income scales\(^{38}\) were developed: one Euro-based question for the Republic of Ireland sample and another Pound Sterling-based option for Northern Ireland. The breakdown of respondents according to income is outlined in Tables 5.5 and 5.6.

In the ROI sample the category ‘€38,000 - €75,999’ was most frequently chosen (n=280 or 28%). Note that this category is above the national average wage of per annum\(^{39}\) (CSO, 2009).

A total of 12% (n=118) reported that they earned between €76,000 and €113,999 per annum. Approximately 6% of the Republic of Ireland sample (n=55) stated that they earned less than €18,000 per annum. Less than 2% of the Republic of Ireland sample (n=17 respondents) stated that their household earned greater than €114,000 per annum after deductions were taken into consideration. Another 21% of the Republic of Ireland respondents (n=213) stated that they earned between €19,000 and €37,999 per annum. 206 respondents (21% of ROI sample) stated that they ‘did not know’ their households total net income; while a further 105 respondents (11%) declined to answer this question. Table 5.5 shows the breakdown of respondents according to their households’ total net annual income.

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\(^{38}\) Respondents in the Republic of Ireland sample areas (i.e. Galway and Dublin) (n=1,000) were asked to report their total net household income in the past year after tax and deductions in Euro (€). Respondents (n=500) in the Northern Ireland sample areas (i.e. Derry/Londonderry) were asked to state their total net household income per annum in Pounds Sterling (£).

\(^{39}\) The average annual income in 2009 (circa the time of survey instrument development) for an individual was €36,700. This figure was based on a 32-hour working week. As a result of the economic downturn and burst of the Celtic Tiger bubble, the 2011/2012 salary survey data reduces this figure to approximately €34,650. Before this economic decline, the average net income for a person was estimated as €46,057 (Salary Survey, 2008). In contrast, figures for the UK in 2007/8 showed average net income to be about £27,769 for a household (equivalent of €34,777).
Table 5.5: Breakdown of respondents according to their households’ total net annual income (Euro).

<table>
<thead>
<tr>
<th>Total Household Net Annual Income (EURO) (n=1,000)</th>
<th>Percentage</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>€0 - €18,999</td>
<td>5</td>
<td>55</td>
</tr>
<tr>
<td>€19,000 - €37,999</td>
<td>21</td>
<td>213</td>
</tr>
<tr>
<td>€38,000 - €75,999</td>
<td>28</td>
<td>280</td>
</tr>
<tr>
<td>€76,000 - €113,999</td>
<td>11</td>
<td>118</td>
</tr>
<tr>
<td>€114,000 and above</td>
<td>2</td>
<td>17</td>
</tr>
<tr>
<td>Don’t know</td>
<td>21</td>
<td>206</td>
</tr>
<tr>
<td>Refused</td>
<td>11</td>
<td>105</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>994</td>
</tr>
</tbody>
</table>

In the Northern Ireland subsample (n=500), there were 499 valid responses to the income question. Here, the modal response was the category £26,393 - £52,785 total household net annual income after taxes and other deductions, with 32% selecting this option (n=160). The second most commonly reported income category was £13,197 - £26,392, with 21% selecting this income bracket (n=107). Less than 3% of respondents in Northern Ireland stated that their household earned more than £79,179 per annum. More respondents in the Northern Ireland sample (6%, n=30) chose the lowest household net income bracket (£0-13,196), compared to 6% or n=55 in the Republic of Ireland.

40 A total of 1,000 responses were not applicable to this question, as these 1000 respondents answered a separate income question (i.e. the Republic of Ireland Euro income question).
Table 5.6 shows the breakdown of respondents according to their households’ total net annual income.

Table 5.6: Breakdown of respondents according to their households’ total net annual household income (Sterling) (n=500).

<table>
<thead>
<tr>
<th>Total household net income (Sterling) (n=500)</th>
<th>Percent</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>£0 - £13,196</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>£13,197 - £26,392</td>
<td>21</td>
<td>107</td>
</tr>
<tr>
<td>£26,393 - £52,785</td>
<td>32</td>
<td>160</td>
</tr>
<tr>
<td>£52,786 - £79,178</td>
<td>14</td>
<td>72</td>
</tr>
<tr>
<td>£79,179+</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>Don’t know</td>
<td>20</td>
<td>102</td>
</tr>
<tr>
<td>Refused/ Declined</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>499</td>
</tr>
</tbody>
</table>

Moreover, information gathered on income through survey methods tend to give crude figures, as general income questions such as these cannot successfully probe into all income sources. Issues of reliability related to these data can occur. Asking the respondent to calculate quickly the total net household income for their household is not a straightforward task. Finally, the interviewee may not have sufficient knowledge or access to income information for all members of the household.

Indeed, the personal and private nature of this type of socio-demographic question meant that a large numbers of ‘don’t know’ or ‘refused’ responses were to be expected. Interestingly, a greater number of respondents in ROI (11%) declined or refused to answer the income question compared to only 3% of NI sample.
5.3 Variables that influence environmental behaviours: Environmental concern, situational and psychological variables.

This section outlines respondents’ expressed attitudes towards the environment and outlines trends emerging from the baseline data of Irish consumption behaviours and lifestyles. Barr’s framework of environmental behaviour (see Chapter Two) is utilised and adapted to structure these findings under the subheadings: Environmental concern variables, situational variables and psychological variables. A general discussion takes place at the end of this section in relation to findings presented.

5.3.1 Environmental concern variables

The following section explores participants’ responses to questions on the Lifestyle Survey under the subheadings of environmental concern, as well as respondents’ willingness to pay higher prices and higher taxes in order to protect the environment.

5.3.1.1 Environmental Concern

Environmental concern and the manner in which individuals perceive environmental problems can affect household behaviours, at least in some cases (Crompton, 2010; Lehner et al., 2011; Millock and Nauges, 2010). The study examined respondents’ reported level of concern for the environment through one question on the CONSENSUS Lifestyle Survey instrument. Respondents were asked to answer this question using a four-point Likert-like scales that ranged from ‘very concerned’ to ‘not at all concerned’.

High levels of reported environmental concern emerged across the entire sample, with 86% of respondents (n=1,289) stating that they were either ‘very concerned’ or ‘somewhat concerned’ about environmental issues (see Figure 5.4).

41 The author is cautious of these high levels of reported concern due to social desirability, which may have resulted due to the presence of the researcher during data collection. This is a key challenge for studying environmental actions (see Chapter Four).
Similar levels of environmental concern were recorded across all age cohorts, with slightly higher levels of concern noted amongst respondents in the 50-64 age category and the 65-79 age group (both 88% respectively), compared to respondents in the 18-33 age category (83%), the 34-49 age category (85.6%) and the 80+ age category (81%). More female respondents (27%, n=240) reported being ‘very concerned’ in comparison to male respondents (17%, n=108).

Levels of environmental concern were also slightly higher among respondents who had attained third level education (89%), in comparison to respondents who had completed their education at the primary level (82%) or secondary level (83%).

One useful method to measure an individual’s personal commitment is to ask what are commonly known as willingness to pay statements. The limitations of such questions include the reinforcement of the belief that environmental protection requires financial penalties. These questions do not permit respondents the opportunity...
discussed, professed willingness to pay (WTP) higher prices for environmentally friendly products and services tends to coincide with increased environmental concern (Loureiro and Hine, 2002; Motherway et al., 2003).

Four questions were asked in the survey to gauge respondents’ level of willingness to carry out certain actions in order to protect the environment. The first question explored respondents’ willingness to pay higher prices for goods and services in order to protect the environment. The second item examined respondents’ willingness to support higher taxes in order to protect the environment. The third question delved into respondents’ willingness to sacrifice personal comforts in the home in order to save energy. Finally, the fourth question on the Lifestyle Survey instrument explored whether respondents would be willing to accept cuts in their standards of living in order to protect the environment. Respondents’ reported willingness to act in terms of higher prices, higher taxes and cuts to standards of living can also provide important clues regarding their actual behaviour, although not necessarily in all cases (Thøgersen, 2005; Jackson 2009; Barr, 2008). These four items are discussed in detail in the following subsections:

5.3.1.2 Willingness to pay higher prices for goods and services

Overall, 43% of respondents said that they would be willing to pay higher prices for goods and services to protect the environment (n=640). However, another 49% of the sample stated that they would not be willing to do so (n=732). The remaining 128 respondents stated that they were unsure. Results of a Chi-square analysis yielded no statistically significant difference between male and female respondents in terms of their willingness to pay higher prices for goods and services for environmental reasons \( \chi^2 (1, N=1,372) = 2.48, p=0.12 \). Note that an alpha level of 0.05 was employed for all statistical tests.
More female respondents (52%, n=413) than male respondents (56%, n=319) stated that they would not be willing to pay higher prices for goods and services. Homeowners (48%) tended to be most likely to state that they would be willing to pay higher prices, compared to 44% of renters and 33% of respondents whose accommodation was provided rent-free. No statistically significant difference was noted at the 0.05 significance level between respondents’ reported willingness to pay higher prices for goods and services and housing tenure.

Results of Chi-square analysis indicated that no statistically significant association existed between respondents in the varying age cohorts in terms of their reported willingness to pay higher prices for goods and services and housing tenure. However, a statistically significant difference was noted between educational attainment and respondents’ willingness to pay higher prices for goods and services at the 0.05 significant level ($\chi^2$ (2, N=1,366) = 21.06, p=0.00). Respondents who stated that they had completed third level education (52%) – compared to those with secondary level education (41%) or those respondents with no formal or solely primary level education to date – were more likely to agree with the statement: ‘I would be willing to pay higher prices for goods and services in order to protect the environment’.

Figure 5.5: Willingness to pay higher prices for goods and services for environmental reasons

I would be willing to pay higher prices for goods and services, if it helped to protect the environment.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Don't Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.4</td>
<td>41.3</td>
<td>8.3</td>
<td>44</td>
<td>4.8</td>
<td>0.3</td>
</tr>
</tbody>
</table>

Response categories

Percentages
Regarding income, Chi-square test results showed a statistically significant difference existed at the 0.01 level \( \chi^2 (3, N=620) =25.68, p=.000 \). Respondents in the lower two income brackets were less likely to report willingness to pay higher prices for goods and services in order to protect the environment (41% and 50% respectively), compared to respondents in the higher two income brackets (67% and 82% respectively) (see Table 5.7).

Table 5.7: Breakdown of respondents within each income bracket who reported being willing to pay higher prices for goods and services.

<table>
<thead>
<tr>
<th>Income brackets</th>
<th>Percentages</th>
<th>Frequencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; €37,999</td>
<td>41%</td>
<td>102</td>
</tr>
<tr>
<td>€38,000 - €75,999</td>
<td>50%</td>
<td>125</td>
</tr>
<tr>
<td>€76,000 - €113,999</td>
<td>67%</td>
<td>70</td>
</tr>
<tr>
<td>&gt;€114,000+</td>
<td>82%</td>
<td>9</td>
</tr>
</tbody>
</table>

These findings were the same for the Northern Ireland sample \( \chi^2 (3, N=352) =8.04, p=0.045 \). Respondents in the higher income brackets tended to be more likely to report willingness to pay higher prices for goods and services.

Table 5.8: Breakdown of respondents within each income brackets who reported being willing to pay higher prices for goods and services.

<table>
<thead>
<tr>
<th>Income brackets</th>
<th>Percentages</th>
<th>Frequencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; £26,392</td>
<td>32%</td>
<td>40</td>
</tr>
<tr>
<td>£26,393 - £52,785</td>
<td>42%</td>
<td>63</td>
</tr>
<tr>
<td>£52,786 - £79,178</td>
<td>42%</td>
<td>27</td>
</tr>
<tr>
<td>&gt;£79,179+</td>
<td>69%</td>
<td>9</td>
</tr>
</tbody>
</table>

43 The income categories were regrouped into four categories to avoid violating Chi-square assumptions.
5.3.1.3 Willingness to support higher taxes in order to protect the environment

Almost two thirds of respondents (62%) stated that they disagreed with the statement: ‘I would be willing to support higher taxes in order to protect the environment’, compared to 31% who agreed. More female respondents (36%, n=293) than male respondents (31%, n=178) stated that they would be willing to support higher taxes in order to protect the environment. This gender difference was found to be statistically significant at the 0.05 level ($\chi^2 (1, N=1,401) = 4.26$, $p=0.039$).

Results of Chi-square analysis indicated that a statistically significant association existed between respondents in the varying educational groupings$^{44}$ and their reported willingness to support higher taxes ($\chi^2 (2, N=1,395) = 10.80$, $p=0.005$) (see Table 5.9). No statistically significant association existed between respondents in varying employment groupings (i.e. employed, unemployed, student, retired, other) and their reported willingness to support higher taxes. Table 5.9 below provides an overview of respondents within the different education categories who stated that they would be willing to support higher taxes in order to protect the environment.

<table>
<thead>
<tr>
<th>Educational groupings</th>
<th>Percentages</th>
<th>Frequencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>No formal Education / Primary Level Education</td>
<td>26%</td>
<td>16</td>
</tr>
<tr>
<td>Secondary Level Education</td>
<td>30%</td>
<td>171</td>
</tr>
<tr>
<td>Third Level Education</td>
<td>38%</td>
<td>284</td>
</tr>
</tbody>
</table>

44 The variables were regrouped prior to Chi-square analysis, hence the 2 degrees of freedom.
No statistically significant difference was found across the different age groups in terms of their reported willingness to support higher taxes (p=0.309). However, results of Chi-square analysis indicated a statistically significant association existed between respondents in the varying income groupings in the Republic of Ireland and their willingness to support higher taxes \(\chi^2 (3, N=640) = 9.214, p=0.027\) (see Table 5.10).

Table 5.10: Respondents within the varying income groupings in the ROI sample (Euro), who were willing to support higher taxes.

<table>
<thead>
<tr>
<th>Income brackets</th>
<th>Percentages</th>
<th>Frequencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; €37,999</td>
<td>30%</td>
<td>76</td>
</tr>
<tr>
<td>€38,000 - €75,999</td>
<td>34%</td>
<td>88</td>
</tr>
<tr>
<td>€76,000 - €113,999</td>
<td>36%</td>
<td>39</td>
</tr>
<tr>
<td>&gt;€114,000+</td>
<td>67%</td>
<td>10</td>
</tr>
</tbody>
</table>

In the Northern Ireland sample (n=500), respondents in the £26,393 - £52,785 income brackets and in the £52,786 - £79,178 income brackets expressed greatest agreement with the statement to support higher taxes in order to protect the environment. Respondents in the highest (Pounds Sterling) income bracket (>£79,179+) were the least willing of all the income groups in the Northern Ireland sample to support higher taxes. This is in contrast to respondents in the highest income grouping in the Republic of Ireland sample, who expressed greatest agreement for supporting higher taxes.

However, unlike the Republic of Ireland sample, no statistically significant difference was noted at the 0.05 significance level between respondents in the varying Pounds Sterling income categories and their agreement with the statement to support higher taxes \(\chi^2 (3, N=366) = 6.05, p=.109\). Table 5.11 shows respondents within the varying income groupings in the NI sample (Pounds Sterling) who were willing to support higher taxes.
Table 5.11: Respondents within the varying income groupings in the NI sample (Sterling) who were willing to support higher taxes

<table>
<thead>
<tr>
<th>Income brackets</th>
<th>Percentages</th>
<th>Frequencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; £26,392</td>
<td>26%</td>
<td>34</td>
</tr>
<tr>
<td>£26,393 - £52,785</td>
<td>37%</td>
<td>57</td>
</tr>
<tr>
<td>£52,786 - £79,178</td>
<td>41%</td>
<td>29</td>
</tr>
<tr>
<td>&gt;£79,179+</td>
<td>25%</td>
<td>3</td>
</tr>
</tbody>
</table>

5.3.1.4 Willingness to sacrifice some personal comforts in the home in order to save energy

The majority of respondents (70%, n=1,038) stated that they agreed with the statement: ‘I would be willing to sacrifice some personal comforts in the home in order to save energy’, compared to 17% who disagreed (n=251).

Although more female respondents (628, 82%) compared to male respondents (410, 78%), concurred with the statement ‘I would be willing to sacrifice some personal comforts in the home in order to save energy’, the results of a Chi-square analysis showed that this difference was not statistically significant at the 0.05 level (χ²=(1, N=1,289) =2.94, p=0.087).

Likewise, no statistically significant difference was noted at the 0.05 significance level in terms of respondents with different housing tenure statuses and their willingness to sacrifice personal comforts to save energy (χ² (3, N=1,497)=6.96, p=.073). Furthermore, no statistically significant difference was found between respondents in the different education groupings and occupations and their willingness to sacrifice personal comforts to save energy.

A breakdown of respondents’ based on their willingness to sacrifice personal comforts to save energy can be seen in Table 5.12 below.
Table 5.12: Respondents’ willingness to sacrifice personal comforts to save energy.

**Statement:** ‘I would be willing to sacrifice some personal comforts in the home in order to save energy’

<table>
<thead>
<tr>
<th>Response</th>
<th>Percent</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>2%</td>
<td>25</td>
</tr>
<tr>
<td>Agree</td>
<td>68%</td>
<td>1,013</td>
</tr>
<tr>
<td>Neither Agree nor Disagree</td>
<td>14%</td>
<td>205</td>
</tr>
<tr>
<td>Disagree</td>
<td>16%</td>
<td>238</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>1%</td>
<td>13</td>
</tr>
<tr>
<td>Don’t Know</td>
<td>0%</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100%</td>
<td>1,497</td>
</tr>
</tbody>
</table>

5.3.1.5 *Willingness to accept cuts to standards of living, to protect the environment*

Results indicated that 49% of this sample (n=730) stated that they would be willing to accept cuts in their standards of living, in order to protect the environment. A further 584 respondents (39%) stated that they would not be willing to accept cuts in their standards of living, in order to protect the environment. A further 12% of respondents neither agreed nor disagreed with this statement.

More women (48%) than men (44%) were reportedly willing to accept cuts in their standards of living. Results of a Chi-square analysis indicated that a statistically significant difference existed between male and female respondents in terms of their willingness to accept cuts in their standards of living \(\chi^2 (1, N=1,314) =12.747, p=0.00\).
A statistically significant association was also found between respondents’ age and their willingness to accept cuts in their standards of living ($\chi^2 (2, N=1,274) =7.59, p=0.023$). Respondents in the older age cohorts (i.e. >41 years of age) were more willing to accept cuts in their standards of living than their younger counterparts (<40 years of age) (see Table 5.13).

### Table 5.13: Breakdown of respondents within each age group who were willing to accept cuts in standard of living.

<table>
<thead>
<tr>
<th>Age cohorts</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-40 years of age</td>
<td>51%</td>
</tr>
<tr>
<td>41-65 years of age</td>
<td>59%</td>
</tr>
<tr>
<td>66+ years of age</td>
<td>57%</td>
</tr>
</tbody>
</table>

No statistically significant difference existed between respondents’ education and their reported willingness to accept reductions in their current living standards ($p=0.074$). A statistically significant association existed between respondents in the different housing tenure groupings and their reported willingness to accept cuts in living standards ($\chi^2= (3, N=1,310) =8.84, p=.032$).

More homeowners (57%) reported being willing to accept cuts in their standards of living, in comparison to respondents whose home was rented (52%) or respondents whose accommodation was provided rent free (37%).

### Table 5.14: Breakdown of respondents in each housing tenure grouping, who were willing to accept cuts in their living standards in order to protect the environment.

<table>
<thead>
<tr>
<th>Housing Tenure</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owners</td>
<td>57%</td>
</tr>
<tr>
<td>Renters</td>
<td>52%</td>
</tr>
<tr>
<td>Rent-free</td>
<td>37%</td>
</tr>
<tr>
<td>Other</td>
<td>60%</td>
</tr>
</tbody>
</table>
Not surprisingly, respondents in the lowest income brackets were the least likely group to state their willingness to accept cuts in their standards of living in order to protect the environment. Respondents in the highest income bracket were the most likely to report being willing to accept cuts in their standards of living (77%) (see Table 5.14). However, results of a Chi-square analysis indicated that these differences were not statistically significant at the 0.05 significance level ($\chi^2 (3, N=597) = 6.77, p=0.8$). See Table 5.15 below for a breakdown of respondents within each income group (Euro) who were willing to accept cuts in their standards of living.

Table 5.15: Breakdown of respondents within each income group who were willing to accept cuts in their standards of living (ROI).

<table>
<thead>
<tr>
<th>Income brackets</th>
<th>Percentages</th>
<th>Frequencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; €37,999</td>
<td>54%</td>
<td>128</td>
</tr>
<tr>
<td>€38000 - €75,999</td>
<td>59%</td>
<td>138</td>
</tr>
<tr>
<td>€76,000 - €113,999</td>
<td>66%</td>
<td>72</td>
</tr>
<tr>
<td>&gt;€114,000+</td>
<td>77%</td>
<td>10</td>
</tr>
</tbody>
</table>

These findings were found to be the same for the Northern Ireland sample with respondents in the higher income brackets tended to be more likely to report willingness to accept cuts in their standards of living (see Table 5.14). There were slightly less respondents in the highest income bracket than the second highest income bracket for the Northern Ireland sample. No statistically significant difference was found between the variables ($\chi^2 = (3, N=339) = 4.45, p=0.22$).

See Table 5.16 below for a breakdown of Northern Ireland respondents according to each income group (Pounds Sterling) who were willing to accept cuts in their standards of living.
Table 5.16: Breakdown of respondents within each income group who were willing to accept cuts in their standards of living (NI).

<table>
<thead>
<tr>
<th>Income brackets</th>
<th>Percentages</th>
<th>Frequencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; £26,392</td>
<td>50%</td>
<td>60</td>
</tr>
<tr>
<td>£26,393 - £52,785</td>
<td>52%</td>
<td>75</td>
</tr>
<tr>
<td>£52,786 - £79,178</td>
<td>65%</td>
<td>39</td>
</tr>
<tr>
<td>&gt;£79,179+</td>
<td>62%</td>
<td>8</td>
</tr>
</tbody>
</table>

5.4 Situational Variables

As discussed in detail in Chapter Two, consumption behaviours are also influenced by an individual’s situational context, which itself influenced by structural issues, socio-demographics variables, environmental knowledge and experience. The start of this chapter outlined in detail the socio-demographic profile of this sample and as a result, will not be addressed again under this subsection. Similarly structural variables, which also come under the category of situational variables, are discussed in detail in the following chapter (Chapter Six) and will not be addressed under this section.

Instead, respondents’ environmental knowledge and awareness are explored. This section highlights respondents’ reported levels of awareness towards a number of resource efficient instruments and devices, as well as the respondents’ own perceived levels of information and awareness regarding environmental impact of products they use. Respondents’ awareness levels are cross-tabulated against a number of socio-demographic variables such as gender, educational status and age.
5.4.1 Environmental knowledge, awareness and experience

Research suggests that comprehensive information is required in order for individuals to make informed decisions about consumption (Jackson, 2005). However, this view tends to completely ignore the emotional aspects of consumption. The assumption is that once individuals become aware of an environmental problem, they will utilise this information to make more sustainable decisions regarding their environmental behaviour decisions.

In terms of reported levels of environmental awareness, 59% of respondents reported that they felt well-informed about the environmental impacts of products they used. Slightly more men (68%, n=377) than women (62%, n=506), felt that they were well informed about the environmental impact of the products. A statistically significant difference was noted between the genders ($\chi^2 (1, N=1,364) = 4.81, p=0.28$).

A statistically significant association was also found between respondents’ education level and their agreement with the statement that they felt well informed about the environmental impacts of products that they used ($\chi^2 (3, N=1,362) = 10.71, p=0.013$). Respondents who attained third level education (68%) were more likely to report being well informed, compared to those with secondary level education (60%) and primary level education (61%).

Chi-square analysis revealed that a statistically significant difference existed between respondents’ in the different age cohorts and their agreement with the statement: ‘I feel well-informed about the environmental impact of the products I use’ ($\chi^2 (2, N=1,330) = 5.941, p=0.051$). Respondents in the older age cohorts (i.e. >41 years of age) were more likely to agree that they were well-informed compared to their younger counterparts (<40 years of age) (see Table 5.17).
Table 5.17: Breakdown of respondents within each age group, who were well informed about the environmental impacts of products that they used.

<table>
<thead>
<tr>
<th>Age cohorts</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-40 years of age</td>
<td>63%</td>
</tr>
<tr>
<td>41-65 years of age</td>
<td>64%</td>
</tr>
<tr>
<td>66+ years of age</td>
<td>74%</td>
</tr>
</tbody>
</table>

In terms of reported levels of environmental awareness, Ireland appears to be in line with many other European countries, with 59% of the respondents in this study stating that they felt well informed of the environmental impacts of products in comparison to 55% of respondents in a recent Eurobarometer Study (2009). These results indicate progress has been made since previous research was conducted in Ireland in 2000 (see Drury, 2000), which indicated that over 75% of respondents reported that they did not feel well informed about environmental issues.

Figure 5.6 shows the frequency of respondents in relation to their awareness of available grants and devices to boost resource efficiency. The majority of respondents (79%, n=1,190) stated that they were aware of the availability of government grants and subsidies targeted at making their homes more energy efficient. However, further investigation revealed that only 5% of all respondents in this study had actually availed of a grant during the past five years to make their homes more energy efficient (n=71).

The majority of respondents were aware of the existence of ‘low-flow shower heads’ (61%) and ‘household wind turbines’ (60%). Many respondents were not aware of the devices listed. For example almost half of the respondents (48%, n=719) were not aware of energy meters or smart meters. Over one third of the respondents surveyed (38%, n=566), reported that they were unaware of the existence of low-flow showerheads to reduce water usage in the shower. 47% of respondents were unaware of the water-saving devices called water butts (n=710) (see Figure 5.6).
Likewise, almost one third of respondents stated that they were not well informed about the environmental impact of the products they used, a fact that is likely to have numerous implications for environmental policies. Indeed, approximately one fifth of those surveyed (19%) stated that the government should provide people with more information and education about energy efficiency (n=279).

Figure 5.6: Awareness of grants and devices to increase resource efficiency

This ends the section on situational variables that can impact environmental behaviours. The following section (Section 5.5) examines psychological factors that can play a role in influencing environmental actions.
5.5 Psychological Variables

This study explored psychological variables such as perceived self-efficacy, perceptions of environmental responsibility, social norms and social desirability, and intrinsic motivation. These variables are explored in the following subsections.

5.5.1 Self-efficacy beliefs

Self-efficacy, or a person’s perceived behavioural control, refers to the extent to which respondents feel capable of bringing about environmental change through their own behaviour and have control over their consumption actions. As reviewed in the literature, although individuals feel personally responsible for behaving in a certain manner, often they do not think that the scale of global environmental problems can be resolved by their insignificant actions (Burgess et al., 1998; Eden, 1993). Research shows that people are often unaware of or deny the impact that social support has on their own behaviour (Nolan, Schultz, Cialdini, Goldstein, & Griskevicius, 2008).

Lifestyle Survey results indicated high levels of self-efficacy, with 82% of the sample (n=1,129) stating that their personal behaviour could make a difference in the environment (see Table 5.18 for details). More women (85%) in comparison to men (77%) believed that their personal behaviour could make a difference. A greater number of respondents, who had completed third level education (84%), in comparison to respondents who had finished their education at either primary level (76%) or secondary level (80%), believed that their personal behaviour could make a difference in the environment.

45 This measure was tested using two items on the survey: ‘My own personal behaviour can bring about positive environmental change’ and ‘I can change my behaviour quite easily if I wanted to’. These two items did not form a reliable scale (α <.40) when combined. Hence, based on face validity, the latter statement was used as a single item measure of perceived behavioural control, with a lower score indicating higher degree of self-efficacy.
Table 5.18: Level of agreement with statement: 'I believe my own personal behaviour can bring about positive environmental change'

<table>
<thead>
<tr>
<th>Agreement Level</th>
<th>Percent</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>21</td>
<td>317</td>
</tr>
<tr>
<td>Agree</td>
<td>61</td>
<td>912</td>
</tr>
<tr>
<td>Neither Agree nor Disagree</td>
<td>7</td>
<td>107</td>
</tr>
<tr>
<td>Disagree</td>
<td>10</td>
<td>154</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>0.5</td>
<td>6</td>
</tr>
<tr>
<td>Don't Know</td>
<td>0.5</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100.0</strong></td>
<td><strong>1500</strong></td>
</tr>
</tbody>
</table>

5.5.2 Environmental responsibility

Notions of self-efficacy intrinsically link to issues of environmental responsibility and trust (Vining and Ebreo, 1992; Dobson, 2006). Research emerging on individual responsibility finds that individuals who feel a personal responsibility for the environment may be more likely to act in a pro-environmental manner (see Chapter Two).

When asked who they thought was most responsible for protecting the environment, 32% of respondents (n=483) felt that governmental bodies and organisations, communities, businesses and individuals alike were all responsible for protecting the environment. The second most common response was that governmental bodies and organisations should be most responsible for protecting the environment (n=383, 26%). There was an expectation that the government should do more to tackle sustainable consumption. Just over one fifth of respondents (n=315, 21%) stated that individuals themselves were most responsible. The hypothesis that individuals who feel personally responsible for the environment are more pro-environmental in their actions will be tested in Chapter Six.
Table 5.19: Breakdown of respondents according to who they believed was most responsible for protecting the environment.

<table>
<thead>
<tr>
<th>Who is responsible for protecting the environment?</th>
<th>Percent</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government agencies</td>
<td>26</td>
<td>383</td>
</tr>
<tr>
<td>Businesses &amp; Manufacturers</td>
<td>10</td>
<td>146</td>
</tr>
<tr>
<td>Communities</td>
<td>9</td>
<td>129</td>
</tr>
<tr>
<td>Individuals</td>
<td>21</td>
<td>315</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>31</td>
</tr>
<tr>
<td>All of the above</td>
<td>32</td>
<td>483</td>
</tr>
<tr>
<td>Don't Know</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>1,499</td>
</tr>
</tbody>
</table>

5.5.3 Social norms

As discussed in Chapter Three, subjective norms – or perceived pressure on respondents from important others in their lives to undertake certain behaviour – are important drivers or inhibitors of environmental actions (see Ajzen, 1991). Social and cultural norms of consumption can frequently surpass environmental concerns (Hobson, 2003). A recent OECD report (OECD, 2013) found that social norms and general attitudes towards the environment have a significant and positive relationship with water-saving behaviours.

The CONSENSUS Lifestyle Survey employed one question to measure respondents’ desire for social acceptance: ‘I like people to think of me as being environmentally friendly’. Results revealed that over two thirds of respondents (69%, n=1,028) would like to be seen as being environmentally friendly (Figure 5.7). In contrast, one quarter of respondents (23%) were unsure whether or not they wished to be viewed as environmentally friendly.

46 Based on face validity, this statement was used as a single item measure of ‘norms’, with a higher score indicating that respondents felt less social pressure to be viewed as environmentally friendly.
More female respondents (73%), in comparison to their male counterparts (62%), wished to be viewed as being ‘environmentally friendly’. More respondents in the third level education grouping (73%, n=591), in comparison to those in the secondary level education group (64%, n=394) and the primary education group (58%, n=38), wished to be perceived as ‘environmentally friendly’. In the Republic, respondents in the higher income categories (≥€38,000), in comparison to respondents in the lower income categories (≤€37,999), were more likely to want others to perceive them as being ‘environmentally friendly’. Conversely, in Northern Ireland respondents across all income categories were just as likely to want others to perceive them as ‘environmentally friendly’.

Figure 5.7: Social desirability levels amongst respondents.
5.5.4 Intrinsic motivation

Intrinsic motivation is another key driver for environmental action. Over half of the respondents (58%, n=871) felt that they needed ‘to behave in a more environmentally friendly way’.

More female respondents (61%, n=537), in comparison to their male counterparts (54%, n=334), believed that they needed ‘to behave in a more environmentally friendly way’.

Respondents in the younger age cohorts, in comparison to those in the older age categories, were more likely to feel that they should ‘behave in a more environmentally friendly way’, with 59% in the 18-34 years age group believing they should behave in this way, in comparison to 41% in the 65-79 year group and 38% in the 80 years and older age category.

5.6 Reflections

In summary, a number of positive findings were uncovered including high levels of expressed environmental concern, reported willingness to act and self-efficacy beliefs.

Attitudes towards environmental concern are very high across the entire sample, with 86% of respondents stating that they were concerned about environmental issues. High levels of reported environmental concern were noted across all age cohorts. From a sustainability perspective, these findings are quite positive as studies have found environmental concern to be positively related to pro-environmental behaviour, although relationships tend to be weak (Stern 2000; De Groot and Steg, 2008).

High levels of self-efficacy beliefs were noted, with 82% of respondents believing that their personal behaviour could make a difference to the environment.
Meanwhile, 58% felt that they needed ‘to behave in a more environmentally friendly way’. This is encouraging from a policy perspective to note that the majority of people interviewed were concerned about environmental issues. However, issues related to social desirability and response bias need to be considered (see Chapter Three).

Meanwhile, respondents’ reported willingness to act to protect the environment was not as promising. The majority of respondents were not willing to support higher taxes in order to protect the environment. Almost half of the sample (49%) was not willing to pay higher prices for goods and services in order to protect the environment. These results reflect findings from a recent OECD (2011) report, which noted that the majority of people in all eleven countries surveyed were opposed to paying more taxes or charges in order to address environmental problems.

These findings also echo findings from the 2003 report by Motherway et al. entitled Trends in Irish Environmental Attitudes between 1993 and 2002, which found that respondents were more willing to pay higher prices in order to protect the environment as opposed to paying higher taxes. Motherway et al. (2003) posited that this was a reflection of a general aversion to tax and a preference for respondent choice to control payment through higher prices. This distinction might indicate a tendency for people to respond more positively to questions about remote or abstract behaviour such as unspecified higher prices. In comparison, people appear less likely to respond positively to the more concrete questions of higher taxes. This may also be the case here with this Irish sample, almost a decade later, experiencing a period of economic downturn and austerity measures.

Nevertheless, 43% agreed that they ‘would be willing to pay higher prices for goods and services, if it helped to protect the environment’. The Lifestyle Survey also found that approximately seven out of every ten individuals interviewed were willing to sacrifice personal comforts to save energy (69%). Likewise, another positive finding is that 49% of respondents agreed with the statement: ‘I would be willing to accept cuts in my standards of living, if it helped to protect the environment’. Respondents in the lowest income brackets were the least likely
group to state their willingness to accept cuts in standard of living, however. These findings link with recent calls to refocus sustainable consumption policy messages towards the enhancement of quality of life (Doran, 2007; Hinton and Goodman, 2010).

Such reported willingness could provide a positive incentive for producers to employ less environmentally harmful techniques (Basu et al., 2003). Moreover, recommendations that future government environmental policy should seek to take advantage of the public’s willingness to make non-financial contributions towards environmental improvements have been put forward (OECD, 2011). For example, respondents’ willingness to accept cuts in their standards of living in order to protect environment could be one policy avenue worth addressing further. These recommendations will be discussed in detail in Chapter Nine.

In terms of reported levels of environmental awareness, there has been a marked improvement in Ireland over the past decade, with reported levels of environmental concern and environmental responsibility and awareness quite high across the Lifestyle Survey samples. In terms of reported levels of environmental awareness, Ireland appears to be in line with many other European countries, with 59% of the respondents in this study feeling well-informed about the environmental impacts of products compared to 55% in a recent Eurobarometer Study of European Citizens (2009). These results indicate progress on this matter since previous research was conducted in Ireland over a decade ago (see Drury Research Study, 2000), which indicated that over 75% of respondents did not feel well informed about environmental issues.

Regardless of these positive findings, the environment continues to be a domain in which positive attitudes and/ or awareness do not readily translate into pro-environmental behaviour (Ungar, 1994). Recent research shows that while people may demonstrate concern over an environmental issue, they often do so without taking particular actions to address it (see Larson et al., 2011). Increased levels of environmental concern, willingness and awareness were found in this sample.
The next chapter – Chapter Six – explores (un)sustainable lifestyles in relation to three areas of consumption: water, energy and transport. These areas are identified as key priority areas for the island of Ireland by an OECD report (2009). This will be complemented by a discussion of possible motivations for unsustainable behaviours based on survey findings.
CHAPTER SIX:
REPORTED CONSUMPTION BEHAVIOURS AND UNDERLYING MOTIVATING VARIABLES
6.1 Overview

This chapter summarises baseline trends and patterns in respondents’ reported household consumption behaviours in relation to water, energy and transport consumption; providing further exploratory analysis of Lifestyle Survey data. As already discussed in the literature review in Chapter Two, there is a wide array of variables that can influence behaviour.

Using an adapted version of Barr’s framework of environmental behaviours to structure the results, this chapter explores the potential influence of three broad groups of variables – environmental concern variables, situational characteristics, and psychological factors – on respondents’ water, energy and transport behaviour. To recap, situational characteristics are those that define a given personal situation, including individual demographic factors such as income, education, household size, residence type and ownership. Moreover, environmental knowledge, that is, general knowledge about the state of the environment and an awareness of environmental problems as well as behavioural knowledge of how to implement one or other environmental behaviours form part of a person’s situational characteristics. Structural issues come under the wider heading of situational variables. The second set of factors that has been found to affect environmental behaviour is environmental concern variables, which refer to those underlying concern held by individuals towards the physical environment. The third broad group covers psychological factors.

This chapter is divided into four sections. The following section (6.2) focuses on key patterns in the Lifestyle Survey dataset in relation to water consumption and water conservation actions and general attitudes towards water metering. Section 6.3 explores emerging trends and patterns in relation to transport use, most notably in relation to car use and opportunities for a modal shift. This is then followed by an exploration of energy consumption in Section 6.4. The chapter concludes each consumption sector by identifying key areas that require attention by policymakers, and examines some preliminary sector-specific policy implications for these findings. The chapter concludes with a short reflection on the findings presented (Section 6.5). Overall, this chapter explores how
consumption behaviours and the adoption of (un)sustainable lifestyles by households vary with demographic and socio-economic variables.

6.2 Water consumption

As discussed in Chapter Five, rates of water consumption are increasing rapidly across the globe (UN, 2013). At the national level, with the cost of providing clean drinking water escalating, and the proposed re-introduction of water charges for domestic dwellings looming, water consumption and conservation has become an important issue for policymakers, businesses and consumers in Ireland (Flannery et al., forthcoming). This section addresses the dearth of information pertaining to both expressed attitudes and reported behaviours towards water consumption across the island of Ireland, especially the adoption of water-efficient behaviours and water conservation beliefs.

6.2.1 Attitudes towards water usage and entitlement

High levels of awareness of the need to conserve water were found across the three sample areas (e.g. Dublin, Derry/Londonderry and Galway), with 80% of respondents (n=1,198) in agreement with the statement: ‘There is a need to save water’. More than half of respondents believed that they do not have a right to use as much water and energy as they wish. More women (55.8%), compared to men (52.7%), reported not having the right to use as much water and energy as they wish. A statistically significance difference was noted at the 0.05 significance level for men and women in the sample, and their sense of entitlement to unlimited use of water and energy \( \chi^2 (4) =10.560, \ p=0.032 \).
6.2.2 Reducing Water Usage

Respondents’ water usage behaviours did not reflect these expressed pro-environmental beliefs concerning the need for water conservation and lack of water entitlement. Results of this study found that 40% of respondents (n=597) stated that they ‘do not pay attention to the amount of water they use in their homes’. Indeed, 10% of individuals believed that there was not a need to conserve water.

Many individuals felt that they already conserved as much water as they could in their homes. More than half of the respondents (51%, n=764) agreed with the statement: ‘I already save as much water as I can’. Results indicated that almost two thirds of respondents (63%, n=945) had not ‘cut down on water use in the past month for environmental reasons’.
Over one third of respondents (37%, n=558) felt entitled to use unlimited resources, concurring with the statement: ‘I have the right to use as much water and energy as I wish’. This sense of entitlement appears to be in line with other studies pointing towards a sense of entitlement to use water (Nancarrow, et al., 1996; Lam 1999).

Figure 6.2: Breakdown of respondents based on whether they had reduced their water use in the past month.

6.2.3 Environmental concern variables

Environmental concern appeared to affect respondents’ reported awareness of water consumption, with 89.8% of respondents who stated that they paid attention to the amount of water they used also reporting concern for environmental issues. Here, a statistically significant difference exists between respondents who reported being either ‘concerned’ or ‘very concerned’ about
environmental issues and those who reported not paying attention to the amount of water they used \( \chi^2 (2)=21.79, p=0.000 \).

The relationship between environmental concern and respondents’ reported water conservation behaviours was also investigated. Reported water conservation behaviours were examined by agreement with the statement: ‘I pay attention to the amount of water I use in the home’. Results indicating a weak positive relationship between participants’ level of environmental concern and their reported water conservation behaviours. The greater the level of environmental concern reported the greater the likelihood that the respondent paid attention to the amount of water used. Although the two variables were weakly correlated \( \text{Spearman’s } \rho =0.192, \ p <0.01 \), due to the large nature of the sample in question this finding may be significant.

No relationship was found between respondents’ reported level of environmental concern and their current belief as to whether or not they already conserve as much water as they could in their homes.

### 6.2.4 Situational variables

Women tended to have greater awareness of their water usage compared to male respondents, with 62% of women stating that they paid attention to water use in their homes compared to 49% of men. A statistically significant difference was found to exist between the different genders and their reported awareness of water use \( \chi^2 (1, N=1,497) =26.137, p=0.00 \).

Water conservation behaviour varied across age categories, with respondents in the older age cohorts being more likely to pay attention to the amount of water they used in their homes. For example, 73.5% of respondents in the 66+ year’s age cohort, 63.4% of the 41-65 age category and 44.3% of the 18-40 age cohort stated that they paid attention to the amount of water they used. This difference was found to be statistically significant at the 0.01 significance level \( \chi^2 (4) =68.293, p=0.00 \).
A statistically significant difference was noted in water conservation behaviours between rural- and urban-based respondents ($\chi^2 (2, \ N=1,027) =14.431, \ p=0.001$). A larger number of rural-based respondents (61%, n=456) paid attention to the amount of water they used, compared to their urban counterparts (53%, n=394). At the same time, a greater number of rural dwellers in the sample, compared to urban dwellers, felt that they should be entitled to use as much water and energy as they wished. Finally, a greater number of rural dwellers (53%, n=397), than urban dwellers (49%, n=367), agreeing with the statement: ‘I already save as much water as I can in my home’. These findings are in line with existing research findings that show a greater propensity among rural people to adopt a more utilitarian view of resources and the environment when compared to urban dwellers (e.g. Freudenburg, 2007). Therefore, although a greater number of rural dwellers felt that they should be entitled to use resources as they wish, they also claim to be more efficient with these resources in comparison to their urban counterparts. These issues will be discussed further in Chapter Nine.

A statistically significant association was also noted between various age cohorts and conserving water status ($\chi^2 (4) =66.398, \ p=0.00$). A greater number of respondents in the older age cohorts agreed with the statement: ‘I already save as much water as I can’. 75.5% of respondents in the 66 years of age or older age category, 53.9% of the 41-65 age category and 42.3% of the 18-40 age cohort declared that they currently conserve as much water as possible.

With regard to structural variables and their impact on water consumption, 68% of respondents stated that the reintroduction of a water charge would change their water usage. Respondents in the middle-income cohorts were most likely to agree that water charges would change their water behaviour, as opposed to respondents in the highest and lowest income brackets. Interestingly, no statistically significant difference was found between respondents across the different income cohorts in the Republic of Ireland regarding their (dis)agreement with the question: ‘Would the reintroduction of a water charge change my household’s water behaviour’?
6.2.5 Psychological variables

6.2.5.1 Social Norms

Over one quarter of the respondents (27%, n=410) believed that ‘using less water would be unhygienic’. There was little variance across the genders, with 27% of male respondents and 28% of female respondents stating that ‘using less water would be unhygienic’. Respondents in the younger age categories, in comparison to respondents in the older age cohorts, were more likely to state that ‘using less water would be unhygienic’. Perhaps this finding is reflective of differentiated notions of cleanliness and personal hygiene in previous times (Doyle, 2013; Doyle and Davies, 2014; Shove, 2003). Slightly more people (30%, n=223) living in an urban location, as opposed to those people residing in a rural location (25%, n=187), believed that ‘using less water would be unhygienic’.

6.2.5.2 Entitlement beliefs

Using Spearman’s rho correlation coefficients, it was possible to detect a fair degree of association between participants’ agreement with the statement that they need to save or conserve water in their homes and that they should be entitled to use as much water as they wish {Spearman’s $\rho = -0.421, P<0.01$}. This negative relationship showed that the more a person agreed with the statement that they should save water; the less they agreed with the statement that they should be entitled to use as much water as they wish.

In contrast, a weak positive correlation existed between respondents who paid attention to the amount of water they used in their homes and whether or not individuals felt they already saved as much water as they could in their homes {Spearman’s $\rho =0.291, P<0.01$}. 

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6.2.7 Reflections on water behaviours

This study indicates that a large percentage of respondents do not pay attention to the amount of water they consume in the home. The reintroduction of water charges in 2015 for the Republic of Ireland is likely to raise water awareness. As discussed in Chapter Four, both NI and the ROI are unique in that they are two of the very few regions in Europe without domestic water charges at the current time (Flannery et al., forthcoming). Hence, the reintroduction of water charges may play a role in reducing household water consumption. Indeed, the majority of Lifestyle Survey respondents stated that the reintroduction of a water charge would change their water usage. This is consistent with other research which found that volumetric water charges are a key factor influencing both household water-saving behaviours and adoption of water-efficient devices (OECD, 2013; Grafton et al., 2011).

Research shows that residential water demand is predominantly price elastic (Worthington and Hoffman 2008; Barrett 2004). Ward and White (2012) found that volumetric charges were the most important factor in encouraging respondents to undertake water saving behaviours. The estimated water savings for households facing volumetric water charges as a result of these water saving behaviours was around 40,000 Litres each year, or a quarter of the average household water consumption in the OECD (Ward and White, 2012). Evaluations of the effectiveness of residential metering programmes report reductions in water consumption of between 5 and 15% where the design of metering technologies, feedback systems and customer support are key contributors to varying results (Environment Agency, 2001, 2011; Darby 2009).

However, such charges may not be linked with environmental conservation measures, and instead be conflated with revenue-generating charges for the government, particularly in a period of recession, as is currently the case for Ireland. While fiscal incentives can play a valuable role in initiating behaviour changes, prolonged transformations in consumption behaviour require intrinsic motivation, rather than enforcement from an external force (Jackson, 2005). According to Doyle and Davies (2014), relating national patterns of water
consumption solely to economic models of water charging or to levels of access to water mains would be reductionist, as an array of societal relations, cultural norms, technological and infrastructural histories, and political contexts play a role.

Situational variables such as age, gender, and income influence respondents’ stated attitudes towards the use of water as well as their self-reported water consumption behaviour, including water saving. Environmental concern appears to affect respondents’ reported consumption behaviours in relation to water. In particular, levels of environmental concern appear to influence respondents’ agreement with water awareness and consciousness statements. A statistically significant association was noted between respondents’ degree of environmental concern and their reported awareness of how much water they used. The greater the level of environmental concern, the more likely the respondent was to pay attention to the amount of water used. The survey findings also indicate a link between those respondents expressing concern in relation to environmental issues being more likely to report water conservation behaviour. However, only a weak positive relationship was found to exist between the two, which nevertheless supports previous research findings that show a positive link between pro-environmental attitudes and commitment to water conservation (Nancarrow et al., 1996; Willis et al., 2011).

In terms of psychological variables, a weak relationship existed between participants who felt they should conserve water and whether or not they should be entitled to use as much water as they wish. Likewise, a weak link was noted between respondents who paid attention to the amount of water they used in their homes and if they already conserved water.

These results highlight the complex nature of water consumption behaviour and the myriad of variables that affect it. The following section explores findings on reported transport behaviour across the island of Ireland.
6.3 Reported transport behaviour

As outlined in Chapter Five, transport and the ‘consumption of distance’ represent a key challenge facing sustainability across the island of Ireland (Heisserer, 2014; Rau, 2014). Car and bus travel is now the largest transport-related contributor to CO₂ emissions (OECD, 2011; Hynes, 2014). The current economic downturn is exacerbating further some of the transport-related risks to vulnerable households, including rising motoring costs.

This section summarises the survey data in relation to participants’ transport-related attitudes and behaviours. Findings on choice of travel mode for commuting to work, school or college are examined, as well as results linked to the availability of public transport and respondents’ support for different types of government policies aimed at reducing the environmental impacts of transport systems. These findings point to key areas for future investigations.

6.3.1 Prevalence of car usage

The nationally reported prominence of private car use (CSO, 2011) was also highlighted by the Lifestyle Survey. Of the 68% of respondents (n=1,026) who reported commuting to work, school or college, 71% of individuals (n=732) stated that they usually drove a car for this journey. Another 3% of respondents (n=31) reported commuting as a car passenger, a practice that was found to be more common among women and students and that mirrors previous studies (e.g. OECD, 2013).

Walking represented the second most common mode of transport (9%, n=95). Cycling was the third most popular mode of transport (8%, n=80). Overall, the combined number of respondents who reported using more pro-environmental methods of transportation to reach their place of employment or study was substantially less than the number of individuals who commute by car, with less than one quarter of all respondents (24%) stating that they cycled, walked or used public transport. The results of a Chi-square analysis showed that a statistically significant degree of association existed between the participant’s location (i.e.
rural /urban) and the method of transport they most frequently used to travel to work or college \( \chi^2 (7, N=1,027)=81.142, p=0.00 \).

**Figure 6.3: Breakdown of respondents according to method of transport used to travel to work, school or college.**

Regarding the distance travelled to work, school and college, the most frequent response was ‘less than 10 miles’ (see Figure 6.3). 47% of commuters (n=485) reported covering distances of ‘less than 5 miles’. Another 18% of respondents (n=185) stated that they travelled less than two miles to their place of employment or study, a distance that can be covered relatively easily by cycling or walking.
6.3.2 Situational Variables

6.3.2.1 Socio-demographic variables

Socio-demographic factors influence people’s commuting behaviour, especially regarding mode and distance travelled. Results of this study demonstrate that driving was slightly more common among men (74%) than among women (70%). These results confirm recent research findings that men and women use cars differently, with men commuting significantly more by car than women do (OECD, 2013). Moreover, cycling was marginally more popular among male respondents (8%) in comparison to among female respondents (7%).

Results of Lifestyle Survey also revealed that a greater number of respondents residing in rural locations (82%, \( n=392 \)) reported driving for their commute to work, school or college compared to respondents from urban areas (62%, \( n=340 \)). A Chi-square analysis showed a statistically significant linkage between participants’ location (rural or urban) and the method of transport they most frequently used to travel to work or college \( \chi^2 (1, N=1,500) = 81.14, p=0.000 \).
Lifestyle Survey results also indicated that a greater number of rural dwellers considered the car to be a necessity, than urban dwellers (92% versus 82%). In contrast, 16% of urban dwellers considered the car to be a luxury compared to only 6% of rural dwellers.

Figure 6.5: Breakdown of respondents from rural and urban areas in terms of whether they view a car as a luxury or necessity.

More than twice as many respondents from urban areas (13%, n=69) reported walking to work, school or college, compared to those residing in rural locations (5%, n=26). Respondents living in urban locations (12%, n=65) were also more likely to report cycling as a means of transport than their rural counterparts (3%, n=15). Likewise, more urban residents (9%, n=51) reported travelling by bus or train or LUAS\(^47\) when compared to rural dwellers (5%, n=26) (see Figure 6.6).

A total of 27.8% of urban dwellers reported that there was not public transport available for their commute to work, school or college, as opposed to 43.8% of rural dwellers. This is in line with previous research carried out by the Urban Institute Ireland (2001) that highlighted a lack of public transport (29%), isolation

\(^47\) LUAS is the name of Dublin’s light rail system.
(15%) and distance from facilities (9%) as a key limitation to rural life for people in Ireland.

![Figure 6.6 Breakdown of respondents according to urban and rural locations](image)

The distance respondents had to travel varied significantly depending on whether they lived in an urban or rural area \( \chi^2 = (1, N=1500) = 108.128, p<0.01 \). This is in line with research that finds that individuals who reside in cities and suburbs tend to have better access to public transport and, as a result, drive less than people are from rural areas (OECD, 2013). According to OECD (Ibid), ‘household car use (like car ownership) is heavily determined by residential location and the corresponding availability of alternative modes and destinations that are accessible by those modes’ (p125). In studies from the United States and Europe both car ownership and use were found to be positively influenced by income and household size (see review in OECD, 2011, OECD, 2013).
6.3.2.2 Structural variables

Structural issues relate to services and the built environment and can promote or hinder the uptake of pro-environmental behaviours. Wider governmental policies are one example of wider structural variables.

A lack of public transport services was also clearly visible from the data, with 35% of respondents stating that there was no public transport available for their commute to work, school or college (n=359). Figure 6.7 illustrates the availability of public transport for respondents’ commute to work, school or college. The gap in public transport provision was more pronounced in rural areas (44%, n=208) compared to urban areas (28%, n=151). Rural Ireland (across both NI and ROI sample areas) appeared particularly affected by gaps in public transport provision, with almost half of all rural respondents (43%, n=208) reporting that there was no public transport available to them for their daily commute, compared to 27% of urban dwellers.

Respondents who did not make use of available public transport viewed it as ‘too restrictive’ (42%, n=272), ‘too unreliable’ (11%, n=70) and ‘too expensive’ (7%). Interestingly, the most common response to why people did not use public transport for their commute to work, school or college across the three sample areas was that it was ‘too restrictive’, with 81 respondents in Galway, 114 respondents in County Derry/Londonderry and 77 respondents in Dublin preferring this reason. Another 17% of respondents across all three regions (n=108) stated that they required their car or van ‘for my job’. This suggests that some respondents are potentially locked into unsustainable patterns of mobility due to structural contexts such as their work duties. Likewise, the distance from respondents’ home to work is another potentially barrier, reflecting wider land use and planning issues across the island.
Respondents were also questioned on their willingness to reduce their car use in order to protect the environment. Results indicate that 40.5% of respondents were not willing to ‘reduce their car use’. However, a further 43.6% of respondents interviewed stated that they would be willing to reduce their car usage.

When asked what would encourage a reduction in car journeys, 53% of the sample (n=792) stated ‘improved, more affordable public transport’, 12.4% of respondents (n=18) reported ‘financial incentives to encourage walking and cycling’ and a further 12.1% of respondents (n=181) cited ‘improved bike lanes, footpaths and pedestrian crossings’. There were 1,495 valid responses obtained for the question (Question 18 – see Appendix Two for copy of questionnaire) concerning what might influence people in general to reduce their journeys by car. The graph below (see Figure 6.8) shows the total frequency of responses obtained for the entire sample.
Financial concerns are at the forefront of respondent’s rationale for not reducing their car usage. Financial incentives and reduced public transport costs are cited as being important. Overall, the results of the transport-related Lifestyle Survey questions are broadly in line with other studies, including those that demonstrate a strong link between personal transport decisions and cost (OECD, 2007c) and socio-economic status and modal choice (Rau and Vega, 2012). Also these findings reflect a report by the OECD (2013), which suggests that ‘improved public transport’ and ‘investment in public transport’ would reduce car dependency.
6.3.4 Reflections on transport consumption behaviours

The importance of external structural variables for transport cannot be overestimated. The Lifestyle Survey highlighted the need for adequate infrastructure, services, and the role of financial constraints and the importance of affordability. A prevailing lack of available transport services illustrates how respondents are potentially locked into unsustainable patterns of mobility. In addition, reported distances travelled from home to work clearly reflect land use planning issues. Results suggest that there is broad support for additional government investment in public transportation infrastructure, with respondents most frequently citing ‘improved public transport’ as the motivator which would lead them to reduce their car usage. This is in line with research that links enhanced accessibility to public transport to reductions in car use (Axhausen and Simma, 2004; Dargay and Giuliano, 2006).

Successful transport policy requires an instrumental mix of policy tools at multiple levels with multiple actors. One example of more sustainable transport behaviour include the promotion of cycling or walking as realistic alternatives for short commutes (i.e., less than five kilometres). The uptake of these modes of transport could help reduce the need for cars for commutes over short distances. Firstly, a clear need exists for improved infrastructure to promote increased uptake of these pro-environmental modes of transport. There is also a need to draw on a full range of communications tools to promote these more sustainable transport practices. For example, communication messages may need to emphasise how more sustainable patterns of transport can be economically advantageous for individuals, as well as better for their health and wellbeing. For example, cycling and walking can promote enhanced cardiovascular health.

Hence, this illustrates the need for multi-faceted policy approaches to promote environmental behaviours. This multi-faceted holistic approach to policy remains a significant challenge for sustainable transport policy development.
6.4 Behaviour and attitudes towards energy use and conservation

This section examines differences in behaviour and attitudes towards energy use and conservation across households with varying economic and demographic characteristics, such as gender, age, and education. The section examines individuals’ responses to various types of governmental policies and initiatives targeting energy behaviour in order to protect the environment. The survey also explored respondents’ reported everyday habitual behaviours, as well as a number of occasional ‘once-off’ actions undertaken in the past five years. The author discusses findings on these two different types of reported behaviours in the following chapter, Chapter Seven, in greater detail. The findings are structured separately in this manner to add weight to the importance of exploring the different types of pro-environmental behaviour that exist and explore whether there is varying rationale underpinning each type. As a result, the energy consumption sector (Section 6.4) is relatively shorter than water and transport for this reason.

6.4.1 Inclination to buy energy-efficient appliances

The majority of respondents stated that they would be prepared ‘to buy more energy-efficient appliances’ (91%, n=1,365). Willingness to purchase energy-efficient appliances was consistently high for both male and female respondents (90% of men and 92% of women). Willingness to purchase energy-efficient appliances was also high for respondents across all age cohorts.

Respondents were asked about their willingness to undertake certain actions in order to reduce their energy consumption. As is evident from Figure 6.9, respondents stated high levels of willingness to ‘purchase’ their way out of unsustainable lifestyles. Nine out of ten respondents stated willingness to buy products with less packaging (93%, n=1,394). Approximately nine out of every ten individuals surveyed stated willingness to buy more energy-efficient appliances (91%, n=1,365). Almost three quarters of respondents (73.6%, n=1,099) stated that they would be willing to install insulation or energy meters.
However, when questioned about altering their consumption levels, respondents appeared to be less willing to change. For example, less than half of the respondents surveyed (43.6%, n=652) stated that they would be willing to reduce their car usage. In contrast, 606 respondents (40.5 %) stated that ‘they would not be willing to reduce their car use’. Similarly, willingness to change their lifestyles in terms of sharing or communal appliances was also not very popular, with more than half of the sample (53.8%, n=805) declining to share appliances with neighbours.

As is evident from Figure 6.9, the Lifestyle Survey specifically questioned respondents about activities involving consuming more (e.g., the purchase of energy-efficient appliances and the purchase of less packaged goods), while also covering activities that reduce consumption (e.g., respondents willingness to share items such as appliances as well as reducing their car journeys). The graph
illustrates that higher levels of expressed willingness were noted in this study to undertake certain pro-environmental behaviours such as purchasing energy-efficient appliances; yet less inclination was noted towards changing or reducing actual consumption altogether.

Over half of the respondents (53%, n=789) had not reduced their household energy consumption in the past month for environmental reasons. There was little variation noted between men and women in terms of reducing their energy use, with 46% of female respondents having done so, in comparison to 44% of male respondents. Older respondents tended to be the most active energy reducers, with 61% of the 65-79 age groups reporting that they had reduced their energy use in the past month for environmental reasons, in comparison to 49% of the 50-64 age cohort and 43% of the 34-49 age groups.

Respondents’ willingness to change social norms about individuality and ownership of goods emerged, with over half of the sample (53.8%) stating that they would not be willing to share appliances with neighbours. Changing lifestyles to incorporate sharing or communal appliances was not viewed as popular.

Although literature finds that adopters of ‘green’ electricity tend to be highly influenced by information from friends, family and newspapers rather than top-down government sources (Briceno and Stagl, 2006), this was not found to be the case in this study. 2.6% of respondents stated that they changed to a renewable energy supplier because they were ‘recommended by family and friends’. Instead, money was cited as the primary reason for changing behaviour, with 65% of respondents stating this reason. A vast body of research has been undertaken into the role of material incentives towards influencing pro-environmental activity with certain forms of economic incentives such as taxing and pricing deemed useful in terms of behaviour change (De Young, 1993; Linden and Carlsson-Kanyama, 2003).

However, a review by Guagnano et al (1995) noted that prolonged environmental behaviour change required ‘intrinsic motivation’. This is worrying finding based on the results of this study which found financial motivation a key driving factor.
This is because the removal of economic incentives to carry out certain behaviours may result in a decline in the uptake of the pro-environmental behaviour in question.

**6.5 Reflections on consumption behaviours and drivers**

This chapter provided an overview of baseline data of expressed attitudes and reported behaviours in the areas of water, transport and energy consumption, and unpacked some variables that contributed to these attitudes and actions. Adopting a framework approach to structure the analysis of possible drivers of consumption attitudes and behaviours proved useful in this context. Variables that can influence consumption behaviours can be categorised under the following headings: situational variables, environmental concern and psychological factors.

In terms of water consumption behaviours, situational variables appear to play a key role. One type of situational variables is related to socio-demographic factors such as age, gender, and education. More specifically, the analysis indicates that socio-demographics are an important factor affecting both household water-saving behaviours and adoption of water-saving actions. Among the demographic and socio-economic factors, there was a distinct gender divide in reported awareness of water use, with women being more conscious of their water use behaviour. These results echo the findings of authors such as Corral–Verdugo et al., (2003, 2008) and Gilg and Barr (2006). Women tended to have greater awareness of their water usage than men did, with 62% of women stating that they paid attention to water use in their homes as opposed to 49% of men. Such findings are in keeping with CAP-NET (2006, p13) which reports that women and men tend to reduce environmental sustainability in ‘different proportions’ with women often having higher stakes in productive uses of household water globally. Greater awareness of water by one gender may be because of this reported bias in terms of global domestic labour division. Water conservation behaviour also varied across age categories, with respondents in the older age cohorts being more likely to pay attention to the amount of water they used in their homes.
Analysis of Lifestyle Survey data also indicated that facing a volumetric water charge is an important factor affecting water-saving behaviours. Over two thirds of respondents (68%) stated that the reintroduction of a water charge would change their water consumption behaviour. This is in line with Grafton et al. (2011) who used data from ten OECD countries to show that volumetric water charges and higher water prices increase the probability of adopting water-saving behaviours (cited in OECD 2013). Numerous literature focuses on the effects of water pricing, and the positive effect that this has on water conservation (for a review, see OECD, 2011). These findings also concur with research conducted in Sweden and the US, by Linden and Carlsson-Kanyama (2003) and Price (2001) respectively, which revealed that economic measures can be highly effective in shifting people towards pro-environmental behaviour. The possible social implications of introducing economic measures cannot be ignored and will be discussed in Chapter Nine.

Respondents’ commuting patterns also appeared to be influenced by socio-economic characteristics; with driving being slightly more common among men (74%) than among women (70%). These results echo recent research that shows significant gender differences in travel behaviour (see OECD, 2013). Transport consumption behaviour is constantly shaped by contextual and structural factors also (Princen et al., 2002). Structural variables such as availability of services and the built environment play a key role, particularly for transport behaviours. Lack of services also goes toward explaining why some respondents appear to be locked into unsustainable transport and mobility patterns. Findings from descriptive analysis suggest that there is broad support for additional government investment in public transportation infrastructure, with respondents most frequently citing ‘improved public transport’ as the motivator which would lead them to reduce their car usage.

Psychological variables also play a key role in influencing consumption behaviours across the three sectors examined in this research. Issues like subjective norms and social influences are important drivers of environmental actions. For example, social norms related to cleanliness are apparent in the data with over one quarter of the respondents stating that ‘using less water would be unhygienic’. This belief was more apparent in the younger age categories, in
comparison to respondents in the older age cohorts, which is perhaps reflective of changing notions of cleanliness and personal hygiene in society (Davies et al., 2012).

Environmental concern appears to affect respondents’ reported consumption behaviours. In particular, environmental concern appears to influence respondents’ agreement with water awareness and consciousness statements. Although people may demonstrate concern over environmental issues, they often do so without taking particular actions to address it (Larson et al., 2011). Results of the CONSENSUS Lifestyle Survey revealed the persistence of a value-action gap, with relatively poor uptake of sustainable consumption behaviours in the areas of water, energy and transport, despite the expression of high levels of environmental concern over all across both genders and all age categories. Environmental concern is not the sole motivating factors that cause people to engage in certain consumption behaviours. The links between attitudes, demographic factors, and environmental behaviours are complex.

In order to gain greater in-depth understanding of pro-environmental behaviours, the following chapter explores two different categories of behaviour (occasional and habitual actions) in greater detail with regard to their frequency of undertaking such activities and also their underlying rationale.
CHAPTER SEVEN:
OCCASIONAL AND HABITUAL PRO-
ENVIRONMENTAL BEHAVIOURS
7.1 Introduction

Following on from the establishment of baseline trends and emerging patterns in terms of reported water, transport and energy consumption activities in the previous chapter, this chapter explores the existence and undertaking of two different types of pro-environmental behaviours. Respondents’ behaviours are explored under these two categories: occasional ‘one-shot’ and habitual behaviours (see Chapter Two for a review of these types of behaviours).

The chapter dismantles the notion of pro-environmental behaviour as a single entity, and sets the scene for further dissecting of these two behaviour categories in Chapter Eight. Results presented in this chapter highlight a number of occasional behaviours undertaken by respondents during the past five years prior to being surveyed. The chapter subsequently explores habitual behaviours (such as reducing water use or reducing energy use) that respondents have practiced in the month prior to their involvement in the study are explored (see Section 7.3).

Overall, this chapter focuses on the propensity of respondents to engage in both occasional and habitual pro-environmental behaviours, such as reducing water and energy use in the home, or purchasing reusable products and ‘green’ technology. Moreover, it also explores why respondents decided to adopt large-scale occasional behaviours such as home improvements to reduce energy consumption.

7.2 Occasional behaviours

This category includes behaviours that require conscious thought and planning on behalf of the individual, and may require extra financial resources on behalf of the individual to implement. Examples of occasional ‘one-shot’ actions include structural changes to an individual’s home such as the installation of insulation.

All respondents in the study were asked whether they had carried out a number of occasional behaviours in the past five years prior to being surveyed. As is evident from Figure 7.1, respondents were most likely to have purchased an energy-efficient appliance, with 46% of the total sample (n=689) stating that they had
done so in the past five years. Results indicated that there was a sizeable willingness on behalf of respondents to use energy-efficient technology. For example, 91% of respondents surveyed stated their willingness to buy more energy-efficient appliances (n=1,365). Approximately half (46% of the sample) of the respondents reported that they had actually purchased an energy-efficient appliance in the past five years. Hence, respondents’ expressed willingness did not necessarily translate into action. Over half of respondents stated that they had not reduced their household energy consumption in the past month for environmental reasons. As discussed in greater detail (see Chapter Two), these findings may indicate the faith or belief of respondents in technological innovation as a means to move society and behaviour towards sustainable consumption as opposed to actual individual or lifestyle modification. However, results of this study indicate that the actual purchasing of promising technology was not as popular as anticipated based on technological optimism beliefs discussed previously. This closely resembles evidence of the many contradictions that surround sustainable consumption discussed in Chapter One, most notably the discrepancy between expressed views and actual practices.

Figure 7.1: Types of occasional behaviours most commonly practiced.
Results indicate that the least popular behaviour involved ‘purchasing an energy-efficient car’, with approximately 6% of the sample reported doing so during the past five years. In comparison to purchasing energy-efficient appliances, this form of ‘green’ purchasing was not as popular with respondents in this study. However, one must recognise that the turnover of cars is undoubtedly less regular than purchase of smaller household items and appliances such as a kettle or toaster due to durability. The likelihood of respondents purchasing a car in the past five years is probably less likely in comparison to the same respondents purchasing a kettle or TV in that same period. Hence, this question may not adequately record the purchase of energy-efficient cars because people may not have had to make that decision. In other words, the answers to this question should not be interpreted as people not taking energy efficiency into account but rather as people not making certain purchasing decisions that involve significant expenditure.

The actual frequency of these listed occasional behaviours is evident from Figure 7.2. The modal response from respondents surveyed was that they had not undertaken any of these four ‘occasional’ behaviours (listed in the Figure 7.1 above) in the past five years (n=582, 38.8% of sample).

![Breakdown of respondents (%) based on their reported undertaking of occasional 'one-shot' behaviours](image)

Figure 7.2: Breakdown of respondents according to the number of occasional behaviours they undertook.
A total of 512 respondents (34% of the sample) stated that they had undertaken just one of these occasional behaviours listed on the survey instrument in the past five years prior to being surveyed. Of these 512 respondents, the most popular occasional behaviour carried out was ‘purchasing an energy-efficient appliance’, with 62.9% of respondents reporting this behaviour (n=322). See Figure 7.3 for overview of most commonly carried out occasional behaviour.

Another 20.5% of the sample (n=307) stated that they had undertaken two of the behaviours listed. Only 6% of the sample, (89 respondents) reported undertaking three of these listed ‘occasional’ behaviours in the past five years. Finally, a mere 1% (n=10) had carried out all four of these listed behaviours. Considering the additional effort required to undertake these occasional behaviours – as opposed to habitual behaviours – it is perhaps little surprising that very few respondents had carried out all four listed actions. This breakdown of respondents, according to the number of occasional behaviours that they reported undertaking in the past five years, is illustrated further in terms of percentages in Figure 7.3 above.
In addition to frequency, the research explored in detail the rationale provided by respondents for why they undertook these occasional behaviours. In order to explore underlying drivers or motivating factors, each of the four listed survey questions provided respondents with a set of closed responses. The response options included a category for ‘environmental reasons’, ‘financial reasons’, ‘availed of a grant’, ‘recommended by peers’ (examples previously identified in the literature review include neighbours or friends recommended it) as well as ‘a mix of environmental reasons’. The last option was added after piloting stages, due to the excessive demand for such an option when author was in the field. For the purposes of this analysis, respondents who stated that they had availed of a grant as the rationale underpinning their behaviour were merged with those respondents who stated financial reasons as both responses reflected economic motives. To counter potential limitations regarding the use of close-ended questions, each response list contained an ‘other’ category to give respondents the opportunity to specify what exactly their motives were if not listed.

When respondents were asked for the primary reason for why they had ‘installed insulation in their homes over the past five years, the modal response stated was a combination of ‘financial and environmental reasons’ (43%, n=148), followed by ‘financial reasons’ (34%, n=117). A total of 5% (n=16) of those individuals who stated that they had installed insulation in their homes in the past five years reported doing so specifically for environmental reasons. Another 17% of individuals (n=59) stated ‘other reasons’ for installing insulation. Figure 7.4 below illustrates the reported rationale for undertaking this behaviour.
Similarly ‘a mix of financial and environmental reasons’ was the most popular rationale for why respondents purchased an energy-efficient appliance (see Figure 7.5). Almost half of the respondents (49%, n=334) who stated that they had undertaken this behaviour (out of 683 valid responses obtained for this question) provided this as the rationale. Solely ‘financial reasons’ were cited as the second most common reason for purchasing an energy-efficient appliance, with 32% of those respondents (n=217) stating this rationale. Of the individuals who purchased an energy-efficient appliance (n=689 or 46% of total sample), 16% (n=107) stated that they did so solely for ‘environmental reasons’.

Figure 7.4: Respondents’ stated reasons for installing insulation in their homes
When respondents were asked for the primary reason for why they had ‘switched to a renewable energy supplier’ in the past five years, the modal response stated was ‘financial reasons’ (65%, n=202). A mix of ‘financial and environmental’ reasons came second, followed by 19% who said that they had carried out this activity for environmental reasons. 10% (n=30) of individuals who reported to have switched to a renewable energy supplier (n=310 or 21% of the total sample) stated that they did so solely for environmental reasons. See Figure 7.6 below for overview of rationale provided for changing to a renewable energy supplier.

Respondents in the 34-49 age group (26%, n=137) were most likely to have changed to a renewable energy supplier during the past five years. This age grouping tends to represent young homeowners or individuals with young children. Although evidence finds that adopters of ‘green’ electricity tend to be highly influenced by information from friends, family and newspapers rather than top-down government sources (Briceno and Stagl, 2006), in this instance financial reasons appeared to be the primary factor.
When asked for the primary reason for purchasing an energy-efficient car over the past five years’, equal numbers of respondents who engaged in this activity – 5.9% of the total sample – stated financial reasons (40%) or a combination of financial and environmental reasons (40%). A total of 12% (n=10) of individuals who reported having purchased an energy-efficient car in the past five years did so solely for environmental reasons. Figure 7.7 illustrates respondents’ rationale for purchasing an energy-efficient car.
A number of factors appeared to play a dominant role in relation to respondents’ decision-making process for undertaking occasional actions. Environmental concerns were ranked in third place for all listed behaviours, except in the case of installing insulation where it came in fourth place after a combination of financial and environmental, financial and other motivations. Financial concerns played a significant role in terms of respondents’ decision to change their energy supplier to a renewable energy-based alternative, with the majority of respondents stating financial or economic concerns as their main motivating factor. The more common response tended to be ‘a combination of environmental and financial rationale’, which may reflect a social desirability bias due to the presence of interviewer.

Figure 7.8 compares reported reasons across the four listed occasional behaviours. As is evident from the graph, ‘a mix of environmental and financial reasons’ tended to be the dominant response for why respondents undertook certain occasional behaviours.

48 Note that in above analysis, respondents who availed of a grant to undertake the behaviour were included under the heading of financial reasons.
Figure 7.8: Rationales provided for undertaking occasional consumption behaviours.
Putting these results into a wider context is absolutely essential. In Ireland, over the past decade in particular, specific areas of consumption have been targeted by the introduction of economic instruments (for example, taxes, levies and grants) and communicative instruments (for example, the Power of One campaign to save energy), many of which aimed at individuals and households (Pape et al., 2011). Therefore, while the number of respondents who reported installing insulation (23%) could be viewed as encouraging, it could also be seen as disappointing in light of the current initiatives in place to promote this behaviour. Indeed, the Lifestyle Survey found that less than 5% of respondents had availed of grants or subsidies in the previous five years. Based on these results, current policy and practice could be perceived as not making a significant impact in terms of meeting EU targets of 20% efficiency improvement, 20% renewable energy penetration and 20% greenhouse-gas emissions reduction by 2020 (EC, 2008).

Likewise, 21% of the total sample reported changing to a renewable energy supplier in the past five years prior to being surveyed, with 9% doing so for environmental reasons. This figure is quite high when compared to other EU countries. For example, Germany’s share of electricity produced from renewable energy was 25 percent in the first half of 2012. Germany has increased its share of electricity produced from renewable energy up from 6.3 percent in 2000. This increase is set against the backdrop of German consumers paying higher prices to avail of renewable energy suppliers (German Association of Energy and Water Industries (BDEW), 2013). In Ireland, an electricity company called Airtricity (previously known as Eirtricity) provided discounts to entice consumers to join their network that is powered by wind energy. However, this phase of incentivisation has now largely ended. This makes the Irish figures seem less noteworthy, compared to German figures for example, as Irish respondents stood to gain small financial incentives to use renewable energy supplier.

As discussed in Chapter Four, the recent economic downturn is likely to have influenced individuals’ decisions to buy cheaper, more affordable vehicles, appliances and electricity. Hence, the purchasing or consideration of a more energy-efficient car or appliance for example may be largely due to practical contextual variables, as opposed to concern for the environment and lower ecological footprints. These findings merit further investigation in the future.
7.3 Habitual or everyday behaviours

This section provides an overview of reported habitual behaviours undertaken by respondents in the month prior to surveying. As discussed in the literature (see Gardner and Stern 2002; Barr et al, 2005; Delft: 2012), habitual actions are recurring actions that are initially under conscious control initially but subsequently become taken-for-granted and automated.

Within the Lifestyle Survey, respondents were asked whether they had engaged in six types of short-term habitual pro-environmental behaviour. Figure 7.8 shows which habitual behaviours respondents most commonly undertook.

Table 7.1: Frequency of habitual behaviours undertaken by respondents

<table>
<thead>
<tr>
<th>Pro-Environmental Habitual Activity</th>
<th>Percent</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bought reusable products instead of disposable ones</td>
<td>52</td>
<td>781</td>
</tr>
<tr>
<td>Reduced energy use</td>
<td>45</td>
<td>674</td>
</tr>
<tr>
<td>Reduced water use</td>
<td>35</td>
<td>521</td>
</tr>
<tr>
<td>Shopped or paid a bill online</td>
<td>31</td>
<td>458</td>
</tr>
<tr>
<td>Avoided products with excess packaging</td>
<td>28</td>
<td>425</td>
</tr>
<tr>
<td>Repaired items instead of purchasing new ones</td>
<td>20</td>
<td>302</td>
</tr>
</tbody>
</table>

The modal number of habitual behaviours carried during the month prior to being surveyed was two behaviours (328 participants or 22% of total sample). A further 305 respondents (20%) stated that they had carried out one of these listed habitual behaviours. Another 19.8% of the sample (n=297) stated that they had undertaken half of the behaviours (i.e. three actions). Only 26 respondents (2%) had actually carried out all six behaviours in the past month. This is quite similar to the minute
percentage of respondents (0.7% of the sample, n=10) who had reported undertaking all four of the occasional behaviours listed over the past five years.

Figure 7.9 captures the number of people who reported carrying out a certain number of pro-environmental habitual actions for environmental reasons, with answers ranging from none to all six.

![Figure 7.9: Number of respondents who reported undertaking habitual behaviours for environmental reasons](image)

Figure 7.9 illustrates that the most commonly undertaken habitual pro-environmental activity by respondents was to purchase reusable products instead of disposable ones. A total of 52% (n=781) out of 1,500 respondents stated that they had carried out this activity during the month prior to being surveyed. The next common activity was to reduce energy use, with 45% (n=674) stating that they had done so in the past month. Reducing water use was the third popular activity, with 35% of the sample (n=521) stating that they had carried out this action in the month prior to surveying.
Within the context of this research, it is important to state once again that environmentally significant actions are frequently undertaken for non-environmental reasons (Whitmarsh, 2009). The above questions applied solely to individuals who carried out pro-environmental habitual actions for environmental reasons. This is to address findings of existing studies by Stern (1992) and Gatersleben et al., (2002), which highlight that individuals tend to carry out low-impact behaviours due to ease of undertaking and convenience as opposed to environmental concern.

![Figure 7.10: Percentage of respondents who undertook certain listed habitual behaviours.](chart)

A degree of variation existed between the different habitual behaviours listed, with certain actions appearing to be more popular than others. For example, a greater number of respondents reported reducing their energy use (45%) as opposed to reducing their water consumption (35%). A total of 28% out of the entire sample (n=425) reported avoiding products with excess packaging in the past month for environmental reasons. Results indicate that from the habitual behaviours listed, repairing items instead of purchasing new ones is the least commonly practiced behaviour, with approximately 20% of the respondents
reportedly undertaking this action in the month prior to the survey. These results are interesting as they confirm recent research findings from the UK that habitual activities that require more commitment on behalf of the respondent were less popular overall with respondents (Barr et al., 2005). This appears to be the case in this study as results showed that respondents were more likely to report purchasing reusable products than repairing products. The latter option to repair an item may require more planning and effort, in terms of finding a store or person to mend the item and then collect the repaired item at a later stage, compared to purchasing a new item.

Although these six behaviours are regular activities in the sense that they classify as ‘do-without-thinking actions’ and they do not they require extra financial resources to implement, the author is cautious qualifying all six actions as ‘habitual behaviour’. A temporal scale comes into play for many of these behaviours, as some of the actions tend to be carried out quite infrequently. For example, repairing an item as opposed to purchasing a new item may not be a common everyday occurrence; with approximately 20% of respondents they had carried out this action in the month prior to being surveyed. Some of the everyday actions also involve occasional actions in that they require purchasing activities such as the purchase of reusable items rather than disposable items. Further profiling of respondents who undertake each type of behaviour will be reported in the following chapter to explore if these activities could be classified under different headings to better depict their characteristics.
7.4 Reflections

This results chapter captured data on respondents’ reported undertaking of two categories of pro-environmental behaviour: occasional and habitual pro-environmental behaviour. The quantitative data collected for this research can provide vital benchmarks against which public attitudes and reported behaviours towards the environment and sustainable consumption can be judged in the future.

In addition, the survey covered a range of occasional and habitual behaviours that participants reported undertaking. This analysis of behaviour according to these two categories permits more in-depth analysis of pro-environmental behaviours. Such a focus aims to dismantle the view that pro-environmental behaviour is comprised of one general type of behaviour. Instead, a focus of two types of behaviour (occasional and habitual actions) challenges this simplistic idea and permits the exploration of different self-reported behaviours with varying impact on the environment. The behaviours under investigation within the CONSENSUS Lifestyle Survey study incorporated activities that have been classified within the literature as behaviours that do not have a high impact on people’s daily lives for example, minor changes to water and energy use practices in the home, as well as behaviours with a potentially higher environmental and financial impact (i.e., installing insulation).

On one level, data obtained from the CONSENSUS Lifestyle Survey on self-reported behaviour may be interpreted as encouraging. More than half of the sample (55%, n=819) stated that they had undertaken either one or two longer-term occasional behaviours. Similarly, 62% of respondents (n=930) reported undertaking between one and three of the pre-defined habitual activities for environmental reasons within the month previous to their participation in the survey.

Results of the CONSENSUS Lifestyle Survey revealed that a greater commitment to pro-environmental action is required on the part of individuals and householders. Over one third of respondents had not undertaken any occasional action, whilst almost one fifth of respondents reported not carrying out any habitual behaviours listed.
This chapter explored why respondents adopted large-scale occasional behaviours such as installing insulation, changing to a renewable energy supplier, and purchasing energy-efficient cars and appliances. Evidence of underlying motivations, as stated by participants, complements this in-depth understanding of the different types of behaviours. Findings show that very few respondents stated solely environmental rationale for their occasional behaviours. Instead ‘a mix of financial and environmental’ rationale emerged as the most significant reason for respondents’ decisions to purchase an energy efficient appliance or car or to install insulation in the home. ‘Financial reasons’ were cited as the popular reason for changing to a renewable energy supplier.

While the material presented in this chapter offers an overview of some of the key findings, a number of issues have emerged which merit further comment as they illustrate some of the key challenges researchers encounter when investigating self-reported consumption behaviours. First, the important role played by financial incentives in motivating behavioural change can be interpreted in a number of ways. These results could be utilised to advocate greater use of environmental levies and taxes to encourage changes to consumption and lifestyle behaviours. On the other hand, there is an inherent danger in over-relying on financial incentives to motivate behavioural change in that the removal of financial incentives may result in consumers reverting back to their original unsustainable behaviour. This emphasises the importance of, and need for, long-term thinking and action to promote lasting and meaningful behaviour change (see Rau and Edmondson, 2013). These issues relating to the need for more permanent intrinsic behaviour change in order to promote a shift towards sustainable consumption will be discussed further in Chapter Nine.

The analysis of the reported behaviour data in this chapter highlights that the most popular environmentally significant behaviours undertaken were those involving the purchase of more green or efficient products. These data could be viewed in a very positive light when thinking about pathways to a more sustainable future. These findings highlight a key irony of sustainable consumption debates, which relates to the interpretation of sustainable consumption as meaning the act of consuming more ‘green’ or energy-efficient products compared to the actual reduction of consumption itself or change in individuals’ lifestyles. The latter
definition of sustainable consumption refers to behaviour change that could potentially reflect an overall greater reduction in environmental impact of a person or household. Few respondents reported attempting to repair an item instead of purchasing a new one or avoiding product with excess packaging.

Given the prevailing capitalist economic structures, purchasing a new product may be a simpler option than pursuing alternatives such as repairing the item or purchasing a second-hand replacement. Thus, buying represents a much easier option than adopting deeper fundamental lifestyle changes such as questioning the need for the item in the first place. As a number of recent European surveys have indicated, while simple measures such as separating waste for recycling are widespread across Europe, deeper changes in consumption patterns such as reducing the amount of waste produced in the first place are not as frequently undertaken (European Commission, 2008). However, perhaps the goal of encouraging less consumption is not in the best interests of these capitalist economies, regardless whether or not such goals benefit the environment.

The next stage of analysis of the CONSENSUS survey dataset involves segmentation analyses to identify a typology of respondents based on both their attitudes and behaviours. This is done to identify population segments with similar commitments to environmental practices and attitudes as the basis for potential future change initiatives. The author believes that a combination of both attitudes and behaviours are important for successful long-term pro-environmental behaviour change to occur. These factors, in conjunction with wider societal and structural variables, are key variables which need addressing for intrinsic meaningful environmental actions.

As discussed in Chapter Three, being able to identify what segment of society a person belongs to in terms of their consumption behaviours and attitudes could aid the development of tailored interventions (DEFRA, 2006). This said there is also ample criticism in the SC literature of segmentation-based policy and change initiatives, partly because their impact remains unclear. Any comprehensive evaluation of current segmentation models utilised in policy arenas appears to be lacking to date in this field. However, the use of this key policy tool cannot be overlooked particularly in the health policy area. Hence, the author utilises a
segmentation approach in the following chapter further advance our understanding of pro-environmental actions. Building on from this chapter, respondents are assigned to different groups based on their attitudes and behaviours. The groups will be constructed using the types of pro-environmental behaviours discussed in this chapter: occasional and habitual behaviours.
CHAPTER EIGHT:

SEGMENTING TOWARDS SUSTAINABILITY
8.1 Introduction

Given the extensive scale and breadth of the CONSENSUS Lifestyle Survey data, it was necessary to utilise analytical strategies that provide clear insights into respondents’ consumption behaviours and that are capable of synthesising the wealth of data available. Constructing a fourfold consumer typology that covered two dimensions – environmental attitudes and reported behaviours – was deemed to be most useful for identifying and further understanding lifestyles based on particular patterns of (un)sustainable consumption. This approach also reflects developments in SC research in the UK that deployed a segmentation model for analysing and influencing consumption behaviour (see DEFRA, 2008).

Initially, a six-item attitudinal scale was constructed to examine respondents’ expressed environmental attitudes. This was then complemented by two behavioural scales, distinguishing between occasional ‘one-shot’ actions and habitual behaviours (see Chapter Three for the construction of these two scales). In light of segmentation literature discussed in Chapter Two, this study cross-tabulates the two newly constructed behaviour indices with the six-item attitudinal indices to construct two separate consumer typologies. The rationale underpinning this categorisation is to examine whether or not empirically verifiable lifestyle groups can be developed, paying particular attention to potential (in) consistencies between expressed environmental attitudes and reported behaviour. All three scales developed for this research were informed by key international research studies that employed scales and thresholds to construct typologies or groupings of respondents based on expressed attitudes and/or reported behaviours (Barr et al., 2005; Martinsson and Lundqvist, 2010; Csutora, 2012).

Two typologies, each with four separate lifestyle groupings of respondents, were identified (see Section 8.2). The formation of eight groupings is described and discussed based on each group’s positioning on these two dimensions (i.e. behaviours and attitudes). The chapter first provides a general overview of socio-demographic profile of respondents in the four categories constructed using the occasional behaviour index (see Section 8.3). These initial four lifestyle groupings are compared to one another to explore similarities and differences. Next the chapter explores the remaining four lifestyle groupings, which were constructed
from the habitual behaviour index (see Section 8.5). Similar to the previous index, these newly formed groupings of respondents are profiled (see Section 8.6) and comparisons are drawn between members of each grouping to explore differences and parallels. Section 8.8 proceeds to compare those individuals who were categorised as ‘green’ in terms of their occasional behaviours to those individuals who were classified as ‘green’ in relation to their habitual actions. Combining both typologies with additional socio-demographic data serves to make visible patterns of association between respondents who classify as ‘green’ in terms of habitual behaviour, and those engaged in ‘green’ occasional behaviour. This chapter sheds light on whether or not various lifestyle groupings display particular socio-demographic characteristics that correspond to different groups. The rationale behind this methodology is to provide tailored information pertaining to specific segments of the Irish population.

8.2 Typology construction - Combining attitudes and behaviours

Within the context of this research, ‘green’ is used to describe a person who holds pro-environmental attitudes and reports pro-environmental behaviours. In contrast the term ‘brown’ is used to denote a person who does not hold pro-environmental attitudes and who does not display pro-environmental behaviours. Respondents’ environmental attitudes and behaviours were identified as ‘green’ or ‘brown’ using cut-off criterion based on the aforementioned attitudinal scale and behavioural indices.

8.2.1 Attitudinal scale

With respect to the six-item attitudinal scale, respondents were required to score over a certain criterion on the attitudinal index\textsuperscript{49} to be classified as ‘green’. The threshold set on the index, which ranged from 0 to 6, was three. Respondents who scored greater than the threshold score (e.g. 3, 4, 5, 6) on the newly constructed

\textsuperscript{49} Please refer to Chapter Three (Section 3.41 and 3.42) for detailed overview of items employed to form the attitudinal scale and the two behavioural scales.
attitudinal index were labelled as ‘green’ Respondents who scored less than the threshold score (i.e. 2, 1, 0) were labelled as ‘brown’ with regard to their attitudes. The author selected these thresholds for the measurement of green attitudes based on the logic that the midpoint of this ratio variable was three, which indicated that half of the respondents were located below this point and the other half were situated above this point with regard to their attitudinal scores on this index. The mean response was three too, which indicates that the data were normally distributed.

Based on the criterion developed for this study, 60.4% of respondents (n=906), or 6 out of every ten people interviewed, were categorised as having green attitudes. Based on this same criterion, 39.6% of respondents (n=594) are classified as having ‘brown’ environmental attitudes. This categorisation is illustrated in Table 8.1.

Table 8.1: Summary of respondents classified as ‘green’ or ‘brown’ according to their scoring on the attitudinal index.

<table>
<thead>
<tr>
<th>Green-brown attitudes towards the environment</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown Attitudes (≤ 2)</td>
<td>594</td>
<td>39.6</td>
</tr>
<tr>
<td>Green Attitudes (≥3)</td>
<td>906</td>
<td>60.4</td>
</tr>
<tr>
<td>Total</td>
<td>1500</td>
<td>100.0</td>
</tr>
</tbody>
</table>

As noted previously, two separate behaviour indexes were utilised to construct consumer typologies. The first scale was constructed using occasional pro-environmental behaviours, whilst the second employed habitual pro-environmental behaviours. The main aim was to establish how many respondents classified as ‘green’ in terms of one behaviour type were also classified as ‘green’ in relation to the other type of behaviour.
8.2.2 Occasional ‘one-shot’ behaviours

The behavioural index created for occasional one shot behaviours ranged from zero to four. Respondents who scored greater than the threshold score (e.g. 3, 4) on the newly constructed occasional behaviour index were labeled as ‘green’. Respondents who scored less than the threshold score (i.e. 2, 1, 0) were labeled as ‘brown’ with regard to their actions.

In terms of their scoring on the newly constructed occasional one shot behaviours behaviour index, 7% of the sample (n=99 respondents) were classified as ‘green’, that is, less than one person in every ten individuals interviewed were classified as ‘green’ based on undertaking of occasional behaviours during the past five years. The vast majority of respondents (93.4% of total sample, n=1,401) were classified as ‘brown’ in terms of occasional behaviour, scoring 2 points or less on the index.

These findings may be slightly skewed towards brown behaviour classification based on the criteria for cut-off thresholds. This subjective criterion for classifying respondents as practising green or pro-environmental behaviours is that they reach a score of at least 3 out of a possible four behaviours. Although these delimitations might appear harsh, the author felt it was important to place high demands on respondents in order to pass as green. The reason for this is that we do not want to overestimate the share of people with strongly pro-environmental attitudes due to social desirability bias when answering survey questions. Also as these are self-reported behaviour being explored, compared to objective measures of actual behaviours observed, the author wished to place high thresholds to classify as green in terms of pro-environmental behaviour. However, these thresholds are subjective and the cut off criterion was an arbitrary decision in the end.
Based on respondents’ ability to obtain scores above certain thresholds concerning their reported exhibition of green-brown occasional behaviours and their expressed green-brown attitudes, four categories of consumer were identified. These four groupings were as follows: ‘Ever-Greens’, ‘Never-Greens’, ‘Aspiring-Greens’, and ‘Accidental-Greens’. See Table 8.2 below for these groupings.

Table 8.2: Breakdown of participants according to their undertaking of occasional behaviours and expressed attitudes (Typology 1)

<table>
<thead>
<tr>
<th>Category of consumers</th>
<th>Attitude</th>
<th>Behaviour</th>
<th>Percentage</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever-Greens</td>
<td>Green</td>
<td>Green</td>
<td>4.5%</td>
<td>67</td>
</tr>
<tr>
<td>Never-Greens</td>
<td>Brown</td>
<td>Brown</td>
<td>37.5%</td>
<td>562</td>
</tr>
<tr>
<td>Aspiring-Greens</td>
<td>Green</td>
<td>Brown</td>
<td>55.9%</td>
<td>839</td>
</tr>
<tr>
<td>Accidental-Greens</td>
<td>Brown</td>
<td>Green</td>
<td>2.1%</td>
<td>32</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>100%</td>
<td>1,500</td>
</tr>
</tbody>
</table>

The largest category of respondents was Aspiring-Greens (55.9%, n=839). The second largest grouping consisted of respondents classified as ‘Never-Greens’ (37.6%, n=562). Again, this closely resembles the occasional one-shot behaviour typology, which found Never-Greens (37.6%) to be the second largest grouping. Respondents who were categorised as green in terms of their actions (e.g., Ever-Greens and Accidental-Greens were the smallest groupings identified in relation to occasional one-shot behaviours.

As is evident from Table 8.2, all four theoretically possible combinations of attitudes and occasional behaviours could be constructed using this sample of 1,500 respondents from across the island of Ireland. The largest category of respondents identified was the ‘Aspiring-Greens’ category. These individuals showed inconsistency by expressing green attitudes but displaying brown behaviours; with 55.9% of the total sample classified under this label. The second largest grouping identified was the Never-Greens, which comprised of 562
respondents (38% of total sample). Those respondents who displayed green behaviour (Ever-Greens and Accidental-Greens) – regardless of their attitudes – comprised the smallest proportion of the typology groupings. Less than one in every ten respondents (6.6%, n=99) were classified as displaying green behaviours regardless of whether or not their attitudes were green also. Figure 8.2 shows the breakdown of respondents according to author’s classification based on green-brown attitudes and green-brown behaviours with regard to occasional actions.

Two clear patterns emerged from the data; one pattern demonstrated consonance and the other illustrated discord between expressed attitudes and reported behaviours. Respondents in both the ‘Ever-Greens’ and ‘Never-Greens’ appeared to be consistent in terms of their actions and attitudes. For example, Ever-Greens scored high on green attitudinal scale, and this was consistent with a high scoring on green behaviour scale. The other two groupings comprised of individuals who exhibited inconsistency between expressed attitudes and reported behaviours.

Two groups labelled ‘Accidental-Greens’ and ‘Aspiring-Greens’, both displayed opposing patterns of dissonance. Individuals categorised in the Accidental-Greens grouping appeared to exhibit low levels of green attitudes (m=1.4688), whilst scoring a high score\(^50\) in terms of pro-environmental behaviour (m=3.1875). In contrast, individuals in the ‘Aspiring-Greens’ category displayed high mean scores on the green attitude scale, whilst simultaneously scoring low scores for environmental behaviour on the occasional one shot behaviour scale (which ranged from 0-4).

The mean scores for each of the four groupings of respondents are illustrated in Table 8.3. The next section profiles these four newly identified lifestyle groupings in terms of their socio-economic and demographic characteristics.

\(^{50}\) The highest values (H) on both scales indicate the most environmentally friendly behaviour or attitudes.
Results illustrate the ability to construct four categories of consumers from CONSENSUS lifestyle survey data based on expressed attitudes and reported occasional one-shot behaviour. To summarise, these categories are: Ever-Greens, Never-Greens, Aspiring-Greens and Accidental-Greens. Figure 8.1 shows these four groupings positioned along an attitude-behaviour continuum.

**Figure 8.1: Overview of four newly constructed typologies**
8.3. Profiling of Typology One (occasional behaviours)

Profiling of each of the four groupings in terms of their varying socio-demographic characteristics permits greater understanding of segments of a population by providing a descriptive analysis of the main characteristic of each grouping. Research has found that socio-demographic variables, age, rural/urban location, housing tenure, and employment status, can indicate where environmental attitudes cluster in different populations (Ölofsson and Öhman, 2006). This preliminary analysis of groupings based on socio-demographic characteristics permits a more nuanced examination of environmental action according to lifestyle group.

Ever-Greens (n=67);

Respondents, who classified under this heading, are green in their expressed attitudes and reported occasional one-shot behaviours. This was a small number of individuals (n=67).

The grouping labelled as ‘Ever-Green’ was comprised of 61% females (n=41) and 39% men (n=26). The mean age of this grouping is 45.6 years of age. There are over twice as many respondents in this group who have attained third level education (68.7%, n=46%) than those respondents who have attained secondary level education (29.9%, n=20). Approximately 1.5% (n=1) of this group have stated as having completed either no formal education or primary level only. In terms of employment status, the modal response was ‘employed’ (59.7%, n=40), followed by ‘retired’ (14.9%) and ‘student’ (9.0%), then ‘other’ (9.0%) and finally ‘unemployed’ (7.5%). Ever-Greens tended to be mainly comprised of homeowners (74%, n=49), and then renters (18%, n=12). The majority of Ever-Greens (65.7% (n=44) shared their home with family members; while another 17.9% (n=12) shared their home with a spouse or partner. A further 10.4% stated

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51 Please note that all three sample areas (Galway, Derry/Londonderry and Dublin) in this study comprised of the urban city area and also the hinterlands of the cities. Please note the researcher indicated whether or not the person resided in an urban or rural location in each county.
that they lived alone (n=7). More Ever-Greens resided in rural locations (57%), as opposed to urban locale (43%). Almost half of respondents labelled Ever-Greens resided in the Dublin sample area (48%) either in urban or rural locations across this county. A further 37% of respondents categorised as Ever-Green lived in Galway and 15% in County Derry/Londonderry. Ever-Greens were distributed relatively evenly across the different income cohorts, with a slim majority of these respondents (32%) stating that they earned between €38,000 and €75,000 net household income per annum.

**Never-Greens (n=562);**

Respondents classified as Never-Green were categorised as brown in both attitudes and occasional one-shot behaviours. The group categorised as ‘Never-Greens’ was comprised of 54% females (n=301) and 46% men (n=261). The mean age of this grouping was 43.3 years. Roughly equal numbers of respondents in this group have attained secondary level education (48%, n=266) and third level education (47%, n=261). Approximately 5% (n=29) of this group have no formal education or primary level only. In terms of employment status, the majority of Never-Green reported being employed (57.8%, n=325), followed by retired (16%, n=90), unemployed (9.4%, n=53) and students (9.3%, n=52). This Never-Green group was mainly comprised of homeowners (67.8%) and renters (22.5%). The distribution of Never-Green individuals were scattered across all three counties relatively equally with 29.4% of Never-Greens residing in Galway (n=165), 37.4% of Browns residing in Derry/Londonderry (n=210), and the final 33.3% of Never-Greens lived in Dublin (n=187). More respondents classified as Never-Green reside in urban areas (56.8%), as opposed to rural areas (43.2%). Almost half of respondents (46%) categorised as Never-Greens stated that they earned less than €37,999 net household income per annum.

**Aspiring-Greens (n=839);**

Respondents classified under this heading were categorised as expressing green attitudes but brown behaviours. This group categorised as ‘Aspiring-Greens’ was the second largest. The group was comprised of 62% females (n=520) and 38%
men (n=319). The mean age of this grouping was 45.68 years of age. More than half of this grouping had attained third level education (58%). 37.8% of Aspiring-Greens reported attaining secondary level education. 4.2% of this Aspiring-Greens group stated that they had either no formal education or primary level only. In terms of employment status, the modal response was ‘employed’ (59.7%), followed by ‘retired’ (19%) and ‘student’ (8.3%), then ‘other’ (7.3%) and finally ‘unemployed’ (6.2%). The Aspiring-Greens group was mainly comprised of homeowners (75.4%, n=629), then renters (paying to private landlord) (16.9%, n=141). The distribution of Aspiring-Greens were scattered across all three counties relatively equally, with 35.6% of Aspiring-Greens residing in Galway, 32.9% in Derry and 31.5% in Dublin. A greater number of ‘Aspiring-Greens’ reported that they lived in rural areas (53.9%), as opposed to urban areas (46.1%). Larger numbers of respondents categorised as Aspiring-Greens were found in the two lower income cohorts; with 43% of Aspiring-Greens stating that they earned between €38,000 and €75,999 and a further 34% of Aspiring-Greens less than €37,999 net household income per annum.

**Accidental-Greens (n=32);**

Respondents classified under the title of Accidental-Greens were categorised as brown in terms of their attitudes but green in relation to their behaviours. This group was smallest in terms of numbers of individuals.

This group labelled ‘Accidental-Greens’ was comprised of 50% females (n=16) and 50% men (n=16). The mean age of this grouping was 47.16 years of age. 62.5% of respondents classified as Accidental-Greens reported having attained third level education (n=20). 31.2% (n=10) reported attaining secondary level education and another 3.1% (n=1) stated that they had either no formal education or primary level only. In terms of employment status, the modal response was employed (53.1%), next retired (18.8%), then unemployed (15.6%) then other (9.4 %) and finally student (3.1%). The Accidental-Green group was comprised predominantly of homeowners (83.2%, n=25), then respondents who resided rent-free (10%, n=3) and finally renters paying rent to private property owners (6.7%, n=2. The spatial distribution of Accidental-Greens was more uneven, with the
majority based in the Dublin area (53.1%), then Galway (34.4%) and a small percentage also in Derry/Londonderry (12.5%). A greater number of ‘Accidental-Greens’ appeared to be based in rural areas (53.1%) of these three sample areas as opposed to urban areas (46.9%). Table 8.9 summarises the profiles of each of the four typologies based on occasional behaviours. Over half of respondents categorised as Accidental-Greens in this study (55%) stated that they earned between €38,000 and €75,999 net household income per annum.

Table 8.4: Socio-economic and demographic characteristics of lifestyles groupings based on occasional behaviours

<table>
<thead>
<tr>
<th>Variable</th>
<th>Ever-Greens</th>
<th>Never-Greens</th>
<th>Aspiring-Greens</th>
<th>Accidental-Greens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number (%) in grouping</td>
<td>67 (4.5%)</td>
<td>562 (37.5%)</td>
<td>839 (55.9%)</td>
<td>32 (2.1%)</td>
</tr>
<tr>
<td>Age in years (mean)</td>
<td>45.6</td>
<td>43.3</td>
<td>45.7</td>
<td>47.2</td>
</tr>
<tr>
<td>Gender (Male/female in %)</td>
<td>39/61</td>
<td>46/54</td>
<td>38/62</td>
<td>50/50</td>
</tr>
<tr>
<td>Household size (mean)</td>
<td>3.18</td>
<td>3.15</td>
<td>3.11</td>
<td>3.31</td>
</tr>
<tr>
<td>Housing tenure (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homeowners</td>
<td>74%</td>
<td>67.8</td>
<td>83.3</td>
<td>78.1</td>
</tr>
<tr>
<td>Renters</td>
<td>18%</td>
<td>22.5</td>
<td>6.7</td>
<td>6.3</td>
</tr>
<tr>
<td>Rent-free</td>
<td>.3%</td>
<td>4.6</td>
<td>10.0</td>
<td>9.4</td>
</tr>
<tr>
<td>Other</td>
<td>4.5%</td>
<td>5.1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Income*(Euro)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;€37,999</td>
<td>25.5%</td>
<td>45.88%</td>
<td>33.83%</td>
<td>30%</td>
</tr>
<tr>
<td>€38,000-€75,999</td>
<td>31.9%</td>
<td>39.65%</td>
<td>42.5%</td>
<td>55%</td>
</tr>
<tr>
<td>€76,000-€113,999</td>
<td>29.78%</td>
<td>12.21%</td>
<td>20.83%</td>
<td>10%</td>
</tr>
<tr>
<td>&gt;€114,000</td>
<td>6.38%</td>
<td>2.24%</td>
<td>2.83%</td>
<td>5%</td>
</tr>
<tr>
<td>Educational attainment**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No formal/Primary</td>
<td>1.5%</td>
<td>5.2</td>
<td>4.2</td>
<td>3.2</td>
</tr>
<tr>
<td>Level</td>
<td>Primary</td>
<td>Secondary</td>
<td>Tertiary</td>
<td>Other</td>
</tr>
<tr>
<td>------------</td>
<td>---------</td>
<td>-----------</td>
<td>----------</td>
<td>-------</td>
</tr>
<tr>
<td>Secondary Level</td>
<td>29.9%</td>
<td>47.8%</td>
<td>37.8%</td>
<td>32.3%</td>
</tr>
<tr>
<td>Third level</td>
<td>68.7%</td>
<td>46.9%</td>
<td>58.0%</td>
<td>64.5%</td>
</tr>
</tbody>
</table>

**Location**

<table>
<thead>
<tr>
<th></th>
<th>Rural</th>
<th>Urban</th>
<th>Rural</th>
<th>Urban</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>57%</td>
<td>43%</td>
<td>53.9%</td>
<td>46.1%</td>
</tr>
<tr>
<td></td>
<td>43%</td>
<td>56.8%</td>
<td>46.1%</td>
<td>46.9%</td>
</tr>
</tbody>
</table>

**Employment status**

<table>
<thead>
<tr>
<th></th>
<th>Employed</th>
<th>Unemployed</th>
<th>Student</th>
<th>Retired</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>59.7%</td>
<td>7.5%</td>
<td>9.0%</td>
<td>14.9%</td>
<td>9.0%</td>
</tr>
<tr>
<td></td>
<td>57.8%</td>
<td>9.4%</td>
<td>9.3%</td>
<td>16.0%</td>
<td>7.1%</td>
</tr>
<tr>
<td></td>
<td>59.7%</td>
<td>6.2%</td>
<td>8.3%</td>
<td>18.5%</td>
<td>7.3%</td>
</tr>
<tr>
<td></td>
<td>53.1%</td>
<td>15.6%</td>
<td>0.0%</td>
<td>18.8%</td>
<td>09.4%</td>
</tr>
</tbody>
</table>

**Mean attitude score (0-6)**

|                | 4.0597 (H) | 1.3096 (L) | 4.0536 (H) | 1.4688 (L) |

**Mean occasional behaviour score (0-4)**

|                | 3.0597 (H) | 0.7473 (L) | 0.8415 (L) | 3.1875 (H) |

*Income was recoded into four groups that represented respondents’ total net household income after tax and deductions. All income is reported in Euros.

**Educational attainment was measured by the highest degree achieved by respondent at time of interviewing.

8.4 Comparison of lifestyle groupings to one another based on socio-demographic variables

There were a number of differences noted across the four newly constructed lifestyle groupings: Ever-Greens, Never-Greens, Aspiring-Greens and Accidental-Greens. Respondents who were categorised as ‘green’ according to their occasional ‘one-shot’ behaviours (i.e. Ever-Greens and Accidental-Greens) were amalgamated together and the two groupings who were considered ‘brown’ in their behaviours were merged together to explore whether or not differences across the four identified groupings of respondents were statistically significant.

Although more women (58%, n=57), compared to men (42%, n=42), comprised the green behaving occasional behaviour group (i.e. Ever-Green and Accidental-
Greens), this difference was not found to be statistically significant \( \chi^2 (1, N=1,500) =0.040, p=0.841 \).

A statistically significant difference was found to exist between green-acting individuals and brown-acting individuals across the different educational attainment categories \( \chi^2 (3, N=1,498) =8.27, p=0.041 \). There were slightly more respondents with no formal education or primary level education (97%, n=64) categorised as behaving in a brown manner, compared to respondents with secondary level education (95%, n=583) and those individuals with third level education (92%, 747).

In terms of mean ages of respondents across the four groupings, individuals in the Never-Green category had the lowest mean age (43.32 years). Respondents in the Accidental-Green grouping had the highest mean age (47.16 years). Green-behaving respondents (i.e. Ever-Greens and Accidental-Greens) were more likely to be homeowners (13.8%, n=74) compared to renters 95.4%, n=14) or reside in their homes rent-free (11.6%, n=5). Aspiring-Greens and Accidental-Greens reported vastly lower numbers of renters (6.7% and 6.3% respectively). These differences were not statistically significant \( \chi^2 (6, N=1,478) =6.503, p=0.37 \).

There were very marginal differences noted across the four groupings in terms of mean number of residents residing in the household. The two lifestyle groupings that behaved in a green manner (Ever-greens and Accidental-Greens), reported the highest mean number of residents (m=3.18 for Dark-Greens and m=3.31 for Accidental-Greens). Individuals in the Aspiring-Green grouping had the lowest average number of persons (3.11).

The Never-Green grouping had the highest percentage of respondents who stated that they had attained either no formal education or primary level education (5.2%). This grouping also had the lowest percentage of respondents who had attained third level education (46.9%). Respondents in the Ever-Green category had the greatest number of respondents with third level education (68.7%). The greatest number of Ever-Greens individuals resided in Dublin (48%), as well as the greatest percentage of Accidental-Green respondent types (53.1%).
Londonderry/Derry appeared to have the largest percentage of Never-Green consumers (37.4%). Galway had the higher percentage of consumers, in other words individuals who reported high levels of green attitudes but low levels of green behaviours.

Slightly more individuals who reported undertaking green behaviours (i.e. Ever-Greens and Accidental-Greens) appeared to reside in rural locations (7%, n=55), compared to those who lived in urban locations (6%, n=44). Similarly, a greater number of individuals who behaved in a brown manner for occasional behaviours (i.e. Never-Greens and Aspiring-Greens) tended to reside in urban areas (94%, n=706), as opposed to rural areas (93, n=695). Results of Chi-square analysis found these differences were not to be statistically significant \( \chi^2 (1, N=1,500) =1.31, p=0.253 \).

A greater number of respondents in the Never-Green grouping (45.88%), and next those in the Aspiring-Green grouping (33.8%) reported a net household income of less than €37,999 after tax and deductions. A greater number of respondents classified as Ever-Green or Accidental-Green reported earning the highest income cohort listed on the survey instrument (6.4% and 5% respectively). In other words, both groups who acted brown in terms of occasional behaviour (i.e. Never-Green and Aspiring-Green groups) comprised of a larger number of individuals who fell into the lowest income category. Groups classified as green in terms of their occasional behaviour – Ever-Greens and Accidental-Greens – tended to have a greater proportion of respondents in the highest income group (>€114,000).

This concludes a comparison of the various socio-demographic characteristics of the four newly constructed lifestyle groupings, which were developed utilising respondents’ attitudes and reported undertaking of occasional one-shot behaviours. The next section describes and profiles four lifestyle groupings of respondents based on the same attitudinal index, but now in combination with the habitual environmental behaviours index. The research explores whether individuals who practice green occasional one-shot activities differ from those respondents who practice green habitual behaviours. This will be discussed further at the end of this chapter.
8.5 Typology Two – habitual behaviours

In line with the methodology employed for occasional one-shot behaviours above, the study utilised a similar subjective typology criterion for the subsequent development of a habitual behaviour scale. The behavioural index created for habitual behaviours ranged from zero to six. Respondents who scored greater than the threshold score (e.g. 3, 4, 5, 6) on the newly constructed occasional behaviour index were labelled as ‘green’ in terms of their pro-environmental habitual behaviours. Respondents who scored less than the threshold score (i.e. 2, 1, 0) were labelled as ‘brown’ with regard to their habitual everyday pro-environmental actions.

The author again selected the midpoint (i.e. 3) as the threshold for the measurement of habitual behaviours to be categorised as ‘green’. In line with the previous occasional criterion, this threshold was quite delimiting also for the same rationale to avoid overestimating the existence of green habitual pro-environmental behaviours due to social desirability bias. These thresholds were informed by previous research on typology constructions which incorporated similar rationale to define cut-off points.

This criterion classified 291 respondents (19.4% of the total sample) as ‘green’ based on reported habitual pro-environmental behaviours, amounting to approximately two people in every ten individuals interviewed. Almost three quarters (n= 209, 71.8%) of these ‘green-behaving’ respondents also expressed green attitudes. In other words, a relatively large percentage of respondents exhibited consonance in terms of their attitudes and pro-environmental actions.

Utilising the second behaviour scale – the six-item habitual behaviour scale – it is possible to determine whether the categories of respondents can be developed in relation to habitual pro-environmental actions and respondents attitudes. As is evident from Table 8.5 all four theoretically possible combinations of attitudes (i.e. green or brown in terms of attitudes) and habitual behaviours (green or brown) existed in the all-island sample of 1,500 respondents.
Table 8.5: Frequency of respondents in each typology category based on habitual behaviours scale scores.

<table>
<thead>
<tr>
<th>Category</th>
<th>Attitude</th>
<th>Behaviour</th>
<th>Percentages</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dark-Greens</td>
<td>Green</td>
<td>Green</td>
<td>13.9%</td>
<td>209</td>
</tr>
<tr>
<td>Brown</td>
<td>Brown</td>
<td>Brown</td>
<td>34.1%</td>
<td>512</td>
</tr>
<tr>
<td>Yellow</td>
<td>Green</td>
<td>Brown</td>
<td>46.5%</td>
<td>697</td>
</tr>
<tr>
<td>Light-Green</td>
<td>Brown</td>
<td>Green</td>
<td>5.5%</td>
<td>82</td>
</tr>
</tbody>
</table>

100% 1,500

The largest category of respondents based on scores for habitual behaviour and attitudes was Yellow (46.5%). In other words, over half of respondents expressed green attitudes but displayed brown habitual behaviours. The second largest grouping consisted of respondents classified as ‘Brown’ (n=512, 34.1%). Respondents who were categorised as green in terms of their reported behaviours (e.g., Dark-Greens and Light-Greens) were the smallest groupings identified in relation to habitual behaviour. See Figure 8.5 for breakdown of respondents according to attitudes and habitual behaviour.

Overall, 80.6% of respondents (n=1,209) were classified as ‘brown’ in terms of their habitual behaviours. Of these individuals over half (57.7%, n=697) reported green attitudes towards environment. The remaining 512 individuals with ‘brown’ behaviour scores (42.3% of this subsample) reported ‘brown’ attitudes. Results of Chi-square analysis indicated that a statistically significant difference existed between green-brown habitual behaviours and green-brown attitudes \( \chi^2 (1, N=1,500) =19.691, p=0.00 \).

The next section profiles these four newly identified lifestyle groupings based on habitual behaviours and attitudes indices in terms of their socio-economic and demographic characteristics.
8.6 Profiling of Typology 2 (habitual pro-environmental behaviours)

This section investigates the profile of the four attitudes-habitual behaviour groupings: Dark-Greens, Browns, Yellows and Light-Greens. Table 8.6 outlines some of the key socio-economic and socio-demographic factors relating to each of the four groups identified.

Similar to the previous typology, the following socio-demographic variables are examined for each of the four typology groupings: gender, age, educational status, rural/urban location\(^{52}\), housing tenure, and employment status. Profiling of each of the four groupings in terms of their varying socio-demographic characteristics permits greater understanding of segments of a population by providing a descriptive analysis of the main characteristic of each grouping (see Table 8.6 below).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Dark-Greens</th>
<th>Browns</th>
<th>Yellows</th>
<th>Light-Greens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number (%) in grouping</td>
<td>209(13.9%)</td>
<td>512(34.1%)</td>
<td>697(46.5%)</td>
<td>82(5.5%)</td>
</tr>
<tr>
<td>Age in years (mean)</td>
<td>45.51</td>
<td>43.49</td>
<td>45.71</td>
<td>43.75</td>
</tr>
<tr>
<td>Gender (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Male/female)</td>
<td>36.8/63.2</td>
<td>47.5/52.5</td>
<td>38.5/61.5</td>
<td>41.5/58.5</td>
</tr>
<tr>
<td>Household size (mean)</td>
<td>3.05</td>
<td>3.19</td>
<td>3.13</td>
<td>2.93</td>
</tr>
<tr>
<td>Housing tenure (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homeowners</td>
<td>69.4</td>
<td>67.4</td>
<td>77.2</td>
<td>76.6</td>
</tr>
<tr>
<td>Renters</td>
<td>27.7</td>
<td>22.6</td>
<td>16.5</td>
<td>15.6</td>
</tr>
<tr>
<td>Rent-free</td>
<td>0.5</td>
<td>5.0</td>
<td>2.0</td>
<td>3.9</td>
</tr>
<tr>
<td>Other</td>
<td>2.4</td>
<td>5.0</td>
<td>4.3</td>
<td>3.9</td>
</tr>
</tbody>
</table>

\(^{52}\) Please note that all three sample areas (Galway, Derry/Londonderry and Dublin) in this study comprised of the urban city area and also the hinterlands of the cities. Please note the researcher indicated whether or not the person resided in an urban or rural location in each county.
Dark-Greens (14%, n=209);

Respondents, who classified under this heading, are green in their expressed attitudes and reported habitual behaviours. The grouping labelled as ‘Dark-Green’ was comprised of 63% females and 37% men. The mean age of this grouping is 45.5 years of age. There are over twice as many respondents in this group who have attained third level education (65%) than those respondents who have attained secondary level education (30%). Approximately 5% of this group have stated as having completed either no formal education or primary level only. In terms of employment status, the modal response was ‘employed’ (60%), followed by ‘retired’ (15%) and ‘other’ (10%), then ‘unemployed’ (9%) and finally ‘student’ (7%). Dark-Greens tended to be mainly comprised of homeowners (69%), and then renters (28%). More Dark-Greens resided in rural locations (52%), as opposed to urban locale (48%). The majority of Dark-Greens (47%) stated that they earned between €38,000 and €75,000 net household income per
36% of Dark-Greens stated they earned less than €37,999 net household income.

**Browns (34%, n=512);**

Respondents classified as Browns were categorised as brown in both attitudes and habitual behaviours. The group categorised as ‘Browns’ was comprised of 52% females and 48% men. The mean age of this grouping was 43.5 years. Roughly equal numbers of respondents in this group have attained secondary level education (48%) and third level education (47%). Approximately 5% of this group have no formal education or primary level only. In terms of employment status, the majority of Browns reported being employed (59%), followed by retired (16%), unemployed (9%), students (8%) and other (7%). The Brown group was mainly comprised of homeowners (67%) and renters (23%). More respondents classified as Brown reside in urban areas (56%), as opposed to rural areas (44%). 45% of respondents categorised as Brown stated that they earned less than €37,999 net household income per annum.

**Yellows (47%, n=697);**

Respondents classified under this heading were categorised as expressing green attitudes but brown behaviours. The group categorised as ‘Yellows’ was comprised of 62% females and 38% men. The mean age of this grouping was 45.71 years of age. 57% of this grouping had attained third level education. 39% of Yellows reported attaining secondary level education. 4% of this Yellows group stated that they had either no formal education or primary level only. In terms of employment status, the modal response was ‘employed’ (59.9%), followed by ‘retired’ (19%) and ‘student’ (8.6%), then ‘other’ (6.6%) and finally ‘unemployed’ (5.6%). The Yellow group was mainly comprised of homeowners (77%), then renters (17%). A greater number of Yellows reported that they lived in rural areas (55%), compared to urban areas (45%). Larger numbers of respondents categorised as Yellows were found in the two lower income cohorts;
with 40% of Yellows stating that they earned between €38,000 and €75,999 and a further 32% of Yellows less than €37,999 net household income per annum.

**Light-Greens (6%, n=82);**

Respondents classified under the title of Light-Greens were categorised as brown in terms of their attitudes but green in relation to their behaviours. The group labelled Light-Greens was comprised of 59% females (n=16) and 41% men. The mean age of this grouping was 43.7 years of age. 52.5% of respondents classified as Light-Greens reported having attained third level education. 40% reported attaining secondary level education and another 7.5% stated that they had either no formal education or primary level only. In terms of employment status, the modal response was employed (49%), next retired (20%), then unemployed (13%) then other (7%) and finally student (3.1%). The Light-Greens group was comprised predominantly of homeowners (76%), then renters (16%) then respondents who stated that they resided rent-free or other comprised of 4% each respectively. A greater number of Light-Greens appeared to be based in rural areas (59%) of these three sample areas as opposed to urban areas (41%). Table 8.6 summarises the profiles of each of the four typologies based on occasional behaviours. Almost half of the respondents categorised as Light-Greens in this study (47%) stated that they earned less than €37,999 net household income per annum.

**8.7 Comparison of four habitual lifestyle groupings**

There were a number of differences across the four lifestyle groupings categorised on their attitudes and undertaking of habitual behaviour. The Brown group scored the lowest mean age (43.49 years) in the habitual groupings. Respondents in the Yellow group (the largest category) were found to have the highest mean age (45.71 years). Each of the groups had a greater percentage of female respondents in comparison to men. In particular, there were substantially more females in the Dark-Green group (63.2%) and in the Yellow grouping (61.5%).
Groups that displayed green habitual behaviours (i.e. Dark-Greens and Light-Greens) tended to have a lower mean number of residents residing in their home ($m_{\text{Dark-Green}}=3.05$ and $m_{\text{Light-Green}}=2.93$), in comparison to the other two groups which exhibited brown behaviours (i.e. Browns and Yellows). The Yellow group had the highest proportion of homeowners (77.2%), followed by the Light-Green group with 76.6%. The least number of homeowners existed in the Brown group (67.4%). Respondents in Brown behavioural groupings had the highest percentage of respondents who stated that their accommodation was provided rent-free (5%). The Light-Green category had the second highest proportion of rent-free tenants. The Dark-Green category had the largest percentage of renters (27.7%), followed by the brown grouping (22.6%).

The greatest number of respondents with no formal education or primary level education was in the Light-Green category (7.5%). The Brown grouping had the lowest percentage of respondents who had attained third level education (47.1%). Respondents in the Dark-Green category had the greatest number of individuals with third level education (64.9%). The Light-Green category had the highest percentage of unemployed persons (13.4%) and the second highest percentage of unemployed respondents was located in the Brown grouping (9.2%). The Light-Green and Yellow groupings had the highest percentage of retired respondents (19.5% and 19.3% respectively).

More individuals who reported holding green attitudes (i.e. Ever-Greens and Yellows) tended to reside in rural locations (51.7% and 54.8%) compared to urban locations (48.3% and 45.2% respectively). Brown and Yellow respondents (i.e. individuals that were categorised as brown in terms of their habitual behaviour) were slightly more likely to reside in urban areas (55.9% and 58.5%).

In terms of income, the categories deemed as having brown attitudes (i.e. Brown and Light-Greens) appeared to have the greatest percentage of respondents who reported earning less than €37,000 total household net income in the past year (44.8% Brown and 47.27% Light-Greens respectively). Both Yellow and Light-Green categories comprised of the greatest percentage of respondents who stated earning greater than €114,000 net household income per annum. The largest proportion of
the Dark-Green group (47.01%) stated earning €38000-€75000 annual net household income last year.

The next section compares the two categories of respondents, across both typologies, which were classified as ‘green’ in terms of their behaviours in relation to each other.

8.8 Comparison of green habitual grouping and green occasional grouping

Following on from descriptive analysis of groupings, a logical next step is to investigate whether respondents who practice ‘green’ occasional one-shot behaviours differ greatly from those respondents who practice ‘green’ habitual behaviours. Hence, respondents categorised as ‘Ever-Green’ and ‘Accidental-Green’ in the first typology will be merged together and compared to the amalgamated green groupings in the second typology (i.e. ‘Dark-Greens’ and ‘Light-Greens’).

Further analysis revealed that only 35 respondents (2.3% of the total sample (n=1,500) who were classified as ‘green’ according to their occasional one-shot behaviours, were also categorised as ‘green’ based on their habitual behaviours. This means that 9% (n=35) of the 390 ‘green behaving’ individuals practiced both green habitual or occasional behaviour according to the author’s criterion.

Closer inspection of these 35 ‘True-Green’ respondents found that 57% were women (n=20) and 43% were men (n=15). 71% of these True-Green individuals attained third level education (n=24). A further 29% (n=10) stated that they had attained secondary level education. There were no respondents in this grouping who had attained no formal education or solely primary school education. This group comprised predominantly of homeowners (75.7%), then renters (18%) and finally those respondents who resided rent-free in their homes rent-free (6.1%). The majority of these ‘True-Greens’ respondents were employed (40%) , with 20% described as ‘other’, 17% retired and equal numbers of students and unemployed individuals (11% and 11% respectively).
This finding above would imply that there is relatively little overlap between those respondents categorised as ‘green’ based on their occasional one-shot behaviours (n=99) and those individuals who are categorised as green in relation to their habitual behaviours (n=291). For this reason, the author compared the respondents in the two typologies who were categorised as acting ‘green’ in order to understand the differences between individuals who undertook the two different type of pro-environmental actions.

Based on the author’s criteria, there were almost three times as many individuals who were classified as displaying ‘green’ behaviour (i.e. Ever-Greens and Light-Greens) in the habitual behaviour subsample (19.4%, n=291) when contrasted with the occasional one-shot behaviour group (6.6%, n=99). This finding makes sense as the listed occasional one-shot actions in question relate to larger scale activities (such as installing insulation, purchasing an energy-efficient car etc.) and hence, may require substantial financial investment and time to undertake in comparison to habitual environmental actions such as reducing energy and water use in the home (Barr et al., 2005; Abrahamse et al., 2005).

Respondents in the habitual green grouping had a greater proportion of women (61.9%, n=180), compared to the occasional one shot green grouping (57.6%, n=57). In terms of educational status, more respondents in the occasional-one shot behaviour typology attained a third level qualification (66.7%) compared to respondents in the habitual green grouping (60.8%). The green habitual behaviour group (1.94%) had a lower percentage of individuals in the highest income category (>€114,000), compared to respondents classified as occasional one-shot green grouping (6.2%). The latter group also had a lower percentage of people in the smallest income category (28.1%) in comparison to the former (39.3%). Greens tended to have similar mean ages regardless of which type of behaviour they were engaged in. Figure 8.7 shows a breakdown of respondents according to age categories.
More respondents in the occasional one-shot green behaviour grouping are homeowners (74.7%, n=74), compared to habitual greens (71.1%, n=202). Likewise, more respondents in the habitual green group are renters\(^n\) (24.3%, n=69), as opposed to occasional activities (14.1%). Occasional actions such as purchasing an energy-efficient appliance or installing insulation can often affect the structure of the dwelling and or the internal infrastructure. Home-owners, as opposed to renters, might undertake these activities due to nature of tenancy. Renters may be less likely to invest in property development and retrofitting if they dwell at the premise for a limited period of time.

### 8.9 Reflections on segmentation and resulting typologies

To conclude, this chapter developed two separate typologies of respondents based on their expressed attitudes towards the environment and their reported habitual and occasional behaviours respectively.

Eight separate categories of individuals were developed; four groupings of respondents in each typology. Only a relatively small number of these groupings

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Note renters in this instance include respondents who pay rent to private landlords as well as those who pay rent to social/voluntary and municipal housing bodies.
exhibited consistency between their views and actions; in other words they were consistent in having both green/brown attitudes and green/brown behaviours. Two other groups showed inconsistent patterns in each typology, with one group of respondents behaving in a green manner despite their brown attitudes (Accidental-Greens\textsubscript{occasional} and Light-Greens\textsubscript{habitual}) and the other group expressing green attitudes yet engaging in brown behaviour (Aspiring-Greens\textsubscript{occasional} and Yellows\textsubscript{habitual}).

A number of important differences were found to exist between respondents classified as ‘green’ in terms of their habitual and occasional actions. Respondents with green habitual behaviour were slightly more prevalent in urban locations (51.2%), as opposed to respondents displaying green occasional behaviours (44.4%). Green habitual respondents were most common in Galway (44.7%, n=130), followed by Dublin (34.7%, n=101) and Derry/Londonderry (20.6%, n=60). However, respondents with green occasional behaviours were most common in Dublin (49.5%, n=49), then Galway (36.4%, n=36) and then Derry/Londonderry (14.1%, n=14). Individuals classified as green in both groups had a similar mean age (45–46 years). More respondents in the occasional grouping (6.25%) stated earning net annual household income from the highest cohort, in comparison to those in the green habitual behaviour group (1.94%).

More importantly, respondents who undertook green occasional behaviours in this study were different individuals to those who reportedly undertook green habitual behaviours. Only 2% of all respondents (n=35) were categorised as green in both their habitual and occasional behaviours. These results would suggest that a distinction needs to be made between habitual and occasional pro-environmental behaviour. For this reason, the author compared the respondents in the two typology groupings who were categorised as acting ‘green’ in order to understand the differences between the two different type of pro-environmental actions.

The socio-economic and demographic profile of these groups revealed both similarities and differences. Slightly more women comprised the habitual green grouping than the occasional typology. In terms of educational status, slightly more occasional green individuals had attained a third level qualification, compared to respondents in the habitual green grouping. Although both groups
comprised predominantly of homeowners as opposed to other tenure categories (e.g., renters, rent free, other), slightly more respondents in the green occasional group owned their home. More respondents classified as green occasional groupings (6.25%) were in the highest income category (>€114,000), compared to those in the green habitual grouping. The green occasional group also had a lower percentage of people in the smallest income category (28.12%) in comparison to the green habitual group (39.3%).

The author acknowledges the limitations and subjective nature of both behaviour and attitudinal scales utilised in this research in terms of typology formation. Although Cronbach’s alpha were very low for the behavioural scales in particular, the author decided to utilise these indices based on a more theoretical basis, in order to develop the two separate matrixes of lifestyle groupings. In other words, the author constructed a typology of respondents based on the occasional behaviour scale and also the second typology of respondents based on the habitual behaviour scale. Building on previous research (see DEFRA, 2006), this study argues that being able to recognise what segment of society a person belongs to in terms of their consumption behaviours and attitudes is vital in order to critically examine what kind of tailored policy or interventions are needed (or will work) based on evidence related to this particular segment grouping. Although this quantitative research was undertaken in three areas across the island of Ireland in 2010/11, these spatial and temporal limitations do not exclude generalisations to be made concerning the nature of environmental lifestyles in Ireland today.

To summarise, this chapter synthesised the empirical findings of this study to show that the use of lifestyle approaches (based on social marketing techniques) are a useful way to approach future sustainable consumption policy. This implies that new policy measures are needed that focus on groupings of people or individuals at different life stages rather than one size fits all policy. The author proposes that different policy approaches may be required to influence different types of behaviour. The concluding chapter – Chapter Nine – also outlines some suggestions for the design of these proposed policies, as well as directions for future research based on limitations of this study.
CHAPTER NINE:

CONCLUSIONS, FUTURE RESEARCH AND POLICY RECOMMENDATIONS
9.1 Introduction

This research advances theoretical and empirical understanding of consumption behaviours and lifestyles. The research made a significant contribution to sustainable consumption research through the exploration of attitudes and behaviours towards sustainable consumption and lifestyles across the island of Ireland. The thesis succeeded in its aims by addressing the objectives set out in the introductory chapter. Firstly, findings from a desktop policy analysis of international and national developments in the field of sustainable consumption and production illuminated existing gaps in current policy developments on sustainable consumption and production. Another key aim of the research was to design and implement an innovative survey tool to collate and record large-scale data on reported attitudes and behaviours towards sustainable consumption behaviours and lifestyles across the island of Ireland. Data generated provided trends in expressed attitudes and reported behaviours across the three consumption sectors of water, energy and transport. The research also investigated respondents’ reported rationale for undertaking occasional ‘one-shot’ activities.

In addition, this research developed a series of eight lifestyle groupings of respondents, based on four major combinations of expressed attitudes and reported habitual and occasional ‘one-shot’ behaviours. Factor analysis techniques were employed to develop three scales (one attitudinal and two behavioural scales) in order to develop an innovative Irish specific typology of respondents. The eight categories of respondents were profiled according to socio-demographic and economic variables to explore the differences across the lifestyle groupings on each typology as well as differences across both typologies. This final chapter provides a reflective overview on the research in its entirety and focuses on the key conclusions of this study and recommendations for future research and policy development.
The initial part of this chapter (see Section 9.2) summarises the main arguments and findings outlined in this thesis, and reflects on their contribution to the study of sustainable consumption and lifestyles. A number of challenges relating to the design and implementation of the survey instrument are discussed (see Section 9.4), as well as difficulties encountered when undertaking a cross-border research study. Key recommendations are proposed in relation to how these challenges may be addressed in future applications within academic and environmental governance contexts. In addition, this concluding chapter provides clear recommendations and implications for future sustainable consumption policy-making based on the findings of this study (Section 9.3), and highlights potential avenues for future research (Section 9.5). Finally, Section 9.6 summarises the chapter and concludes the thesis.

9.2 Summary of the main arguments and findings

Chapter One sets the scene for this research thesis, highlighting the dramatic rise in household consumption between the mid-1990s and early 2008, both in Northern Ireland and the Republic of Ireland. This initial section outlined the magnitude of the task involved in achieving a transition towards sustainability and identified the specific core consumption issues and sectors that impact negatively on the environment. A dearth of up-to-date data and research concerning attitudes and behaviours towards household consumption and lifestyles were identified. It is argued throughout this thesis that without such data, household consumption and lifestyles remain somewhat of a black box for policymakers across both policy regions on the island. An appreciation of the complexity of human behaviours is required; improving understandings of the underlying reasons behind why and how individuals consume in the manner in which they currently do is a crucial step to ensure that policy mechanisms put in place to help shape consumption behaviour are effective and operative.

Chapter Two discussed the conceptual underpinnings of this research. A state of the literature explored pro environmental behaviour, as well as various behaviour models and framework approaches. Building on and adapting psychological-social models of human behaviour, this study explored environmental behaviour using a
framework approach. The thesis reviewed literature from a wide variety of sources including environmental psychology, sociology as well as geographies of consumption approaches such as lifestyle segmentation analysis and the development of consumer typologies, with the aim of promoting greater understanding of consumption behaviour.

Chapter Three outlined the research methodology employed to conduct this study. A quantitative research design was employed to collect extensive data for the island on expressed attitudes and reported behaviours towards consumption behaviours and sustainable lifestyles. A survey tool, called CONSENSUS Lifestyle Survey, was constructed and implemented to collate such data mentioned. This survey tool was piloted extensively and amended accordingly based on feedback obtained from the piloting stages. This chapter focused on challenged pertaining to the design, sampling and implementing of this survey instrument. An outline and detailed discussion was also provided concerning the later data analysis employed to understand these data. The results of this study established an all-island Irish baseline dataset, in order to understand expressed attitudes and reported behaviours concerning sustainable consumption and lifestyles and the subsequent results chapters explored many aspects of these data.

Chapter Four comprised the initial results chapter, based on a desktop policy analysis of sustainable development and sustainable consumption policy on an international and national level. This chapter outlined key challenges facing sustainable household consumption in an all-island Ireland context in the areas of water; energy use; and transport. With a focus on the National Sustainable Development Strategy (DEHLG, 1997) and the Northern Ireland National Sustainable Development Strategy (DOENI, 2006), this chapter outlined key gaps regarding sustainable consumption research and policy to date in an all-island Irish context.

Chapter Five presented large-scale primary data on expressed attitudes regarding sustainable household consumption and lifestyles in Northern Ireland and the Republic of Ireland. Following an overview of the profile of the sample expressed attitudes and values of respondents in the sample were outlined in order to set the
scene to understand where the sample population was currently at concerning sustainable consumption and lifestyles.

Chapter Six explored reported behavioural trends in relation to three consumption areas, identified as priority sectors in both Northern Ireland and Republic of Ireland: water, energy and transport. This chapter provides an overview of behavioural bases of the sample. After grounding the readers’ knowledge in the descriptive statistics of the sample, Chapter Six used progressively higher order relationships in order to assign importance to the variables outlined in the conceptual framework by initially using bi-variate statistics to examine salient relationships between reported actions and situational variables (i.e., socio-economic and demographic factors, structural variables, knowledge and awareness), psychological variables and environmental values. This results chapter aimed to conceptualise respondents’ reported environmental behaviours, using a framework, which examined consumption behaviours, in terms of values, situational variables and psychological factors. Towards this investigation, the chapter illuminated key emerging trends and patterns in the Lifestyle Survey dataset. Results indicate the existence of a value-action gap in the Irish context between respondents’ expressed concern about environment issues, and then a subsequent poor level of reported pro-environmental behaviours across the three consumption sectors examined.

Chapter Seven furthered the analysis of consumption behaviour, and its underlying drivers, with an exploration of respondents’ engagement with two types of pro-environmental behaviours: occasional and habitual pro-environmental behaviour. The chapter dissected the notion of pro-environmental behaviour as encompassing solely one uniform behaviour type. Instead, a focus of two types of behaviour (occasional and habitual actions) permitted an exploration of different self-reported behaviours with varying impact on the environment. This chapter investigated the tendency of respondents to undertake each type of behaviour. In terms of occasional ‘one-shot’ behaviours, this chapter explored various motivating factors reported by respondents. Results revealed that a greater commitment to pro-environmental action is required on the part of individuals and householders. Findings also illustrated that very few respondents stated solely
environmental rationale for their occasional behaviours. Instead ‘a mix of financial and environmental’ rationale emerged as the most significant reason for respondents’ decisions to undertake larger occasional actions such as purchasing an energy-efficient appliance or energy-efficient car. ‘Financial reasons’ were cited as the popular reason for changing to a renewable energy supplier. These findings are advantageous to furthering knowledge on the behaviour change, as they further our understanding of underlying motivations for certain types of pro-environmental behaviours.

Chapter Eight employed factor analysis techniques to devise a scale to develop an innovative typology of respondents, based on their environmental attitudes and reported pro-environmental behaviours in the areas of occasional and habitual action. This chapter devised an original and innovative typology of respondents (specifically for this research) in order to identify target audiences for behavioural change initiatives, thereby enabling policymakers to develop more effective sustainable consumption strategies that are closely aligned with the attitudes and behaviours of certain identified lifestyle groupings. Eight lifestyle groupings were identified using the typology instrument. These groupings were profiled and discussed in light of their socio-economic and demographic variables. Such an approach is apt in terms of the development of tailored sustainable consumption policy or interventions based on evidence related to this particular segment grouping (DEFRA, 2006). Results of this chapter are important as they identify potential in data to apply this typology to a range of consumption behaviours and attitudes. This is a crucial step forward to understand and influence consumption behaviours.

9.3 Achievement of research aims and objectives

A key challenge for the sustainable consumption agenda is to widen understandings of main determinants that influence consumption behaviour with a view to changing unsustainable patterns of consumption. This research was conducted in response to a dearth of baseline data on household consumption behaviours and lifestyles identified across the island. This study produced
extensive data in a cross-border all-island context. This analysis of household consumption from a behavioural perspective provides insight and crucial baseline data on current consumption patterns across the island.

Results of this research found a range of factors that influence consumption behaviours across the sectors of transport, water and energy consumption on the island of Ireland. Financial reasons appeared to take precedent in terms of respondents’ decisions to undertake many of the listed occasional pro-environmental activities. This central role played by financial incentives in influencing environmental behavioural change can be interpreted in a number of ways. These results could be utilised to support a call for more policies based on the use of environmental levies and taxes to encourage changes to consumption behaviours and lifestyles. On the other hand, there is an inherent danger on over-relying on financial incentives to motivate behavioural change. In other words, there is a possibility that if financial incentives are revoked that many consumers may revert to their original behaviour, regardless of the environmental impact of that behaviour. These findings highlight the importance of, and need for, intrinsic, meaningful behavioural change in terms of shifting towards sustainable consumption.

Although reported levels of environmental concern and awareness are quite high, a greater commitment to pro-environmental behaviours is still required on the part of individuals and householders. Respondents’ awareness of water usage, as well commuting modes, appeared to be associated with socio-economic characteristics. Echoing results from international studies (Schäfer et al., 2011), differences across respondents’ consumption patterns cannot be explained merely by differences in social stratification, such as levels of income, education, and profession or variables like age and gender.

Structural variables, such as services and the built environment, were found to be important drivers of behaviours across the three sectors, particularly for transport where a lack of public transport services could represent a key factor in high levels of car dependency across the sample. This study illustrated how respondents are potentially locked-into unsustainable patterns of mobility due to
structural contexts such as their work duties – or distance from home to work – reflecting wider land use planning issues. Findings from descriptive analysis suggest that there is broad support for additional government investment in public transportation infrastructure, with respondents most frequently citing ‘improved public transport’ as the main motivator that might encourage them to reduce their car usage. The author is aware of bias that may be at play in relation to self-reported actions.

While the results of CONSENSUS Lifestyle Survey could be interpreted as revealing that a greater commitment to pro-environmental behaviour and action is required on the part of individuals and householders, when the data are considered in light of the contemporary policy context, it is clear that individuals are restrained by wider political and social circumstances. The research highlights how there is also a clear need for multi-faceted policy approaches to promote and enable environmental behaviours, involving a mix of policy instruments at multiple levels with multiple actors, drawing on a full range of policy and communications tools, e.g., transport policy. Improved infrastructure and targeted initiatives to promote increased uptake of pro-environmental behaviour change are necessary. These data collected throughout this study shed light on sustainable consumption practice, a topic, which was previously considered a black box for policymakers across the island. Building on these data generated by the lifestyle survey tool, a recent study by Heisserer (2012) designed and evaluated the implementation of travel initiative to promote more sustainable modes of transport with a large multinational corporation in Ireland. An understanding of current behavioural and attitudinal trends is significant to the development of more holistic policy approaches to tackle this ever-increasing problem of overconsumption. Findings drawn from CONSENSUS Lifestyle Survey data will continue to inform future policies and strategies concerning sustainable consumption and lifestyles in the Irish population.

Results of this study show that in order to increase pro-environmental behaviours, a tailored policy approach to different groups of individuals may be more successful than general policy interventions for all. For example, the ability to group respondents as being ‘green’ in terms of their occasional and habitual reported behaviour could be a very useful tool to critically examine what kind of
Tailored behavioural interventions may work, based on evidence related to this particular segment grouping. Segmentation approaches to pro-environmental behaviour change are not without their shortcomings. One criticism often levelled at segmentation lifestyle approaches relates to the lack of on-going research evaluating these tools in terms of long term meaningful behaviour change. Overall, the results in this thesis indicate that there is merit in distinguishing between different groupings of individuals and hence, the segmentation tool developed and implemented in this study has potential to further advance our understandings of pro-environmental behaviours.

Hence, using detailed factor analysis of these data, the author developed an innovative typology of respondents according to their expressed attitudes and reported habitual and occasional behaviours. One benefit of such information is the development of more effective sustainable consumption strategies that are developed specifically to target certain identified lifestyle groupings. Based on data collated for this empirical study, the author subjectively constructed eight different groups of consumers based on respondents’ expressed green-brown attitudes and reported green-brown behaviours using two typologies of behaviour. The author labelled these groups in the occasional behaviour typology (i.e. Typology One) as: Ever-Greens, Aspiring-Greens, Accidental-Greens and Never-Greens. To distinguish between the groupings in each of the two typologies, the author labelled the four groupings based on their habitual behaviour as: Dark-Greens, Browns, Light-Greens and Yellows (i.e. Typology Two). Both typologies illustrated similar consistencies and inconsistencies between the groupings in terms of attitudes and behaviours. Some groups (Ever-Greens and Never-Greens in Typology One and ‘Dark-Greens’ and ‘Browns’ in Typology Two) showed consistency between their attitudes and behaviours. The other two groups in Typology One (‘Aspiring-Greens’ and ‘Accidental-Greens’) and in Typology Two (‘Light-Greens’ and ‘Yellows’) highlight discrepancy between attitudes and behaviours. The results also highlighted that a number of key emerging trends or patterns were observed in individuals’ responses according to varying socio-demographic variables such as age, gender, income, education, as well as reported housing tenure status.
9.4 Contribution to knowledge

9.4.1 Contribution to existing and emerging areas of sustainability research

This study has much to offer in the advancement of environmental policy and behaviour change research. Firstly, this research has identified gaps in knowledge related to the island of Ireland and sustainable consumption developments. The findings presented in this thesis illuminate one of the key difficulties when attempting to explore or understand sustainability: does consuming in a sustainable way mean consuming less or consuming differently with many commentators positing that sustainable consumption needs to involve a reduction in actual consumption due to the increasingly globalised scale of the problem of overconsumption (see Chapter One). The Lifestyle Survey instrument specifically questioned respondents about activities involving consuming more (e.g., the purchase of energy efficient appliances) as well as a range of activities involving consuming less or in a different manner (e.g., their engagement in repairing items or avoiding the purchase of certain products). Results showed that participants expressed high levels of willingness to undertake certain pro-environmental behaviours. However, respondents in this study reported that they were notably less willing to make changes to their lifestyles or reduce their levels of consumption activities.

Heeding international calls for action on sustainable consumption, this research makes a key contribution to the field of pivotal consumption areas of transport, energy, and water by generating comprehensive up-to-date baseline data concerning expressed attitudes and reported consumption behaviours across the island. Prior to this survey, comprehensive data on environmental behaviours and attitudes across priority consumption areas (i.e. water, energy and transport) did not exist, particularly in an all island context. This study addressed this gap in knowledge.

Data were collated through the use of an innovative survey tool designed and tested specifically for this research. As is evident from Chapter Three, the study design employed was highly structured and probabilistically sound. The
questionnaire was carefully drafted and sample areas were purposely selected. This quantitative research design produced the first national baseline data on reported attitudes and behaviours towards sustainable household consumption and sustainable lifestyles in an Irish setting. This tool (or parts of this instrument) has the potential to be used in other studies to generate data, as is already the case (see Section 9.8 below for further details).

Spatially this research was conducted in three locations across the island of Ireland: counties Derry/Londonderry, Galway and Dublin. This is a unique feature of this study in that it explored attitudes and behaviours in an all-island sampling frame. Exploring consumption across two policy regions is an ambitious goal and the research produced some very significant and original data for the two policy regions. Although this sampling strategy employed a rural-urban divide, questions are raised about the diversity of each county as Ireland is quite a homogenous island as opposed to other countries (such as Italy or Spain). Hence, these data need be viewed as both spatially and temporally unique.

This study suggests that social marketing and segmentation approaches may add knowledge to answer some central questions in the theoretical field of environmental behaviour. Advancing the area of lifestyle segmentation approaches to the study of sustainable consumption, the results presented in this thesis indicate that a focus on specific lifestyle groupings with regard to environmental behaviour change may be useful. Building on other key studies (see DEFRA, 2008; Martinsson and Lundqvist, 2010; Csutora, 2012), this research devised a typology instrument to identify eight groupings of respondents (on two separate behavioural scales) according to their attitudes and behaviours towards consumption and lifestyles in an all-island Irish context. These eight different groupings of consumers were constructed with regard to green-brown attitudes and two types of pro environmental behaviours I(occasional and habitual activities). Unlike other segmentation models to date (Martinsson and Lundqvist, 2010; Csutora, 2012), this study is unique as it utilised two behavioural indices to construct the groupings of respondents. This research dismantles the notion that pro-environmental behaviours are uniform in character. Instead the development of two scales, one based on habitual everyday pro-environmental behaviours and the second on occasional ‘one-shot’ behaviours, permitted greater insight into
respondents who undertook each type of action. This study found that there is a temporal element to pro-environmental actions based on the frequency of undertaking certain pro-environmental actions; that is on a regular daily basis or a less frequent occasional or once-off basis. Understanding action in this way helps to illuminate the ways in which different segments of a sample behave and think in relation to different attitudes and behaviours. Such an approach could lead to identification of issues and opportunities, based on our understanding of each segment’s attitudes, barriers, motivations and current behaviours. In particular, segmentation may assist with understanding of the value-action gap (Blake, 1999; Kollmuss and Agyeman, 2002). Findings presented in this volume contribute to the emerging area of work of social marketing ideas applied to sustainability research.

Exploring both types of pro-environmental behaviours introduces a temporal element to the study of behaviour. Respondents who are categorised as displaying green habitual and green occasional behaviours were compared to explore whether or not there is differences between individuals. A number of differences were noted between the two typologies. Evident from this chapter’s results, a number of key emerging trends or patterns were observed in individuals’ responses according to varying socio-demographic variables such as age, gender, income, education, as well as reported housing tenure status. These results highlight the need for different tools to address different environmental behaviours as opposed to a one-size fits all approach to behaviour change.

9.4.2 Contribution to policy and governance

As this thesis has highlighted, in both Northern Ireland and the Republic of Ireland there is a need for more conjoined thinking and action on sustainable consumption and sustainable lifestyles with regard to environmental policy and interventions. Policy has a role in supporting and encouraging pro-environmental behaviour (Lehner et al., 2011). Tailored approaches for different population segments have been identified as useful in terms of environmental policy, and facilitating increased, meaningful behavioural change. The focus is not on moving
people between segments. The aim is rather to use the insights from the segmentation model and wider research to develop tailored and targeted approaches to encourage greater levels of environmental behaviour within segments. Further research is required to explore future environmental policies based on a more tailored approaches. Shifts towards sustainable consumption patterns are possible if framework conditions (e.g., prices, incentives), infrastructure (e.g., public transport, city planning), product supply, and educational strategies are directed towards targeted groupings in an integrated effort. However, any environmental strategy needs to be a broad approach that includes ways, in which positive behaviours are adopted, maintained and reinforced over time. To date, segmentation approaches have informed prioritisation of various communication and policy activities in other contexts such as the United Kingdom (see DEFRA, 2006) and New Zealand (see Barton et al., 2013). For example, Barr and colleagues maintain that studies based on larger surveys – and hence can employ cluster analysis and social marketing techniques – have been more readily utilised by policymakers (Barr et al., 2006).

This research has produced valuable evidence and data that highlights a need and demand for greater governmental action and investment in relation to efforts to promote sustainable consumption and lifestyles. These data illustrate how certain typologies of consumers (i.e. those individuals who are categorised as green and brown in relational to their environmental manners) differ from each other in terms of various socio-demographic factors. For example, green-behaving individuals in the habitual behaviour typology had fewer respondents in the highest income category compared to respondents in the occasional one shot grouping. This makes sense that more respondents in the green occasional grouping would fall under the highest income category, as occasional one-shot actions often necessitate financial input on behalf of the individual to carry out. This is in contrast to habitual everyday behaviours, which often do not incur costs on the respondents other than their time and energy to undertake. Results of this study also found that a greater number of women were categorised as green according to habitual behaviours than that same grouping in the occasional typology. This may reflect the unequal division of labour in the home, with
women undertaking a greater proportion of habitual everyday behaviours as a result.

This study has several implications for policy makers. There is a need for a multi-faceted policy approach, involving an instrumental mix of policy tools at multiple levels with multiple actors. Policy makers, businesses, and consumers play a key role in any integrated approach towards sustainability (Pape and Fahy, 2010). Pro-environmental behaviour is the shared responsibility of individual citizens, public authorities and industry (Sonigo et al., 2012). Government has a key role to play in addressing environmental protection issues according to Lifestyle Survey data, with the majority of respondents requesting the government to ‘use more energy from renewable sources’, as well as to ‘improve energy-efficient appliances’ and provide ‘more education & information on energy-efficiency’. Although environmental laws were seen as important (14% stated this action), the need for more taxes and levies to protect the environment were not viewed favourably by respondent; with only 5% stating this action should be a governmental priority. Results of this research found that over one quarter of respondents (25.6%) felt that the government was solely responsible for protecting the environment; 1% of respondents felt that the government did not need to take any action to protect the environment. This research is in line with Evans and Abrahamse (2009) who argue that vast ‘structural changes are needed such as economic, educational and social reform to engage more individuals in attempts to live more sustainably’ (501). Hence, the role of government to enable sustainable lifestyles is crucial in that choices need to connect to wider ‘structural’ initiatives such that individual action is situated in a meaningful framework of social and environmental change.

For example, results of this CONSENSUS Lifestyle Survey indicate that improved infrastructure and targeted initiatives to promote increased uptake of pro-environmental behaviour change are necessary. There is an urgent need for businesses and citizens to function with less detriment to the environment by providing a framework in which both can operate (EEA, 2005). These results are reflective of Schäfer and colleagues (2011), who also argue that any initial steps towards sustainable consumption require discussion with a broad number of factors, including businesses, universities, and NGOs.
Although it is important to emphasise collective action, individuals do have a role to play in the protection of the environment, in conjunction with changes in infrastructure and systems of provisions. Results of CONSENSUS Lifestyle Survey revealed that a greater commitment to pro-environmental behaviour and action is required on the part of individuals and householders. Responsibility for environmental policy and decision-making in its widest sense is shifting from central government to new sets of actors and institutions at a range of scales from international coalitions to individuals (Jasanoff and Martello, 2004). This research raises questions about the role of consumers themselves and the extent to which necessary change will stem from changes in consumer behaviour. As sustainable consumption challenges demand more basic and fundamental amendments to the role consumption plays in society, pertinent considerations are needed with regard to the relationship between individual consumption patterns and achieving a shift towards sustainable consumption. The manner in which individuals behave and consume is central to any pro-environmental change scenario. Lifestyle Survey data found a sense of personal responsibility on behalf of respondents. However, results of this study show that in areas of energy, water and transport, the current consumption trends do not seem to be in accord with the vision of sustainable consumption and development. This study identified a discrepancy between respondents’ attitudes and good intentions and their reported consumption behaviour across all three consumption areas. There is a need for immediate lifestyle change also as well as structural changes.

Using lifestyle segmentation methods to identify respondents according to behaviours and attitudes is an important step in any transition towards more sustainable consumption. Tailored approaches for different population segments have been identified as potentially useful policy approaches. One-size-fits-all policy may not deliver lasting meaningful change in attitudes and environmental behaviours. Different segments or groupings of individuals need to be treated differently in order to elicit more meaningful behaviour change with regard to sustainable consumption activities. The ability to recognise what segment of society a person belongs to in terms of their consumption behaviours and attitudes is vital in order to critically examine what kind of tailored policy or interventions
are needed (or will work) based on evidence related to this particular segment grouping (DEFRA, 2006). When used in conjunction with broader-based, longer-term political strategies, segmentation approaches at the household level can promote spaces of consumption that are sustainable. Hence, with regard to future environmental policies a more tailored approach may be required to facilitate increased, meaningful environmental behavioral change.

The application of segmenting techniques is an appropriate approach as behaviours vary across groupings and segmenting permits application of inventions to tailored groupings. Hence, this Lifestyle Survey data could potentially provide a rich source of relevant insights for policymakers concerned with changing environmental actions. The typology tool developed in this study could aid with enhanced understanding of environmental behaviours. The application of segmentation methods is also an innovation in this field, and one which has proved extremely useful in this study, in that it provides opportunities and issues for each segment and the implications of this for the way policymakers develop interventions to engage with different groups. There is a need for further analysis of will specific segments in order to identify priority interventions and projects to target each grouping. Even at this early stage, we can see that there are implications that are common to a number of groups, who in other ways are very different. For example, groups identified as ‘Browns’ and ‘Yellows’ although different in terms of attitudes, tend to be similar in terms of their reported behaviour. Likewise, ‘Dark-Greens’ and Light-Greens’ tend to have more similarities in behaviours that one might expect. Based on these findings, the author proposes that any roadmap towards sustainable consumption and lifestyles needs to incorporate social marketing to a large extent. Hence, methods explored in this study could have a greater role to play in future research on sustainable practices. The application of segmenting techniques is an appropriate approach as behaviours vary across groupings and segmenting permits application of inventions to tailored groupings. Hence, this Lifestyle Survey data could potentially provide a rich source of relevant insights for policymakers concerned with changing environmental actions.
9.5 Evaluation of the empirical investigation processes and outputs: benefits, limitations, and recommendations

9.5.1 Quantitative research methodology: survey design, piloting, sampling and implementation

As discussed in Chapter Four, a central advantage to survey methods relate to their ability to enable the examination and identification of trends in attitudes and behaviours (Barr, 2002; Barton et al., 2013). This study produced large scale data concerning attitudes and behaviours in relation to sustainable consumption, which have the potential to have crucial impacts on future sustainable consumption policy and interventions. Similarly, this extensive survey data permits segmentation analysis and the construction of lifestyle groupings.

One limitation of this study was that a probability sampling method was not used to select participants. This method involves the selection of a sample from a population, based on the principle of randomization. This lack of random sampling means that the study is not fully representative of householders in Ireland. Hence, all policy recommendations based on these data must be considered with this in mind. However a multi-stage cluster sampling was employed and great attention to detail was given at each stage of the cluster selection with regard to a wide range of socio-demographic and socio-economic characteristics considered in the selection of each county and Electoral Districts.

9.5.2 Respondents involvement in methodological process: Social desirability, responses bias

Quantitative approaches, such as the ones employed in this study tend not to be frequently used by researchers from the discipline of geography, who instead more commonly study behaviours and actions using qualitative methodologies (Barr, 2008). As a result, the author was conscious of several challenges related to the use of survey methods. In particular, the administered nature of this methodological design raises issues of anonymity and confidentiality which could deter respondents from participating in the study or promote reluctance to divulge personal information (i.e. age or income levels) to the interviewer. In order to
overcome anticipated difficulties, the professionalism of the interviewer is paramount. The interviewer provided reassurance throughout the survey interview that any information provided would be treated as highly confidential. The provision of accurate interviewer identification, as well as a clear but brief project description facilitates the development of a rapport between the interviewer and the respondent; it also promotes a certain level of trust between the two individuals that helps to overcome certain confidentiality issues associated with administered surveys.

Factors such as social desirability and other types of conscious or unconscious response bias\(^{54}\) pose a particular challenge for conducting environmental research. Administered survey methodologies may cause respondents to experience social pressure (due to presence of the interviewer) to report attitudes and behaviours towards the environment that are not in conjunction with their actual beliefs. This leads to social desirability bias when answering survey questions when an interviewer is present\(^{55}\) (Bradburn, Sudman and Wansink, 2004). This tendency towards the need for social approval and acceptance is problematic as it can bias respondents’ answers; as well as mask the existence of true relationships between variables. Research has found that observed levels of social desirability responding tend to vary with the level of anonymity. Results indicated that the more anonymity that is assured, the less social desirability responding is detected (Ong and Weiss, 2000).

Self-report methods are important and practical methods of collating data on environmental behaviours and actions. The use of indices has become an important method of exploring correspondence among individuals’ attitudes and their reported behaviours in empirical studies (see Martinsson and Lundqvist, 2010). Self-report methods enable the measurement of attitudes and behaviours at similar levels of specificity (Böhner and Wänke 2002). Research by Corral-Verdugo et al., (1994-1995) illustrates that the differences among individuals are

\(^{54}\) Various studies show that certain characteristics of interviewers may affect the answers that people give. Factors such as the ethnicity, gender and the social background of an interviewer may all combine to bias the answers that respondents provide (Bryman, 2008). These are issues that the researcher was aware of but was unable to control.

\(^{55}\) It should be noted that researchers are never completely ‘neutral’ when interacting with participants and hence, problems related to interviewer influence apply equally to several other methods.
proportionate and that reported environmental behaviours permit assumptions to be made with a degree of certainty concerning the relative commitments. Although a number of studies attest to the accuracy of self-reports (e.g., Fuji, Hennesy, and Mak, 1985; Warriner, McDougall, and Claxton, 1984), others reveal low correlations between self-reported and observed behaviour (e.g., Corral-Verdugo, 1997). Hence, scholars propose that further investigation is needed when studying valid and reliable measures of self-reported behaviour (see Vining and Ebreo, 2002).

Although self-report measures utilised on surveys often provide a pragmatic and cost-effective way to measure pro-environmental behaviours (Fahy and Rau, 2013), several of the aforementioned response biases can pose particular challenges. Researchers who attempt to measure and report pro-environmental behaviours through the use of reported behavioural indices on survey instruments must be cautious of inaccurate reporting of ‘actual behaviours’ (Barr and Prillwitz, 2013; Gatersleben et al., 2002: 337; Viklund, 2004). Behaviour indices proxies can increase the risk of respondents overstating the extent to which they are environmentally active. Examples of reported behavioural indices include asking individuals how regularly they engage in recycling or water conservation activities. Nonetheless, self-report measures are very popular in the field of environmental psychology (Greendex, 2011; Martinsson and Lundqvist, 2010).

Despite numerous challenges involved with self-reported data, many researchers (see Barr and Prillwitz, 2013; Warriner et al., 1984) still posit that reported behaviour is both a practical and accurate method to measure and report pro-environmental behaviours. Self-report data are particularly valuable when measuring an individual’s actual behaviour is not a feasible option. For example, Barr and colleagues (Barr et al., 2005: 1428) propose that observation research methods of habitual energy conservation behaviour can be difficult due to the creation of ‘artificial behavioural conditions’ caused by such methods. Non-natural behavioural environments can result in modifications of respondents’ behaviours and actions (Barr et al., 2005). Patton found that once individuals are aware that they are being observed, this approach can and does affect how people act (Patton, 2002:269). Although naturalistic observation are superior in that they tend not to ‘interfere with the people or activities under observation’ (Angrosino,
2005:730) and individuals are autonomous to differ their individual and social responses, there are also many methodological and ethical rationale against covertly observing participants of a study in a systematic manner.

While acknowledging these potential drawbacks involved in using an administered survey methodology, it is important nevertheless to recognise the widely documented merits of this type of research design (see Bryman 2008; Neuman 2000). According to Fahy and Rau (2013), the significance of large datasets for critically inspired, progressively orientated research agendas cannot be ignored. As a result, this research study developed and tested a survey instrument to collect large-scale survey data to permit more nuanced understanding of attitudes and behaviours towards sustainable consumption and lifestyles across the island of Ireland, as well as to develop typology groupings of respondents based on their pro-environmental views and actions. Without such large-scale survey data, these aims would be unattainable.

A potential weakness related to scale (both in time and space) is inherent when undertaking this type of methodological approach. Temporally, this research was based on a snapshot of environmental action and attitudes at one point in time and fails to produce longitudinal data. Further longitudinal research is necessary to explore how these actions and attitudes change over time.

9.5.3 Data analyses and interpretation

Reflecting on data analysis undertaken, it is apparent that while care was taken to adopt a specific typology based on this all-island sample, a number of alternative avenues for investigation could potentially have been adopted. This study utilised factor analysis to construct three scales to develop a typology of consumers. Unlike previous studies which employed cluster analysis (Barr and Gilg, 2006; Evans, Lawson, and Todd, 2006; Gröger, et al., 2010), this study employed both behavioural and attitudinal indices to group respondents into a matrix of lifestyle groupings according to their scoring on each index. It is important to acknowledge that this study did not employ the NEP scale in its survey tool, which would have potentially produced data more suitable for cluster analysis techniques.
Methodologically, the exploration of a multidimensional theoretical construct (such as self-imposed austerity) ideally requires a substantial number of questions yielding a high Cronbach's alpha score for a question set. As this author aimed to produce a questionnaire of manageable length, a relatively broad range of constructs were explored with relatively few questions per construct. Hence, there were trade-offs in instrument design in terms of length, number of constructs and number of questions per construct.

9.5.4 Limitations of using segmenting and the lifestyle approach

Using lifestyles can have its disadvantages as these units of analysis have been critiqued proffering snapshots of current situations that appear unproblematic. Lifestyle approaches are questioned on the grounds that they assume lifestyles and behaviours to be stable entities. According to Barr (2008), the constant process of change in a society and social transformation lead to a different composition of lifestyles. Similarly approaches which are based on segmentation models tend to be quite context-specific and do not generalise to other contexts or environments. However, as a concept, lifestyles provide a somewhat common ground for analysis of consumption behaviours across different disciplines.

In particular, this study could be critiqued for its use of subjective threshold criteria for grouping the respondents into each of the eight lifestyle groupings in Chapter Eight. With respect to the six-item attitudinal scale, respondents were required to score 3 or over on the attitudinal index to be classified as ‘green’ and to score less than 3 to be labelled as ‘brown’ according to their attitudes. The study utilised a similar subjective typology criterion for the subsequent development of the two behaviour scales. The midpoint, 3, was utilised as the threshold cut-off point for the occasional one-shot behaviour scale, which ranged from zero to four. Respondents who scored greater than the threshold score (e.g. 3, 4) were labelled as ‘green’ and respondents who scored less than the threshold score were labelled as ‘brown’ with regard to their actions. Similarly, the behavioural index created for habitual behaviours ranged from zero to six. Respondents who scored greater than the threshold score of 3 on the habitual behaviour index were labelled as ‘green’ and respondents who scored less than the
threshold score were labelled as ‘brown’ in terms of their habitual everyday actions. Although these thresholds were informed by previous research on typology constructions, which incorporated similar rationale to define cut-off points, the author recognises the subjective nature of the thresholds employed. Due to the uneven number of items in each item, the categories may be slightly skewed towards a certain behaviour or attitudinal category (i.e. ‘green’ or ‘brown’) in each index. For example the occasional one-shot behaviour scale is slightly skewed towards the ‘brown’ categorisation. In other words, respondents had to score 3 or 4 on this scale to be identified as ‘green’ in terms of their occasional behaviour. Although these cut-off points may appear harsh, the author was conscious of the many biases linked to the study of self-reported pro-environmental behaviours. Hence, the author decided that there was a need to keep the cut-off points relatively high in order to be deemed green in terms of occasional pro-environmental actions.

Whilst acknowledging these limitations, segmentation was still deemed the most appropriate method to use for this research. This innovative approach enables greater examination and understanding of various groupings of respondents and hence, may result in widening our knowledge of pro-environmental behaviour change in relation to habitual everyday actions and occasional one-shot actions. Such knowledge may result in more successful behavioural change interventions that can be tailored to different groupings of respondents.

**9.5.5 Challenge of conducting cross-border research**

Conducting research in two separate policy regions resulted in a number of methodological difficulties related to survey construction (e.g., the use of terms such as ‘miles’ as opposed to ‘kilometres’ to denote distance travelled for commute to work, college or school); question phrasing (i.e. different currencies used in Northern Ireland as opposed to Republic); sampling strategies (i.e. differing definitions of rural and urban borders as well as electoral district boundaries as well as different directories available for Northern Ireland (Pointer database) and the Republic (e.g. the Geo-directory). Although the two regions employ similar sets of regulatory, economic and information instruments to target
sustainable consumption in line with European policy (see Chapter Two), they differed along other lines. From a sustainability perspective, there is a need for greater collaboration between the Republic of Ireland and Northern Ireland as many environmental problems are not context specific.

9.6. Recommendations for future research

This research produced results, which enabled enhanced understanding of trends in relation to public attitudes, beliefs, behaviours and motivations and barriers towards achieving a shift towards sustainability. Greater commitment to pro-environmental behaviour and action is required from policymakers, government and businesses, but also on the part of individuals and householders as a substantial gap between participants’ attitudes and reported behaviour was found. A number of recommendations emerged from this study including:

There is a need for government action to raise awareness of and promote sustainable consumption as uptake of environmental actions could be increased in this sample.

It is not just individuals who need to act, in more environmentally friendly manners, respondents expect the government to play a key role in protecting the environment. It is important for governments in both policy regions to lead by example, by expanding the mandate through policy debate and support for innovation (in products and consumption patterns). Sustainable development and consumption in Ireland requires a comprehensive policy framework for SCP, but also the securing of high level of government commitment to the agenda.

Measures that increase consumer access to greener choices, such as investment in infrastructure (e.g. public transport or recycling services), are important complements to policies that make green choices cheaper. Poor transport infrastructure and a need for more improved and affordable public transport were repeatedly cited as barriers for adopting more sustainable transport behaviours. This finding is in line with recent OECD findings (2013). Hence policymakers urgently need to address these issues.
Economic issues such as the cost of sustainable lifestyles could be examined further as a potential barrier to individuals carry out pro-environmental behaviours. Results of the typology construction indicated that the largest grouping for habitual and occasional behaviours tended to be ‘Yellows’. Further analysis into these groupings is required and could be of interest for future research. In particular, the role that socio-economic class is important due to the economic downturn that was rampant during the period of data collection.

There is also a need for multi-faceted policy approaches to promote environmental behaviours, involving an instrumental mix of policy tools at multiple levels with multiple actors; drawing on full range of policy and communications tools. Tools can and should be combined across policy and communication spectrums (DEFRA, 2008). The role of ‘choice editing’ may also be important to explore (see Thaler and Sunstein, 2008).

This research identified a range of underlying motivators of household consumption behaviour, which need to be addressed if policy-makers wish to implement successful action-plans or roadmaps to encourage more sustainable consumption behaviours.

Policy approaches need to acknowledge the crucial role of human choice in terms of implementing sustainable technologies and changing unsustainable consumption patterns (Jackson and Clift 1998; Rayner et al., 1998; Princen et al., 2002).

There needs to be a renewed focus on behaviour. This research proposes examining two types of behaviours (habitual everyday behaviours and occasional one-shot actions) and to understand the groupings of respondents who undertake both. This research illustrates that there are differences between individuals who undertake habitual actions and those who carry out occasional actions. Results of this study found that there is little overlap in terms of the two types of behaviour with only 35 individuals categorised as green behaving in both groupings. This highlights the need for different interventions and tools to be utilised for different groups of individuals and different behavioural change. Any strategy should target
groupings of respondents and particular behaviours at a time. The DEFRA-commissioned research into Innovative Approaches to Sustainable Consumption and Production in the UK offers various examples of social marketing techniques that would be worth considering in this context, as well as a number of behavioural interventions. DEFRA’s research states that personal contact has a fundamental role in educating and encouraging more sustainable behaviours.

A strong evidence base is required. Developing household audits of behaviours in each of the three consumption sectors (water, energy and transport) could be useful in developing behaviour interventions required.

There is also a need to increase producer responsibility for packaging. Although the majority of respondents (93%) stated that they would be willing to buy products with less packaging, over two-thirds of individuals (68%) stated that they had not avoided products with excess packaging in the past month for environmental rationale. Whilst the provision of information is recognised to be inadequate on its own, it clearly has an important role as part of a package of supporting measures, for example not only helping consumers but also procurers to make more sustainable choices.

The findings presented in this research, which have been disseminated widely through the medium of results factsheets to numerous academic, governmental and general media outlets, will contribute to the lively emergent debate on these important questions. These recommendations could be used by policymakers to implementation of interventions.

9.7 Engagement and dissemination

Due to the comprehensive nature the dataset itself, a number of months were spent completing the preliminary analysis of dataset in order to identify the existing and emerging trends in reported consumption behaviours and lifestyles. In terms of public dissemination of these initial findings and emerging trends in the data, a strategic decision was made to develop one page factsheets56 to provide an overview of the research findings (see Appendix Six for example of factsheets).

56 All nine factsheets are available to download on the CONSENSUS website at www.consensus.ie.
One obvious advantage to factsheet formatting was that it is more accessible to a wider section of the public, rather than being focused towards policymakers and academics. These results factsheets were also distributed in hardcopy and electronic format to all relevant stakeholders, including the six local authorities where the survey was undertaken. Factsheets were sent to all interested respondents in the sample areas. These were also sent to key government officials (North and South) and submitted as part of the official consultation processes for the Framework for Sustainable Development Ireland. Copies of factsheets were requested by Pat Macken for distribution to all Department of Environment staff and the data has been subsequently cited in national policy reports including the latest NESC Report (2012) entitled 'Ireland and the climate change challenge: Connecting 'how much' with 'how to'.

This research and its findings were promoted on the broader CONSENSUS project (www.consentus.ie) through monthly newsletters, as well as online via the CONSENSUS Twitter page. In addition, a set of factsheets was sent to the Association of Geography Teachers in Ireland in September 2012 and they are available as a teaching resource on their website. The author also developed a two-minute animated info-graphic video for wider dissemination of findings, which was designed to upload onto the CONSENSUS website and also other social media forums such as YouTube. The animated info-graphic depicted key results from CONSENSUS’s all-Ireland Lifestyle Survey of 1,500 households on sustainable transport, food, energy and water consumption (see Appendix Seven). Other public dissemination of Lifestyle Survey findings included national media coverage on two broadsheet newspapers (i.e. The Irish Times and Irish Examiner) (See Appendix Eight).

A substantial number of individuals (n= 223 respondents) also expressed interest in receiving feedback and/or offered to participate in further stages of the study. This sample frame is important for future research in Ireland on sustainability and consumption behaviours. At present, two other PhD students in the Geography Department in the National University of Ireland, Galway have used these follow on contacts from the Lifestyle Survey as the basis for their PhD research projects to explore issues related to food sustainability and life stage analysis of
sustainability. Likewise, the data collated through the Lifestyle Survey also provided foundational baseline data for three qualitative research design projects in the areas of consumption of distance, water and energy consumption. These three separate projects were exploratory components of the overall CONSENSUS Project that this study was conducted under (see Appendix One).

There is also potential to use the segmentation tool in future applications and in collaboration with other departments and universities\textsuperscript{57} to explore undertaking of behaviours across different types of behaviours (consumption oriented and habitual), as well as across the different areas of consumption (water, energy and transport).

9.8 Future research: Potential avenues and scope for future agendas

Key insights from this study, in conjunction with the use of segmentation processes, are applicable to the development of future targeted environmental approaches. This research raises questions for future interventions, and also for future research.

It is important to further analyse the data and identified factors in a continuing exploratory and validation phase. And then use regression analyses to determine drivers of behaviours according to each segment of respondents identified. However the author also advises caution when evaluating findings, and their applicability to other contexts. As stated previously in Chapter Four, this thesis used multi-stage cluster sampling to obtain a sample of the population as opposed to solely random sampling techniques.

\textsuperscript{57} The Lifestyle Survey tool has been deployed in other research contexts in the National University of Ireland, Galway’s Engineering Department. Here, elements of the CONSENSUS survey were employed in surveys conducted with residences of homes in Highfields, Ballyshannon, Co. Donegal to examine the efficacy of typical insulation and building fabric upgrade works of residential buildings in reducing energy and greenhouse gas emissions, as well as their effect on the perceived thermal comfort of the occupants. These surveys were conducted pre- and post-retrofit work on the homes in December 2012 and February 2013, respectively.
Although studies (Sheeran, 2002) have found attitudes and behavioural intentions to be adequately predictive of behaviour, due to bias like social desirability bias, the author argues a need for prudence in relation to generalising findings of this research to other contexts. As the focus was on self-reported consumer perceptions of their behaviour as opposed to actual observable behaviour, one potential future line of enquiry could be to investigate the consistency between self-reported and actual pro-environmental consumption behaviours. The employment of smart readers and energy monitoring devices could aid this investigation.

This study opens up avenues for future longitudinal research into expressed attitudes and reported behaviours towards sustainable consumption and how these change with time. Many questions employed on the Lifestyle Survey were asked in a similar study by Motherway et al., (2003) over a decade ago in Ireland. Comparison of responses to this study in the Republic would make for an interesting analysis. Likewise conducting this survey again with another sample of Irish respondents post-recession would make for an interesting study especially from an economic perspective, to gauge whether attitudes towards environmental issues and undertaking of behaviours had changed.

One major advantage to conducting a large scale survey is that larger studies lend themselves more successfully to social marketing techniques (Barr and Prillwitz, 2013). However, this type of research has several limitations that also offer directions for future research. The quantitative approach provides a somewhat crude assessment of underlying issues. A mixed methods approach, which incorporates qualitative methods, could address this criticism. This research was conducted as part of a wider research project, which comprised qualitative research methods (see Appendix One). Commentators (Barr and Gilg, 2006) argue for a conjoining of micro-level and broader scale analyses. For example, lifestyle groups identified within larger-scale surveys can be combined with those smaller-scale qualitative studies to explore these groupings in greater detail and producing richer data.

This study was limited to adult populations meaning that valuable information on environmental attitudes and behaviours of children and adolescence were not
collected directly. Evidence shows that childhood experiences can be important predictors of behaviours in adult life. Therefore habits and routines learned at an early age, through initiatives like Green Schools (O’Malley and Rau, forthcoming) can have an impact of future pro-environmental behaviours in later life. Indeed initiatives like Green Schools were regularly mentioned during fieldwork with some respondents praising these kinds of initiatives for taking the lead in terms of environmental education. Respondents also reported the key role their children have in promoting and/or initiating pro-environmental behaviours that they were taught in a school environment in the domestic sphere; such as composting, recycling, and power saving methods. Hence, understanding attitudes and beliefs of young people is an important component of promoting pro-environmental behaviours in populations. The study focuses on adults’ attitudes and behaviours, which mean no insights, can be made regarding young people. This area merits further investigation.

Methods and analysis employed in this PhD research could play a greater role in future research on sustainable consumption and lifestyles across the island of Ireland.

9.9 Conclusion

In conclusion, this study makes a useful contribution to theories of planned behaviour and lifestyle approaches to environmental behaviour change; adding to knowledge within both the psychological, sociological and social-marketing fields of behaviour change, as well as to work in environmental policy. Given the scale of the challenge of shifting society towards more sustainable consumption, it is important to understand what factors influence environmental behaviour. This research further supports policymakers in furthering their understanding of sustainable consumption. As mentioned above, it has informed a recent NESC report (NESC, 2012).

As is evident from this thesis, the study design employed was highly structured and probabilistically sound. The questionnaire was carefully drafted and sample areas were carefully selected to encourage not only a high response rate, but to ensure a methodologically sound research design. This study also developed an
easily administered, quantitative tool that to explore various segments of individuals based on their consumption behaviours and attitudes. Through the employment of this innovative framework and segmentation tool, a significant gap in research was found pertaining to sustainable consumption and lifestyles.

This study while undertaken within a discipline of geography has taken an interdisciplinary approach, drawing on concepts from a range of other fields such as psychology, sociology and social marketing and contributing to the exchange of ideas about sustainable consumption across disciplinary boundaries. Changing attitudes and behaviours is neither an easy nor a straightforward task. Instead it is a long-term challenge whereby a number of factors interact. In addition to under-researching of the drivers of household consumption and sustainable lifestyles on the island of Ireland, there is a parallel gap in terms of the identification and examination of lifestyle group segments. This research moves forward methodological debates, by testing an innovative approach based on a segmentation tool. The research affirms that segmentation processes can lead to the production of promising groupings of respondents which differ according to their socio-economic and demographic characteristics. There is a need for sophisticated and evidence based policies that are deliberately targeted to deliver defined objectives from different segments of the population. These policies must be designed in conjunction with other policies as well as be long term in focus.

The results of this study represent a significant step towards understanding attitudes and behaviours sustainable consumption and lifestyles across the island of Ireland. However, policymakers should not draw simple conclusions from this research. Human behaviour is complex and can be impacted by a wide range of different factors as the state of the literature in Chapter Two has shown. These findings open up one practical route for future environmental policy. It is important to set reasonable expectations for any policy directed at consumer behaviour and to look for policy options in other areas that may be effective in removing barriers to consumer action that lie outside consumers’ control. According to Gardner and Stern’s (2002) principles for interventions to change environmental destructive behaviours, interventions are most effective when designed from the consumer perspective. This permits the understanding of main
barriers to behaviour change. Surveys are one way that policy makers can gain access to consumers’ perspectives. Hence the use of segmenting could provide even further knowledge towards developing successful interventions for environmental behaviour change.

It is clear that further research is required to assess the ways in which the outputs and learning generated could be acted upon and embedded in political contexts across the island. Future analysis of these identified groupings of respondents is required to gauge their differences according to behavioural and attitudinal beliefs towards sustainable consumption. It could also be constructive to conduct practical interventions with respondents identified from different groupings to gauge their acceptance and willingness to undertake certain pro-environmental behaviours. The research has therefore generated a range of ideas, providing starting points for further research and has advanced understanding on how lifestyle group segmentations can offer insight and learning of sustainable consumption behaviours.

In conclusion, the challenge of achieving any shift towards sustainable consumption demands a very comprehensive and multi-layered policy response that seeks to intervene at a number of different levels, and that involves a range of key stakeholders: government, businesses and individuals alike. This thesis has focused on individual’s expressed attitudes and reported behaviours and highlights the need for a concerted effort to engage more effectively and in a more sustained way with different segments of the population as identified by their expressed attitudes and reported behaviours. Any intervention needs to be in accordance with best evidence that is available. Furthermore pro-environmental behaviour needs to be explored further in relation to its various dimensions rather than accepting a generic single type of behaviour that is all encompassing. As this research has highlighted different types of pro-environmental behaviour have different drivers and barriers. Indeed individuals classified as green acting in relation to habitual actions are not the same individuals classified as green in terms of occasional or once off behaviours. This finding has implications for policy in that it calls for greater exploration of the different types of behaviour.
The findings from this research study aim to act as a catalyst for more focused efforts in tackling complex consumption issues across the island of Ireland: both Northern Ireland and the Republic of Ireland. Data collected as part of this extensive large-scale survey have potential to be utilised and analysed in greater detail to identify interventions and initiatives.


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APPENDIX ONE:

CONSENSUS PROJECT OVERVIEW
CONSENSUS Project:

The CONSENSUS Project (CONSumption, ENvironment and SUStainability) is a collaborative research project, involving Trinity College Dublin and the National University of Ireland, Galway. This project examines four key areas of household consumption that currently impact negatively on the environment and inhibit our ability across the island of Ireland to achieve sustainable development: energy, water, food and transport. The CONSENSUS Project is funded by the Science, Technology, Research and Innovation for the Environment (STRIVE) Programme 2007–2013.

The CONSENSUS Project comprises of a set of integrated work packages that combine foundational, exploratory and integrative research initiatives (see diagram below for an outline of the project structure). Full details of the CONSENSUS Project, and its findings, can be accessed online at [http://www.consensus.ie](http://www.consensus.ie).

Figure 1: CONSENSUS Project Structure
Lifestyle Survey:

Part A: General Attitudes Questions:

Q1. Which one of the following statements best describes how you feel about environmental issues?
(Please tick one option)
1. I am very concerned
2. I am somewhat concerned
3. I am not concerned
4. I am not at all concerned
5. I have no opinion/ Don’t Know

Q2. In your opinion, who is most responsible for protecting the environment?
(Please tick one option)
1. Governments agencies
2. Businesses & manufacturers
3. Communities (i.e. people working together in communities)
4. Individuals themselves
5. Other (please specify ________________)
6. All of the above
7. Don’t know

Q3. In your opinion, what action should the government be focusing on first; in order to protect the environment?
(Please tick one option)
1. Creating more taxes/ levies
2. Using more energy from renewable sources (i.e. wind, solar, biomass etc)
3. Improving technology to make products more energy efficient
4. Providing more education and information on energy efficiency
5. Creating more laws to protect the environment
6. Nothing at all – the government do not need to take any action.
7. Other ____________________________
8. All of the above
9. Don’t know

Q5. Would you be willing to do any of the following to reduce your household’s energy use?
(Please answer Yes/ No/ Don’t know)
1. Buy products with less packaging
2. Buy more energy-efficient appliances
3. Install installation / energy meters in home
4. Reduce your car use
5. Share appliances with neighbours (e.g. communal wash machine)

Q6. To what extent do you agree with the following statements?

A. I feel that my own personal behaviour can bring about positive environmental change.
(Please tick one option)
1. Strongly agree
2. Agree
3. Neither agree nor disagree
4. Disagree
5. Strongly disagree
6. DK
B. I would rate my household as excellent when it comes to being environmentally friendly?

(Please tick one option)
1. Strongly agree
2. Agree
3. Neither agree nor disagree
4. Disagree
5. Strongly disagree
6. DK

C. I can change my consumption behaviour quite easily if I wanted to.

(Please tick one option)
1. Strongly agree
2. Agree
3. Neither agree nor disagree
4. Disagree
5. Strongly disagree
6. DK

D. I do not need to behave in a more environmentally friendly way.

(Please tick one option)
1. Strongly agree
2. Agree
3. Neither agree nor disagree
4. Disagree
5. Strongly disagree
6. DK

Q7. I would be willingly to accept cuts in my standards of living, if it helped to protect the environment.

(Please tick one option)
1. Strongly agree
2. Agree
3. Neither agree nor disagree
4. Disagree
5. Strongly disagree
6. DK/NA

Q8. I would be willing to pay higher prices for goods and services; if it helped to protect the environment?

(Please tick one option)
1. Strongly agree
2. Agree
3. Neither agree nor disagree
4. Disagree
5. Strongly disagree
6. DK/NA

Q9. I would be willing to support higher taxes; if it helped to protect the environment.

(Please tick one option)
1. Strongly agree
2. Agree
3. Neither agree nor disagree
4. Disagree
5. Strongly disagree
6. DK/NA

Q10. I would be willing to sacrifice some personal comforts in order to save energy.
(Please tick one option)
1. Strongly agree
2. Agree
3. Neither agree nor disagree
4. Disagree
5. Strongly disagree
6. DK/NA

Q11A. My overall quality of life has been affected as a result of the recent economic downturn?
(Please tick one option)
1. Strongly agree                     (GO to Q11B)
2. Agree                                     (GO to Q11B)
3. Neither agree nor disagree (Go TO Q12)
4. Disagree                                  (Go TO Q12)
5. Strongly disagree                   (Go TO Q12)
6. DK/NA

Q11B. If so, has your household’s ability to do any of the following been affected?
(Please answer Yes or No or DK)
1. Keep your house adequately warm
2. Take an annual holiday abroad (not staying with relatives)
3. Own a new car
4. Ability to buy your weekly food shopping
5. Ability to go out with friends at least once a month

Q12A. How many of the following does your household own?
1. Cars________
2. Bicycles________
3. TVs________
4. Personal computers/laptops________
5. Mobile phones________
6. Electric shower________

Q12B. Would you regard the following household items to be luxuries or necessities?
(Please answer Luxury/Necessity/Don’t Know/Neither)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>A. Car (personal use)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Bicycle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Dishwasher</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Tumble dryer</td>
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<td></td>
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<td>E. Electric shower/power shower</td>
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<tr>
<td>F. Microwave</td>
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<td></td>
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<tr>
<td>G. TV</td>
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</tbody>
</table>
Q13. I am now going to list off a few things that some people would say are important for their quality of life. Please tell me which three things are most important to your own quality of life?
(Please rank your top 3)
1. A nice place to live
2. Good education
3. Job satisfaction
4. A good standard of living
5. Good family life
6. Good health
7. Good social life
8. Good work-life balance
9. Having religious beliefs/spiritual beliefs
10. Good Community life/relationships with others
11. Other (please specify) _______________________
12. Don’t know

Q14. All things considered how satisfied would you say you are with your life these days?
Please tell me on a scale of 1-10 (where 1 means very dissatisfied and 10 means very satisfied and 11 means don’t know)

0 - 1- 2- 3- 4- 5-6- 7- 8- 9- 10(-11)

Part B: Transport Questions:

Q15. How far do you have to travel (one way) to work/college/school on a daily basis?
(Please tick one option)
1. Less than 1 mile
2. Less than 2 miles
3. Less than 3 miles
4. Less than 5 miles
5. Less than 10 miles
6. Less than 20 miles
7. Over 20 miles
8. Not applicable
9. DK

Q16. Which method of transport do you most frequently use to travel to work/college/school? (Please tick one option)
1. Walk
2. Cycle
3. Bus/train/Luas (if respondent’s ticks bus/train only; please GO to Q18)
4. Taxi
5. Car (driver)
6. Car (passenger)
7. Motorbike
8. N/A

Q17A. Is there public transport (or a private bus service) available for this commute to work/college/school? (Q17A)
(Please tick one option)
1. Yes
2. No
3. I don’t know
4. N/A

Q17B. If yes, what is the main reason for not using this public transport? (Please tick one option)
1. It’s too expensive
2. It’s unreliable
3. It’s very restrictive (can’t go when and where I want)
4. It’s unsafe
5. Buses can be very unhygienic
6. I need to carry heavy/bulky things
7. I need to give lifts to others
8. I need the car for work
9. Never considered it/I don’t know
10. Other (please specify)____________
11. N/A

Q18. In your opinion, which one of the following would encourage people most to reduce their journeys by car? (Please tick one option)
1. An increase in the cost of fuel/parking/toll charges
2. Improved/more affordable public transport
3. Improved bike lanes, footpaths and pedestrian crossings
4. More financial incentives to encourage people to walk/cycle
5. Easier online transactions such as banking, shopping, e-government
6. I don’t believe there is any encouragement that would make people leave their car at home
7. Never considered it/I don’t know
8. Other (please specify)____________

Q19A. In your opinion, what is the biggest benefit of driving a car? (Please tick one option)
1. It’s very flexible (the freedom to travel)
2. I can carry heavy/bulky things
3. I can give lifts to others
4. I’m protected from bad weather
5. It’s safer (less risk of an accident)
6. Never considered it/I don’t know
7. Other (please specify)____________
8. There are no benefits to driving a car

Q19B. In your opinion what is the biggest obstacle to driving a car? (Please tick one option)
1. It’s too expensive (cost of fuel/parking)
2. There are too many traffic jams and congestion
3. It’s bad for the environment
4. I don’t get physical exercise
5. I’m physically unable to drive
6. Never considered it/I don’t know
7. Other (please specify)____________
8. There are no obstacles to driving a car
Q20A. In your opinion, what is the biggest benefit of cycling?
(Please tick one option)
1. It’s a cheaper option
2. It’s good for the environment
3. It’s good for my health
4. No trouble with parking or traffic jams
5. It’s very flexible & convenient
6. Never considered it/I don’t know
7. Other (please specify) __________
8. There are no benefits to cycling

Q20B. In your opinion what is the biggest obstacle to cycling?
(Please tick one option)
1. I have to travel some distance
2. It is costly to buy bike/ equipment/ gear
3. I have to carry heavy/bulky items
4. I need to give lifts to others
5. Cycling is dangerous
6. Lack of secure cycle paths
7. I’m not protected from the weather
8. I’m physically unable to cycle
9. Never considered it/I don’t know
10. Other (please specify) __________
11. There are no obstacles to cycling

Q21A. In your opinion, what is the biggest benefit of walking?
(Please tick one option)
1. It’s a cheaper option
2. It’s good for the environment
3. It’s good for my health
4. No trouble with parking or traffic jams
5. It’s very flexible & convenient
6. Never considered it/I don’t know
7. Other (please specify) __________
8. There are no benefits to walking

Q21B. In your opinion what is the biggest obstacle to walking?
(Please tick one option)
1. I have to travel some distance
2. I have to carry heavy/bulky items
3. I need to give lifts to others
4. Increased risk of accident/injury
5. I’m not protected from the weather
6. I’m physically unable to walk
7. Never considered it/I don’t know
8. Other (please specify) __________
9. There are no obstacles to walking

Q21C. Please state whether or not you could walk to the following places without too much trouble
(Please answer Yes/No/Don’t know to each of the following)
A. A local corner shop/newsagent
B. A church
C. A park or playing pitch
D. A local school
E. A community or recreation centre
F. A crèche (or a childcare facilitate)
G. A pharmacy
H. A pub
I. The place I work

Part C: Food section:

Q22. What is the most important issue for you when you buy food?
(Please rank top three)
1. Price
2. Health benefits/ Nutritional content
3. Where/how food is produced-(i.e. is it fair-trade/ organic)
4. Taste / flavour
5. Brand
6. It's easy to cook (i.e. convenience food/ frozen meals)
7. Other(please specify______________)

Q23. What do you consider “local food” to be?
(Please tick one option)
1. Available at a farmers market
2. Produced within a 30 Km radius of where I live
3. Produced within my county
4. Produced within my country
5. Produced within Europe
6. Other (please specify) _________________________
7. Don’t know

Q24. To what extent, do you agree with the following statements?

A. I pay attention to where and how the food I buy is produced
(Please tick one option)
1. Strongly agree
2. Agree
3. Neither agree nor disagree
4. Disagree
5. Strongly disagree
6. DK/NA

B. I try to avoid eating meat as much as possible
(Please tick one option)
1. Strongly agree
2. Agree
3. Neither agree nor disagree
4. Disagree
5. Strongly disagree
6. DK/NA

E. I trust eco-labels
(Please tick one option)
1. Strongly agree
2. Agree
3. Neither agree nor disagree
4. Disagree
5. Strongly disagree
6. DK/NA

F. I try to reduce the amount of food waste that my household produces
(Please tick one option)
1. Strongly agree
2. Agree
3. Neither agree nor disagree
4. Disagree
5. Strongly disagree
6. DK/NA

G. Food that is organic or fair-trade is too expensive to buy
(Please tick one option)
1. Strongly agree
2. Agree
3. Neither agree nor disagree
4. Disagree
5. Strongly disagree
6. DK/NA

H. I drink bottled water on a daily basis
(Please tick one option)
1. Strongly agree
2. Agree
3. Neither agree nor disagree
4. Disagree
5. Strongly disagree
6. DK/NA

Q25. Does your household Compost –
(Please tick one option)
1. Yes (Go to Q27)
2. No (If no, please continue to Q26 )
3. DK

Q26. If no, what would encourage your household to start composting?
(Please tick one option)
1. Better facilities
2. More space
3. Financial incentives (to reduce waste/ start composting)
4. If friends and family were also composting
5. More information
6. None of the above would encourage me to start composting
7. Don’t know/ N/A
8. Other(please specify) ___________________

Q27. What is the main reason that your household throws food in the bin?
(Please tick one option)
1. Bought too much-expired
2. Change of plans (i.e. late home from work, sickness)
3. Supermarket offers- “buy one get one free”
4. No space to conserve food (e.g. no freezer)
5. Other (Please specify)____________________
6. Our household does not throw food in the bin!
7. Don’t know/ NA

Part D: Energy Section:

Q28. Have you heard of any of the following that can help make your home more energy-efficient? (Please answer Yes or No or DK)
1. Government grants / subsidies
2. Energy meters/smart meters
3. Low flow shower heads
4. Water butts(a barrel for collecting & storing rainwater)
5. Household wind turbines

Q29. How much do you agree with the following statements?

A. I don’t pay much attention to the amount of water I use
(Please tick one option)
1. Strongly agree
2. Agree
3. Neither agree nor disagree
4. Disagree
5. Strongly disagree
6. DK/NA

B. I have the right to use as much water and energy as I want.
(Please tick one option)
1. Strongly agree
2. Agree
3. Neither agree nor disagree
4. Disagree
5. Strongly disagree
6. DK/NA

C. I don’t need to save water – there is plenty of it
(Please tick one option)
1. Strongly agree
2. Agree
3. Neither agree nor disagree
4. Disagree
5. Strongly disagree
6. DK/NA

D. Using less water would be unhygienic
(Please tick one option)
1. Strongly agree
2. Agree
3. Neither agree nor disagree
4. Disagree
5. Strongly disagree
6. DK/NA

E. I already save as much water as I can.

(Please tick one option)
1. Strongly agree
2. Agree
3. Neither agree nor disagree
4. Disagree
5. Strongly disagree
6. DK/NA

Q30. Do you think that the introduction of a water charge would change your water usage?
(Please answer yes or no or DK)
1. Yes
2. No
3. Don’t know

Q31. Has your household done any of the following actions in the past month for environmental reasons?

A. Cut down on water use
   1. Yes
   2. No
   3. DK
   4. No but I intend to in the future

B. Cut down on energy use
   1. Yes
   2. No
   3. DK
   4. No but I intend to in the future

C. Shopped or paid a bill online
   1. Yes
   2. No
   3. DK
   4. No but I intend to in the future

D. Avoided products with a lot of packaging
   1. Yes
   2. No
   3. DK
   4. No but I intend to in the future

E. Bought reusable products instead of disposable ones (e.g. batteries/containers/nappies/bags)
   1. Yes
   2. No
   3. DK
   4. No but I intend to in the future
F. Repaired items rather than purchased new ones-(e.g. electrical goods, clothes)
   1. Yes
   2. No
   3. DK
   4. No but I intend to in the future

Q32. Has your household done any of the following actions within the last 5 years?

Q32A(i) Installed insulation (e.g. lagging jacket, cavity wall insulation, double glazing)
(Please tick one option)
   1. Yes (continue to part ii)
   2. No
   3. DK
   4. No but I intend to in the future
   5. No, but our house is already well insulated

Q32A(ii). If yes, then what was the reason for carrying out this action? (Please tick one option)
   1. I wanted to be more eco-friendly
   2. I wanted to save money
   3. I availed of a grant to implement behaviour
   4. My neighbours/friends recommended it
   5. Other (please specify)____________________________
   6. Both environmental & financial reasons
   7. Don’t know

Q32B(i). Availed of grant to make house more energy efficient
(Please tick one option)
   1. Yes (continue to part ii)
   2. No
   3. DK
   4. No but I intend to in the future
   5. No, but our house is already very energy efficient

Q32B(ii). If yes, then what was the reason for carrying out this action? (Please tick one option)
   1. I wanted to be more eco-friendly
   2. I wanted to save money
   3. I availed of a grant to implement behaviour
   4. My neighbours/friends recommended it
   5. Other (please specify)____________________________
   6. Both environmental & financial reasons
   7. Don’t know

Q32C(i). Purchased an appliance because it was energy efficiency
(Please tick one option)
   1. Yes (continue to part ii)
   2. No
   3. DK
   4. No, but I intend to in the future
Q32C(ii). If yes, then what was the reason for carrying out this action? (Please tick one option)

1. I wanted to be more eco-friendly
2. I wanted to save money
3. I availed of a grant to implement behaviour
4. My neighbours/friends recommended it
5. Other (please specify)____________________________
6. Both environmental & financial reasons
7. Don’t know

Q32D(i). Switched to a renewable energy supplier
(Please tick one option)

1. Yes (continue to part ii)
2. No
3. DK
4. No but I intend to in the future

Q32D(ii). If yes, then what was the reason for carrying out this action? (Please tick one option)

1. I wanted to be more eco-friendly
2. I wanted to save money
3. I availed of a grant to implement behaviour
4. My neighbours/friends recommended it
5. Other (please specify)____________________________
6. Both environmental & financial reasons
7. Don’t know

Q32E(i). Purchased an energy efficient car (e.g. hybrid/ smaller engine/electric car)
(Please tick one option)

1. Yes (continue to part ii)
2. No
3. DK
4. No but I intend to in the future

Q32E(ii). If yes, then what was the reason for carrying out this action? (Please tick one option)

1. I wanted to be more eco-friendly
2. I wanted to save money
3. I availed of a grant to implement behaviour
4. My neighbours/friends recommended it
5. Other (please specify)____________________________
6. Both environmental & financial reasons
7. Don’t know

Q33. How much do you agree with the following statements?

A. I like people to think of me as being environmentally friendly

1. Strongly agree
2. Agree
3. Neither agree nor disagree
4. Disagree
5. Strongly disagree
6. DK/NA

B. I am well informed about the environmental impact of products I use (i.e. food miles, packaging lifespan, production methods)
   1. Strongly agree
   2. Agree
   3. Neither agree nor disagree
   4. Disagree
   5. Strongly disagree
   6. DK/NA

Q34. Have you done any of the following actions in the past 5 years?
(Please answer Yes or no)
A. Become a member of an Environmental Group
   1. Yes
   2. No
   3. Don’t know

B. Signed a Petition about an Environmental Issue
   1. Yes
   2. No
   3. Don’t know

C. Given Money to an Environmental Group
   1. Yes
   2. No
   3. Don’t know

D. Taken part in a Protest or Demonstration about an Environmental Issue
   1. Yes
   2. No
   3. Don’t know

Part E: Socio-demographic Questions:

Q35. Are you…
(Please tick one option)
   1. Male
   2. Female

Q36. What is the highest level of education which you have completed to date?
(Please tick one option)
   1. Primary/ National School Education

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2. Second level education
3. Third level
4. Declined
5. No formal Education

Q37. Do you mind me asking, what year were you born in? __________

Q38. Could I please ask about your marital status?
(Please tick one option)
1. Single
2. Married
3. Widowed
4. Separated/deserted
5. Divorced
6. Long Term Relationship
7. Other
8. Declined/Refused

Q39. How would you describe your present employment status?
(Please tick one option)
1. Employed                  (Go to Q40)
2. Unemployed               (Go to Q41)
3. Student                        (Go to Q42)
4. Retired                         (Go to Q41)
5. Other                            (Go to Q42)
6. Refused

Q40. If you are currently employed, what category below best describes your occupation?
(Please tick one option)
1. Professional
2. Service industry
3. Looking after the home
4. Managerial
5. Technical
7. Farmer
8. Government/ civil service
9. Self employed
10. Other

Q41. If you are currently retired or unemployed, what category below best describes your previous occupation?
(Please tick one option)
1. Professional
2. Service industry
3. Looking after the home
4. Managerial
5. Technical
7. Farmer
8. Government/ civil service
9. Self employed
10. Other

Q42. Which of the following best describes your accommodation?
(Please tick one option)
1. Own without mortgage (i.e. without any loan)
2. Own with mortgage
3. Tenant, paying rent to private landlord
4. Tenant, paying rent in social / voluntary/ municipal housing
5. Accommodation is provided rent free
6. Other
7. Don’t know
8. Refused

Q44. Could you tell me ROUGHLY when this house was built?  
(Please tick one option)  
1. before 1940 –
2. between 1941 and 1950
3. between 1951 and 1960
4. between 1961 and 1970
5. between 1971 and 1980
6. between 1981 and 1990
7. between 1991 and 2000
8. between 2001 and 2010
9. Don’t Know

Q45. How many people currently live at this address? ___________

Q46. Who do you share your home with?  
(Please tick one option)  
1. Family members
2. Live alone
3. Housemates
4. Other
5. Spouse/partner
6. Owner occupied
7. Refused

Q47A. Do you have children?  
(Please answer yes or no)  
1. Yes (Go to part B & C)
2. No (GO To Q48)

Q47B. How many of these children live at home? ______________

Q47C. How many are less than 18 years of age? ______________

Q48. Please state your total household income in the last year from all sources AFTER tax and other deductions. Annual Income : (Please tick one option)  

<table>
<thead>
<tr>
<th>Q48A. Euro</th>
<th>Q48B. Pounds Sterling</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. €0 – 18,999</td>
<td>1. £0-13,196</td>
</tr>
<tr>
<td>2. 19,000- 37,999</td>
<td>2. 13,197 - 26,392</td>
</tr>
<tr>
<td>3. €38,000 - 75,999</td>
<td>3. £26,393-52,785</td>
</tr>
<tr>
<td>4. €76,000 - 113,999</td>
<td>4. £52,786-79,178</td>
</tr>
</tbody>
</table>
Q49. Have you any further comments that you would like to make, about sustainable household consumption?
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________

Please fill out the following section if you or anyone else in your household would be interested in receiving a copy of the results from this research.

Also, if you or any member of your family is interested in helping us further with our research and answering some more questions, please fill in your contact details below.

Q50. Name______________________________________________________________
Q51. Phone number: ______________________________________________________
Q52. Email address (if you have one):________________________________________

Thank you very much for taking part in this study- your participation is really appreciated!
For office use only:

Q53. Interviewer No: ____

Q54. County:
   1. Galway
   2. Derry
   3. Dublin

Q55. Rural/Urban:
   1. Urban
   2. Rural

Q56. ED Number: _________

Q57. Town land / area: ______________

Q58. Housing type:
   A. House/Bungalow
      1. Detached
      2. Semidetached
      3. Terraced/end of terraced
   
   B. Flat/maisonette/apartment
      1. Tenements
      2. 4-in-1 block
      3. Purpose built block of flats
      4. Part of converted/shared house
      5. In a commercial building
   
   C. A room
   
   D. Other

Q59. Survey number: _________

Q60. Date: ____________

Q61. Follow up: ______
APPENDIX THREE:

RATIONALE FOR SELECTING SAMPLING AREAS:
PRIMARY CLUSTERS - COUNTIES
Clusters: Three Counties

Numerous sample frames across the island of Ireland were initially considered for this research. In the end, three counties were selected for sampling: Counties Galway, Derry/ Londonderry and Dublin. These three regions were selected to generate comparative data, but also as stand-alone case study areas in their own right. The rationale for selecting each region is outlined as follows:

Sampling in Area 1 – County Galway

Galway City and County were deemed appropriate sampling frames due to three reasons. As one of Ireland’s second tier cities, Galway City was selected as the second primary cluster sample based on not only its socio-economic profile, but also its geographic location. Situated on the west coast of Ireland, Galway is located on one of Europe’s most peripheral regions. Galway acts as a nodal centre for the surrounding regions on and has been called the ‘gateway to the west’ (Collins and Fahy, 2010). Galway, with its rapidly expanding youthful population, is the third largest city in the Republic. The dynamic growth rate of Galway is reflected in its age profile, with nearly half the population of the city and county under 24 years of age (CSO, 2011). This figure may be partly due to the presence of two higher education institutes in the city. According to the Galway Chambers of Commerce (2005), 7,000 students graduate per annum from these institutes. The city’s more established EDs, areas like Mervue, Renmore, Knocknacarragh and Salthill, have significantly higher percentages of their population aged 65 of age and over. Galway city has a large population of 72,414 people and is surrounded by a large hinterland with a population of 222,940 people according to the census of the population (CSO, 2006). Many of these people commute to work in Galway city. Galway County, selected as the rural sampling frame for the study, had a population of 159, 256 people (Census, 2006); 51.3% of who were male and 48.7% of whom were female. County Galway continues to be quite rural in composition; with 15% of the population living in aggregated town areas and the other 85% residing in the aggregate rural areas.
Sampling in Area 2 – County Derry/Londonderry

In order to enable a comparative cross-border analysis of consumption behaviours, this research selected a county from the six counties in Northern Ireland. County Derry/Londonderry was selected. Derry/Londonderry is similar to County Galway in that both counties comprise of large urban areas with large rural hinterlands surrounding them. Both cities have large rivers flowing through them (the Corrib River in Galway and the Foyle River in County Derry/Londonderry).

The population of the Derry/Londonderry City Council area is currently 107,877 persons accounting for 5.96% of the Northern Ireland total. This represents a 2.68% increase since the 2001 Census (NISRA, 2011). The population of Derry/Londonderry City Council area has expanded from a population of 90,736 persons in the 2001 (Census, 2001). The city’s population is comparatively young; with 24,214 (22.45%) of the population under 16 years of age. Overall, it has the third youngest population of the 26 Council Districts in Northern Ireland; with 36.08% residents under the age of 25 (NISRA, 2011). Just over 71% of the population are aged under 50 years of age while 22.45% of population are aged under 16 years and 11.91% were aged 65 and over. The mean age of the population is 35 years.

County Derry/Londonderry was slightly different in comparison to the Republic of Ireland sample areas in that the county itself is governed according to a number of Local Government District Councils (LGDCs). The LGDCs which comprise the county are as follows: Derry/Londonderry District Council, Limavady District Council, Coleraine District Council and Strabane District Council. These four LGDCs comprise Derry’s rural sampling frame. County Derry/Londonderry’s urban sampling frame was selected from within Derry/Londonderry Urban Area’s jurisdiction.
Sampling in Area 3 – County Dublin

Dublin city was selected as one of the sample areas due to its position as capital city of the Republic and its 1.5 million population (CSO, 2011). Dublin City Council is the largest local authority in Ireland. Dublin city has many similarities with other European cities, such as similar population levels, transportation links and urban sprawl. However despite the many similarities, Dublin tends to be omitted from larger international studies on sustainability and environmental research (see Chapter Three). In terms of the Dublin urban sampling frame, Dublin City Council district was selected due to its large and growing population. Dublin City’s population had increased from 481,854 people in 1996 to 506,211 people in 2006; a 5.06% increase. In particular, the inner-city areas experienced exceptional growth in population; from 99,262 persons to 130,466 persons. This was a 31.44% increase over the ten-year period.

In relation to Dublin ‘rural’ sampling frame, Fingal County Council\textsuperscript{58} was selected as it is different from the other Dublin counties (Dun Laoghaire-Rathdown and South Dublin) in its spatial extent, due to the fact that Fingal’s territory is still quite rural in character. County Fingal is officially Ireland’s fastest growing county council area. Fingal comprises 5.6\% of the total national population and has a population of 239,992 persons (CSO, 2006). Fingal is also Ireland’s youngest county; with Fingal’s demographic profile differing from the State average with the average age of its resident being 32.2 years old (the national average of 35.6 years). Fingal also has a high proportion of young families. Certain age cohorts having a significant influence on housing demand; in particular the age category 25-34 (often referred to as ‘commencers’), are often very likely to become first time house buyers. The commencer age category in Fingal rose by 46\% since 2002 (CSO, 2006).

\textsuperscript{58} Fingal County Council is one of the three new local authorities established when Dublin County Council was abolished in 1994. The other two areas are Dun Laoghaire-Rathdown and South Dublin County Council areas.
APPENDIX FOUR:

RATIONALE FOR SELECTING SAMPLING AREAS: ELECTORAL DISTRICTS (EDs)
Thirty EDs – ten EDs in each of the three counties – were selected based on their varying social, economic and demographic characteristics. Similarly, consideration was based on a number of housing characteristics also such as housing tenure, housing size and housing density in certain areas. The tables below provide summaries of the social, economic and demographic characteristics of each of the ten EDs selected across Galway, Derry/Londonderry and Dublin.

**Sampling Area A: Galway City and County**

Table A: Summary of the social, economic and demographic characteristics of each of the five EDs in Galway City Council’s Jurisdiction (Authors own table based on Galway Altas data, 2009).

<table>
<thead>
<tr>
<th></th>
<th>Mervue</th>
<th>Ballybaan</th>
<th>Menlough</th>
<th>Bearna</th>
<th>Salthill</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Population</strong></td>
<td>2,130 ppl</td>
<td>9,871 ppl</td>
<td>5,742 ppl</td>
<td>12,792ppl</td>
<td>3,376 ppl</td>
</tr>
<tr>
<td><strong>Geographical Location</strong></td>
<td>East</td>
<td>East</td>
<td>North</td>
<td>West</td>
<td>South-West</td>
</tr>
<tr>
<td><strong>No. of Households (HH)</strong></td>
<td>778</td>
<td>3,370</td>
<td>1,827</td>
<td>4,544</td>
<td>1,229</td>
</tr>
<tr>
<td><strong>Household density (per KM²)</strong></td>
<td>Low</td>
<td>High</td>
<td>Low</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td><strong>No. of Lone Parent HHs</strong></td>
<td>122</td>
<td>610</td>
<td>193</td>
<td>628</td>
<td>86</td>
</tr>
<tr>
<td><strong>Young/older age cohorts</strong></td>
<td>Higher percentage of population in the 65+ age cohort</td>
<td>The greatest concentration of young people: possibly due to the presence of the institute of technology in area.</td>
<td>High concentration of young families</td>
<td>High concentration of young people (24%)</td>
<td>Higher percentage of population in the 65+ age cohort</td>
</tr>
<tr>
<td><strong>Rapid areas</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Employment Dependency</td>
<td>Low</td>
<td>High*</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----</td>
<td>-------</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td>Highest no. of people with ‘no formal’ or ‘primary level education only’ in city.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Social Housing</strong></td>
<td>Low levels of local authority housing</td>
<td>Large number of social units of local authority housing (n=110, 31.8% of total Local Authority housing stock).</td>
<td>Low levels of local authority housing</td>
<td>High percentage of local authority rented houses.</td>
<td>Fewest number of Local Authority Housing.</td>
</tr>
</tbody>
</table>

* Highest employment dependency levels in Galway city
Table B: Summary of the social, economic and demographic characteristics of each of the five EDs in Galway County Council Jurisdiction (Authors own table based on Galway Altas data, 2009).

<table>
<thead>
<tr>
<th>Settlement classification</th>
<th>Aran Islands</th>
<th>Ardrahan, Gort and Kinvarra</th>
<th>Cleggan and Renvyle</th>
<th>Oranmore</th>
<th>Tuam (Rural\textsuperscript{59})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geographic Location</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total population (Persons)</td>
<td>1,225</td>
<td>4,422*</td>
<td>2,845 persons*</td>
<td>3,523 persons</td>
<td>4,622 persons</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td>Good mix of age cohorts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment Dependency</td>
<td></td>
<td>Most residents of the villages work outside the village itself.</td>
<td>Highest unemployment rate in county Galway (12.2%);</td>
<td>Highest labour force participation rate at 68% and the lowest unemployment rate at 5.1%.</td>
<td></td>
</tr>
</tbody>
</table>

\* Total number of people residing in all areas combined.

59 Surrounding towns and villages of Belclare, Dunmore, Abbeyknockmoy and Milltown comprise the Tuam Rural ED.
### Sample Area 2: Derry/Londonderry

Authors own table based on NIRSA data (NIRSA, 2001; 2011).

**Table C: Summary of the social, economic and demographic characteristics of each of the five rural sample areas in County Derry/Londonderry**

<table>
<thead>
<tr>
<th>Settlement classification</th>
<th>Ballykelly and Greysteel</th>
<th>Castlerock and Macosquin</th>
<th>Dungiven and Claudy</th>
<th>Eglinton</th>
<th>Limavady</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geographic Location</td>
<td>East of Derry/Londonderry Urban Area (DUA)</td>
<td>North-East of DUA</td>
<td>Dungiven is South-East of DUA Claudy is East of DUA</td>
<td>North east of DUA</td>
<td>East of DUA</td>
</tr>
<tr>
<td>No. of Households (HHs)</td>
<td>1,007*</td>
<td>792 *</td>
<td>1,424*</td>
<td>1,083</td>
<td>4,474</td>
</tr>
<tr>
<td>Total Population</td>
<td>3,065</td>
<td>1,932</td>
<td>4,309</td>
<td>3,165</td>
<td>12,135</td>
</tr>
<tr>
<td>Age Profile</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;16 years old (%)</td>
<td>Greysteel:25.4 Ballykelly:27.8</td>
<td>Macosquin21.8 Castlerock22.2.</td>
<td>Dungiven 29.3. Castlerock 22.3 Macosquin16.8</td>
<td>Eglinton 28.6</td>
<td>Limavady 25.4.</td>
</tr>
<tr>
<td>&gt; 60 years old (%)</td>
<td>Greysteel 11.7 Ballykelly 11.3%</td>
<td>Castlerock 22.3 Macosquin 16.8</td>
<td>Dungiven 11.7</td>
<td>Eglinton 10.3</td>
<td>Limavady 14.3.</td>
</tr>
<tr>
<td>Employment Dependency (% Unempl)</td>
<td>Ballykelly 6.9 Greystee 5.8</td>
<td>Castlerock 3.4 Macosquin 7.6</td>
<td>Dungiven 6.7 Claudy 4.9</td>
<td>Eglinton 4.0</td>
<td>Limavady 5.1</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree level or higher education (%)</td>
<td>Ballykelly 8.8 Greystee 7.0</td>
<td>Castlerock 21.7 Macosquin 8.5.</td>
<td>Dungiven 10.9</td>
<td>Eglinton 20.7</td>
<td>Limavady 10.8%</td>
</tr>
</tbody>
</table>
| No formal qualifications (%) | Greysteel 53.2  
BallyKelly 47.7  
Macosquin 57.8  
Claudy 14.6  
Eglinton 34.1  
Limavady 44.4 |
| Description of area | Ballykelly is a mixed religious community in a relatively affluent area, while Greysteel is predominantly Catholic community in generally affluent area.  
Both villages are predominantly protestant in terms of religious makeup and are both relatively affluent areas.  
Both Claudy (77.9%) and Dungiven (96.8%) are predominantly catholic communities. Both are relatively affluent areas.  
A mixed religious community in a generally affluent area  
A mixed religious community and affluent. |

* Total number of people residing in all areas combined.
Table D: Summary table of social, economic and demographic characteristics of Derry/Londonderry City Council’s Urban Areas (Author’s own table)

<table>
<thead>
<tr>
<th></th>
<th>Strathfoyle</th>
<th>Culmore</th>
<th>Creggan</th>
<th>Kilfennan</th>
<th>Lisnagelvin</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Population</strong></td>
<td>1,581 ppl</td>
<td>2,960 ppl</td>
<td>3,054 ppl</td>
<td>3,321 ppl</td>
<td>3,529 ppl</td>
</tr>
<tr>
<td><strong>Geographic Location</strong></td>
<td>East of Derry/Londonderry Urban Area</td>
<td>North-west of Derry/Londonderry Urban Area</td>
<td>West of Derry/Londonderry Urban Area</td>
<td>South-east of Derry/Londonderry Urban Area</td>
<td>South-east of Derry/Londonderry Urban Area</td>
</tr>
<tr>
<td><strong>No. of Households</strong></td>
<td>551</td>
<td>920</td>
<td>1,001</td>
<td>1,276</td>
<td>1,478</td>
</tr>
<tr>
<td><strong>Average HH size</strong></td>
<td>2.87 persons</td>
<td>3.19 persons</td>
<td>3.05 persons</td>
<td>2.60 persons</td>
<td>2.39 persons</td>
</tr>
<tr>
<td><strong>No. of Lone Parent Households</strong></td>
<td>22.7% lone parent HHs</td>
<td>5.8% lone parent HHs</td>
<td>27.8% lone parent HHs</td>
<td>6.8% lone parent HHs</td>
<td>8.3% lone parent HHs</td>
</tr>
<tr>
<td><strong>Age of population</strong></td>
<td>&lt; 16 yrs old</td>
<td>&gt;60 yrs old</td>
<td>&lt; 16 yrs old</td>
<td>&gt;60 yrs old</td>
<td>&lt; 16 yrs old</td>
</tr>
<tr>
<td></td>
<td>32.6%</td>
<td>12.1%</td>
<td>29.3%</td>
<td>8.0%</td>
<td>4.1%</td>
</tr>
<tr>
<td></td>
<td>12.1%</td>
<td>12.1%</td>
<td>8.0%</td>
<td>9.1%</td>
<td>10.5%</td>
</tr>
<tr>
<td><strong>Employment Dependency</strong></td>
<td>7.8% unemployed.</td>
<td>4.3% unemployed.</td>
<td>12.6% unemployed</td>
<td>3.9% unemployed</td>
<td>4.6% unemployed</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td>No formal education.</td>
<td>60%</td>
<td>24.8%</td>
<td>76.4%</td>
<td>53.9%</td>
</tr>
<tr>
<td></td>
<td>degree level education or higher.</td>
<td>4.1%</td>
<td>30.5%</td>
<td>5.3%</td>
<td>18.1%</td>
</tr>
<tr>
<td><strong>Description of area</strong></td>
<td>A relatively mixed community (84.6% Catholic and 15.2% protestant) in an affluent area with a high concentration of young people.</td>
<td>Culmore is predominantly Catholic area; with a relatively affluent population.</td>
<td>Creggan is a predominantly Catholic social housing area.</td>
<td>Kilfennan is a mixed religious community (66% protestant population) in a predominantly social housing area.</td>
<td>Mixed community and mixed income area</td>
</tr>
</tbody>
</table>
### Area 3: Dublin City and Fingal County

#### Table E: Summary table of social, economic and demographic characteristics of Fingal County Council (Dublin Rural) Sample Areas

<table>
<thead>
<tr>
<th>Settlement classification</th>
<th>Swords (Forest Road Area)</th>
<th>Portmarnock</th>
<th>Blanchardstown (Tyrrelstown ED)</th>
<th>Lusk</th>
<th>The Naul and Garristown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geographic Location</td>
<td>Commuter town</td>
<td>Village</td>
<td>Electoral district boundary</td>
<td>Village</td>
<td>Village(s)</td>
</tr>
<tr>
<td>No. of Households</td>
<td>4,209 HHs</td>
<td>2,604 HHs</td>
<td>8,000 HHs</td>
<td>2,272 HHs</td>
<td>247 HHs (in total)</td>
</tr>
<tr>
<td>Total Population</td>
<td>12,443 persons</td>
<td>8,376 persons</td>
<td>3,663 persons</td>
<td>6,793 persons</td>
<td>453 persons</td>
</tr>
<tr>
<td>Age profile</td>
<td>A stable well established area</td>
<td>A stable well established area</td>
<td>A high youth population; 26% of the overall population is aged below 15 years of age. A high concentration of young families.</td>
<td>Very young population</td>
<td>Relatively young area</td>
</tr>
<tr>
<td>Education</td>
<td>_______</td>
<td>_______</td>
<td>39.8% of the population aged 15 years and over have attained a degree level qualification or higher.</td>
<td>_______</td>
<td>20.7% of residents have attained a degree level education or higher.</td>
</tr>
<tr>
<td>Employment Dependency</td>
<td>Unemployment has almost doubled from its 2006 level (9.7%) to 18.4% (CSO, 2011)</td>
<td>5.1% unemployment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>-------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid Areas</td>
<td>Tyrrelstown Ed is designated as ‘disadvantaged’* &amp; experiences very high percentages of ‘youth at risk’ (42.22%).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Description of area</td>
<td>Mixed community in relatively affluent area; with a mix of both private and social housing.</td>
<td>Blanchardstown is a mixed socio-economic area. The ED of Tyrrelstown is classified as a low income area. Tyrrelstown has the highest concentrations of local authority housing in Fingal County Council (71.1%).</td>
<td>Rapidly developed urban area; 62% of all houses built between 2001 and 2006. Both villages are part of a network of villages in North Fingal, which function as local centres servicing the agricultural hinterland within the County.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* See CODAN Report (1994). Blanchardstown Local Drugs Task Force was established in 1997, because the area was identified as having amongst the highest levels of drug misuse in the country most especially heroin misuse.
Table F: Summary of social, economic and demographic characteristics of Dublin City sample areas

<table>
<thead>
<tr>
<th></th>
<th>Finglas</th>
<th>Clontarf</th>
<th>Pembroke</th>
<th>Rathmines</th>
<th>Crumlin</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total population</strong></td>
<td>33,914 persons</td>
<td>31,063 persons</td>
<td>30,137 persons</td>
<td>35,567 persons</td>
<td>19,219 persons</td>
</tr>
<tr>
<td><strong>No. of Households</strong></td>
<td>7,125 HHs (total)</td>
<td>12,302 HHs (total)</td>
<td>12,009 HHs</td>
<td>15,890 HHs</td>
<td>7,267 HHs</td>
</tr>
<tr>
<td><strong>Description of area</strong></td>
<td>A low socio-economic area</td>
<td>A mixed socio-economic area</td>
<td>A relatively affluent area</td>
<td>A generally affluent population with a high degree of people in work and a relatively low level of unemployment.</td>
<td>A predominantly low socio-economic area that has not experienced dramatic immigration.</td>
</tr>
</tbody>
</table>
APPENDIX FIVE:
OVERVIEW OF SAMPLE PROFILE
<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>878</td>
<td>59</td>
</tr>
<tr>
<td>Male</td>
<td>622</td>
<td>41</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-33</td>
<td>395</td>
<td>27</td>
</tr>
<tr>
<td>34-49</td>
<td>529</td>
<td>36</td>
</tr>
<tr>
<td>50-64</td>
<td>363</td>
<td>25</td>
</tr>
<tr>
<td>65-79</td>
<td>144</td>
<td>10</td>
</tr>
<tr>
<td>80+</td>
<td>21</td>
<td>2</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No formal education/ primary education only</td>
<td>66</td>
<td>5</td>
</tr>
<tr>
<td>Second level education</td>
<td>613</td>
<td>41</td>
</tr>
<tr>
<td>Third level education</td>
<td>813</td>
<td>54</td>
</tr>
<tr>
<td><strong>Housing Tenure status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Own house without a mortgage</td>
<td>547</td>
<td>37</td>
</tr>
<tr>
<td>Own house with a mortgage</td>
<td>527</td>
<td>35</td>
</tr>
<tr>
<td>Tenant – paying rent to private landlord</td>
<td>259</td>
<td>18</td>
</tr>
<tr>
<td>Tenant – paying rent social/voluntary/municipal housing body</td>
<td>37</td>
<td>3</td>
</tr>
<tr>
<td>Accommodation is provided rent free</td>
<td>43</td>
<td>3</td>
</tr>
<tr>
<td>Other</td>
<td>63</td>
<td>4</td>
</tr>
<tr>
<td><strong>Number of Residents</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lived alone</td>
<td>131</td>
<td>8</td>
</tr>
<tr>
<td>Two-Person Household</td>
<td>429</td>
<td>29</td>
</tr>
<tr>
<td>Three-Person Household</td>
<td>335</td>
<td>22</td>
</tr>
<tr>
<td>Four-Person Household</td>
<td>356</td>
<td>24</td>
</tr>
<tr>
<td>Five-Person Household</td>
<td>205</td>
<td>14</td>
</tr>
<tr>
<td>Six+-Person Household</td>
<td>38</td>
<td>3</td>
</tr>
<tr>
<td><strong>Household composition</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family members</td>
<td>898</td>
<td>60</td>
</tr>
<tr>
<td>Live alone</td>
<td>124</td>
<td>8</td>
</tr>
<tr>
<td>Housemates</td>
<td>104</td>
<td>7</td>
</tr>
<tr>
<td>Other</td>
<td>19</td>
<td>1</td>
</tr>
<tr>
<td>Spouse or partner</td>
<td>337</td>
<td>23</td>
</tr>
<tr>
<td>Owner occupied</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td><strong>Income categories</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Euro Income Categories (N= 683)</td>
<td>268</td>
<td>39</td>
</tr>
<tr>
<td>&lt;€37,999</td>
<td>398</td>
<td>58</td>
</tr>
<tr>
<td>€38,000-€113,999</td>
<td>17</td>
<td>3</td>
</tr>
<tr>
<td>&gt;€114,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sterling Income Categories (N=382)</td>
<td>137</td>
<td>36</td>
</tr>
<tr>
<td>&lt; £26,392</td>
<td>137</td>
<td>36</td>
</tr>
<tr>
<td>£26,393 - £ 79,178</td>
<td>232</td>
<td>61</td>
</tr>
<tr>
<td>&gt;£79,179</td>
<td>13</td>
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</tbody>
</table>
APPENDIX SIX:
PUBLIC DISSEMINATION OF RESEARCH FINDINGS:
EXAMPLE OF FACTSHEET
Environmental Concern

Numerous studies have indicated high levels of environmental concern, as well as growing social awareness of environmental degradation across the island of Ireland (O’Day, 2000; 2003; Davies et al., 2005). However, environmental concerns and attitudes are often not the sole motivating factors why people engage in certain behaviours. Attitudes towards perceived moral obligation, perceived entitlement to resources as well as behavioural experience can all influence a person’s behaviour, either directly or indirectly. Similarly, perceived self-efficacy can influence an individual’s behaviour.

Level of environmental concern

When respondents were asked how concerned they were about environmental issues:
- Approximately 86% stated that they were either ‘very concerned’ or ‘somewhat concerned’ (n=1,265) (see Figure 2.1).
- More female respondents (74%, n=240) reported being ‘very concerned’ in comparison to male respondents (77%, n=1,012).
- Levels of environmental concern were slightly higher among respondents who had attained third level education (86%), in comparison to respondents who had completed their education at the primary level (82%) or secondary level (83%).
- Similar levels of environmental concern were recorded across all age cohorts, with marginally higher levels of concern noted amongst respondents in the 50-65 age category (88%) and also in the 65-75 age group (88%), in comparison to respondents in the younger 16-35 age categories (83%).

Environmental responsibility

- Over half of the respondents (50%, n=871) felt that they needed to behave in a more environmentally friendly way.
- More female respondents (61%, n=537) in comparison to their male counterparts (54%, n=334), believed that they needed to behave in a more environmentally friendly way.
- Respondents in the younger age cohorts, in comparison to those in the older age categories, were more likely to feel that they should ‘behave in a more environmentally friendly way’, with 50% in the 18-34 years age group believing they should behave in this way, in comparison to 41% in the 55-75 year group and 38% in the 80 years and older age category.

Self-efficacy

- Overall 62% of the sample (n=1,126) believed that their personal behaviour could make a difference in the environment.
- More women (85%) in comparison to men (77%) believed that their own personal behaviour could make a difference in the environment.
- A greater number of the respondents who had completed third level education (84%), in comparison to respondents who had completed their education at either primary level (76%)

Social desirability

- Over two thirds of all respondents (65%, n=1,020) stated that they liked to be perceived as environmentally friendly.
- More female respondents (73%, n=591) in comparison to their male counterparts (62%), wished to be viewed as being ‘environmentally friendly’.
- More respondents in the third level education group (73%, n=294) in comparison to those in the secondary level education group (54%, n=294) for the primary education group (59%, n=38), wished to be perceived as ‘environmentally friendly’.
- In the Republic, respondents in the higher income categories (greater than €31,000 per household p.a.), in comparison to respondents in the lower income categories (less than €37,999 per household p.a.), were more likely to want others to perceive them as being ‘environmentally friendly’.
- Conversely in the Northern Ireland sample, respondents across all income categories, high and low, were just as likely to want others to perceive them as ‘environmentally friendly’.

References

APPENDIX SEVEN:
INFO-GRAPHICS
For wider dissemination and outreach purposes, the author created a short animated info-graphic based on the findings of the CONSENSUS Lifestyle Survey. This two-minute info-graphic depicted key results on transport, water, and food and energy consumption. This info-graphic is available to view on the CONSENSUS website at www.consensus.ie. It is also available to view on other social media forums such as YouTube, Twitter ad LinkedIn. The screenshot below shows the link uploaded onto the CONSENSUS website.
APPENDIX EIGHT:
PUBLIC DISSEMINATION OF RESEARCH FINDINGS:
NEWSPAPER COVERAGE
National Media Coverage

The findings of the CONSENSUS Lifestyle Survey were disseminated to a wide audience. The author sent press releases to national and local media sources to disseminate the findings. The screen shots below are examples of the media coverage that the results received in national broadsheet newspapers.

Example One: The Irish Times (Irish Times, 2012)
Example Two: The Irish Examiner (The Irish Examiner, 2012).

Water charge would significantly influence usage, survey finds

More than two-thirds of people would change their water usage if a charge were reintroduced, according to a survey published today by NUIG.

The ConsEnSus Lifestyle Survey found that the re-introduction of a water charge would lead 68% of respondents to change their water use.

The research, involving 1,500 households around the country, carried out between 2010 and 2011, found a marked improvement in environmental awareness in Ireland over the past decade.

The study also examined people's attitudes and behaviours towards sustainable household consumption and sustainable lifestyles in the areas of mobility, food and energy use.

A total of 89% said they try to reduce the amount of food waste their household produces and 86% admitted they are concerned about the environment.