MATERIALISM AND ENVIRONMENTAL CONCERN

EXAMINING VALUES AND LIFESTYLE CHOICES AMONG PARTICIPANTS OF THE 21ST CENTURY LIVING PROJECT

by

Birgitta Gatersleben, Emma White, Wokje Abrahamse,

Tim Jackson, David Uzzell

The Research Group on Lifestyles, Values and Environment (RESOLVE) is a novel and exciting collaboration located entirely within the University of Surrey, involving four internationally acclaimed departments: the Centre for Environmental Strategy, the Surrey Energy Economics Centre, the Environmental Psychology Research Group and the Department of Sociology.

Sponsored by the UK's Economic and Social Research Council (ESRC) as part of the Research Councils' Energy Programme, RESOLVE aims to unravel the complex links between lifestyles, values and the environment. In particular, the group will provide robust, evidence-based advice to policy-makers in the UK and elsewhere who are seeking to understand and to influence the behaviours and practices of 'energy consumers'.

The working papers in this series reflect the outputs, findings and recommendations emerging from a truly inter-disciplinary research programme arranged around six thematic research strands:

Carbon Footprinting: developing the tools to find out which bits of people's lifestyles and practices generate how much energy consumption (and carbon emissions).

Psychology of Energy Behaviours: concentrating on the social psychological influences on energy-related behaviours, including the role of identity, and testing interventions aimed at change.

Sociology of Lifestyles: focusing on the sociological aspects of lifestyles and the possibilities of lifestyle change, exploring the role of values and the creation and maintenance of meaning.

Household change over time: working with individual households to understand how they respond to the demands of climate change and negotiate new, low-carbon lifestyles and practices.

Lifestyle Scenarios: exploring the potential for reducing the energy consumption (and carbon emissions) associated with a variety of lifestyle scenarios over the next two to three decades.

Energy/Carbon Governance: reviewing the implications of a low carbon society for governance, and investigating, in particular, the role of community in stimulating long-term lifestyle change.

For further information about our research programme or the RESOLVE
Working Paper series please visit our web site

http://www.surrey.ac.uk/resolve

MATERIALISM AND ENVIRONMENTAL CONCERN

EXAMINING VALUES AND LIFESTYLE CHOICES AMONG PARTICIPANTS OF THE 21ST CENTURY LIVING PROJECT

by

Birgitta Gatersleben, Emma White, Wokje Abrahamse,

Tim Jackson, David Uzzell

RESOLVE Working Paper 01-09

Research Group on Lifestyles, Values and the Environment

Centre for Environmental Strategy (D3)

University of Surrey

Guildford, GU2 7XH, UK

http://www.surrey.ac.uk/resolve/

Contact details:

Birgitta Gatersleben: email – b.gatersleben@surrey.ac.uk

Tel: 00 44 (0)1483 689306, Fax: 00 44 (0)1483 686671

Summary

With ever increasing concerns about the consequences of climate change, the household is an important focus for change. The 21st Century Living Project is a year long intervention study aiming to examine sustainable lifestyle choices, the values that underlie sustainable behaviours, the barriers to their adoption, and ways to overcome them. It follows participants from 100 households, monitoring their energy use and waste production. Each household is given £500 for participating in the study. Interviewers visited each of the participating households in August 2008 to conduct an environmental home audit and to present participants with a home pack with environmentally friendly products.

This report describes the results of a survey study focussing on attitudes, values and lifestyles of the participating householders. All household members of 16 and over were asked to complete the questionnaire before the environmental audit which they handed back to the interviewer during the visit. A total of 188 questionnaires were completed.

The aim of the survey study was to examine the relationship between respondent values and their consumer behaviour. The survey asked participants about their lifestyle, ownership and relative importance of a range of possessions, reasons for participating in the study, plans for their participation and their £500 incentive money, their intention and perceptions of difficultly in relation to home electricity use, transport and food consumption and their values. In relation to values we specifically explored the relationship between materialistic values on the one hand and environmental concern on the other.

The findings of the study can be summarised as follows:

1. Values
On average, respondents expressed high concern for environmental issues and the need for change (environmental values). They indicated being much less concerned about material aspects such as acquiring more wealth and possessions (materialistic values). However, we did not find that people who expressed high environmental concern had necessarily low materialistic values and vice versa. About a quarter of the respondents expressed relatively high environmental concern and high materialism simultaneously.

2. Lifestyles
Time spent on various activities ranged significantly between respondents. As expected, people tended to spent more time on activities that support their (materialistic) value orientations. For instance, respondents who held stronger materialistic value orientations spent more time fun shopping and playing computer games than respondents who attached less importance to materialistic values. Environmental concern was not related to lifestyles.

3. Ownership and perceived importance of possessions
Respondents owned most common modern goods such as televisions and mobile phones. For most products ownership and perceived importance are related, i.e., those goods that are owned by most people are also perceived to be important by most people. On average, respondents who attached more importance to material values tended to attach more importance to modern leisure goods (CD player, games consul) than people who hold weaker materialistic values. Respondents who held stronger environmental values were

more likely to attach importance to environmental goods than people who held weaker environmental values.

4. Intentions to change

Respondents were more likely to say that they would make changes in their food consumption than they were in their home energy use and transport. They also believed changes in food consumption would be easier to make. Intentions to change transport behaviours and home energy use behaviours were strongly related but neither were strongly related to intentions to change food consumption. A strong material value orientation was negatively related to intentions to change. Strong environmental concern was positively related to willingness to change (and perceived ease), in particular willingness to change energy and transport behaviours.

5. Household conflict

On average, respondents indicated that they talked to other family members about environmental issues and that they tried to persuade others to behave environmentally friendly and sometimes even tell them off. They did not feel they got told off themselves. Respondents with strong environmental values were more likely to say that they talked to others and that they tried to persuade others and tell them off, then respondents with weaker environmental values. Strong materialistic values were negatively related to environmental discussions in the home.

6. Planned changes and plans to spent the incentive money

Most respondents were very clear that they had decided to participate in the study to try to live more sustainably and to learn more about how to do this. Those who held stronger environmental values were particularly likely to say this. When asked what kind of changes they expected to make, most respondents referred to buying products in order to help them do this. The most common options were installing insulation and replacing goods with more energy efficient alternatives.

The next stage for the 21st Century Living project will be to implement the intervention programme, utilising, amongst others, feedback on energy use and waste production and the provision of information via the website and information pack. The findings from the present questionnaire will be useful in helping to tailor the intervention programme. They also highlight the sustainable behaviours which are currently perceived as being difficult to adopt, and so information can be provided to help participants overcome these difficulties. It will be interesting to see whether the intended lifestyle changes are actually implemented, and to look at where and why there may be discrepancies between the two.

1. Introduction

The environment has become a hot topic in recent years, with increasing concerns over the threats posed by climate change and finite global resources. According to the Stern Review (2007), if current global carbon emissions are not ultimately reduced by 80% we risk irreversible climate change, resulting in "major disruption to economic and social activity, on a scale similar to those associated with the great wars and the economic depression of the first half of the 20th century" (p.vi). The UK government has created the Climate Change Act which, if passed, would commit the UK to reduce CO_2 emissions by at least 80% by 2050 (DEFRA, 2008). A report by the Office of Climate Change (2007) found that 27% of UK carbon emissions arise from households. Twenty-nine percent of UK carbon emissions comes from transport, around 80% of this can be attributed to personal transport in the form of cars and taxis (Department for Transport, 2007). There are also concerns over the rate of UK waste production and water consumption. In 2004 the UK was the fourth largest producer of municipal waste for landfill (European Committees, 2005) and had the third lowest rate of recycling across the 15 European Union members (DEFRA, 2006). In terms of water, the entire South East of England has been classified as "seriously water stressed" (DEFRA, 2008, p.21), with unsustainable abstraction levels in the area. Climate change and increasing usage is expected to further add to the water stress across England (DEFRA, 2008; Environment Agency, 2008). Twenty-five percent of all the water abstracted in England and Wales is used in the household (DEFRA, 2008), with around one third used to flush the toilet and another third for showers, baths, and taps (Waterwise, 2008). Household energy use, water consumption, and waste production therefore account for a substantial proportion of UK resource use and carbon emissions, and consumer behaviour change can play an important role in helping to meet reduction targets.

The 21st Century Living Project is a year-long project which aims to provide an in-depth understanding of UK householders' behaviour and lifestyles, utilising multiple measures to monitor consumption patterns, and investigating ways in which householders can reduce their environmental footprint and increase home energy efficiency (http:21stcenturyliving.edenproject.com). It will address behaviour with regard to domestic energy use, water consumption and waste reduction; the first study in UK to look at all three. The aims of the 21st century living project are formulated as follows:

- To better understand the barriers to sustainable living amongst householders and research techniques and solutions that can overcome them;
- To share the study findings and recommendations with producer groups, environmental NGOs, government and retailers in order to advance product efficiencies to create industry wide best practice;
- To identify values which underlie sustainable behaviours;
- To encourage positive behavioural change amongst householders to adopt greener lifestyles.

The study will examine the effect of a range of interventions on household consumer behaviour. These interventions include incentives (all respondents have been given £500 for participating and have received a start-up pack containing eco products), feedback (householders will be given feedback about their own energy use and waste production), and information (householders will receive suggestions for saving energy and reducing

waste production). A range of social science studies have examined the effectiveness of such interventions. For instance, in a study on energy saving in an organisation, Siero, Bakker, Dekker and van den Burg (1996), showed that a group who received feedback about the conservation behaviours of the other group, saved more energy than the group that did not received feedback. McKenzie-Mohr and Smith (1999) suggest six "tools" for behaviour change, different interventions which include creating commitment to change, utilising prompts, incentives, and social norms, communicating effectively, and removing external barriers. The more successful interventions in social sciences studies have been shown to involve tailoring (Daamen, Staats, Wilke, & Engelen, 2001) and use a combination of interventions before and after measuring the behaviour (such as information and feedback) (Abrahamse, W., Steg, L., Vlek, C., & Rothengatter, T., 2005). In the 21st century living project households will be exposed to a range of interventions and some of the information they receive will be tailored to that specific household; suggestions for behaviour changes will be different for each household and will depend on their situation and behavioural pattern (Kreuter & Skiner, 2000). One of the aims of the project will be to examine whether behaviour changes can be observed among participants of the 21st century living project and to explore what factors may have contributed to these changes.

The present report describes the findings of a survey that was distributed among all 100 participating households. The survey aimed to measure the attitudes, perceptions and values of all household members of 16 and over. A range of studies have shown that psychological variables such as values and attitudes are related to consumer behaviours (e.g., De Groot and Steg, 2007, 2008). However, few studies have explored how these variables may interact with household responses to a behaviour intervention.

The aim of the study is to examine the relationship between values, behaviours and wellbeing. Below we will briefly discuss each of these concepts and formulate specific research questions and hypotheses that will be addressed in this report.

1.1 Values

In the social sciences values are usually defined as 'concepts or beliefs about end states or behaviours that transcend specific situations, guide selection or evaluation of behaviours and events, and are ordered by relative importance' (Schwartz and Bilsky, 1987, p 551). In this research we examine both general and specific values. We have chosen to concentrate on measuring two specific values in detail, which are likely to be relevant for the research topic of sustainable lifestyles: materialism and environmental concern. General values tend to be more stable whereas specific values are more closely linked to attitudes and are more context dependant. Stern et al. (1995) developed a theoretical framework to describe the relationship between general values and specific environmental behaviours via specific values and general and specific attitudes. According to this model general values are most strongly related to specific values, which in turn are most closely related to general attitudes followed by specific attitudes and intentions. We would therefore expect, in the present research, that general values will be less strongly related to specific behaviours and behavioural intentions than specific values.

1.1.1 General values

Most of the research on values in the social sciences is rooted in the work of Rokeach (1973), who developed a list of 18 instrumental and 18 terminal values. Schwartz built on this list and developed a list of 56 'guiding principles in life' (e.g., Schwartz, 1992). A large number of studies, including populations from all over the world, have been conducted using the Schwartz value inventory. This research suggests that human values can be grouped into 10 motivational clusters: benevolence, universalism, self-direction, stimulation, hedonism, achievement, power, security, conformity and tradition. These value clusters can be plotted along two dimensions: self-enhancement (e.g., power) versus self-transcendence (e.g., universalism) and conservation (e.g., tradition) versus openness to change (e.g., stimulation).

A number of studies have linked general values to materialism. Richins (2004) defines materialism as "the importance ascribed to the ownership and acquisition of material goods in achieving major life goals or desired states" (p.210). Richins (2004) used the Schwartz value survey to test the external validity of her scale and found strong positive correlations between materialism and power, achievement, hedonism and stimulation and negative relations with self-direction, universalism, benevolence, tradition and conformity. Kilbourne et al (2005) showed in a study among university students in Canada, Germany and the US that materialism was positively related to self-enhancement and negatively to self-transcendence.

A range of studies have shown that general values are related to environmental concern and behaviour. People who hold stronger self-transcendent values are more likely to report more environmental concern and behaviour (Garling et al., 2003, Nordlund and Garvill, 2002. Schultz, 1999; Stern et al., 1994, 1999; see Dietz, Fitzgerald and Schwom (2005) for an overview of values and environmental concern literature). Stern and colleagues suggested that there are three values that underlie environmental concern: egoism, altruism and biospherism. He adopted the Schwartz values inventory to test this hypothesis and found support for it. De Groot and Steg (2007, 2008) have since further developed this scale and created and tested a short rating scale which aims to measure these three value orientations. Their research has shown that biospherism and to some extent altruism are positively related to environmental concern and behaviour (De Groot and Steg, 2007, 2008).

Respondents in the 21st century living project were asked to complete the short scale developed by De Groot and Steg. The study explores how these values are related to more specific concerns of the respondents and their behaviour. It is expected that respondents who attach more importance to biospheric (e.g., protecting the environment) and altruistic values (e.g., a world at peace) will express stronger environmental concern and will be more likely to say that they intent to adopt a range of pro-environmental behaviours during their participation in the project. Respondents who attach more value to egoistic values (e.g., success, achievement) will express higher levels of materialism.

1.1.2 Environmental concern

The most common way to measure environmental concern is by means of the New Environmental Paradigm (NEP) scale developed by Dunlap and colleagues (1978, 2000).

This scale measures the extent to which people have an ecological (focus on the intrinsic value of nature and the environment) rather than an anthropocentric worldview (value of the environment for humans). Several studies have reported positive relationships between reported pro-environmental behaviours and environmental concern (e.g., Meinhold & Malkus, 2005; Roberts et al., 1997). Some research suggests that this relationship is stronger for low (financial, effort) cost behaviours than for high cost behaviours (e.g., Stern 1992).

This present study explores the relationships between environmental concern (as measured with the NEP) and a range of behaviours including relative importance attached to possessions and intentions to adopt different kinds of pro-environmental behaviours (e.g. energy, transport, food). It is expected that people who have strong environmental values are more likely to say that they intent to adopt several pro-environmental behaviours.

1.1.3 Materialism
Whereas environmental concern is positively related to pro-environmental behaviour materialism tends to be negatively related to pro-environmental behaviour (Richins and Dawson 1992; Cohen and Cohen, 1996; Kasser, 2005). Moreover, marked differences have been found in the types of possessions valued by those rating high or low in materialism, and in the reasons behind their attached value. Richins (1994) found that high materialists were more likely to value more expensive possessions, assets, and appearance and transport related possessions, and less likely to value possessions which had "interpersonal associations" or were recreational. Consistent with this, high materialists were more likely to report "financial worth" as the reason for valuing these possessions, and less likely to report the enjoyment that it could afford (Richins, 1994).

In this report we will explore the extent to which respondents hold both materialistic and environmental values and how these values are related to their behaviours and behavioural intentions. We would expect materialism to be negatively related to environmental concern and pro-environmental intentions. Moreover, we will explore whether materialism is related to the relative importance people attach to a range of products they may own.

1.1.4 Value conflict?
We know that materialism is negatively related to pro-environmental behaviour (Richins and Dawson 1992; Cohen and Cohen, 1996; Kasser, 2005). Environmental concern, on the other hand is positive related to pro-environmental behaviour (e.g., Stern, 2000; De Groot and Steg, 2008). But few studies examine both materialism and environmental concern at the same time. This is unfortunate as there is an implicit assumption in the literature that those values are simple opposites and there is little discussion about the extent to which people can hold both values simultaneously and what this then means for individual wellbeing and the environment.

The few studies that have measured both materialism and environmental concern at the same time find a small negative correlation between the two concepts (e.g., Burroughs and Rindfleish, 2002; Clump et al. 2002). Kempton, Boster, and Hartley (1996) suggest that materialism and environmental values are incompatible, finding in their survey that more materialistic American individuals value environmental protection less. Similarly, Saunders (2007) found a significant negative correlation between materialism and attitudes towards

environmentalism in an Australian sample. The idea that materialism and environmental concern are opposites is supported by a large body of research examining general values based on the Schwartz values inventory (e.g., Schwartz, 1990, 1992, 2004), which suggests that environmental concern and materialism are often inversely related to the same value dimension. As indicated before, Schwartz (1993) suggests that human values can be plotted along two dimensions: self-enhancement (e.g, power) versus self-transcendence (e.g., universalism) and conservation (e.g., tradition) versus openness to change (e.g., stimulation). A range of studies have shown that materialism is related to self-enhancement whereas environmental concern is related to self-transcendence (Richins, 2004; Kilbourne et al., 2005; Stern and Dietz, 1994; Schultz and Zelezny, 1999; De Groot and Steg, 2008). These studies suggest that materialism and environmental concern may be opposite ends on a dimension (self-enhancement versus self-transcendence). However, most of these studies report small relationships between the relevant concepts and few studies find strong negative correlations between materialism and environmental concern, suggesting that many people may hold both, potentially conflicting values simultaneously.

The hypothesis that materialism and environmental concern should be negatively correlated originates in the Ingelhart tradition (e.g., Inglehart, 1990; 1995). Ingleharts hypothesis is based on a Maslow's (1954) insight that individuals pursue certain goals in hierarchical order: from materialism to post-materialism. Inglehart (1990) showed that (political) values in Western societies have shifted from materialism (e.g., giving high priority to maintaining order in nations and fighting rising prices) to postmaterialism (e.g., giving higher priority to participation in government decision and freedom of speech; Abramson and Inglehart, 1995; Inglehart, 1990). Inglehart explains this by suggesting that in Western countries the basic needs for food, shelter, safety and comfort have been satisfied; therefore, people can be more concerned with higher-order values such as personal freedom and development (see Maslow, 1954). More recent work, however, rejects this hypothesis by showing that environmentalism is rising not only in the developed world but also in developing countries (Brechin and Kempton, 1994). Indeed in later work, Maslow himself suggested that his earlier hierarchical ordering of needs was flawed (Maslow, 1968). Moreover, cross-cultural research by Ger and Belk (1996) suggests that individuals in more affluent societies (e.g., US) have stronger materialistic value-orientations than those who live in less affluent societies.

This study examines the general values, environmental concern and materialism of participating householders. The study will explore to what extent materialism and environmental concern are related and how they are related to behaviours and behavioural intentions.

1.2 Wellbeing
High levels of materialism have been linked to lower levels of well-being (Burroughs & Rindfleisch, 2002; Kasser (2002); Tatzel, 2002; Vansteenekiste, Duriez, Simons, & Soenens, 2006). This has been found for adults as well as adolescents (Cohen and Cohen, 1996; Kasser, 2005; Scheldon and McGregor, 2000). The negative correlation between materialism and wellbeing is often explained in terms of psychological and personality factors which may underlie a materialistic value orientation (e.g., Arndt, et al., 2004; Kasser, 2002; Chaplin et al., 2007). Solberg, Diener and Robinson (2004), however, suggest that this relationship is

determined by a range of factors. They did not find support for the hypothesis that it can be explained by personality factors. Burroughs and Rindfleish (2002), argue that the often found negative correlation between materialism and psychological wellbeing may actually be because of a value conflict people experience. Their research in the US showed that the extent to which people hold both materialistic values and conflicting social altruistic values (family values, religious values) at the same time is indeed related to psychological tension and wellbeing. In this research we will explore the relationship between values and wellbeing. We examine whether the extent to which respondents hold different values is related to their reported wellbeing.

1.3 Lifestyles and behaviours
This report aims to examine the values that underlie (un)sustainable lifestyles of participants in the 21st Century Living Project. The main dependent variables in this research are therefore the (consumer) behaviours and lifestyle choices of the respondents. In this first survey a range of questions were included to measure these concepts. These include intentional pro-environmental behaviours, ownership and perceived importance of consumer products and time spent of a range of activities. In addition the home-audit provides detailed information on the homes and lifestyles of the respondents in terms of energy use. Unfortunately, this information was not available at the time of writing of this report and will therefore be presented elsewhere.

1.3.1 Intentions
The most often used measures of pro-environmental behaviour in social science research focus on intentional behaviour; behaviours which people choose to adopt with the intention of reducing their environmental impact (Gatersleben, Steg and Vlek, 2000). These measures often focus on issues such as recycling, transport, home energy use and in some instances political behaviour. In the current study we adopted some of the questions used in previous research to measure people's intentions to reduce their energy use in the home (e.g., replacing light bulbs, turning down the heating) and their intentions to reduce energy use though changes in transport behaviours (e.g., driving less, using more public transport). In addition we included questions on a relatively under-researched topic: food consumption. We would expect that respondents in this study would indicate that they are more willing to adopt each of these behaviours if they have a stronger environmental concern and a less materialistic value orientation. A weaker relationship is expected to be found between general values and behavioural intentions.
In addition to measuring behavioural intentions the respondents were asked to indicate how difficult or easy it would be to adopt each of the behaviours. Evidence has shown that the more difficult a behaviour is perceived to be, the less likely it is that the behaviour will be carried out, and vice versa for easier behaviours (e.g. Cheung, Chan, & Wong, 1999; Mosler, Tamas, Tobias, Rodríguez, & Miranda, 2007). We would therefore expect intentions to be higher for behaviours which are perceived to be easy. Whether perceptions of difficulty are related to values will be explored.

Finally, the survey asked respondents why they had decided to participate in the study and whether they were planning to make any changes in their behaviours or their households as

part of their participation in the 21st century living project. We will examine whether the reported plans for the year are related to the respondents' values.

1.3.2 Lifestyles

The need to develop more sustainable lifestyles is generally accepted. However, in the social science literature is not always clear what lifestyles are and whether different lifestyles can or should be distinguished (Heijs, Smeets, Carton, & Van Gemert, 2005). What is clear though is that lifestyle changes suggest not only the adoption of intentional pro-environmental behaviour but also changes in the behaviours which we don't necessarily link to the environment.

A problem with existing research on environmental behaviour is that it often only focuses on self-reports of intentional pro-environmental behaviours such as recycling behaviour. People adopt this kind of behaviour mainly because they wish to be environmentally friendly, not for any other reason, this is not the case with many other behaviours (e.g., driving or cycling). Some existing research has shown that environmental concern is more likely to be related to such intentional behaviour, but not necessarily to other behaviours which may have a significant environmental impact (Gatersleben, Steg and Vlek, 2001; Stern, 1992).

One approach to measuring lifestyles is based on time allocation. In leisure research lifestyles are often studied by asking people a range of questions on how much time they devote to various activities. In this survey respondents were asked how much time they spent on a range of activities. These activities were chosen to include activities which directly involve use of energy (e.g., play computer games, watch TV) and activities that do not necessarily require energy (e.g,. cycling, volunteering). The study examines the relationship between respondents' values and the time they spent on various activities. Values and lifestyles are likely to be related. On the one hand values may guide behavioural decisions on the other hand time spent on certain activities may expose people to particular values or make these values more salient to them.

For instance, Saunders et al. (2007) suggests that commercial television is one of the most important sources of communicating the message of materialism to consumers (Sanders et al., 2007). They found a positive correlation between time spent watching commercial television and materialism among young Australian consumers. Earlier studies also found that materialism is higher for young people who watch more television (Moschis and colleagues 1970's; in Chaplin, 2007). In recent studies conducted at Surrey correlations were also found between materialism and time spent on watching television as well as other activities such as playing computer games, fun shopping, and surfing the internet (Gatersleben, Meadows, Abrahamse and Jackson, 2008). On the other hand, time spent volunteering and reading a book was negatively related to materialism.

The importance people attached to social and environmental issues may be positively related to activities such as volunteering and spending time outdoors. Existing research has shown that the use of natural environments for restoration is positively related to environmental concern (Byrka, Hartig and Kaiser, 2007), as is the perceived restorativeness

of natural environments (Hartig et al, 2001). Moreover, emotional affinity with nature is positively related to conservation actions (Kals, 1999; 2001).

In this research we would therefore expect to find positive correlations between materialistic values and time spent on activities which may promote or support these values such as watching TV and fun shopping. Environmental values are expected to be related to activities which promote or support environmental values (e.g., gardening, nature based activities).

1.3.3 Possessions

The kinds of possessions people own and use are indications of their lifestyles and their values. People who have more materialistic value orientations tend to attach more importance to luxury goods than people who do not have strong materialistic values (Kasser, 2005). The relative importance respondents in this study attach to their possessions is therefore expected to be related to materialism. Moreover, Richins (1994) found that materialists are more likely to value expensive possessions, assets, and appearance and transport related possessions. Therefore, we would expect this relationship between materialism and the perceived importance of possessions to vary between products and goods.

In this study we asked respondents how important a range of goods and products are to them. These goods and items ranged from modern technologies (e.g., TV, DVD player, games consul), to non-consumer, low technology items (e.g., national trust membership, garden, compost bin). We expect that materialism will be related to the relative importance of modern technology consumer products. We will explore the relationship between environmental concern and importance attached to various products.

1.4 Household conflict

The study involves (where possible) all adult members of a household. To date most studies on household energy use examine the views of individuals. However, it can be debated how representative such views are of actual household decisions. There is sufficient evidence to suggest that household consumer choices are not the result of individual decision making processes, but are more accurately studied by examining conflict, bargaining processes and persuasive techniques adopted by household members (e.g., Manser and Brown, 1980; Spiro, 1983; Beatty and Talpade, 1994). For example, research has shown how the social and cultural context of the family, in relation to the school and the wider community, can act to enable or to prevent children taking pro-environmental action (Uzzell, 1999). The present study will explore whether inter-household conflicts around energy consumption in the home can be identified.

2. Method

2.1 Questionnaire

A questionnaire consisting of ten sections was developed, see appendix A.

Lifestyles. The first section examined respondent lifestyles, asking how often they participated in 21 activities (1 = almost every day, 7 = I never do this) such as watching TV for 3 hours or more, eating meat, and working as an environmental volunteer.

Possessions. In the next section, respondents were asked to rate various items (e.g. television, car, books) according to their personal importance (1 = totally unimportant, 5 = very important) and to indicate whether they owned that item.

Participation in the project. Section three explored participation in the 21st Century Living project using open-ended questions, asking about their motivations to take part in the project, whether they were planning any changes because of their participation, and what they were thinking of spending the £500 incentive money on. Respondents were also asked to rate the importance of a series of factors in deciding to participate in the project.

Intentions. In section four, respondents were asked to indicate which lifestyle changes they planned to try over the following 12 months. Questions were asked about intentions to save gas and electricity in the home, to change transport behaviours, and to change food consumption (e.g. eat more organic produce) (1 = I will definitely not try, 5 = I will definitely try).

Perceived difficulty. Section five then went on to look at how easy / difficult participants anticipated that these changes would be (1 = very difficult, 5 = very easy).

New Environmental Paradigm. The next section consisted of the New Environmental Paradigm Scale (Dunlap, et al., 2000) which was originally developed by Dunlap and Van Liere (1978). It involved respondents indicating how much they agreed (1 = strongly disagree, 5 = strongly agree) with a set of twelve statements concerning the environment (e.g. plants and animals exist primarily to be used by humans).

Household conflict. To measure household conflict respondents were also asked to report how often they engaged in communication with family members about environmental issues and energy conservation (1 = never, 5 = very often).

Materialism. Section seven focussed on respondent views of money and possessions with the materialism scale developed by Richins (2004). In addition questions were included on non-generosity taken from Belk (1985). Respondents were presented with 22 statements such as 'I admire people who own expensive homes, cars, and clothes' and asked to rate how much they agreed with each (1 = strongly disagree, 5 = strongly agree).

General values. In section eight respondents were asked to report how important a set of 13 values were in their lives (-1 = opposed to my values, 7 = of supreme importance), based on the Value Orientations scale of de Groot and Steg (2007, 2008).

Demographics and wellbeing. The final section included questions to assess demographic characteristics and well-being.

2.2 Procedure and respondents

Participants were recruited by a team of researchers from EDEN project and Homebase from a sample of UK households who owned a Homebase Spend & Save card. Participants were then selected from the initial respondents (N ≈ 3000) using information on the database to select those who could be used to represent the current UK national composition of social grades. Care was taken to select households from all MOSAIC groups, but some lower socio-economic status groups proofed difficult to recruit and are therefore underrepresented in the project. The type and age of the home as well as participant age was also considered. Those who had not specifically bought eco-products from Homebase, who responded to the initial questionnaire, and who provided a contact email address were selected over those who did not. Questionnaires were send to all household members 16 and over in each of the participating households in July/August 2008. The respondents were asked to complete the questionnaire before they were visited by an interviewer who would assess the environmental impact of each household by means of a range of questions on home water and energy use and waste production. The interviewer collected the questionnaires from the householders and presented each household with goody bag and energy advice. The £500 incentive was send to the householders after the first interview together with the first information pack and some feedback information. All interviews were conducted in August and September 2008.

A total of 194 respondents from 99 households completed and returned the questionnaires. One participant (from a single household) was removed from the data file as too many questions were unanswered. Respondent's age ranged from 16 years to 73 years, with an average age of 43 years; 51% of respondents were female, and 49% male. The average number of people living in a household was 2.8. Around 20% of participants lived in 3 person households and 28% in four person households, with less than 5% each living in single, five person, and six person households. The majority of households consisted of a couple with children (47%) or a couple with no children (32%).

3. Results

The main focus of the data analyses lies on examining the relationship between the respondents' values and their reported behaviours, lifestyles and intentions. We are examining whether reported behaviours are dependent on reported values, or whether values influence behaviours. It should be noted, however, that the analyses in this report are correlational and therefore we cannot draw specific causal conclusions; i.e., in this study we cannot conclude that values come before behaviour and vice versa. The issue of causality can be addressed when the second measurement in 2009 has been completed. This additional data will allow us to examine how values reported in the first wave of this study are related to behaviours reported in later stages of the study.

The results section of this report is organised as follows. First, we describe the value measurements and the construction of variables based on the questionnaire items which were used in further analyses. After that we describe the respondent's reported lifestyles, possession, importance attached to these possessions, their pro-environmental intentions, household conflict and wellbeing. For each of these concepts we will explore the relationship with values. Finally we will describe the respondents' views of the 21st century living project, their motivations to participate in the study and their expectations and plans for the year. Where possible, and relevant, we will examine to what extent responses to these questions are related to value orientations and demographic variables.

3.1 Data transformation
New variables were created for several of the constructs in this study. This was mainly done to reduce the number of variables available for further data analyses and to develop robust measurements of the relevant theoretical concepts.

Egoistic, biospheric and altruistic values: Following the work by De Groot and Steg (2007) three new variables were created measuring the relative importance each respondent attached to egoistic, biospheric and altruistic values. For each respondent the mean score was calculated across the items belonging to the relevant scale: egoism (social power, wealth, being influential, authority, ambitious), biospherism (respecting the earth, unity with nature, protecting the environment, preventing pollution) and altruism (equality, being helpful, a world at peace, social justice) (see De Groot and Steg, 2007). By doing this we are assuming that correlations between items within each scale are high: i.e., if a respondent agrees with one item within the scale he/she is likely to also agree with the other items. To test whether this is the case we calculated the internal consistency of the scale (inter item correlations). The internal consistency for the egoism scale was good (alpha = .78; alpha can range from 0 to 1, anything over .70 is good). The internal consistency of the biospheric scale was very good (alpha = .87). However, the internal consistency for the altruism scale was marginal (alpha = .60). This means that respondents did not always respond in the same way to all items in this scale. To some extent the altruistic values scale may therefore reflect different underlying dimensions for some respondents.

On average, respondents indicated they had strong altruistic (M = 4.94) and biospheric values (M = 4.71), but they did not have strong egoistic values (M = 2.17; 0 = opposed to my values, 1 = not important, 8 = of supreme importance).

Materialism (MVS): One new variable was created representing the relative importance respondents attach to materialistic aspects in life: the materialistic values scale (MVS). This was done by calculating the average score for each respondent across the items on materialism adopted from Richins (1994). The internal consistency of this scale was high (alpha = .88). The additional items on generosity were not included in this scale to enable comparisons with previous research. Data analyses with a scale including these items revealed very similar results to the once described below. On average, respondents indicated they do not have strong materialistic values (M = 2.58; 1 = totally disagree, 5 = totally agree).

Environmental concern (NEP): The same procedure was adopted for respondents' scores on the 15 NEP (New Environmental Paradigm) questions. Again a high internal consistency was found for this scale (alpha = .80). On average, respondents indicated that they had strong environmental values (M = 3.86; 1 = totally disagree, 5 = totally agree).

Importance of possessions: A factor analysis was conducted to examine whether there is any underlying pattern in the respondents' perceptions of how important different consumer goods are to them; i,e, whether items can be grouped in such as way that when a respondent finds one item in that group important he or she is likely to also find other items in that group important. This analysis could not be conducted for all 23 consumer goods as there was very little variation in perceived importance for eight of them. For these a significant majority of the respondents agreed that they were either very important (which was the case for the computer, the car, garden, books, sports kit and photographs) or unimportant (a musical instrument or a games consul). This statistical method requires variables to be relatively normally distributed (follow a bell curve). The factor analysis with 15 remaining items initially revealed 4 factors but the first two explained the largest proportion of variance and further factors did not add significantly to this explanation (see appendix B). Two new scales were computed on the basis of these factors by calculating the mean importance ratings of items within each of these two groups: low-tech possessions (including environmental goods (solar panel, CF light bulbs) and art and leisure goods; alpha = .73), and high-tech possessions (including DVD player, television, mobile phone and microwave oven; alpha = .63). On average, respondents found low-tech possessions slightly less important (M = 3.14) then high-tech possessions (M = 3.46; 1 = not at all important, 5 = very important).

Intentions to change: Respondents were asked questions about their intention to change three types of behaviour related to energy in the home, transport and food. The initial idea was to develop three scales on the basis of these questions representing intentions to change for these three clusters. The internal consistency of the food related behaviour cluster was sufficiently high to develop this scale (alpha = .87). However, this was not the case for home energy use and transport. When home energy use and transport questions were taken together did this result in a reliable scale (alpha = .77). It was therefore decided to create two new variables one representing the respondents' intention to save energy (in the home and for transport) and the other representing the respondents' intention to change their food choices. On average, respondents were more likely to say they would make changes in their food consumption (M = 3.81, 1 = will definitely not try, 5 = will definitely try), then they were to say they would make changes in their energy use (M = 3.59).

The findings were very similar for the questions on how difficult it is to adopt these behaviours. Therefore we also created two scales on the basis of these relevant items. On average, respondents believed it would be easier to change food related behaviour (M = 3.81) then energy related behaviours (M = 3.59; 1 = very difficult, 5 = very easy).

Wellbeing. One variable was calculated to represent the reported wellbeing of the respondents by calculating the mean score, for each respondent, across the five relevant times. On average, the respondents tended to report they were quite satisfied with their lives (M = 5.13; 1 = strongly disagree, 7 = strongly agree, alpha = .82).

3.2 Values

Table 1 shows correlations between all value scales developed for the study. What can be seen is that, as expected materialism (MVS) and environmental concern (NEP) are negatively related indicating that when respondents have stronger materialistic values they have weaker environmental concern. However, this correlation is not very high (it can range from 0 (no relationship to 1 (perfect relationship)). Environmental concern is also negatively related to egoism, but again this correlation is small. There is no relationship at all between egoism and biospherism. These findings suggest that a significant number of respondents hold both theoretically conflicting values simultaneously. Table 2 shows this in a different way. Around 60% of respondents do not hold conflicting values; when NEP is relatively low MVS is relatively high and vice versa. However, 21% hold neither value, and around 23% hold both.

Table 1: Relationship between different values

	Environmental concern NEP	Materialism MVS	Egoism	Altruism	Biospherism
NEP	1.00				
MVS	-.20**	1.00			
Egoism	-.17*	.50**	1.00		
Altruism	.14	-.22**	-.02	1.00	
Biospherism	.46**	-.14	.03	.46**	1.00

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

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

Table 2: Percentage of people holding potentially conflicting and non-conflicting values

		Materialism (MVS)	
		Low (< 2.50)	High (> 2.5)
Environmental concern (NEP)	Low (< 3.90)	21%	29%
	High (> 3.90)	28%	23%

Note. High and low in this table are relative. High means higher than the average for this population, low is lower than the average.

Table 1 also shows that materialism is, as expected, positively related to egoism and negatively to altruism. However, it is not significantly related to biopsherism. Moreover, there is no relationship at all between egoism and altruism or egoism and biospherism. Again, this suggest that there is no simple inverse relationship between the theoretically conflicting self-transcendent (environmental, altruistic) and self-enhancing (egoistic and materialistic) values.

Demographic analyses suggested that older respondents are significantly less likely to hold materialistic ($r = -.38$) and egoistic ($r = -.30$) value orientations than younger people. Morevoer, men are significantly more likely to hold materialistic and egoistic values whereas women are more likely to hold altruistic values (Table 3).

Table 3: Differences between men and women in importance attached to various values

	Men	Women	t- test
MVS	2.66	2.49	$t = 2.16$ (189), $p < .05$
NEP	3.81	3.91	$t = 1.49$ ns
Altruism	4.80	5.11	$t = 2.00$ (192), $p < .05$
Egoism	2.45	1.96	$t = 3.18$ (192), $p < .01$
Biospherism	4.60	4.81	$t = 1.08$, ns

Note. Ns = not statistically significant.

3.3 Lifestyles

The most popular activities undertaken by respondents on an (almost) daily basis include cooking meals at home (50% of respondents), reading books (37%), surfing the internet (36%), and watching TV for 3 hours or more (28%). Activities which were most reported to be conducted a few times a week include eating meat (42%), playing sports / exercise (39%), and getting together with friends and family (27%). Activities most frequently reported as never being conducted include working as an environmental volunteer (93% respondents), spending time on collections (80%), attending church / religious gatherings (60%), going cycling (49%) and playing computer games (45%). Figure 1 shows the average amount of time spent on each of the activities in the scale (see appendix A for precise numbers).
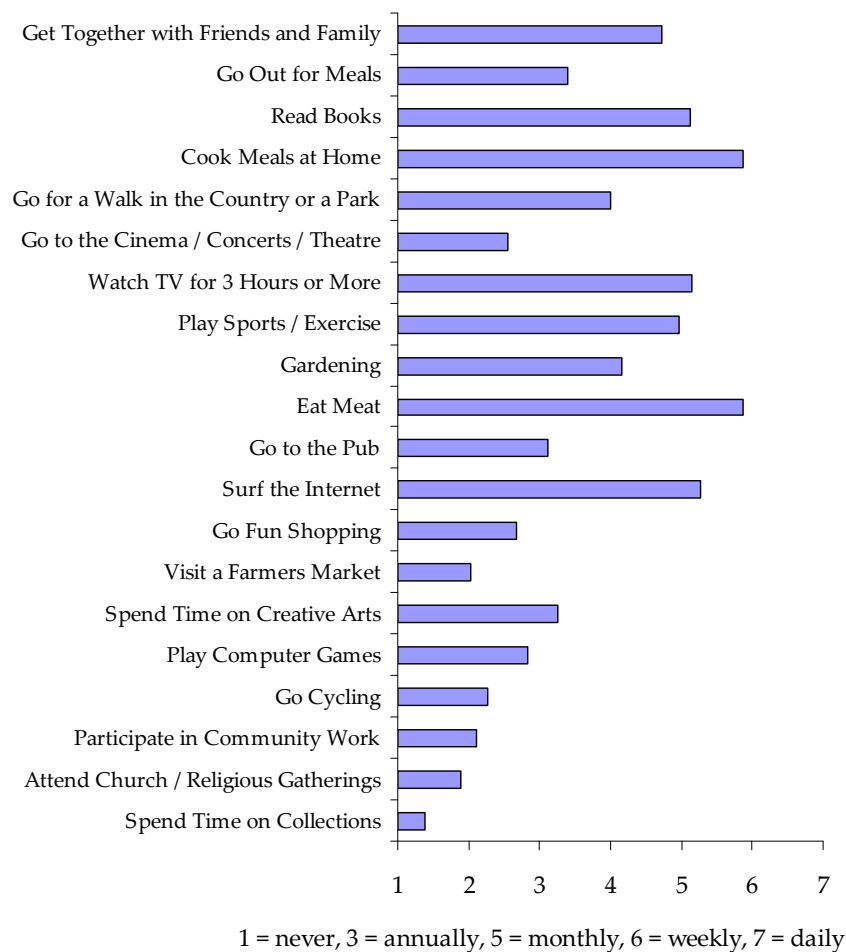

1 = never, 3 = annually, 5 = monthly, 6 = weekly, 7 = daily

Figure 1: The average amount of time spent on a range of activities

Table 4 shows that neither general values nor environmental concern are strongly related to activities. Materialism, however, does appear to be related to a range of activities. Those who hold stronger materialistic values spent more time fun shopping, playing computer games, going out for meals, meeting up with friends, eating meat, going to the pub and going to the cinema, they spent less time gardening, going for a walk and going to a farmers market. This partly supports our hypothesis that people are more likely to engage in activities that support their values. However, there may be an age dimension underlying this finding. It was shown above that materialism is related to gender and age. Partial correlations were therefore computed to control for age. To control for gender these were computed separately for men and for women. The results of this analyses showed that, independent of age, men who hold stronger materialistic values report eating more meat ($r = .21$, $p < .05$) and playing more computer games ($r = .20$, $p < .10$) then men who do not hold strong materialistic values. Women who hold stronger materialistic values spent more time fun shopping ($r = .34$, $p < .001$), going out for meals ($r = .29$, $p < .01$) and less time going to a farmers market ($r = -.25$, $p < .05$), then women with weaker materialistic values. These findings suggest that our hypothesis is supported that people are more likely to engage in activities that support their values, but only for materialism, only for a limited number of activities and these activities vary between men and women.

Table 4: Relationships between values and time spent on various activities

			General values		
	MVO	NEP	Altruism	Biospherism	Egoism
Watch more than 3hrs TV	.11	.09	.13	.12	.02
Sport/ exercise	.02	-.06	-.02	-.10	.04
Arts and crafts	-.08	.01	.16*	.07	-.06
Env. Volunteering	.10	-.08	-.05	-.03	-.01
Community work	-.06	.02	.13	.08	.01
Attending church	-.13	-.13	.16*	.01	-.06
Fun shopping	.27**	.06	.01	.06	.09
Read books	-.08	.13	.08	.10	-.09
Play computer games	.20**	.01	-.07	-.00	.15*
Gardening	-.31**	.03	.04	.08	-.19**
Cook meals at home	-.08	.10	.04	.07	-.09
Go out for meals	.14	.05	-.08	-.01	.08
Go for a walk	-.17*	-.12	-.08	-.06	-.12
Go cycling	.09	-.00	-.05	-.09	.07
Meet up with friends	.15*	-.01	.01	.02	.10
Eat meat	.14	-.10	-.09	-.05	.12
Go to farmers market	-.22**	-.01	.02	.10	-.03
Go to pub	.16*	.04	-.02	.02	.01
Go to cinema	.14	.19**	-.08	.01	.09
Surf the internet	.19**	.05	.04	-.00	.10

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

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

3.4 Possessions owned and their importance

Figure 2 shows the percentage of respondents who reported owning each of the possessions presented in the questionnaire. All participants reported owning family photographs and more than 95% of people own electrical goods such as a mobile phone (97%) and a television (96%). Around 90% of participants own a car (91%) and energy saving light bulbs (91%). Fewer participants reported owning items such as a bike (60%), a compost bin (51%), a games console (38%) and a national trust membership (29%). Only two respondents each reported owning a solar panel and a wind turbine.
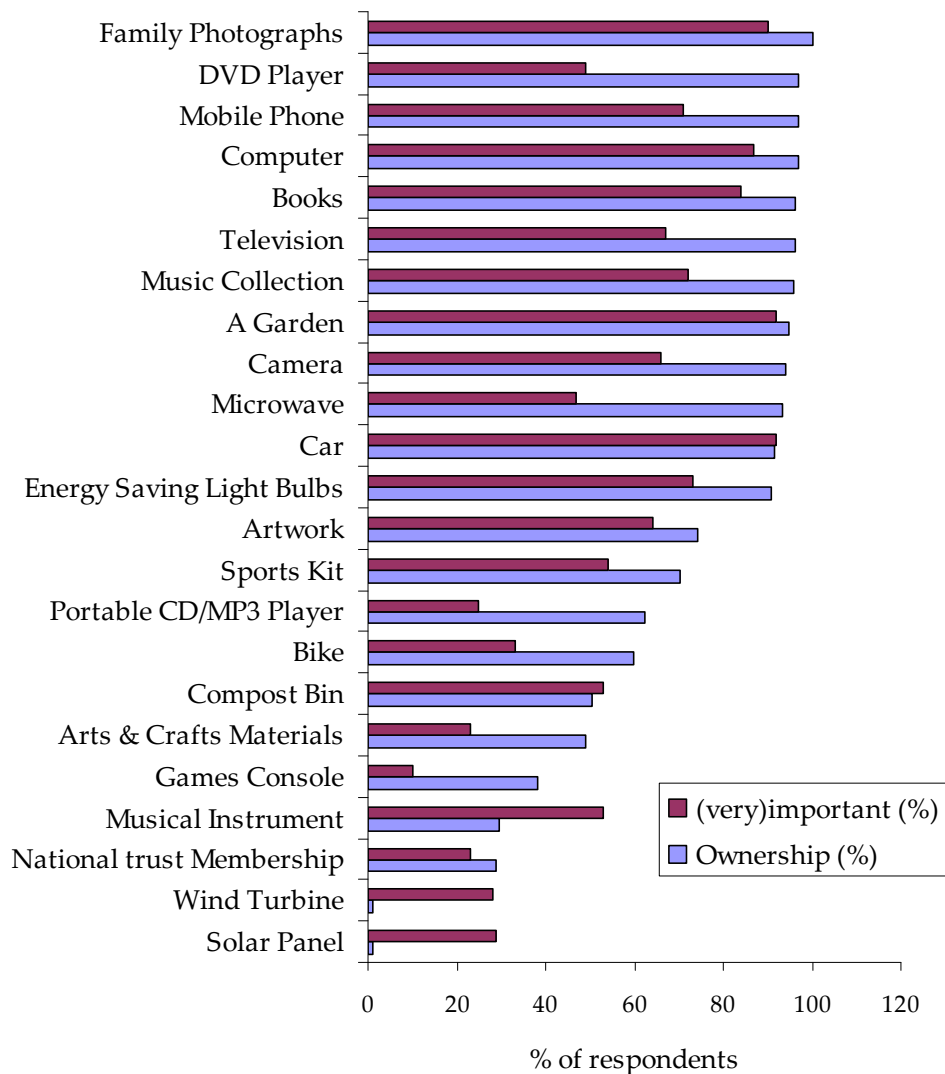
Figure 2: The percentage of respondents who reported owning each of the possessions and the percentage of respondents who rated it as important or very important

Figure 2 shows that, for most possession ownership and perceived importance are related, i.e., those goods that are owned by most people are also perceived to be important by most people. There are, however, a few exceptions. For some goods, the percentage of respondents who perceive them to be important is much lower than the percentage of respondents who own the good. This is the case for the DVD player, mobile phone, television, music collection, camera, microwave oven, portable music player, bike, arts and

21

crafts materials and the games consul. Musical instruments, wind turbines and solar panels are the only goods which are more likely to be perceived as important then they are owned.

Correlations were computed between value orientations and importance attached to consumer goods. Table 5 shows that all values are to some extent related to the perceived importance of consumer goods. As expected, those with a stronger environmental value orientation (NEP and Biospherism) are particularly more likely to attached importance to environmental products (e.g., solar panel, compost bin). People with a stronger materialistic (and to some extent egoistic) value orientation attach more importance to a range of modern goods (tv, microwave, CD-player, games consul) and less to environmental goods.

Table 5: Relationship between values and importance attached to consumer products

	General values				
	NEP	MVO	Altruistism	Biospherism	Egoism
Television	-.18*	.32**	.04	-.13	.21**
Microwave	-.29**	.19*	.01	-.18*	.15*
Computer	-.17*	.14	.08	-.01	.18*
Mobile phone	-.05	.35**	.02	-.02	.24**
Music Instrument	.10	-.05	.16*	.08	-.06
Arts and crafts	.12	-.20**	.21**	.12	-.06
Camera	.09	-.03	.04	.02	.08
N. Trust membership	.17*	-.28**	.12	.22**	-.07
Compost bin	.34**	-.35**	.29**	.34**	-.13
Car	-.13	.21**	-.00	.00	.18*
Bike	.10	.11	.01	.01	.12
Solar panel	.24**	-.23**	.21**	.21**	-.07
Music collection	.13	.11	.19*	.20**	.03
Wind turbine	.21**	-.18*	.26**	.28**	.01
CF light bulbs	.17*	-.14	.20**	.27**	.16*
Sports goods	.00	.22**	.03	-.05	.18*
Garden	.13	-.21**	.08	.15*	.02
Books	.07	-.22**	.20**	.17*	-.02
CD Player	.12	.22**	.09	.01	.14
DVD Player	-.08	.22**	.08	-.08	.14*
Photos	.00	.01	.19*	.18*	.15*
Games consul	.00	.34**	-.06	.04	.33**
Artwork	.22**	-.15*	.06	.16*	-.07

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

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

As materialism is related to age and gender we again computed partial correlations to control for these effects and found that for men materialism is still positively related to importance of the TV (r =.34, p <.01), computer (r = .22, p < .05), mobile phone (r = .27, p < .02), car (r = .34, p < .01) and DVD player (r = .28, p < .01) and negatively related to the importance of a compost bin (r = -.31, p < .01), solar panels (r = -.25, p < .05) and a wind turbine (r = -.25, p < .05). For women materialism is related to the importance of the microwave (r = .34, p < .01), the mobile phone (r = .41, p < .001), sports goods (r = .26, p < .05)

and a CD-player (r = .27, p < .05) and negatively to the importance of artwork (r = -.27, p < .05) a compost bin (r = -.25, p < .05), solar panels (r = -.34, p < .01) and a wind turbine (r = -.28, p < .01). Generally, these findings suggest that those who hold more materialistic values attach more importance high-tech possessions, whereas those hold stronger environmental values attach more importance to low-tech possessions. To analyse this more robustly a regression analysis was conducted (see Table 6).

Table 6 shows that value orientations account for a significant (but not large) percentage of the variance in perceived importance of consumer goods. The relative importance of low-tech possessions is negatively related materialism and positively to environmental concern. The importance attached to high-tech possessions is only (positively) related to materialistic value orientations.

Table 6: Relationship between values and importance of types of consumer products (results of a regression analysis)

	Low-tech possessions	High-tech possessions
% explained variance	11%	19%
	(F = 17.76 (2,187), p < .001)	(F = 19.28 (2,187), p < .001)
MVS	-.20**	.39***
NEP	.31**	-.08

Note. Regression weights presented in the table indicate the unique correlation between the two relevant variables, controlled for the correlation between the dependent variable (importance) and the other independent variables. Beta weights can range from 0 (no relationship) to 1 (perfect relationship). * p < .05 (relationship is significant at 95% confidence level), ** p < .01 (99 % confidence level), *** p < .001 (99.9 % confidence level).

Table 7: Differences between groups with different combinations of value orientations in perceived importance of consumer products

	Mean scores				
	Both low	MVS high NEP low	NEP high MVS low	Both high	F (df), p
Low-tech	3.01$_{ac}$	2.85$_c$	3.45$_a$	3.23$_{ab}$	10.58(3,186), p < .001
High-tech	3.29$_a$	3.67$_b$	3.17$_{ab}$	3.78$_b$	11.04(3,186), p < .001

Note. Mean scores in one row with different subscript letters (a, b or c) differ significantly. When means share a subscript letter they do not differ significantly[1].

To examine differences between respondents depending on whether or not they hold conflicting values analyses of variance were conducted. Table 7 suggests that low-tech possessions are particularly important for people who hold stronger environmental concern and low materialistic values, whereas they are least important to those who hold strong materialistic values and weak environmental values. High-tech possessions appear to be

---

[1] For instance, for the importance of home possessions the mean score for respondents with high NEP scores and low MVS scores differ significantly from respondents with who score low on both NEP and MVS and from respondents with high MVS and low NEP scores. The mean scores of respondents with high scores on both values don't' differ significantly from any other group.

more important to respondents who hold strong materialistic values (independent of their environmental values) and less important to those who hold weak materialistic concern.

Table 8: Relationship between values and intentions to adopt pro-environmental behaviours

			General Values		
	NEP	MVO	Altruism	Biospherism	Egoism
Energy					
Use less gas and electricity	.12	-.18*	.04	.15*	.01
Replace equipment	.17*	-.10	.20**	.26**	.07
Replace light bulbs	.16*	-.19**	.07	.18*	.14
Install technology to use green energy	.18*	-.01	.00	.16*	.01
Sign up to green tariff	.29**	-.21**	.10	.25**	-.07
Turn down heating	.22**	-.06	.06	.20**	-.01
Install insulation	.05	-.03	.06	.12	.06
Turn off lights	.14	.04	.17*	.11	-.01
Unplug equipment not in use	.21**	-.19**	.13	.14	-.15*
Transport					
Drive less	.15*	-.20**	.10	.14	.02
Cycle more	.10	-.06	.06	.01	-.04
Use more public transport	.06	-.19*	.18*	.14	-.10
Avoid travelling by plane	.19*	-.22**	.13	.24**	-.08
Take weekend trips closer to home	.16*	-.23**	.13	.18*	-.12
Change to a more efficient car	.15*	-.05	.07	.18*	.06
Food					
Eat less meat	.20**	-.16*	.09	.14	-.19*
Eat more organic produce	.18*	-.13	.07	.23**	-.02
Eat more locally produced food	.13	-.14	.11	.25**	-.04
Eat more seasonal produce	.13	-.21**	.16*	.27**	-.09
Eat more free range fish or meat	.14	-.16*	.07	.25**	-.03
Eat or drink more fare trade products	.22**	-.28**	.21**	.34**	-.20**

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

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

3.5 Intentions and perceived easy of change

Table 8 shows the relationship between values and intentions to change a range of behaviours. The relationship between behaviour intentions and specific values (NEP and MVS) is stronger than the relationship with general values. This was to be expected on the basis of the literature and confirms Stern's Value Belief Model (1999). Generally it appears that the more likely people are to hold positive environmental values, the more likely they are to say they intent to adopt a range of pro-environmental behaviours, particularly some home energy and food related behaviours. Moreover, the more likely respondents are to

hold a materialistic value orientation the less likely they are to say they intent to adopt these behaviours and in particular transport and some food related behaviours.

Table 9: Relationship between values and intentions to adopt pro-environmental behaviours (results of regression analyses)

	Energy	Food
% explained variance	12%	8%
MVS	-.22**	-.21**
NEP	.24**	.18**

Note. Regression weights presented in the table indicate the unique correlation between the two relevant variables, controlled for the correlation between the dependent variable (importance) and the other independent variables. Beta weights can range from 0 (no relationship) to 1 (perfect relationship). * $p < .05$ (relationship is significant at 95% confidence level), ** $p < .01$ (99 % confidence level), *** $p < .001$ (99.9 % confidence level).

Table 9 shows the results of a less details, more robust regression analysis. It shows that the relationship between values and intentions to change is slightly stronger for energy (including transport) related behaviours then for food related behaviours. This appears to be because energy related behaviours are more strongly related to environmental values than food related behaviours.

As expected significant correlations were found between intentions and perceived difficulty to save energy in the home and transport ($r = .54$) and to change food consumption ($r = .51$). This indicates that when people find it easier to adopt a behaviour they are more likely to be willing to do it and vice versa. However, the size of the correlations do not refer to a very strong relationship suggesting that, at least for some people, finding something easy does not necessarily mean it is likely to be done.

Table 10 shows that the relationship between values and perceptions of how easy or difficult it is to adopt pro-environmental behaviours is largely similar for environmental concern. People who express strong environmental concern believe it is easier to adopt most behaviours than people who do not (except for adopting green energy, installing insulation and driving less). Virtually no relationship was found with materialism. People with stronger materialistic values may be less inclined to behave pro-environmentally (Tables 8 and 9) but they don't necessarily think it is more difficult to do so. Table 10 shows these findings for individual behaviour items and Table 11 confirms these findings with a more robust regression analysis.

People who have strong environmental concern and weak materialism are most likely to indicate they intent to change their food consumption (Table 12). Respondents who hold strong materialistic values and weak environmental concern are least likely to intent to change their food behaviours. Intentions to change energy and transport behaviours appear to differ mostly between respondents who have strong environmental concern versus those who do not, independent of their materialistic values.

Table 10: Relationship between values and perceived easy in adopting a range of pro-environmental behaviours

	NEP	MVO	Altruism	Biospherism	Egoism
				General Values	
Energy					
Use less gas and electricity	.23**	.05	.09	.18*	.04
Replace equipment	.14	-.08	.12	.18*	.06
Replace light bulbs	.26**	-.04	.03	.11	-.01
Install technology to use green energy	.07	.04	.03	.15*	.08
Sign up to green tariff	.22**	-.17*	.05	.08	-.06
Turn down heating	.22**	.01	.05	.23**	.03
Install insulation	.07	-.03	.06	.09	.17*
Turn off lights	.21**	.02	.09	.02	.05
Unplug equipment not in use	.16*	-.07	.11	.07	.04
Transport					
Drive less	.09	-.04	.13	.13	.01
Cycle more	.13	.09	.12	.07	.12
Use more public transport	.13	-.03	.23**	.23**	.06
Avoid travelling by plane	.11	-.09	.21**	.15*	.07
Take weekend trips closer to home	.15*	-.08	.21**	.14	-.07
Change to a more efficient car	.18*	-.05	.00	.12	-.01
Food					
Eat less meat	.18*	-.10	.06	.08	-.03
Eat more organic produce	.21**	.03	.05	.16*	.03
Eat more locally produced food	.22**	-.02	.09	.23**	.05
Eat more seasonal produce	.22**	-.03	.17*	.22**	.01
Eat more free range fish or meat	.17*	.03	.05	.21**	.08
Eat or drink more fare trade products	.27**	-.05	.11	.26**	-.03

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

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

Table 11: Relationship between values and intentions to change (regression analyses)

	Energy	Food
% explained variance	9%	6%
MVS	.01	.04
NEP	.32**	.27**

Note. Regression weights presented in the table indicate the unique correlation between the two relevant variables, controlled for the correlation between the dependent variable (importance) and the other independent variables. Beta weights can range from 0 (no relationship) to 1 (perfect relationship). * p < .05 (relationship is significant at 95% confidence level), ** p < .01 (99 % confidence level), *** p < .001 (99.9 % confidence level).

Table 12: Differences between groups with different combinations of values in intentions to adopt pro-environmental behaviours

	Mean scores				
	Both low	MVS high NEP low	NEP high MVS low	Both high	F (df), p
Intention					
Food	3.62_{ab}	3.34_{a}	3.87_{b}	3.56_{ab}	3.94(3,185), p < .01
Energy/transport	3.19_{a}	3.10_{a}	3.55_{b}	3.26_{ab}	6.57(3,186), p < .001
Difficulty					
Food	3.18_{a}	3.32	3.71_{b}	3.62	3.87(3,184), p < .01
Energy/transport	2.84_{a}	2.86_{a}	3.18_{b}	3.09	5.28(3,186), p < .01

Note. Mean scores in one row with different subscript letters (a, b or c) differ significantly. When means share a subscript letter they do not differ significantly[2].

3.6 Wellbeing

The extent to which respondents felt satisfied with their life is not related to age, gender or household size. But, as expected, it is related to materialism. Respondents with a stronger materialistic value orientation are more likely to report a lower level of wellbeing (r = -.29, p < .001). Reported wellbeing does not vary between respondents depending on whether they hold potentially conflicting values or not. Moreover, it is not related to any of the other variables in this study such as perceived importance of possessions, intentions to adopt pro-environmental behaviours, or lifestyles. Although two small significant correlations are found which suggest that those who spent more time playing sports report slightly higher wellbeing (r = .15, p < .05) and those who spent more time with friends report slightly higher wellbeing (r = .16, p < .05). However, as these are only two significant correlations out of a large number of possible tests (one for each behaviour) these findings should be interpreted with care.

3.7 Household conflict

The questions relating to the communication of environmental issues within the family show that some communication is taking place. Family members appear to be telling other family members off for wasting energy, they try to persuade them to save energy, and they discuss environmental issues (Table 13). Interestingly, respondents are more likely to say that they tell others off than they are to say that they are told off by others.

---

[2] For instance, for the importance of home possessions the mean score for respondents with high NEP scores and low MVS scores differ significantly from respondents with who score low on both NEP and MVS and from respondents with high MVS and low NEP scores. The mean scores of respondents with high scores on both values don't' differ significantly from any other group.

Table 13. Relationship between values and communication of environmental issues.

	Mean	NEP	MVS	Altruism	Biospherism	Egoism
Talk about environment	3.23	.35(**)	-.27(**)	.14(*)	.31(**)	-.16(*)
Tell others off	3.41	.23(**)	-.11	.09	.18(*)	.01
Get told off	2.57	.04	.12	.02	-.01	.11
Try to persuade family	3.28	.22(**)	-.13	.10	.22(**)	.05

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

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

Table 13 also shows that people who have a stronger environmental concern (NEP and biospherism) are more likely to say that they talk about environmental issues in their household, that they tell others off and that they try to persuade their family to live more environmentally friendly. Those who have a stronger materialistic value orientation are less likely to talk about environmental issues than those who have weaker materialistic values.

Respondents who express strong environmental concern and weak materialism are most likely to say that they talk to others about environmental issues (M = 3.60), whereas those who hold relatively strong materialistic values and weak environmental concern are least likely to say that they talk to other household members about environmental issues (M =2.84; F = 8.92(3,185), p < .001; Table 14).

Table 14: Differences between groups with different combinations of value orientations in communication about the environmental issues

	Mean scores				
	Both low	MVS high NEP low	NEP high MVS low	Both high	F (df), p
Talk in household	3.15ab	2.84a	3.60b	3.35b	8.92(3,185), p < .001
Tell others off	3.36	3.09	3.58	3.67	3.27(3,158), p < .05
Get told off	2.49	2.51	2.48	2.86	1.66(3,158), ns
Persuade others	3.26	2.98	3.48	3.40	2.43(3,158), ns

Note. Mean scores in one row with different subscript letters (a, b or c) differ significantly. When means share a subscript letter they do not differ significantly[3].

[3] For instance, for the importance of home possessions the mean score for respondents with high NEP scores and low MVS scores differ significantly from respondents with who score low on both NEP and MVS and from respondents with high MVS and low NEP scores. The mean scores of respondents with high scores on both values don't' differ significantly from any other group.

3.8 Household changes planned as a result of participation

Respondents were asked whether they are planning any changes in their household or lifestyle over the following 12 months because they are participating in the project. Around 6% said they have no plans, around 58% said they would like to do something but do not know what to do yet and around 36% reported specific ideas for what they intended or wanted to do.

A content analysis was carried out on the responses to this open open-ended question. Content analysis involves examining and re-examining the text for themes which emerge from the comments. The themes are then broken down in to sub-themes. In this study new variables were created for these themes and respondents who indicated that they did have a plan were given a code of 1 if they had mentioned this theme or 0 if they did not.

Table 15 shows the themes that were found and the percentage of respondents (out of those who said they had a plan) who reported this particular behaviour. The table does not show all comments made, but only the most frequently mentioned. An overview of detailed comments made by the respondents can be found in appendix B.

Those who had plans were more likely to refer to buying new products or technologies (mentioned by 73%) then they were to report behavioural changes which aimed to reduce energy use (mentioned by 22%). The most often mentioned plan was to buy and install more insulation.

Table 15: Changes planned in the next 12 months

Buy something	73%	Insulation	22%
		Microgeneration	6%
		New boiler	8%
		New white goods	6%
		CF lightbulbs	7%
		Waterbutt	9%
		Compost bin	6%
Change behaviour	22%	No leave on stand by	4%
		Walk more	6%
		Grow own food	1%
		Buy more organic	3%
		Recycle	1%
Need more advice	3%		
Non-specific (save energy)	5%		

The motivations of participants to take part in the project were measured in six closed questions on which they rated how important each of the given factors were in deciding to participate, an open-ended question where participants could write an additional reason for participation, and a flexible open-ended question in which they could write any additional comments. Table 16 shows that of the given reasons for participation, trying to live more environmentally friendly was rated as most important, followed by saving money, and

learning about environmental issues. The £500 incentive was rated lowest in contributing to their decision.

Table 16 also shows that the extent to which respondents agreed with the six potential reasons for participating was related to their value orientations. Respondents who have stronger environmental concern (and biospheric and altruistic value) are particularly more likely to agree that they were participating to learn something, to have their say and to try to live more environmentally friendly compared to respondents who held weaker environmental values. Respondents who have stronger materialistic values are especially less likely to say they are participating to try to live more environmentally friendly. They are slightly more likely to say they are motivated by the incentive although this is not significant. Egoistic value orientations, however, are significantly related to reported importance of the £500.

Table 16: The relationship between values and reported reasons for participating in the project

	Mean	NEP	MVO	Altruism	General values Biospherism	Egoism
An interesting experience	3.62	.17*	-.16*	.17*	.16*	.09
Learning	4.19	.42**	-.18*	.25**	.36**	-.01
The £500	3.13	-.08	.13	.05	-.08	.21**
Having my say	3.20	.38**	-.08	.20**	.36**	.09
Saving money	4.29	.13	.00	.09	.11	.08
Living more environmentally	4.51	.36**	-.29**	.29**	.39**	-.08

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

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

Table 17. Additional comments on the 21st Century living project

Learn. Hope to learn about how to what can be done in household to save energy and reduce environmental impact	58%
Cost effective. Would like to learn what can be done with little cost	11%
Try. Would like to find out what they can do.	27%
Teach. Hope to teach others (particularly own children) about environmental issues	10%
Compare. Would like to know how well (bad) the are doing compared to others and know more about what other people do	9%
Disseminate. Hopes that findings of the project will be have an impact of policy and stresses importance of disseminating findings	6%

Just over 40% of the respondents gave additional comments about the study, the most often reported comments are clustered and presented in table 17. A full list of comments can be found in appendix C. Respondents most often referred to their hope to learn more about ways to save energy and reduce the environmental impact of their household. Participants made comments such as:

"I hope to find accurate and honest information about different products i.e. I am in the middle of boarding my attic but I am finding it hard to obtain the thermal properties of timber, ply wood, foil etc."

"it would be good to get another opinion... and some fresh ideas".

A number of respondents were particularly hoping to find out how to do this in a cost effective manner.

"sometimes it feels like making the 'eco' choice is the expensive choice, and I can't always afford to do that".

Many of them also indicated they were looking forward to trying to change and see what would happen. Others were keen to teach others (mainly their own children) about the environment or to find out how they were doing compared to other households.

"It would be interesting to know how environmentally friendly we are compared to all the other households in the study - both at the beginning and at the end".

Finally, a small number commented specifically on the importance of the project to have a wider impact on policy and industry by giving them information about the wants, needs and limitations of individual households.

When respondents were asked what they were planning to spend the £500 on just over half said they did not know yet (53%), the other 47% did have an idea. Table 18 shows the most frequent responses that were given. Appendix D gives an overview of all the individual responses.

Table 18: Plans for spending the £500 incentive

Insulation	47%
Microgeneration	10%
New boiler	16%
Other energy saving technologies like new valves	16%
Waterbutt	22%
CF bulbs	12%
For the garden (grow own, collect rainwater, solar lights)	8%
Replace white goods	6%
Would like more advice	20%

Table 18 shows very similar results as Table 15 above. Respondents were most likely to say they would spend the money on insulation. This was followed by a range of purchases which would help the household save energy in their home.

4. Conclusion

The aim of the study was to examine the values that underlie consumer behaviours. A survey distributed among all adult household members asked questions about values, lifestyles, possessions and pro-environmental behaviours.

The respondents in the study expressed strong concern for environmental issues and much less concern for acquiring wealth and possessions (materialism). However, we did not find that people who expressed high environmental concern had necessarily low materialistic values and vice versa, suggestion that some people hold both, theoretically conflicting values simultaneously.

On average, it was shown that when respondents have stronger materialistic and egoistic values they attach more important to high-tech products (such as televisions, mobile phones and cars), attach less importance to low-tech products (e.g., a national trust membership, a compost bin) and they are less likely to say they intent to adopt a range of pro-environmental behaviours related to home energy, transport and food. It also appeared that the more value respondents place on environmental issues the more importance they attach to low-tech possessions and the more likely they are to say they intent to adopt a range of pro-environmental behaviours. This suggests that, at least for these attitudinal and intentional variables materialistic and environmental values may have conflicting and opposing influences. This is potentially problematic as it was shown that many people hold both values simultaneously. It was also found that the differences between respondents are more distinct when they hold non-conflicting values. Respondents who attach relatively high importance to environmental values and relatively low importance to materialistic values are most likely to value low tech goods, to talk to others about environmental issues and to intent to adopt pro-environmental behaviours.

In support of previous research materialistic value orientations were negatively related to wellbeing. Moreover, men and younger respondents were more likely to hold materialistic value orientations and they were more likely to engage in behaviours which support these values (such as shopping, playing computer games). None of these variables were related to environmental values. This indicates that whereas in some areas (e.g., intentions) environmental and materialistic values may have opposing influences this is not the case for other variables. This was also supported by the finding that whereas materialism was negatively related to intentions to behave pro-environmentally it was not related to perceptions of how easy or difficult it is to perform these behaviours.

We found no relationship between environmental values and current behaviour patterns in terms of possessions owned and time spent on various activities. Further analyses of additional data and analyses of the data which is to be collected at the end of the 21st century living project will enable us to examine the relationship between values and actual behaviours and behaviour changes in more detail.

When respondents were asked what kinds of behaviours they were planning to adopt or what changes they were planning to make in their household in response to participation in the project most respondents referred to buying products for their household which would allow them to save energy. Very few respondents indicated they would attempt to consume

less or buy less. We do not know whether this is a generalisable finding, whether it is specific to the respondent group in this study or whether it is related to the context of the 21st century living project. As the project was funded by a large DIY superstore and recruitment of participants was via the store cards it may well be that respondents have specific attitudes or expectations about the study.

The next stage for the 21st Century Living project will be to implement the intervention programme, utilising, amongst others, feedback on energy use and waste production and the provision of information via the website and information pack. This will allow us to examine the relationship between values and actual behaviour changes of individuals in response to the interventions.

As the first study of its kind in the UK, the findings from the 21st Century Living Project will prove to be a valuable tool in informing research in the field of sustainability. This study is the first part of that project, and it has already begun to address its objectives; to establish the values that underlie sustainable behaviours, the barriers to sustainable living, and to find ways in which to encourage positive behavioural change amongst householders. The findings will allow us to create more sustainable households and ultimately help to meet the ambitious yet necessary targets for tackling climate change.

References

Abrahamse, W., Steg, L., Vlek, C., & Rothengatter, T. (2005). A review of intervention studies aimed at household energy conservation. *Journal of Environmental Psychology*, 25(3), 273-291.

Arndt, J., Solomon, S., Kasser, T., & Sheldon, K. (2004). The urge to splurge: A terror management account of materialism and consumer behavior. *Journal of Consumer Psychology*, 14, 198-212.

Beatty, S. E., and Talpade, S. (1994). Adolescent Influence in Family Decision Making: A Replication with Extension. *Journal of Consumer Research*, 21, 332-341.

Burroughs, J.E. & Rindfleisch, A. (2002). Materialism and well-being: A conflicting values perspective. *Journal of Consumer Research*, 29(3), 348-370.

Byrka, K., Hartig, T. and Kaiser, F. (2007). Restoration in nature and environmental concern as motivations for environment friendly behaviors. Paper presented at Bianual conference in Environmental Psychology, Bayreuth Germany, September 2007.

Chaplin, L, & John, D. (2007). Growing Up in a Material World: Age Differences in Materialism in Children and Adolescents. *Journal of Consumer Research*, 34, 184.

Cheung, S.F., Chan, D.K.-S., & Wong, Z.S.-Y. (1999). Reexamining the Theory of Planned Behaviour in understanding wastepaper recycling. *Environment and Behavior*, 31, 587-612.

Clump, M.A., Brandel, J.M., Sharpe, P.J. (2002). Differences in environmental responsibility between materialistic groups. *Psychologia*, 45, 155-161

Cohen, P. & Cohen, J. (1996). *Life Values and Adolescent Mental Health*. Mahwah: NJ: Lawrence Erlbaum.

Daamen, D.D.L., Staats, H., Wilke, H.A.M., & Engelen, M. (2001). Improving environmental behaviour in companies: The effectiveness of tailored versus nontailored interventions. *Environment and Behavior*, 33, 229-248.

De Groot, J.I.M. & Steg, L. (2008). Value orientations to explain beliefs related to environmental significant behaviour: How to measure egoistic, altruistic, and biospheric orientations. *Environment and Behavior*, 40(3), 330-354.

De Groot, J. I.M. and Steg, L., (2007). Value Orientations and Environmental Beliefs in Five Countries: Validity of an Instrument to Measure Egoistic, Altruistic and Biospheric Value Orientations. *Journal of Cross-Cultural Psychology*, 38, 318-332.

Department for Environment, Food, and Rural Affairs (DEFRA) (2006). *Municipal waste management in the European Union*. Accessed on 18 September, 2008, from http://www.defra.gov.uk/environment/statistics/waste/kf/wrkf08.htm.

Department for Environment, Food, and Rural Affairs (DEFRA) (2008). *Future water: The Government's water strategy for England*. Norwich, UK: TSO.

Department for Transport (2007). *Transport statistics Great Britain: 2007 edition*. Section nine - vehicles. Accessed on 16 September, 2008, from http://www.dft.gov.uk/pgr/statistics/datatablespublications/tsgb/2007edition/sectionnineveh icles.pdf.

Dietz, Thomas, Amy Fitzgerald and Rachael Shwom. 2005. Environmental Values. *Annual Review of Environment and Natural Resources*, 30, 335-372.

Dunlap, R. Van Liere, K., Mertig, A. and Jones, R.E. (2000). Measuring endorsement of the New Ecological Paradigm: A revised NEP scale. *Journal of Social Issues*, 56, 3, 425-442.

Dunlap, R.E. & van Liere, K.D. (1978). The "new environmental paradigm": A proposed measuring instrument and preliminary results. *Journal of Environmental Education*, 9, 10-19.

Environment Agency (2008). *Household water use*. Accessed on 18 September, 2008, from http://www.environment-agency.gov.uk/yourenv/432430/432434/432453/434390/.

European Committees (2005). Energy, *transport and environmental indicators: Data 1992-2002*. Luxembourg: Office for Official Publications of the European Committees. (check don't need ISBN number)

Gärling, T., Fujii, S., Gärling, A. and Jakobsson, C. (2003). Moderating effects of social value orientation on determinants of proenvironmental behavior intention. *Journal of Environmental Psychology*, 23, 1–9.

Gatersleben, B, and J. Meadows, W. Abrahamse, and T. Jackson (2008) *Materialistic and Environmental Values of Young Volunteers in Nature Conservation Projects* , RESOLVE Working Paper Series 07-08, University of Surrey, November 2008.

Gatersleben, B., Steg, L., & Vlek, C. (2002). Measurement and Determinants of Environmental Relevant Consumer Behaviour. *Environment and Behavior*, 34 (3), 335-362.

Hartig, T., Kaiser, F. and Bowler, P. (2001). Psychological restoration in nature as a positive motivator for ecological behaviour. *Environment and Behavior*, 33,4, 590-607.

Heijs, W., Carton, M., Smeets, J., & van Gemert, A. (2005). *Labyrint van leefstijlen (Labyrinth of lifestyles)*. Cahier Architectuur Stedebouw Eindhoven, nr. 7. Internal Report. Eindhoven University. [In Dutch]

Inglehart, R. (1990). *Culture Shift in Advanced Industrial Society*. Princeton: New Yersey University Press.

Inglehart, R. (1995). Public support for environmental protection: objective problems and subjective values in 43 societies. *Political Science and Politics*, March , 57-72.

Kals, E., Schumacher, D. and Montada, L. (1999).Emotional affinity toward nature as a motivational basis to protect nature. *Environment and Behavior*, 31(2), 178-202.

Kals, E. and Maes, J. (2001). Sustainable development and emotions. In: Schmuck, P. and Schultz, W. (eds). *Psychology of sustainable development*. Kluwer, p. 97-122.

Kasser, T. (2002). *The high price of materialism: A psychological inquiry*. MA, USA: MIT Press.

Kasser, T. (2005). Frugality, generosity, and materialism in children and adolescents. In Moore, K.A. & Lipman, L.H. (Ed.), *What do Children Need to Flourish?: Conceptualizing and Measuring Indicators of Positive Development* (chapter 22). New York, Springer.

Kempton, W., Boster, J.S., & Hartley, J.A. (1996). *Environmental Values in American Culture*. MA, USA: MIT Press.

Kilbourne, W., Grünhagen, M., Foley, J. (2005), A cross-cultural examination of relationship between materialism and individual values, *Journal of Economic Psychology*, 26, 624-41.

Kreuter, M.W. & Skinner, C.S. (2000). Tailoring: What's in a name? *Health Education Research*, 15(1), 1-4.

Manser, M., and M. Brown (1980). Marriage and Household Decision Making: A Bargaining Analysis. *International Economics Review*, 21, 31-34.

Maslow, A. H. (1968). *Toward a Psychology of Being* (2nd ed.). New York: Van Nostrand Reinhold.

Maslow, A.H. (1954). *Motivation and Personality*. New York: Harper.

McKenzie-Mohr, D. & Smith, W. (1999). *Fostering sustainable behaviour: An introduction to community-based social marketing*. Canada: New Society Publishers.

Meinhold, J. L., & Malkus, A. J. (2005). Adolescent environmental behaviors: Can knowledge, attitudes, and self-efficacy make a difference? *Environment and Behavior*. 37, 511-531.

Mosler, H.-J., Tamas, A., Tobias, R., Rodríguez, T.C., & Miranda, O.G. (2007). Deriving interventions on the basis of factors influencing behavioural intentions for waste recycling, composting, and reuse in Cuba. *Environment and Behavior*, 40, 522-544.

Nordlund, A. M., & Garvill, J. (2002). Value structures behind proenvironmental behavior. *Environment and Behavior, 34*, 740-756.

Office of Climate Change (2007, September). *OCC household emissions project: Analysis pack*. Retrieved 15 September, 2008, from http://www.occ.gov.uk/activities/household.htm.

Richins, M.L. (2004). The material values scale: Measurement properties and development of a short form. *Journal of Consumer Research*, 31, 209-218.

Richins, M.L. (1994). Special possessions and the expression of material values. *Journal of Consumer Research*, 21(3), 522-533.

Richins, M.L., Dawson, S. (1992), A consumer values orientation for materialism and its measurement: scale development and validation, *Journal of Consumer Research*, 19, 303-316.

Roberts, J.A. and Bacon, D. (1997). Exploring the Subtle Relationships between Environmental Concern and Ecologically Conscious Consumer Behavior, *Journal of Business Research*, 40, 1, 79-89.

Rokeach, M. (1973). *The nature of human values*. New York: The Free Press.

Saunders, S.A. (2007). A snapshot of five materialism studies in Australia. *Journal of Pacific Rim Psychology*, 1(1), 14-19.

Schultz, P. W. (2001). The structure of environmental concern: Concern for self, other people, and the biosphere. *Journal of Environmental Psychology*, 21, 1-13.

Schultz, P. W., & Zelezny, L. (1999). Values as predictors of environmental attitudes: Evidence for consistency across cultures. *Journal of Environmental Psychology*, 19, 255-265.

Schwartz, S. H. and Boehnke, K. (2004). Evaluating the structure of human values with confirmatory factor analysis, *Journal of Research in Personality*, 38, 230-255.

Schwartz, S. H. (1992). Universals in the content and structure of values: Theory and empirical tests in 20 countries. In M. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 25) (pp. 1-65). New York: Academic Press.

Schwartz, S. H. and Bilsky, W. (1990). Toward a theory of the universal content and structure of values: Extensions and cross cultural replications. *Journal of Personality and Social Psychology*, 58, 878-891.

Schwartz, S. H. and W. Bilsky (1987). Toward a Universal Psychological Structure of Human Values. *Journal of Personality and Social Psychology*, 53, 550-562.

Siero, F.W., Bakker, A.B., Dekker, G.B., & Van Den Burg, T.C. (1996). Changing organizational energy consumption behaviour through comparative feedback. *Journal of Environmental Psychology*, 16(3), 235-246.

Solberg, E. G., Diener, E., & Robinson, M. D. (2004). Why are materialists less satisfied? In: T. Kasser & A. Kanner (Eds.), *Psychology and consumer culture: The struggle for a good life in a materialistic world* (pp. 29-48). Washington, DC: American Psychological Association.

Stern, N.H. (2007). *The Economics of Climate Change. The Stern Review*. Cabinet Office, HM Treasury.

Stern, P. (2000). Toward a coherent theory of environmentally significant behavior. *Journal of Social Issues*, 56, 407-424.

Stern, P., Dietz, T., Abel, T., Guagnano, G. A., & Kalof, L. (1999). A value-belief-norm theory of support for social movements: The case of environmentalism. *Human Ecology Review*, 6, 81-97,

Stern, P.C. and Dietz, T. (1994). The value basis of environmental concern. *Journal of Social Issues*, 50, 65-84.

Stern, P.C., Dietz, T., & Kalof, L. (1993). Value orientations, gender, and environmental concern. *Environment and Behavior*, 25, 322-348.

Stern, P.C. (1992). What Psychology knows about energy conservation. *American Psychologist*, 47, 1224-1232.

Tatzel, M. (2002) "Money worlds" and well-being: An integration of money dispositions, materialism and price-related behaviour. *Journal of Economic Psychology*, 23, 103-126.

Uzzell, DL (1999). Education for Environmental Action in the Community: New Roles and Relationships. *Cambridge Journal of Education*, 29, 3, 397 – 413

Vansteenekiste, M., Duriez, B., Simons, J., & Soenens, B. (2006). Materialistic values and well-being among business students: Further evidence of their detrimental effect. *Journal of Applied Social Psychology*, 36(12), 2892-2908.

Waterwise (2008). *At home – indoors*. Accessed on 18 September, 2008, from www.waterwise.org.uk/reducing_water_wastage_in_the_uk/house_and _garden/save_water_at_home.html.

Lifestyles and values questionnaire

This questionnaire is part of the 21st Century Living project led by Homebase and the Eden project. It asks questions about your daily activities, the things you own and the things that are important to you.

We would very much appreciate it if every person in your household of 16 years and over could complete one of the questionnaires. It is important that you do not discuss your answers prior to and during completion of the questionnaire, as we would like to know your individual views.
Please note that there are no right or wrong answers, we just want to know your opinion. Moreover, all the information you give us will be treated with strict confidentiality and will not be passed on to any third party.

The questionnaire should take about 20 minutes to complete.

For most questions you will be asked to circle ONE number to indicate how much you agree with a statement.

For instance

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
1. I like wearing a watch.	1	2	3	4	5

If you do not like wearing a watch, but you also don't really hate wearing a watch you would circle number 2 'disagree' as it is shown in this example

Thank you very much for your help with our study!

For any further information about this study, please contact: Mike Harris

YOUR LIFESTYLE

Please indicate how many times a month, on average, do you do the following? For each activity please circle ONE number

		(Almost) every day	A few times a week	About once a week	A few times a month	About once a month	A few times a year	I never do this
1	Watch TV for 3 hours or more	29	27	15	10	7	9	5
2	Play sports/exercise	16	39	16	7	4	11	7
3	Spend time on creative arts (e.g., painting, playing music, writing)	10	11	10	12	7	23	27
4	Spend time on collections (e.g. stamps, coins)	1	1	2	2	4	11	80
5	Work as an environmental volunteer	0.5	0.5	0.5	1	0.5	4	93
6	Participate in community work	2	6	8	6	2	17	59
7	Attend church/religious gatherings	1	3	9	2	3	23	60
8	Go fun shopping	1	1	5	20	21	35	17
9	Read books	37	20	7	12	7	15	2
10	Play computer games	7	12	5	10	5	15	45
11	Gardening	7	13	29	19	13	12	7
12	Cook meals at home	50	25	6	10	4	3	2
13	Go out for meals	0	5	8	34	27	24	1
14	Go for a walk in the country or a park	9	11	15	28	11	22	3
15	Go cycling (for all purposes)	3	8	5	6	3	26	49
16	Get together with friends and family	5	27	28	25	6	9	0
17	Eat meat	40	42	7	2	1	1	8
18	Visit a farmers market	0	1	2	5	11	55	27
19	Go to the pub	1	5	12	21	20	32	9
20	Go to the cinema/concerts/ theatre	0	1	2	15	20	57	4
21	Surf the internet (for leisure)	36	26	11	8	6	5	9

THE THINGS YOU OWN

Below you find a list of various things you may own. For each item please indicate
How important or unimportant these things are to you personally (Please circle the appropriate number).
Whether you own each item or not (Please tick the box in the last column for each item you own)

		Totally unimportant	Unimportant	A little important	Important	Very important	Yes I own this
1	Television	2	10	21	46	21	96
2	Microwave	4	13	36	34	13	94
2	Computer	2	2	10	31	55	97
3	Mobile phone	3	5	21	26	46	97
4	Musical instrument	40	31	16	7	6	30
5	Arts and crafts materials	18	28	31	18	5	49
6	Camera	0.5	3	31	43	23	94
7	National trust membership	24	23	30	17	6	29
8	Compost bin	8	12	26	31	22	51
9	Car	1	1	7	28	64	91
10	Bike	14	23	31	19	14	60
11	Solar panel	12	24	35	20	9	1
12	Music collection (e.g., CD)	3	8	36	33	20	96
13	Wind turbine	22	21	29	20	7	1
14	Energy saving lights bulbs	2	4	21	38	36	91
15	Sports kit	11	17	17	32	23	70
16	A garden	0	0	8	25	67	95
17	Books	2	4	11	31	53	96
18	Portable CD/MP3 player	19	24	32	15	10	62
19	DVD player	3	13	35	36	13	97
20	Family photographs	0.5	1	9	21	69	100
21	Games consul (e.g., Play	49	24	18	6	4	38
22	Artwork	8	13	40	28	10	74

YOUR PARTICIPATION IN THE 21ST CENTURY LIVING PROJECT

Are you planning any changes in your household or your lifestyle in the next 12 months because you are participating in the 21st Century Living Project? (Please circle the appropriate answer)
1.   No, I have no plans to change anything (6.5%)
2.   I would like to change but I don't know what I will do yet (57.8%)
3.   Yes I have an idea of what I might change. Please describe what you might do (35.7%)
……………………………………………………………………………………………
……………………………………………………………………………………………
……………………………………………………………………………………………

Please indicate how much the following reasons played a role in your decision to participate in the 21st Century living project.

	Not at all important	A little important	Somewhat important	Quite important	Very important
1 Having an interesting experience	3	13	18	45	21
2 Learning more about environmental issues	1	5	14	33	47
3 Receiving a £500 incentive	8	24	26	30	12
4 Having your say in environmental issues	7	20	33	28	13
5 Saving money	1	6	8	32	54
6 Trying to live more environmentally friendly	0	2	7	29	62
7 Something else, please specify,					

What do you think you might spend the £500 on?
1   I don't know (53%)
2   I do know; I will probably spend it on: (47%)
……………………………………………………………………………………………
……………………………………………………………………………………………
……………………………………………………………………………………………
……………………………………………………………………………………………
Is there anything else you would like to say about your participation in this project, your expectations, your motivations? If so, please write below.
43%…………………………………………………………………………………………………
……….………………………………………………………………………………………………….…
………
……
……
……
……
……
…………………………………………….……………………

YOUR PLANS FOR THE NEXT 12 MONTHS

Please indicate whether you will try to do the following things over the next 12 months. For each statement please circle ONE number

		I will definitely not try	I will probably not try	I might try	I will probably try	I will definitely try
IN THE HOME						
1	Use less gas and electricity	1	2	4	21	73
2	Replace household equipment with more energy efficient alternatives (e.g., washing machine,	6	21	29	17	27
3	Replace light bulbs with energy efficient ones	1	3	13	18	65
4	Install a technology that allows me to use green energy (e.g., wind turbine, solar panels)	11	30	41	8	9
5	Sign up to a green electricity tariff	8	16	52	16	9
6	Turn the heating on less often or at a lower temperature	2	5	11	38	45
7	Install insulation (e.g., cavity wall, roof)	12	11	27	19	31
8	Turn off lights when leaving a room	0	1	2	16	81
9	Turn off/unplug electric goods that are not in use (e.g., mobile phone charger, lights, radio)	1	1	2	19	77
TRANSPORT						
1	Drive less	5	15	26	23	32
2	Cycle more	20	18	22	21	18
3	Use more public transport	12	25	26	18	18
4	Avoid travelling by plane	14	32	27	12	15
5	Make weekend trips and holidays closer to home	6	17	41	18	18
6	Change to a more efficient car	21	39	20	12	8
FOOD						
1	Eat less meat	27	29	21	15	9
2	Eat more organic produce	7	15	34	25	18
3	Eat more locally produced food	2	4	25	35	34
4	Eat more seasonal produce	2	4	21	36	38
5	Eat more free range fish or meat	4	8	22	26	40
6	Eat and drink more Fair Trade products	3	9	23	37	28

BEHAVIOUR CHANGES

Please indicate how difficult you think it will be to do the following things over the next 12 months. For each statement please circle ONE number

	Very difficult	Quite difficult	Not very difficult	Quite easy	Very easy
IN THE HOME					
1 Use less gas and electricity	4	44	27	16	9
2 Replace household equipment with more energy efficient alternatives (e.g., washing machine,	18	51	17	9	5
3 Replace light bulbs with energy efficient ones	4	8	14	27	47
4 Install a technology that allows me to use green energy (e.g., wind turbine, solar panels)	48	42	7	3	1
5 Sign up to a green electricity tariff	8	21	46	13	12
6 Turn the heating on less often or at a lower	5	16	25	26	29
7 Install insulation (e.g., cavity wall, roof)	13	21	29	20	16
8 Turn off lights when leaving a room	0	2	11	19	69
9 Turn off/unplug electric goods that are not in use (e.g., mobile phone charger, lights, radio)	0	1	14	29	56
TRANSPORT					
1 Drive less	22	40	19	10	9
2 Cycle more	30	27	18	13	13
3 Use more public transport	17	34	27	13	9
4 Avoid travelling by plane	17	24	25	17	16
5 Make weekend trips and holidays closer to home	7	20	29	30	15
6 Change to a more efficient car	43	35	13	5	5
FOOD					
1 Eat less meat	15	23	29	20	13
2 Eat more organic produce	5	15	35	26	20
3 Eat more locally produced food	2	15	30	34	20
4 Eat more seasonal produce	1	6	34	33	25
5 Eat more free range fish or meat	3	15	25	30	27
6 Eat and drink more Fair Trade products	4	9	28	37	22

Your views about the environment

Please indicate to what extent you agree with the following statements. For each statement please circle ONE number

		Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1	We are approaching the limit of the number of people the Earth can support	1	17	32	36	14
2	The balance of nature is very delicate and easily upset	1	8	19	46	27
3	Humans have the right to modify the natural environment	19	38	25	16	2
4	Humankind was created to rule over the rest of nature	38	34	17	7	5
5	When humans interfere with nature it often produces disastrous consequences	2	9	25	45	19
6	Plants and animals exist primarily to be used by humans	35	38	19	7	2
7	To maintain a healthy economy we will have to develop a "steady state" economy where industrial growth is	1	9	31	45	14
8	Humans must live in harmony with nature in order to survive	0	3	9	54	35
9	The Earth is like a spaceship with only limited room and resources	0	2	18	53	28
10	Humans need not adapt to the natural environment because they can remake it to suit their needs	30	46	19	5	1
11	There are limits to growth beyond which our industrialised society cannot expand	1	6	31	46	16
12	Mankind is severely abusing the environment	0	3	14	49	34

How often do you do the following (please circle one number for each behaviour)

		Never	Rarely	Sometimes	Often	Very often
1	Talk to my family (housemates) about environmental	1	15	50	28	6
2	Tell a member of my family off when they do something	5	12	36	32	15
3	Get told off by other members of my family for wasting	12	36	36	14	2
4	Try to persuade family to save energy (e.g., not leaving TVs on stand-by)	6	14	37	31	11

YOUR VIEWS ABOUT MONEY AND POSSESSIONS

Please indicate to what extent you agree with the following statements. For each statement please circle ONE number

		Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1	I admire people who own expensive homes, cars, and clothes.	27	34	31	8	1
2	I usually buy only the things I need.	2	28	22	39	10
3	I have all the things I really need to enjoy life.	2	8	19	58	14
4	Some of the most important achievements in life include acquiring material possessions.	21	41	22	16	1
5	I try to keep my life simple, as far as possessions are concerned.	1	25	37	30	8
6	Having a job that helps people matters more than having a job that pays a lot.	2	19	37	30	12
7	I don't place much emphasis on the amount of material objects people own as a sign of success.	1	12	26	48	14
8	The things I own aren't all that important to me.	6	46	30	17	1
9	My life would be better if I owned certain things I don't have.	13	47	25	15	1
10	The things I own say a lot about how well I'm doing in life.	8	36	31	23	2
11	I enjoy spending money on things that aren't practical.	16	43	25	14	2
12	I enjoy sharing my things with other people.	2	4	22	61	12
13	I wouldn't be any happier if I owned nicer things.	2	16	23	47	12
14	Buying things gives me a lot of pleasure.	4	24	33	35	4
15	I like to own things that impress people.	30	42	18	10	0
16	I like a lot of luxury in my life.	14	40	26	19	2
17	I'd be happier if I could afford to buy more things.	14	40	23	23	2
18	I enjoy giving things or money to charity.	1	5	35	52	6
19	I don't pay much attention to the material objects other people own.	0	13	35	44	9
20	I put less emphasis on material things than most people I know.	1	13	59	25	3
21	It sometimes bothers me quite a bit that I can't afford to buy all the things I'd like.	15	40	25	19	2
22	It is really important to me that I work to make the world a better place.	0	10	34	48	9

YOUR VALUES

Below you will find 13 values that may be important in your life. Each value is accompanied by a brief explanation. We would like to know how important each value is for you as a guiding principle in your life. This will help us understand which values are important to you. The higher the number (-1 to 7), the more important the value is as a guiding principle in your life.

1. Please first read all values, and indicate which value is most important to you.

2. Then please rate the other values. Try to distinguish as much as possible between the values by using different numbers.

		Opposed to my values	Not important			Important			very important	Of supreme importance
1	EQUALITY (equal opportunities for all)	1	2	3	4	20	9	14	32	16
2	RESPECTING THE EARTH (harmony with other species)	0	0	2	7	17	12	19	32	12
3	BEING HELPFUL (working for the welfare of Others)	0	1	4	6	21	12	22	24	20
4	SOCIAL POWER (control over others, dominance)	31	36	12	13	3	3	2	0	1
5	UNITY WITH NATURE (fitting into nature)	1	2	7	10	31	12	15	16	8
6	WEALTH (material possessions, money)	6	15	13	21	23	7	11	5	0
7	A WORLD AT PEACE (free of war and conflict)	0	2	2	3	8	5	14	23	43
8	BEING INFLUENTIAL (having an impact on people and events)	2	17	9	18	23	11	12	5	3
9	SOCIAL JUSTICE (correcting injustice, care for the weak)	0	2	1	6	18	10	21	25	17
10	PROTECTING THE ENVIRONMENT (preserving nature)	0	1	2	2	17	12	23	26	19
11	AUTHORITY (the right to lead or command)	9	31	17	15	16	8	1	2	2
12	PROVENTING POLLUTION (protecting natural recourses)	0	1	1	4	13	12	19	32	19
13	BEING AMBITIOUS (hard-working, aspiring)	0	5	6	12	23	11	14	17	12

ABOUT YOU

In this part of the questionnaire, we would like to ask you a number of questions about yourself. Please circle your answer or write it on the dotted line.

Please be assured that the answers to these questions will not be used to identify you personally but will only be used to examine answers per respondent groups, such as age groups.

1. Are you
   1. Male (48.9%)
   2. Female (51.1%)

2. How old are you?
   Mean = 43.0 years, Range 16-73 years

3. What type of household do you live in?
   1. Single (4.8%)
   2. Single with children (who live at home) (3.7%)
   3. Couple with no children (31.9%)
   4. Couple with children (who live at home) (46.8%)
   5. Other (please specify) (12.8%)

4. How many people live in your house or flat?
   Mean = 2.8, Range = 1-6 people

5. Please write down the postcode of your address
Please note that this information will only be used to link your questionnaire answers to the findings of your home audit and for nothing else.

Finally we would like to know how you feel about your life in general. For each statement please circle ONE number

		Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
1	In most ways my life is close to my ideal.	1	5	10	11	26	42	4
2	The conditions of my life are excellent.	0	3	7	10	31	39	10
3	I am satisfied with my life.	0	1	6	8	24	52	10
4	So far I have got the important things I want in life.	0	2	4	7	16	55	17
5	If I could live my life over, I would change almost nothing.	4	17	15	14	18	26	7

You have now come to the end of the questionnaire.
Thank you very much for your co-operation

Appendix B. Results of a factor analyses aiming to identify clusters of consumer goods

Rotated Component Matrix(a)

	Component	
	Low tech	High tech
% explained variance	21%	16%
O11Solar	**.75**	-.05
O13Wind	**.73**	-.04
O8Compost	**.69**	-.23
O14Bulbs	**.54**	.09
O5Arts	**.54**	.19
O7NatTrust	**.45**	-.14
O6Camera	**.45**	.19
O22Artwork	**.40**	.11
O10Bike	**.40**	.12
O12Music	**.36**	.34
O19dvdPlayer	.11	**.75**
O1Television	-.09	**.70**
O3Mobile	.03	**.62**
O2aMicrowave	-.07	**.59**
O18cdPlayer	.23	**.52**
Alpha	.73	.63

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 3 iterations.

The initial analysis revealed 4 factors with Eigenvalues of 1 or more but the first two factors explained the highest proportion of variance and the analysis was therefore repeated to distinguish only two factors

Appendix B. Planned changes mentioned by respondents

A method of using rainwater to water the garden.
As a household reduce waste of energy and water.
Avoid leaving electric appliances on stand-by, invest in better insulation,
Better insulation
Better shower unit, insulation improvement
Change boiler. Dual flush toilets.
Change halogen bulbs for LED bulbs. Extra lagging in the loft. Thermostatic valves on all radiators.
Change to an energy efficient boiler. Investigate and implement additional energy saving measures.
Changing all bulbs to energy saving bulbs. Energy saving kettle. Look into a new boiler as ours is over 10 years old.
Collection of water for use in garden
Compost bin. More energy saving light bulbs. Look into loft insulation / more lagging.
Conserve more run-off water (garden). Conserve more electricity (improve device discipline).
Cycle more & walk more.
Cycle to work, compost bin, source cheap organic / fair trade food
Either loft & cavity wall insulation (if possible) or double glazing. If we could afford it, I would replace the boiler & central heating.
Garden - water butt / compost bin, layout of garden. Energy saving equipment / environmentally friendly equipment.
Have already installed improved loft insulation, secondary glazing and double glazing.
Have wall insulation. Grow own vegetables.
House insulation, use of energy, harvest rainwater, grow own veg, use more public transport, use my bicycle more.
I will replace as many light bulbs as poss with energy savers. I am open to other suggestions.
I would buy energy saving light bulbs, a water butt, a composter, solar powered water pump (pond), smaller toilet cistern, not flush every time, use less toilet paper, turn off lights + electrical goods when not in use, turn thermostat down 1 or 2 degrees.
I would like to explore the feasibility & cost of putting solar panels on the roof - i don't think that we would need to use any gas at all during the summer months.
I would like to increase the amount of recycling generated eg. cardboard & plastic packaging without having to drive to the recycling centre. Also wish to invest in a compost bin.
Improve cooking to "A" rated or air to air heat pumps
Improve draft proofing & perhaps save energy.
Improve insulation - windows, floors. Look into new boiler. Compost bin.
Improve insulation and seek ways to reduce heat loss.
Improve insulation in house (bathroom and maybe loft). Replace boiler to more efficient model. Save electricity / be more conscious about the electricity I use.
Improve insulation in house.
Increase number of energy saving light bulbs (save energy). Purchasing a compost bin (recycling).
Install a shower, buy a compost bin & water butt
Install a wood burning stove. Investigate how to get round hot water wastage from tank to bath.
Build a greenhouse (unheated). Experiment with windbreaks for kitchen garden. Continue researching green / solar / wind alternatives & planning permission. Try and ride my bike without falling off.
Insulate floors. Change energy provider - try more "old fashioned" / traditional cleaning products. Get water butt. Back radiators & add shelves above.
Insulation in loft, thermostat on radiators, get new water butt, improve garden
Insulation of one wall, improve energy efficiency of house. Investigate alternative forms of energy.
Insulation, solar panels.

Interested in energy saving plug systems for TV etc. Would consider water butt if space saving one.

Look at changing room thermostats or multi zone thermometers. Change lawnmower for non-electric pull / push mower.

Loft insulation. Washing machine.

Loft insulation. Wood stove.

Lower energy bill and emissions - install draught proofing, more insulation, woodburner, improve lagging on hot water cylinder, thermostat on radiators. Will consider replacing boiler.

Make house more "efficient", need to change boiler, want to revamp bathroom.

Physical changes: Sigle glazed back door replaced, lighting in utility room. Lifestyle changes based on advice.

Possibly loft insulation and having central heating system flushed

Re-position thermostat to a less draughty area & change lightbulbs to energy saving

Really like to look at solar panel for heating water and perhaps an energy watcher so everytime we used electric it shows how much. & standby switches.

Rebuild conservatory with PV roof. External insulate house.

Recycle more - waste / water etc. Look at ways of improving home insulation. Improve home energy usage.

reduce electricity, gas, water. Compost

Reduce packaging waste. Grow more vegetables.

Replace cooker to A rating

Replace gas boiler with energy-efficient boiler.

Replace some of our windows as I don't think they keep much heat in.

Save energy in the home, Recycle and avoid over packaged products, walk to work more often, waste less food, investigate green energy for the home, get an organic vege box delivery, shop locally and on foot.

Single glazed back door replaced. Flourescent light in utility room replaced. More water butts.

solar panel

Solar panel for heating. Energy watcher.

To reduce carbon footprint. Reduce gas, electricity and water bills.

Try to lower energy costs and reduce energy waste

Try to turn down the thermostat. Switch off standby buttons. Shower more - bath less.

Upgrade inefficient household appliance, save money on utility bills - gas & water.

Use low energy light bulbs throughout. Collect water for use in the garden. take into account advice through the project following the survey.

Use of electric - switching off appliances rather than leaving on standby.

Use the car less, be more aware of my energy consumption.

Vegetable garden. Use the car less and walk more. Maybe small solar panel lights in the garden.

We are doing a lot of work on our house in the next few years, we may bring some of that forward and consider 'green' issues as a starting point rather than a final 'nice' thought.

We are having a baby at the end of October.

We are planning to build a herb garden, also buy a compost bin for our top veg garden we will be composing. Also where our wheely bins are we are going to build an area for more recycle as we don't have a good facility.

We have already made small changes eg. light bulbs etc., turning stuff off when not using it. Would like to do more but has a COST attached.

We know that over the next few years we need to replace some windows and will replace with double glazed units. I plan to grow more vegetables.

Welcome for suggestions from surveyor.

Windows. Covered outside [unreadable] area.

Appendix C. Other comment about the project

A good chance to change the way we live and reduce the impact we have on the environment. Also a chance to learn from other people.

As a bit of a sceptic it will be interesting to see what can be achieved and what doesn't really make a difference.

As a household we spend a huge amount on energy and water - even though our house is only 10 years old I don't think it is particularly efficient. We had it built and would do a lot differently now! W

As a single parent on a tight budget I am keen to know what changes I can make that will save me money, not cost the earth to "set up" and have a positive environmental impact.

As i have said above it is important for me to know / learn about our environment but to teach our children the importance of it all.

Being environmentally friendly is sadly expensive for a family. I want to understand why?

Due to working for a large company (Eaton Aerospace) we have recently employed a "mesh" manager. Eaton are a worldwide company and part of his role is to look at environmental issues. This has opened

Expectations to gain more knowledge how we can live greener and also save energy.

Feel at present we are about as environmentally friendly as we can be from a financial point of view but hope we can see areas we can change which we've not considered. Wanting to get house warmer in

Gain advice to reduce our households environmental footprint

Hoping to save money and reduce waste.

How to live greener & save energy.

I'd like to have a better understanding of how we can make environmentally friendly improvements to our house and generally live in a more environmentally friendly way

I'd like to learn more about what really works and what really helps; e.g., I sold my car and replaced it with a small motorbike, does that really work, is it really much cleaner?

I'm interested in finding ways of reducing my environmental footprint without causing too many changes to our general lifestyle. The future [unreadable] cost of a property and finding there are ways forward

I'm interested to find out what else I can do to improve energy efficiency & consumption as I think I am probably quite good but have never spent much time thinking about environmental issues in general

I'm motivated to conserve energy to help keep fuel costs down.

I am concerned about the environmental changes that effect the world but are frustrated by the ineffective efforts and ideas cast about by Government and people that seem to jump on the bandwagon. If

I am curious to see how much we can achieve

I am designing a small scale hydro project for an old mill in Llannhidiam, S. Wales. I am hoping to get an insight into energy efficiency and usage.

I am glad & excited to be involved

I am hoping that the project will find key areas where all families can make easy changes to become more environmentally and economically friendly. It is also very important the project makes its find

I am interested in saving heating costs & conserve energy better

I am interested in the concept & cutting energy related costs.

I am looking forward to learning innovative ways to be more energy efficient and in gaining knowledge on other environmental issues. Use this knowledge where appropriate and pass onto children in school

I am looking forward to participating in this project as I feel quite strongly about doing what I can to improve the environment both in the home and globally. I hope to be able to make some changes t

I am looking forward to receiving impartial advice about such things as solar panels, boilers, water metering etc.

I am looking forward to what this project has to offer the family and I am willing to try and improve the way we live to save energy & the environment.

I am ultra-keen to embrace a life which is as organic as possible and educate the next generation (my son) that they need to look after the world and themselves (their body) to get the most out of life

I am very keen to learn more about how I can become more environmentally friendly.

I believe this is a very worthwhile initiative. I hope to make lasting changes to my lifestyle to benefit my family and the environment.

I consider myself quite environmentally aware and have spent a lot of money to already reduce my environmental footprint. For that reason I am unclear on what further steps I will take in the next 12

I feel I want to help the environment, I just can't afford to. Perhaps if retailers lowered their prices then a lot more people would go greener.

I feel its a great way to help save the planet and save money at the same time.

I feel that we are doing as much as we can do to be environmentally friendly at the moment, so welcome any help and advice to help us improve further.

I hate our volume of packaging recycling and I am not convinced that the all in one recycling is effective. I would like to find out what happens to our recycling, how it is sorted and what could be d

I hope the project shows/reveals more about what makes people change the way they live because individual action is important (as well as government action)

I hope to find accurate and honest information about different products i.e. I am in the middle of boarding my attic but I am finding it hard to obtain the thermal properties of timber, ply wood, foil

I hope to pass on what i learn on to family and friends.

I like to be be more energy efficient reducing our utility bills and at the same time being more concerned about the environment.

I think I already do quite a lot - recycling, buy organic / fair trade / recycled / local etc. and i would like to take part to see how much more I could do. Sometimes it feels like making the 'eco' c

I think I lead a more than averagely environmentally friendly lifestyle at the moment and I am keen to see what else I can do or change to improve on this and save more money on utility bills.

I think that it would be nice to get an example as to how a family can be environmentally friendly without becoming [unreadable word] and humourless about it. It would be nice to be able to demonstrate

I think we are quite good at saving energy already compared with the national average but it would be good to get another opinion on this and some fresh ideas also.

I want to see whether it is possible to save money and change footprint by making the small changes in terms of cost and behaviour. I want to set an example to my children and involve them in the chan

I was very keen to live in a period home (due to aesthetics!). We haven't owned a home before and found we were becoming interested in composting, growing our own produce, changing light bulbs etc. We

I welcome the opportunity to think of improvements and take advice.

I would like my children to have a better understanding of energy costs & environmental issues.

I would like to participate more in [unreadable word] energy and reducing emissions / carbon footprint.

I would like to receive good advice on practical things we can do to improve our energy bills and make our household more environmentally friendly

I would like to spend £500 on improving the house but I don't see what can be done without spending a lot more than £500.

In return for my participation I would like to see good use being made of the information supplied and the contribution made by myself and the other participants. I would like to be kept informed of t

Interesting project generally. I am particularly interested in energy efficiency. I might want secondary glazing on a north facing bedroom window. I do want a water meter - I use tiny amounts only, th

It is a worthwhile endeavour and an opportunity to change our lifestyle for the better.

It is important to be energy efficient for the planet but also to save money that need not be spent unnecessarily - hopefully without too much effort.

It would be interesting to know how environmentally friendly we are compared to all the other households in the study - both at the beginning and at the end, so we can see whether we have improved our

It would be interesting to see a before and after of our energy output. I like to try and do my bit for the environment and doing this project is another thing / way my family can try.

Just looking forward to find out ways that I can change our lifestyle to cut back on energy costs, whilst making as little negative impact on the environment as possible. At the same time I'm looking

Just saving energy and money!

Keen to take advice from the professionals.

Looking forward to the experience and education we can pass on to our family (children) so good habits come naturally to them. Very interested in environmentally friendly and energy saving packages.

Motivated to help protect the environment for my children and their [word unreadable].

My husband made the decision to participate. I was only told about it when it was already arranged. I am quite unhappy about the £500 because: a) If it is not earned it is wasted and could be spent on

My partner and I have just bought an old house and are merging two households into one. This in itself will contribute to a reduction in our energy bills and it will be interesting to see other enviro

No

Not at this time - just very interested in finding out more.

On a very tight budget I am not able to buy organic or fair-trade - if there are cheaper sources I would like to find out

Only the delay from last year before the project started

Our house has its original windows and we would not wish to replace these.

Passionately in favour of Eden Project. Hope to learn from this project. Feel very strongly that government here (& in USA) is doing little to encourage alternative energy so am pleased to participate

To calibrate my carbon footprint.

To get as much out of the project as possible to improve my 'green lifestyle'.

To really feel that I am making some difference and to teach my children about the environment with a real hands on experience

Understanding more about my environmental footprint. How my lifestyle could improve.

Very excited by the project. Money is always an issue with planning any alterations particularly when income & outgoings particularly in Cornwall are very high. Wages are not great. Looking forward to

Very lucky to have been given the opportunity!

We already try to be environmentally friendly, so in a sense I am looking for reassurance that we are doing it right - but [unreadable word] for new ideas, and learn how well others are doing.

We are looking forward to seeing how economically and environmentally we can make a change in our household. We are hoping to learn lots from how we can be eco-friendly through your information and the advice

We have a solid brick built house built in 1912 which we would like to learn ways to improve its environmental performance.

We live in a relatively new house so am very interested in finding out just how energy-efficient it is, has it been built with efficiency in mind or just cost saving. This would help us to determine w

We need some help in working through priorities in environmental practices. You read so much its hard to fathom high impact changes. We have made some small changes, but probably not enough.

With energy prices moving rapidly, looking at previous energy consumptions would give greater comparisons relative to savings mode. It would be good if the government, after seeing results of this sur

Would like more info on solar panels ie. government sponsorship grants companies that supply.
Please as flat roof would be good place to have one installed. If we won £500 would like to spend it on
so

Would like to learn and do more to make house more economic to run. Interested in solar heating and
conservatories.

Appendix D. What the respondents are planning to spend their £500 on.

A bicycle to cycle to work, shower timers, compost bin

A composter, a water butt, a new toilet cistern, loft insulation?, babies nappies.

A new boiler and radiators for the home.

A wood burning stove

Am looking for professional advice in light of the results from the survey conducted.

An energy usage monitor but other than that I have no plans/ideas what to spend the money on.

As above, loft insulation and central heating system

Back door. Radiator & thermostatic controller.

Better loft insulation. Water butt for the garden.

Boiler

Boiler replacement or insulation

Building a herb garden & buying compost bin to aid our large garden. Also to recycle not just normal waste but also things like ink cartridges and other items we may use.

Building a herb garden, building an area for recycle, buy a compost bin for our large garden.

Buy a shower unit

Buy energy efficient boiler.

Buying stuff to make the home more energy efficient

Cavity wall insulation

Cavity wall insulation.

chimney blockers, light bulbs, radiator reflective panels, cavity insulation, water butt, composter

Compost facility, more recycling containers, possible wind turbine or solar panel?

Condensing boiler.

Depending on the advice we receive - it could go towards replacing elderly electrical appliances that are inefficient [unreadable word] A-rated ones - possibly.

Don't know until survey done & advice given.

Door & lighting as indicated above.

Energy bulbs, changing vents in bathrooms, moving & new thermostat

Energy saving bulbs. Energy saving kettle.New boiler.

Energy saving devices - kettle, bulbs, cover for hot water tank, backing for radiators (silver foil kit).

Energy saving equipment / environmentally friendly equipment

Energy saving light bulbs / eco kettle. Other??

Energy saving measures for the house.

Home improvements

I will look into purchasing a solar panel, if that is not possible than replace lof insulation

Improvement

Improvements to draft proofing

Improving energy efficiency in the home. I would like to know more about solar panels.

Improving insulation in the home.

Insulation

Insulation and energy conservation.

Insulation or shower improvement

Insulation, alternative energy sources.

Insulation, lighting, some guidance may be helpful.

LED light bulbs. Thermostatic radiator valves. Lagging for the loft.

Light bulbs, unsure what else yet.

Loft insulation

Loft insulation / House insulation. Composting bin.

Loft insulation and cavity wall insulation

loft insulation, cavity wall insulation

Loft insulation, compost bin, water butt, solar lights, energy saving light bulbs, log fire
Loft insulation, water butts, fruit trees.
Loft insulation.
Loft insulation. Washing machine.
Making energy-saving improvements to home and lifestyle (inc. more economical boiler).
Maybe loft insulation or cavity wall insulation.
Maybe towards solar panels or wind turbine but open to suggestions
Maybe windows
My wife will take care of that
New A rated cooker
New boiler A grade condensing combi. Energy saving kettle. Water butt for garden. Recycling containers.
New boiler. New toilets.
New cooker or air to air heat pumps
New light bulbs, water butt, home insulation
New windows possibly
Not sure much else we can do, would like water butts.
Not yet decided.
Poss towards insulation - floor or radiators & water butt in garden - open to suggestions!
Pumping and collection of water.
Put towards replacement boiler or on insulation in bathroom.
Putting in a water collection of rainwater - with a pump.
Putting towards idea of double & secondary glazing.
Rain harvesting & composting or double glazing replacements.
Reducing water usage & heating water
Remove old metal bath from bathroom and replace with one which doesn't take heat from water. Put thermostatic valves on radiators in lounge and bedrooms. Improve garden and develop veg area.
Replace 15 year old washing machine with lower energy, more efficient version.
Replacement double glazing.
Roof insulation and maybe towards a more efficient boiler.
See above
See above.
Seeking advice.
Solar panel for heating and / or energywatching device so each time electric is used it shows how much. & standby switches.
Solar panel for heating. Energy watcher.
Solar panel lights - for garden.
Solar panels
Subject to advice.
The things mentioned above of relevant after advice.
Thermos on radiators, towards loft insulation?, improve garden, suggestions made by Eden project
Thermostatic radiator valves, room stat? (maybe not necessary). More energy efficient bulbs & [unreadable]. More loft insulation.
Towards a new bathroom or loft insulation.
Towards a new more efficient boiler.
Towards double glazing or new boiler.
Update some radiators, radiator thermostat for spare rooms, possibly new back door
wall / cavity insulation, loft insulation.
Wall insulation, door / window insulation, on compost, vegetable patch.
Water butts, wormery, more energy efficient bulbs.
Water saving system?, solar panel?

Ways to improve energy efficiency of house.

Whatever the household survey may highlight, or possibly towards loft insulation or cavity wall insulation.

Will be seeking advice from you.

Wormery. Raised beds for garden (for veg). Standby saving sockets. Water saving - showerhead / taps.

Would like some suggestions.