

*Hanne Marit Dalen and Bente Halvorsen*

**Gender differences in environmental related  
behaviour**

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*Reports* In this series, analyses and annotated statistical results are published from various surveys. Surveys include sample surveys, censuses and register-based surveys.

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## Preface

In connection with a large scale OECD survey on household environmental behaviour, we were asked to write a chapter on gender differences in the results. The background for this request was an enquiry from the Norwegian Ministry of Environment, who requested that the report on the OECD household survey on Environmental behaviour included a chapter on gender effects. This Report presents the results from the analyses we did for the OECD.

The report was prepared for the OECD Conference on 'Household Behaviour and Environmental Policy' organised by the Environment Directorate, 3-4 June 2009, OECD Headquarters, Paris.

The report is written by senior researcher Bente Halvorsen and junior researcher Hanne Marit Dalen. The work on this report was financed by the Norwegian Research Counsel on the project "Potential for energy savings in Norwegian households. Effects of energy policies on electricity consumption".

This report can be found on Statistics Norway's internet page at: <http://www.ssb.no/publikasjoner/>. More information on the OECD project may be found on the internet at: [http://www.oecd.org/document/52/0,3746,en\\_2649\\_37465\\_35145204\\_1\\_1\\_1\\_37465,00.html](http://www.oecd.org/document/52/0,3746,en_2649_37465_35145204_1_1_1_37465,00.html) and [http://www.oecd-ilibrary.org/environment/greening-household-behaviour\\_9789264096875-en](http://www.oecd-ilibrary.org/environment/greening-household-behaviour_9789264096875-en). See also OECD (2011)

## Abstract

This report discusses gender differences in the data collected in the OECD household survey on environmental behaviour. The survey asked a sample of 10 000 respondents from 10 countries (Norway, Sweden, Canada, France, Italy, the Netherlands, the Czech Republic, Mexico, Australia and Korea) concerning household behaviour with respect to five areas: recycling, energy and water saving, organic food consumption and transportation. This report identifies and describes gender differences in behaviour, in underlying preferences and in household characteristics in this data. We use regression analyses to identify and test for significant gender differences in preferences, and we use differences in means to test for gender differences in background variables and the total effect of gender on behaviour.

In our estimations, where we test for significant gender differences in preferences, we find many significant differences with respect to several of the explanatory variables affecting behaviour. However, there was no clear pattern for most of these gender differences. The only systematic gender difference we found in the estimations was that the belief that they can actually contribute to a better environment seems to be a more important motivator for environmental friendly behaviour for men than it is for women. There are also many significant differences between the genders in the distribution of key background variables, in particular with respect to income, car ownership, participation in the workforce, education and choice of residence. However, these gender differences in preferences and background variables only result in pronounced gender differences in behaviour to a small degree. The exception is transportation, where gender differences are large and significant. Men have a higher probability of owning a car or a motorcycle than women. And given that the respondent owns a car, men drive significantly more than women. For the rest of the behaviour measured in this survey, the effect of the number of adults in the household is often more important for choices.

The results also imply that there are gender differences in how people respond to questions about hypothetical policy measures, where females tend to be more positive on average. Since these positive attitudes is not necessarily mirrored in reported behaviour, it may be difficult to infer on the basis of gender differences in the response to these hypothetical policy questions, to gender differences in actual behaviour.

Even if the analyses reveal significant gender differences, it does not necessarily imply that gender differences in environmental behaviour should have implications for *environmental* policies. Focusing on gender differences may lead to inferior policy recommendations because the focus is shifted away from the main aim, which is to improve the environment.

## Sammendrag

Denne rapporten diskuterer kjønnsforskjeller i et datasett samlet inn på et OECD-prosjekt om miljøvennlig atferd i husholdningene. Undersøkelsen omfattet 10 000 respondenter fra 10 ulike OECD-land (Norge, Sverige, Canada, Frankrike, Italia, Nederland, Tsjekkia, Mexico, Australia og Korea), og kartla miljørelatert husholdningsatferd for fem områder: Resirkulering, energi- og vannsparingstiltak, konsum av økologiske matvarer og transport. Målet med denne rapporten er å identifisere og beskrive kjønnsforskjeller i atferden, underliggende preferanser og viktige bakgrunnsvariable i dataene. Vi bruker regresjonsanalyser for å identifisere og teste for kjønnsforskjeller i preferansene, og en sammenligning av gjennomsnitt og fordeling for å teste for kjønnsforskjeller i bakgrunnsvariable og atferd.

I estimeringene finner vi mange signifikante kjønnsforskjeller i preferansene. Det var imidlertid få av disse forskjellene som er gjennomgående mellom de ulike områdene. Den eneste systematiske kjønnsforskjellen i preferansene, var at troen på at det man gjør faktisk bidrar til et bedre miljø endret menns atferd mer enn kvinners. Vi finner også mange signifikante forskjeller mellom kjønnene i viktige bakgrunnsvariable, som inntekt, valg av utdanning, tilknytning til arbeidsstyrken, eierskap av motorkjøretøyer, valg av bosted, osv.. Disse forskjellene i preferanser og bakgrunnsvariable fører imidlertid kun i mindre grad til signifikante forskjeller i den miljørelaterte atferden. Unntaket er transport, hvor kjønnsforskjellene er store og signifikante. Menn har en høyere sannsynlighet for å eie bil eller motorsykkel enn kvinner, og gitt at respondenten eier et kjøretøy, kjører menn signifikant mer enn kvinner. For resten av den miljørelaterte atferden er effekten av antall voksne i familien langt sterkere.

Resultatene viser imidlertid klare kjønnsforskjeller i hvordan folk responderer på spørsmål om hypotetiske politikktiltak, hvor kvinner har en tendens til å være mer positive. Siden disse holdningene ikke nødvendigvis gjenspeiles i den rapporterte atferden, indikerer det at det er vanskelig å trekke slutninger om kjønnsforskjeller i atferden basert på kjønnsforskjeller i uttrykte preferanser.

Til slutt er det ikke nødvendigvis slik at signifikante kjønnsforskjeller i atferden bør tas hensyn til i utformingen av miljøpolitikken. Å fokusere på kjønnsforskjeller vil kunne føre til innoptimale politikkbefalinger, fordi fokuset skiftes vekk fra hovedmålsetningen, som er å bedre miljøet.

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## 1. Introduction

Several empirical studies show that men and women behave differently in many respects, as in the choice to enter the labour market. This is also true when it comes to environment-related behaviour (see Section 2 for a review of the literature). In many countries, gender issues are high on the political agenda. Some, like Norway, have a Gender Equality Act under the authority of the Ministry of Children and Equality. This act obliges all ministries to take measures to promote equal opportunities, and to report to the Ministry of Children and Equality a summary of their actions. In this context, the Norwegian Ministry of Environment requested that the final report on the OECD Survey on Household Environmental Behaviour include a chapter on gender effects, which are the focus of this chapter.

When discussing gender differences in behaviour, it is important to understand what causes these differences. In the context of an economic analysis, men and women may have different behaviour for two reasons; their preferences and attitudes, and background variables. Differences in preferences include differences in how concerned respondents are about climate change and how much they value various environment-friendly activities. For example, men may on average enjoy driving more than women. In some cases, the different gender effects offset each other, making behaviour look similar and obscure real differences in underlying preferences. In other cases they pull in the same direction, reinforcing each other. It is thus important to identify how both preferences and background variables differ.

Many environment-related decisions concern choices taken by an entire family. Furthermore, some decisions may also affect the welfare of other family members, even if the choice is highly personal. Many people will, for instance, consider their partner's preferences when making a decision. It is thus not obvious how gender differences in preferences translate into behaviour in cases where one's decisions affect the welfare of other family members and/or are taken together with the partner. To complicate matters further, some families (and singles) take collective decisions with other households, as may occur when several households share the ownership of equipment (central heating or water-heating systems, common cold-water meter).

In the present analysis we discuss how joint decision making affects gender differences in behaviour. We also discuss how to test these differences given that the preferences, background variables and the degree of joint decision making vary across respondents. Our objective is not to explain why these gender differences occur, but only to point out when and where they are found in our sample.<sup>1</sup>

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<sup>1</sup> Finding the reasons for gender differences in preferences and/or background variables would have required a much more refined questionnaire aiming this specific objective.

## 2. Review of the literature

In the empirical literature, differences in behaviour between genders are frequently observed, also with respect to environment-related behaviour. We will give a short summary of some of these findings within the five areas covered by the OECD survey: waste generation and recycling, energy consumption, transportation, organic food consumption and water use. The main findings from the literature are summarised in Tabel 2.1.

**Table 2.1. Summary of the main results from selected empirical studies**

Environment-related area	Effect of gender	Authors
<b>Organic food</b>		
Organic food consumption	+ (female)	Underhill and Figueroa (1996) Jolly (1991) Byrne <i>et al.</i> (1991) Groff <i>et al.</i> (1993)
WTP for organic food	+ (female)	Batte <i>et al.</i> (2004) Govindasamy and Italia (1999) Boccaletti and Nardella (2000) Byrne <i>et al.</i> (1991)
<b>Personal transport choices</b>		
Car use	+ (male)	de Jong (1996) Abreu e Silva <i>et al.</i> (2006) Feng <i>et al.</i> (2005) Steg <i>et al.</i> (2001) Johansson-Stenman (2002) Dargay and Hanly (2004) Nolan (2002) Simma and Axhausen (2004) Giuliano and Dargay (2006) Golob and Hensher (1998) [+/-] Dargay (2005) [0]
Car ownership	+ (male)	Dargay (2005) Simma and Axhausen (2004) Abreu e Silva <i>et al.</i> (2006) Nolan (2002)
Vehicle choice	+ (female)	McCarthy and Tey (1998)– Demand for fuel-efficient vehicles greater for women
Public transport use	- (male)	Abreu e Silva <i>et al.</i> (2006) Golob and Hensher (1998) Johansson-Stenman (2002) Linderhof <i>et al.</i>
<b>Waste generation and recycling</b>	+ (female)	Reschovsky and Stone (1994) – <i>Recycling of glass and plastics greater for women</i> Berglund (2006) – <i>Significance of gender for willingness to pay to have someone else take over the waste sorting activities</i>
<b>Residential water use</b>	Insignificant	Krause <i>et al.</i> (2003) – <i>For response to water scarcity</i>

There is some evidence that women recycle more materials than men (Reschovsky and Stone). And also that women generate more waste, both recyclable and non-recyclable, (Linderhof *et al.*), and are more willing to pay for leaving recycling to others (Berglund; Sterner and Bartelings). However, many studies do not find significant gender effects in recycling behaviour. One of the reasons may be that total waste generation and the recycling effort are the accumulated result of the consumption, production and recycling decisions of all household members. Thus, to compare gender differences in behaviour it is important to distinguish between respondents who take account of other household members and those who do not.



This has not always been done in the previous studies in which we would expect to find some gender differences in household recycling behaviour.

In the empirical literature on energy consumption, there is very little evidence of gender differences in behaviour, either because gender was not an issue or because no gender effects on behaviour were found. Another field with little or no evidence of gender effects is water consumption. This may be because energy and water are normally consumed by the entire household, which may obscure any underlying gender differences in individual behaviour, or because there are few differences in the way we use these goods. Thus, we do not expect to find significant gender differences based on the previous literature on energy or water consumption.

Transportation is an area with well documented gender differences. Several studies show that men tend to drive more than women (de Jong; Abreu e Silva *et al.*; Feng *et al.*; Steg *et al.*; Johansson-Stenman; Dargay and Hanly; Nolan; Simma and Axhausen; Giuliano and Dargay; Golob and Hensher; Dargay). There is also evidence that men own more cars than women on average (Dargay; Simma and Axhausen; Abreu e Silva *et al.*; Nolan) and use public transportation less than women (Abreu e Silva *et al.*; Golob and Hensher; Johansson-Stenman). Thus, we expect to find large and significant gender differences in the area of transportation.

In the literature on organic food consumption, there is evidence of important gender effects both in consumption (Underhill and Figueroa; Jolly; Byrne *et al.*; Groff *et al.*) and in willingness to pay (Batte *et al.*; Govindasamy and Italia; Boccaletti and Nardella; Byrne *et al.*), as women tend to consume more and are willing to pay more for organic food products.

### 3. Methodological concerns

In a family, you need to consider not only your own preferences when taking a decision, but also the preferences of other family members, since your actions may affect them in several ways: *i*) through the consumption of common goods, that is goods consumed by the entire household (water, electricity and organic food products used to prepare meals), *ii*) through a common budget, or *iii*) through external effects (stacks of folded cartons and/or piles of washing-up in the kitchen). Some decisions may involve more than one of these three aspects. Furthermore, some decisions are taken by one household member only, whereas others are common, taken collectively by the entire household or together with other households (such as when investing in a central heating system).

As a personal decision may affect other household members both directly (through common goods consumption) and indirectly (through the family budget or an external effect), it is reasonable to believe that this is to some degree taken into consideration in the personal decision. If you know that your partner does not like it when you leave the light on, take too long showers, leave the water running while brushing your teeth, throw the banana peel in the paper bin, etc., it is reasonable to assume that you take this into account, even if the decision is essentially personal.

Many of the goods discussed in the OECD survey are used as inputs in household production, either as goods consumed by the individual (private goods) or as goods consumed by more than one household member (common goods). Furthermore, purchases are often paid by the household as a whole. Examples are electricity and water. Both electricity and water may be consumed privately (a shower), or commonly (cooking family meals, heating or lighting a room). Even when the goods are consumed in common, individual household members take decisions (preparing dinner, turning on the light). Thus, an individual may benefit from other persons' production of common goods. The total consumption of common goods is the sum of the consumption of all individual members of the household. Thus, total consumption of, say, electricity is the sum of many small decisions taken by each individual member about electricity use.

#### 3.1. How does gender affect behaviour?

Since indicators of environment-related behaviour reflect the overall result of the consumption, production and recycling decisions of all household members, assessing the relationship between gender and behaviour is not straightforward for respondents living in families with more than one adult (here we assume that all main decisions are taken by adults). An individual's behaviour depends on his or her own gender, both directly in consumption and indirectly through time and money budgets. It also depends on the gender of other household members, both directly through their own production of goods and services that are consumed by more than one member or through consumption with external effects. In addition to the factors determining gender's preferences, there may also be gender differences in the exogenous background variables, like the number of working hours and personal income. These sources of gender effects on behaviour may either go in the same direction, reinforcing each other, or in the opposite direction, cancelling each other out.

Decisions are much simpler for households with only one adult, as they only depend on the gender of the respondent. However, the effect on behaviour of gender differences in preferences is still not trivial. First, gender may affect several of the elements in the decision, as there may be both gender differences in preferences regarding consumption and in the time and money budgets. In the budget effects, there may be gender differences in how time and/or money are evaluated and in the number of hours/income to be distributed (which are exogenous background variables in the decision). This discussion proves that even

in single-adult households, it is not obvious how one should measure gender differences in behaviour.

### 3.2. How do we analyse gender differences?

There are two main questions with respect to testing gender differences. First; do we want to measure gender differences in behaviour, in preferences or in background characteristics that are exogenous but very important for the decision? For example, the choice of a job according to where it is located is assumed to be exogenous when you decide whether to take the bus or drive to work, but it is obviously of great importance as it determines the distance, availability of public transportation and parking opportunities, and the alternative costs of time and money, as these determine the level of income and number of hours available for household production, transportation and leisure activities. Gender differences in these variables may be the main driving forces in some decisions, overshadowing other gender differences. As a result, behaviour may seem similar for both genders because the differences in background variables cancel out gender differences in preferences, or they may create differences in behaviour where preferences for the good in question do not differ. Secondly, how do we compare gender differences when some respondents only need to consider their own preferences, whereas others need to take account of the preferences and actions of household members of both genders?

In this report we identify and describe gender differences in behaviour, in the underlying preferences and in background factors setting the general conditions for the individual's decisions. We use regression analyses to identify and test for significant gender effects in preferences. We use differences in means to test for differences in background variables and the total effect of gender on behaviour. When discussing gender effects in background variables and behaviour, we look at the entire *distribution*, since both the mean and the variation may differ between men and women. In order to control for differences in family situations, we divide the sample in two main groups: single-adult and multi-adult households, and compare males and females within each group. In this way, we are able to control for all the factors affecting both groups' behaviour, and hopefully to isolate the gender effects.

## 4. The data

The data used here were obtained from the OECD Survey on Household Environmental Behaviour. The survey was a web-based interview carried out in ten OECD countries during February 2008, with approximately 1 000 households per country, representing a total sample of some 10 000 households. In each country, the sample was stratified by income, age, gender and region. The information collected concerned five areas: waste, water, energy, transport and organic food.

Since the questionnaire is quite extensive and includes several questions concerning behaviour in all five areas, we need an indicator of environment-friendly behaviour within each area. For energy and water consumption, we construct an index of how many saving measures the household and/or the respondent has undertaken. For recycling and waste generation, we use the number of materials recycled by the household as an indicator of environment-friendly behaviour. Correspondingly, we use the number of organic products purchased by the household as an indicator of organic food consumption. Finally, with respect to transportation, we consider the distance driven during a typical week as an indicator of the impact of personal transportation on the environment.

When discussing differences in background variables, we look at the main variables determining the consumption opportunities of the individual household: *i*) household income as an indicator of the money budget, *ii*) employment status as an indicator of the time budget, *iii*) education, *iv*) the number of cars owned by the household as an indicator of both wealth and opportunity to drive, and *v*) the distance from the residence to work as an indicator of the residence and workplace choices.

To determine gender differences in preferences, we include several additional background variables describing attitudes towards the environment and the family situation: *a*) household characteristics such as age of the residence, number of small children, urban/suburban area, ownership of the residence, type and size of the residence, etc., *b*) individual characteristics such as age of the respondent, civil status, student, single parent, etc., *c*) attitudinal characteristics describing differences in how concerned the respondent is with pollution, if he/she thinks technology will resolve environmental issues, if he/she believes the individual can contribute to a better environment, if he/she believes environmental impacts are overstated, if environmental issues should be dealt with by future generations, etc., and *d*) country-specific dummies, assessing the differences in behaviour across countries that are due to differences in the role of sex patterns, institutional settings, previous policies and all other factors not accounted for in the estimations and which vary across countries. We test whether the impact of these variables on behaviour differ between genders.

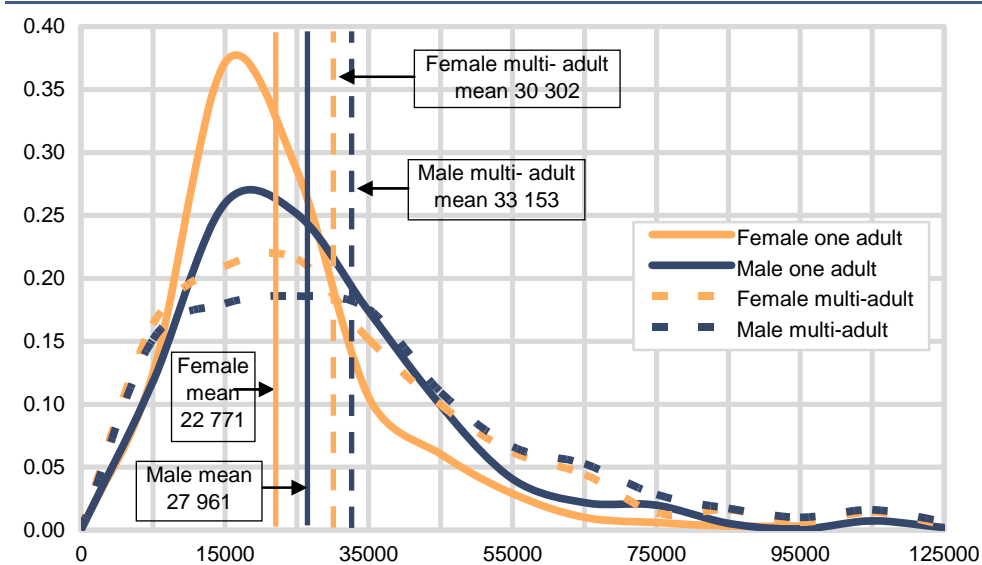
Some of the variables included are constructed by combining different questions, or transforming the response options in the survey. The variables reflecting attitudinal characteristics run from zero to four, where 0 indicates that the respondent has no opinion about the issue in question, 1 indicates the respondent is not concerned with the topic in question or strongly disagrees with the statement being put forward and 4 indicates that the respondent is very concerned or strongly agrees. In the model concerning transport we include an index that reflects the respondent's travel distance from home to the workplace. This variable is constructed by combining mode of transportation to work with the time actually spent to get there. The index is based on assumptions of the distance travelled by different modes per time unit.

## 5. Gender differences in background variables

We start the analysis by looking at gender differences in the most important background variables, both in single- and multi-adult households. These variables are the result of past decisions. One of the main background variables is the distribution of household income. It determines the consumption opportunities of the household.

Figure 5.1 shows the relative distributions of household income among various income groups within the four different sub-samples: males in single-adult households, females in single-adult households, males in multi-adult households and females in multi-adult households. The mean of each sub-sample is also presented. Household income was originally divided into twelve groups that varied in size within the same country and in national currency, and therefore in size between countries. Figure 5.1 is based on a transformation of the income data, using the mid-point as a proxy for income in each interval, applying foreign exchange rates to measure income in Euros.

**Figure 5.1. Income distribution in Euros. The means for sub-samples are indicated by the vertical lines. N = 9 533**



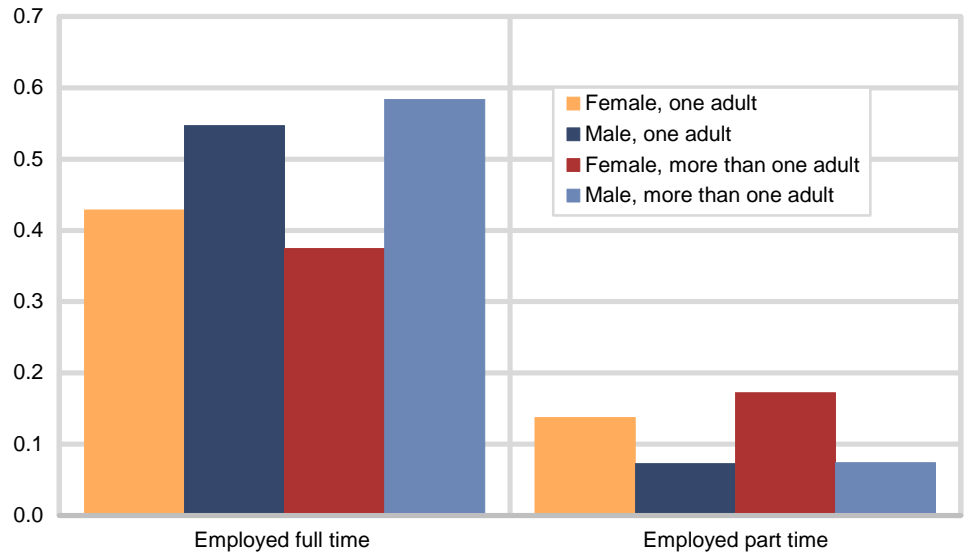
Source: OECD Survey on Household Environmental Behaviour 2008.

We see from the figure that multi-adult households earn more on average than single-adult households, and that income reported by males is higher than that reported by females. The result is as was expected for single-adult households, but rather surprising for multi-adult households, as the mean household income should be the same irrespective of the gender of the family member responding to the questionnaire. Either men have income sources that women in the household do not know about, or men are likely to exaggerate and/or women to underestimate income, or the share of respondents reporting a “don’t know” or “prefer not to answer” is relatively higher for low-income men compared to their female counterparts, or the sample is not representative, or a combination of all of these. It is also possible that some respondents may have misunderstood the question as one about personal and not household income. This may create problems in the estimations. Apart from this, we see that the main difference in the income distribution is between single- and multi-adult households. It does not necessarily mean that the multi-adult households are wealthier than the others, since they have to divide their total income among more household members.

The fact that single-adult males earn more than single-adult females, and in general men earn more than women, may be due to their participation in the workforce. We

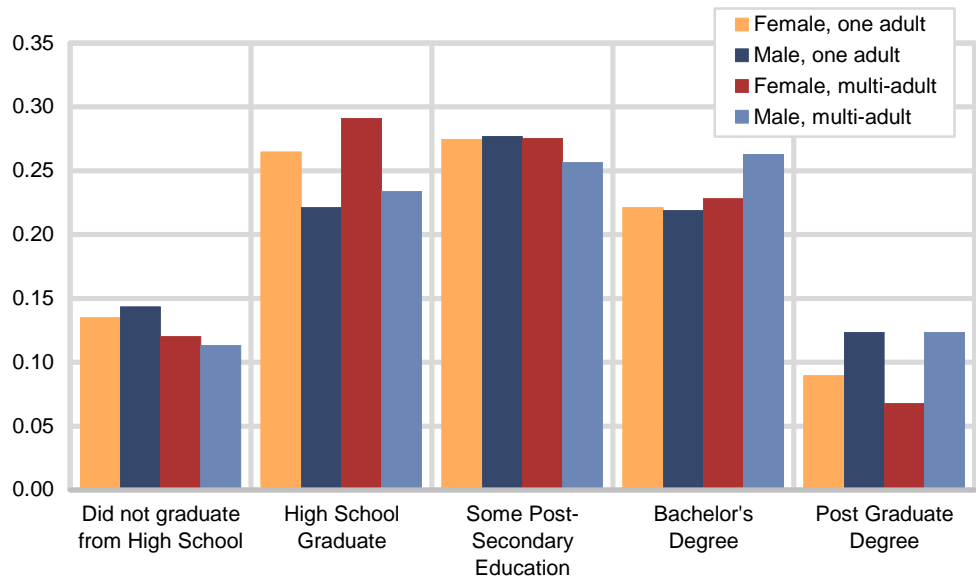
know from previous studies that men tend to work longer hours than women and do less part-time work. This has important implications for the time budget. Figure 5.2 shows that this is also true in our sample, as multi-adult males work more full time and multi-adult females work more part time. The gender difference in the employment rate is very clear in both samples. The differences in the shares of those employed full time or part time between single males and single females and between multi-adult males and multi-adult females are all significant.

**Figure 5.2. Share of adults employed full time or part time. N = 10 251**



Source: OECD Survey on Household Environmental Behaviour 2008.

**Figure 5.3. Education level. N = 10 251**

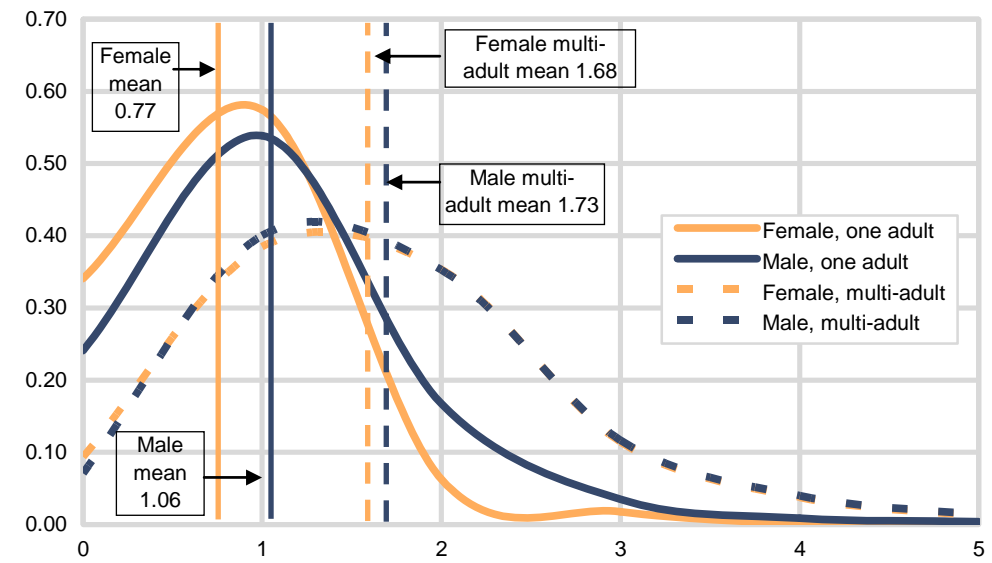


Source: OECD Survey on Household Environmental Behaviour 2008.

Another variable that is highly correlated with income is education. We see from Figure 5.3 that men on average have a higher level of education than women. This is particularly visible for respondents in the highest education group and for those with high school only. Looking at single-adult households, there is a significant difference between females and males with only a high school diploma and those with a post-graduate degree (z-values are respectively 2.41 and -2.57). In multi-adult households we note the same difference as in single-adult households, with corresponding z-values of 3.06 and 4.53. In multi-adult households, there is also a significant difference in the shares that have a bachelor's degree (z-value 1.90). It

is interesting to note that fewer women with a post-graduate degree live in multi-adult as compared to single-adult households, whereas men's share in the post-graduate degree category is equal in both single- and multi-adult households.

**Figure 5.4. Cars and motorcycles owned or used regularly by the household. N = 10 251**

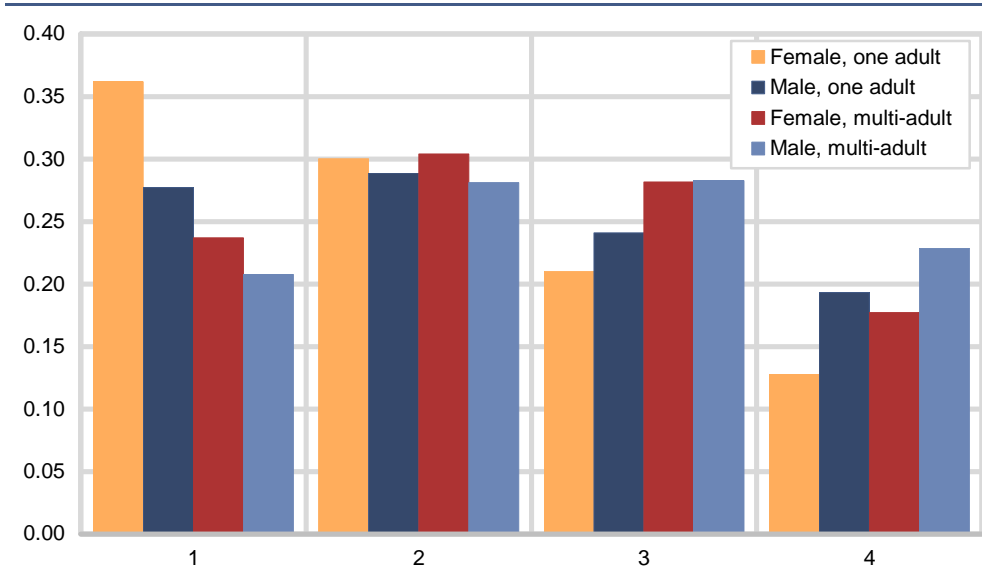


Source: OECD Survey on Household Environmental Behaviour 2008.

Income, education and participation in the labour force all influence respondents' choices through the time and money budgets. However, there are also other choices, such as investing in electric appliances or heating equipment and owning a car, which influence respondents' choices in the short run. Figure 5.4 shows the distribution of car ownership in the four sub-samples. First, we see that respondents in multi-adult households have approximately the same distribution of cars irrespective of whether they are male or female, as should be the case since they belong to the same group. Even if the difference in the mean is small, it is still significant at the 10% level, but not at the 5% level ( $z = 1.92$ ). Comparing single-adult households, we see that men own significantly more cars on average than women ( $z = 8.38$ ), and that the biggest difference in car ownership is between multi- and single-adult households, since the need for transportation is larger in the multi-adult households.

Another important factor determining the choices of transportation modes is the distance from home to work. This is a result of previous decisions about the choice of the workplace and of the residence location, which determines the need for transportation. By combining the time used travelling and the mode of transport, we group respondents into four categories, where respondents in category 1 live so close to work that they may walk or cycle for less than 15 minutes, whereas those in category 4 spend more than one hour in their car or in public transportation (commuters). We see from Figure 5.5 that single-adult females live closest to their workplace while multi-adult males have the highest need for transportation. The difference between females and males in single-adult households is significant in categories 1 and 4 with z-values of 3.78 and -3.67. In multi-adult households the difference is significant in categories 1, 2 and 4 with corresponding z-values of 2.82, 2.03 and -5.13. We note a clear gender difference in that women work closer to home, and that single-adult households, on average, live closer to their workplace than multi-adult households.

**Figure 5.5. Index representing the distance covered by daily commuting when commuting is applicable. N = 8 139**



Source: OECD Survey on Household Environmental Behaviour 2008.



## 6. Gender differences in preferences and behaviour

Here we discuss gender differences in the distribution of actual behaviour and in preferences. To test for gender differences in preferences, we estimate the partial effects of various background variables on behaviour in the four sub-samples, and test for significant differences in the estimated coefficients for men and women within each group. The reason why we estimate from sub-samples, and do not correct the estimations with dummy variables, is that introducing dummy variables is not likely to remove all the effects that differences in the family situation cause on behaviour. Furthermore, there are too few single-adult households in the sample, and it is difficult to make good weights to correct for this in the analysis because of the diversity in the statistics in the ten countries involved. By dividing the sample into four sub-samples, we are able to control for all factors affecting behaviour across these groups, and we are thus more likely to isolate the gender effects.

Since our endogenous variables are discrete count data, an ordered probit model is preferred in the estimations. However, this model may be complicated to interpret, and does not give information about the explanatory power of the model ( $R^2$ ) as an ordinary least squares (OLS) estimation does. We thus tested the effects on the estimation results of choosing an ordered probit or an OLS procedure, and found that the two procedures gave the same results.<sup>2</sup> Following the scientific principle of Occam's razor (Thorburn, 1915), we have therefore chosen to report the results from the OLS procedure, since it is easier to interpret and yields more information than the ordered probit model.

For each area covered by the survey (waste, water, energy, transport and organic food) we have estimated a single model including variables that are especially important for the area in question in addition to the variables described above. In the final models we generally only include variables that are significant for at least one of the sub-samples. Variables concerning the time and money budgets and country-specific dummies are included in the models whether they are significant or not. This enables us to compare the impact of these variables across the different areas, them being insignificant is interesting information in itself.

With the exception of transport, estimations on topics within the different areas are done on the same sample, including all households, whether or not they have the opportunity to take measures regarding, say, energy and water saving. This is done so as to secure a reasonable sample size and to be able to compare results across areas.

### 6.1. Recycling

We start by looking at differences in *preferences* by gender in recycling. Our indicator of the recycling effort is the number of materials recycled by the household ( $recyc_i$ ). The materials in question are glass, plastic, aluminium and other metal containers, paper/cardboard, food, garden waste, batteries and pharmaceuticals. The number of materials recycled varies from zero to eight and is estimated as a linear function of variables reflecting individual and household characteristics, given by:

$$recyc_i = \alpha_0^r + \sum_f \alpha_f^r Y_i + \alpha_{LT}^r LT_i + \sum_s \alpha_s^r HC_{si} + \sum_n \alpha_n^r RC_{ni} + \sum_k \alpha_k^r IC_{ki} + \sum_m \alpha_m^r A_{mi} + \varepsilon_i$$

We have included variables reflecting household income ( $Y_i$ ), variable reflecting the time budget ( $LT_i$ ) general household characteristics ( $HC_{si}$ ), household characteristics that are especially relevant for recycling ( $RC_{ni}$ ), individual characteristics ( $IC_{ki}$ ) and individual attitudinal variables ( $A_i$ ). See Table 6.1 for a complete list of variables.

<sup>2</sup> The coefficients were exactly the same, whereas the p-values differed from the fifth digit.

Table 6.1. Results from the OLS estimations of the number of materials recycled<sup>1</sup>

Variable	One adult		Two adults or more	
	Male	Female	Male	Female
Constant	<b>0.72</b>	<b>2.02</b> ***	2.05***	1.77***
<b>i) Time and money budgets:</b>				
Employed full time (0,1)	-0.07	-0.13	<b>0.11</b>	<b>-0.06</b>
High-income household (group 10, 11 or 12)	0.07	-0.07	0.00	0.15**
Low-income household (group 1, 2 or 3)	-0.03	-0.21*	-0.18**	-0.09
Earns the most (0,1)	0.05	0.24	0.00	0.01
<b>ii) Characteristics of the household:</b>				
Owning current residence (0,1)	<b>0.22</b> *	<b>-0.22</b> **	0.34***	0.19***
Detached house (0,1)	<b>0.26</b> *	<b>0.63</b> ***	0.10	0.27***
Suburban or urban area (0,1)	-0.19	-0.24**	-0.29***	-0.19***
Number of adults	N/A	N/A	-0.04	-0.06*
Time spent living in current residence (1, ..., 4)	-0.04	0.07	0.10***	0.12***
<b>iii) Characteristics of the individual:</b>				
Not voted in local or national election (0,1)	-0.08	-0.33**	-0.06	-0.23***
Member of/contributor to and/or participant in environmental organisation (0, ...,2)	0.25**	0.15	0.30***	0.30***
Does only voluntary work (0,1)	-1.00*	-0.08	-0.27	0.12
Age	0.01***	0.01**	0.00	0.00
Married or living as a couple (0,1)	0.25	0.46**	0.11	0.19**
<b>iv) Country-specific dummies relative to Norway:</b>				
Canada (0,1)	-0.25	-0.35	0.07	-0.21
Netherlands (0,1)	0.55**	0.32	<b>0.42</b> ***	<b>0.92</b> ***
France (0,1)	0.00	-0.08	-0.09	0.08
Mexico (0,1)	-0.48	-0.39	-1.03***	-0.98***
Italy (0,1)	0.70**	0.23	0.27*	0.10
Czech Republic (0,1)	-0.80***	-1.29***	-0.74***	-0.78***
Sweden (0,1)	1.00***	0.76***	1.09***	1.30***
Australia (0,1)	-0.22	-0.52**	0.01	-0.09
Korea (0,1)	0.21	0.60*	0.47***	0.36**
<b>v) Attitudinal characteristics:</b>				
Concerned about waste generation (0, ...,4)	0.21***	0.27***	<b>0.14</b> ***	<b>0.32</b> ***
Individuals/households can contribute to a better environment (0, ..., 4)	0.38***	0.27***	<b>0.34</b> ***	<b>0.18</b> ***
Environmental impacts are overstated (0, ...,4)	-0.05	-0.09	-0.08**	-0.08***
Environmental issues should be dealt with by future generations (0, ...,4)	-0.15**	-0.13**	-0.01	0.01
Environmental policies introduced by the government should not cost me any money (0, ...,4)	0.00	-0.05	-0.08**	-0.02
<b>vi) Goods-specific characteristics:</b>				
More than two bags of mixed waste each week (0,1)	-0.13	-0.24**	-0.30***	-0.19***
Number of recyclable materials collected at the door (0, ...,5)	0.43***	0.34***	0.32***	0.29***
Number of recyclable materials collected at drop-off centres (0, ...,5)	0.30***	0.25***	0.24***	0.22***
Number of recyclable materials brought back with no refund (0, ...,5)	0.22**	0.27**	0.13**	0.17***
Number of materials with no service available (0, ...,5)	-0.16***	-0.13**	-0.10***	-0.13***
Number of materials collected at the door more than once a week (0,...5)	-0.05	-0.12**	-0.07**	-0.02
Collection of mixed waste charged with a flat fee (0,1)	0.36**	0.19*	<b>0.04</b>	<b>0.26</b> ***
Volume-based price on collection of mixed waste (0,1)	0.42	0.25	<b>0.20</b>	<b>0.56</b> ***
Weight-based price on collection of mixed waste (0,1)	0.46	0.06	0.02	0.37*
Mixed waste collection charge based on household size (0,1)	0.29	0.28	0.30**	0.51***
Adjusted R <sup>2</sup>	0.3187	0.2544	0.2503	0.2902

<sup>1</sup>\*\*\* indicates significance at a 1% level, \*\* indicates significance at a 5% level and \* indicates significance at a 10% level.

In the sample we have observations from 10 OECD countries in four different parts of the world with different traditions and political history. To control for these differences in the estimation, we include dummies for different countries relative to Norway. These dummies allow, among other things, to correct for some climatic differences, differences in the division of household production, differences in environmental policy making and other cultural differences in behaviour across the countries surveyed.

The sample consists of 1 239 households with one adult woman, 1 004 households with one adult man, 4 048 multi-adult households with a woman answering the questionnaire and 3 960 multi-adult households with a man responding. The results from the OLS estimation on the number of materials recycled are given in Table 6.1 with a description of the independent variables. The first column gives the estimated coefficient in the estimation on single-adult males. The second column gives the estimated coefficient in the estimation on single-adult females. The last two columns give the estimated coefficients in the estimation on multi-adult males and females respectively. Coefficients which differ significantly between males and females in either single- or multi-adult households are marked in bold printing.

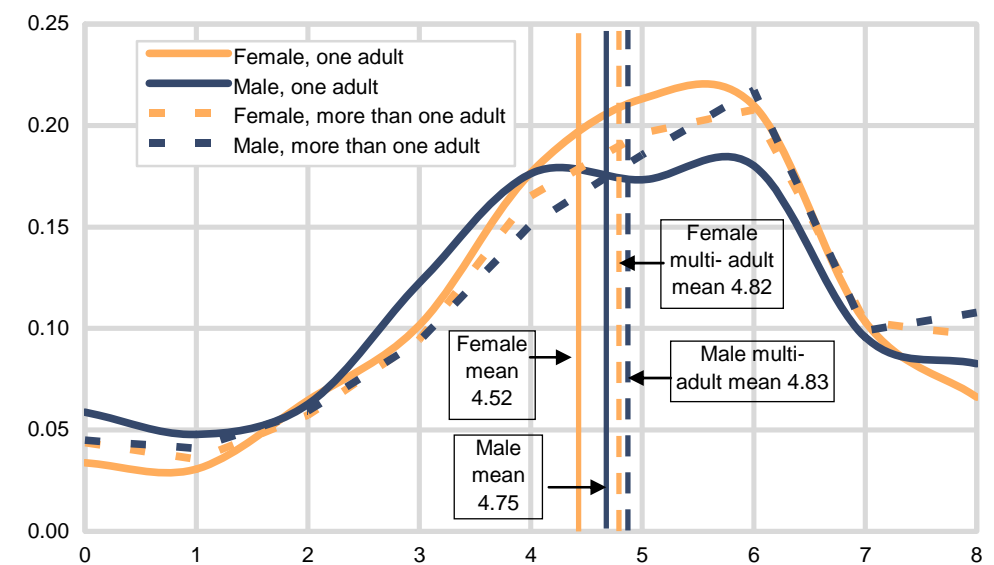
Except for variables indicating the time and money budgets and the country-specific dummies, only variables that are significant for at least one of the groups are included. Here, we only discuss the results where the gender difference within the group (multi- or single-adult households) is significant at least at a 10% level.

The first thing we notice is that, of all the variables included, only a few have significant gender differences, and that most of these differences are in multi-adult households. For single-adult households, ownership of the residence determines men’s recycling significantly more than women’s, and both differ significantly from zero. The female coefficient is also negative, which is unexpected. Women’s recycling efforts are also significantly more influenced by living in a detached house than men’s recycling efforts.

We see that within multi-adult households, there is a gender difference in the time budget, as women’s recycling efforts are more dependent on full-time working hours. These coefficients are, however, not significant. There are no other important gender differences in variables indicating time and money budgets. We also see that households in the Netherlands recycle significantly more than their Norwegian counterparts and that recycling efforts are significantly higher for multi-adult males than for multi-adult females. Next, we see that with respect to attitudes within multi-adult households, women’s recycling efforts are more motivated by their concern about waste generation, whereas men respond more to the belief they can actually contribute to a better environment. This is also true for single-adult households, but the gender difference is not significant there. Finally, within multi-adult households, women’s recycling efforts are significantly more influenced by the money incentives embedded in the charges than men’s efforts. This difference is opposite for single-adult households, although not significant.

This discussion shows that there are some differences in men’s and women’s preferences with respect to recycling efforts. Some increase their efforts, others reduce them. The question is whether these differences, together with the differences in the background variables, result in any significant gender differences in recycling *behaviour*. Figure 6.1 displays the distribution in the number of materials recycled by households in the four sub-samples.

**Figure 6.1. Distribution of the number of materials recycled by the household, N = 10 251**



Source: OECD Survey on Household Environmental Behaviour 2008.

We see that, with the exception of single males, the mean recycling effort is quite similar. Among the single-adult households, men recycle significantly less than women ( $z = 2.59$ ). Notice that the gender difference in recycling activities is almost inexistent in the multi-adult households ( $z = 0.36$ ), even if it is the group in which

we found most significant gender differences in preferences. The reason is that relative increases and decreases due to these gender differences neutralise each other when the total recycling effort is considered.

The questionnaire asked about recycling habits of the household as a whole. We would therefore expect female and male multi-adult respondents to have the same distribution and mean regarding the number of materials recycled. Figure 6.1 shows that both the distribution and the mean for the two groups are quite similar and that the only group that stands out with respect to actual recycling behaviour is the single-adult male household. Thus, it is important to distinguish between multi- and single-adult households to find gender differences in recycling behaviour.

## 6.2. Energy-saving efforts

Energy use is an example of a good which may be consumed individually or commonly by two or more household members. Thus, energy-saving efforts do affect the welfare not only of the individual consumer, but also of the other household members through the collective consumption, household production and the common money budget.

The OECD survey focused mainly on energy-saving measures. To see if there are gender differences in the preferences of energy-saving efforts, we estimate the number of energy-saving measures taken by the individual or the household. The *individual* energy-saving actions taken into account is whether the respondent turns off the lights when leaving a room, reduces heating or cooling, starts the washing machine or dishwasher only once it is fully loaded, turns off appliances when they are not in use and switches off the stand-by mode of appliances and electronic devices. The *household* energy-saving actions included is whether the household has arranged to buy renewable energy from its energy provider and installed any of the following items in the residence during the last ten years; energy efficiency-rated appliances, low-energy light bulbs, thermal insulation, more efficient boiler and equipment producing electricity from renewable energy sources. The energy saving index is estimated as a linear function of various explanatory variables, given by:

$$energy_i = \alpha_0^e + \sum_f \alpha_f^e Y_{fi} + \alpha_{LT}^e LT_i + \sum_s \alpha_s^e HC_{si} + \sum_n \alpha_n^e EC_{ni} + \sum_k \alpha_k^e IC_{ki} + \sum_m \alpha_m^e A_{mi} + \varepsilon_i^e$$

where the characteristics may be divided into individual characteristics,  $IC_{ki}$ , household characteristics in general,  $HC_{si}$ , household characteristics concerning energy,  $EC_{ni}$ , variables reflecting the money budget,  $Y_{fi}$ , a variable reflecting the time budget,  $LT_i$ , variables reflecting knowledge of, attitude towards and motivation for energy saving,  $A_{mi}$ , and a random error term which is assumed to be independently and identically distributed and has a zero mean. See Table 6.2 for a complete list of variables.

The equation is estimated using an ordinary least squares estimation on each of the four sub-samples, each having the same size as the samples in the recycling estimations. Table 6.2 shows the estimation results for each of the four sub-samples. We see from the table that there are many significant gender differences in the two groups (multi- and single-adult households), but there are no variables with significant gender differences in both groups. We also see that for multi-adult households, there are significant gender differences in only one additional variable except for the country-specific dummies.

**Table 6.2. Results from the OLS estimations of the number of energy-saving measures taken<sup>1</sup>**

Variable	One adult		Two adults or more	
	Male	Female	Male	Female
Constant	2.34 ***	3.06 ***	2.10 ***	2.54 ***
<b>i) Time and money budgets</b>				
Employed full time (0,1)	0.18	-0.02	0.00	-0.01
High-income household (group 10, 11 or 12)	0.13	0.00	-0.05	0.04
Low-income household (group 1, 2 or 3)	<b>0.36 ***</b>	<b>0.00</b>	-0.03	-0.07
Earns the most (0,1)	-0.40 *	-0.58 ***	0.09	-0.03
<b>ii) Characteristics of the household:</b>				
Owning current residence (0,1)	0.37 ***	0.58 ***	0.29 ***	0.35 ***
Detached house (0,1)	0.39 ***	0.44 ***	0.15 **	0.08
Size of residence more than 100 m <sup>2</sup> (0,1)	-0.02	0.11	0.13 **	0.07
Time spent living in current residence (1, ..., 4)	0.05	0.02	0.03	0.05
Suburban or urban area (0,1)	-0.07	-0.28 **	-0.15 **	-0.30 ***
Children under the age of 18 (0,1)	<b>-0.03</b>	<b>0.41 ***</b>	0.17 ***	0.07
<b>iii) Characteristics of the individual:</b>				
Age	<b>0.00</b>	<b>0.01 ***</b>	0.01 ***	0.01 ***
Not voted in local or national election (0,1)	<b>-0.53 ***</b>	<b>0.02</b>	-0.05	-0.18 **
Married or living as a couple (0,1)	<b>0.12</b>	<b>-0.56 **</b>	0.13	0.17 **
<b>iv) Country-specific dummies relative to Norway</b>				
Canada (0,1)	0.53 **	0.26	<b>0.54 ***</b>	<b>-0.16</b>
Netherlands (0,1)	0.95 ***	1.05 ***	0.85 ***	0.58 ***
France (0,1)	<b>0.32</b>	<b>0.86 ***</b>	0.47 ***	0.30 **
Mexico (0,1)	0.19	0.30	<b>0.56 ***</b>	<b>0.15</b>
Italy (0,1)	0.71 ***	1.02 ***	<b>0.99 ***</b>	<b>0.44 ***</b>
Czech Republic (0,1)	0.93 ***	0.59 **	<b>0.85 ***</b>	<b>0.31 **</b>
Sweden (0,1)	-0.74 ***	-0.45 **	<b>-0.55 ***</b>	<b>-0.76 ***</b>
Australia (0,1)	0.43 *	0.00	0.08	-0.06
Korea (0,1)	-0.57 *	-0.31	<b>-0.22</b>	<b>-0.81 ***</b>
<b>v) Attitudinal characteristics</b>				
Concerned about natural resource depletion (0, ...,4)	0.16 ***	0.22 ***	0.17 ***	0.21 ***
Individuals/households can contribute to a better environment (0, ..., 4)	<b>0.32 ***</b>	<b>0.14 **</b>	0.27 ***	0.19 ***
Environmental impacts are overstated (0, ...,4)	-0.02	-0.09 *	-0.08 ***	-0.06 **
Environmental issues should be dealt with by future generations (0, ...,4)	0.05	0.05	-0.04	-0.07 **
Environmental policies introduced by the government should not cost me any money (0, ...,4)	-0.04	-0.03	-0.05 *	0.00
<b>vi) Goods-specific characteristics</b>				
Use electricity (0,1)	<b>-0.64 **</b>	<b>0.14</b>	0.03	0.09
Pay electricity bill (0,1)	0.47 **	0.22	0.09	0.37 ***
Variable electricity price (0,1)	<b>0.31 **</b>	<b>-0.17</b>	0.13 **	0.06
Renewable energy is available (0,1)	0.76 ***	0.84 ***	0.84 ***	0.74 ***
Energy costs taken into account when choosing residence (0,1)	0.29 **	0.38 ***	<b>0.50 ***</b>	<b>0.36 ***</b>
Number of electric appliances	0.11 ***	0.04	0.07 ***	0.10 ***
Adjusted R <sup>2</sup>	0.2578	0.2727	0.1990	0.2116

<sup>1</sup> \*\*\* indicates significance at a 1% level, \*\* indicates significance at a 5% level and \* indicates significance at a 10% level.

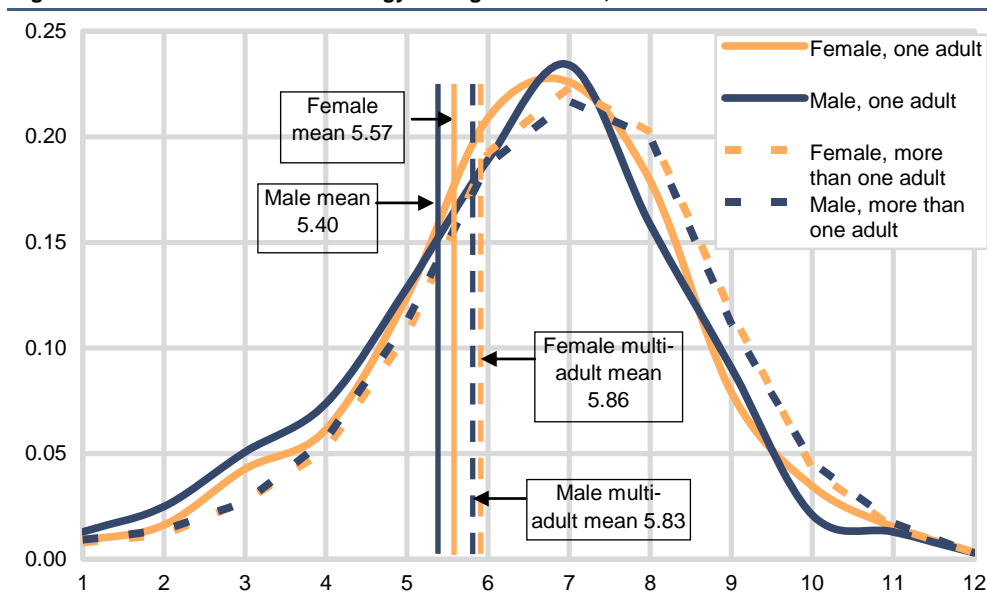
Starting with single-adult households, younger and married women carry out significantly fewer energy-saving measures than older and married men. Married single-adult households imply that husband and wife are living in different residences, either because they are separated or because one of the two is a weekly commuter or works far from home or abroad. The second variable with significant gender differences in single-adult households is low-income households, where single men are saving more energy than women. Single women with young children report more saving measures than single men with young children, and single men who did not vote do significantly less than their female counterparts. The effect on energy saving of living in France relative to Norway is significantly higher for women in single-adult households. Single men undertake relatively more energy-saving measures, and significantly more than single women if they believe they themselves can contribute to a better environment.

The next variable is somewhat puzzling. Single men with no electricity installed undertake more energy-saving measures than single men with electricity, and significantly more than women. This was so surprising that we tried to find out who these respondents were. We found that question 64 may have been misinterpreted. It seems that several of the respondents, particularly in Sweden, Canada and France, have misunderstood the question. From their responses to other questions, it appears that most of these respondents thought they were being asked what energy sources they used to *heat* their residence. It is thus difficult to interpret this result. Finally, single men respond more to variable electricity prices than single women.

Among the multi-adult households, there are significant gender differences in preferences with respect to energy-saving measures if energy costs are taken into account when buying the residence, and in the country-specific dummies for Canada, Mexico, Italy, the Czech Republic and Korea. An interesting finding (not shown in the table) is that if we exclude these country-specific dummies, we obtain significant gender differences for the variables indicating whether the respondent lives in an urban or suburban area, pays the electricity bill or considered the energy costs when purchasing or renting the current residence. This indicates that there are country-specific differences in these background variables, and that they affect the distribution of tasks within the household in these countries relative to Norwegian households.

Gender differences in the *preferences* for energy saving and in the background variables also affect behaviour: Figure 6.2 shows the distribution of the number of energy-saving measures taken by the individual and the household in the four sub-samples, according to the energy-saving index described earlier.

**Figure 6.2.** Distribution of the energy-saving effort index, N = 10 251



Source: OECD Survey on Household Environmental Behaviour 2008.

We see from the figure that women tend to undertake on average more energy-saving measures than men, both in single- and multi-adult households, but the difference is significant only for single-adult households ( $z = 2.13$ ). We also see that the difference between multi- and single-adult households is more pronounced than the difference between the genders. Thus, in the case of energy-saving efforts, the gender difference in preferences does not translate into significant gender differences in actual behaviour in multi-adult households, and the differences in means across groups is at least as big as the gender differences.

### 6.3. Car use

In this section we look at gender differences in car use, focusing on the distance personally driven (by car or motorcycle) by the respondent during a typical week. In the questionnaire, the distance driven is a discrete variable. In order to utilise all the information embedded in the question, we have converted the variable into nine values, running from 0 to 1 200 kilometres, using the mid-point in each interval. Only respondents who own or use a car or motorcycle regularly were asked this question, and are thus included in the samples in the estimation. A total of 8 707 respondents fall in this category: 797 women and 748 men with no other adults living in their primary residence; 3 530 women and 3 632 men living with other adults. The endogenous variable is estimated on a linear combination of explanatory variables, given by:

$$km_i = \alpha_0^{km} + \sum_f \alpha_f^{km} Y_{fi} + \alpha_{LT}^{km} LT_i + \sum_s \alpha_s^{km} HC_{si} + \sum_n \alpha_n^{km} KMC_i \\ + \sum_k \alpha_k^{km} IC_{ik} + \sum_m \alpha_m^{km} A_{mi} + \varepsilon_i^{km}$$

These variables are divided into six main categories; general individual characteristics ( $IC_{ik}$ ), general household characteristics ( $HC_{si}$ ), money budget ( $Y_i$ ), time budget ( $LT_i$ ), household or individual characteristics correlated with driving habits ( $KMC_i$ ) and attitudes towards environmental issues ( $A_{mi}$ ). The results from this estimation are presented in Table 6.3.

We see that there are several significant gender differences among the coefficients, both in single- and multi-adult households. Looking at the single-adult households, we see that single men in the high-income groups drive significantly more than women, as do men living in large houses. High-income single women actually drive significantly less than other single women. Living in urban and suburban areas has a significantly larger negative effect on male driving than female driving among single adults. It is interesting to note that these effects are reversed for multi-adult households. This could be explained by the fact that married women have to drive to do their shopping, take their kids to school and kindergarten and get to work when they live in the countryside. We also find that single men, especially in the Netherlands and in Italy, drive significantly more than single women. For the multi-adult households in the Czech Republic, the male and female coefficients differ significantly.

Having more cars in the household has a larger effect on male driving, both in single- and multi-adult households. This is probably a reflection of the transportation needs of the household, which are translated in the number of cars owned by the family. Another variable reflecting the need for transportation is the time spent to get to work, which has a significantly larger effect on male driving, both in single- and multi-adult households. Believing that individuals can contribute to a better environment reduces car use significantly more among single-adult males. Finally, we find significant gender differences in the coefficients for car-pooling or buying a new and more energy-efficient car. Interestingly, the coefficients for single men are positive. This is probably the result of a higher need for transportation, leading to more averting behaviour in this group. We also find significant gender differences for car-pooling among multi-adult families, but here the signs are reversed.

For multi-adult households, we see that being a member of/contributor to and/or participant in an environmental organisation has a significantly higher effect on female driving, whereas being a student has a larger effect on male driving. The sign of the female coefficient for membership in an environmental organisation is positive, which may be surprising. This probably reflects other aspects of this group, such as an increasing need for transportation when being active in environmental activities. Believing that the individual can contribute to a better environment reduces multi-adult female driving more than male driving. An interesting result is the effect of the differences in time spent using a car or public transportation for daily commuting, which increases male driving significantly more than female driving in multi-adult households. This is probably an effect of the opportunity cost of time used on transport, which is higher for men than for women. This effect is found in both groups. If we exclude the country-specific dummies, the coefficient for women becomes negative (not shown in the table). This may be an indication that for many women in some countries, public transportation is the only option (either because they do not have a driving licence or there is only one car in the family), and that this outweighs the effect of increased car use among female respondents when driving to work is an option. The time difference between using a car or public transportation for education has a significantly larger impact on male driving in multi-adult households. Finally,

using public transportation more during the past year has a significantly larger negative effect on multi-adult male driving.

To test if all these gender differences in preferences result in gender differences in behaviour, we plot the distribution of the four sub-samples over the nine categories (see Figure 6.3). We see a clear and significant gender difference both in single- ( $z = 8.20$ ) and multi-adult households ( $z = 8.32$ ). There are many women in multi-adult households who do not drive at all even if their families own a car (17%). We see that the tails of the male distribution are particularly heavy, which means that there is a relatively large number of men with a very high mileage. When respondents report that they drive more than 1 000 km every week, it is reasonable to believe that a considerable percentage of them are professional drivers, which is a male-dominated profession. These heavy tails in the male distribution contribute to a high male mean.

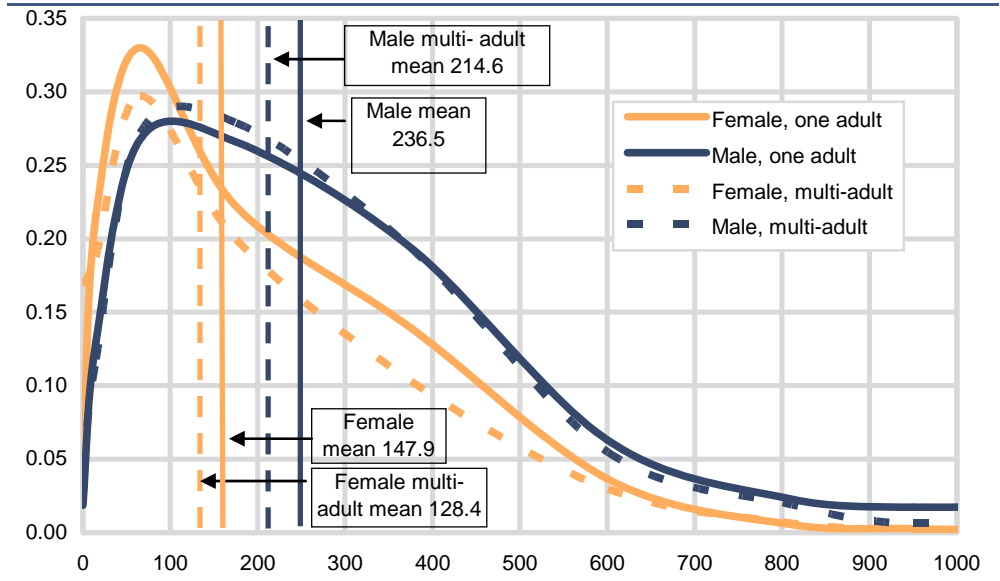
**Table 6.3. Results from the OLS estimations of the average distance driven by car or motorcycle<sup>1</sup>**

Variable	One adult		Two adults or more	
	Male	Female	Male	Female
Constant	159.66 **	71.34	91.82 ***	129.39 ***
<b>i) Time and money budgets</b>				
Employed full time (0,1)	-31.13	-20.53	-21.27 **	-15.09 **
Employed part time (0,1)	-80.95 **	-41.17 **	-22.87	-15.62 *
Self-employed (0,1)	11.16	34.22	43.66 ***	32.78 **
High-income household (group 10, 11 or 12)	<b>79.94 ***</b>	<b>-37.28 *</b>	25.08 ***	14.41 **
Low-income household (group 1, 2 or 3)	-8.94	-17.50	9.45	-4.55
Earns the most (0,1)	47.72	59.82 ***	29.56 ***	24.02 ***
<b>ii) Characteristics of the household:</b>				
Size of residence more than 100 m <sup>2</sup> (0,1)	<b>65.40 ***</b>	<b>14.03</b>	5.84	8.16
Time spent living in current residence (1, ..., 4)	-18.27 **	-9.31 *	-3.97	-4.13
Suburban or urban area (0,1)	<b>-55.94 ***</b>	<b>-12.71</b>	<b>-14.16 *</b>	<b>-45.67 ***</b>
Number of adults	N/A	N/A	-10.11 **	-2.04
<b>iii) Characteristics of the individual:</b>				
Not voted in local or national election (0,1)	-5.68	-28.14 *	-0.64	-2.28
Member of/contributor to and/or participant in environmental organisation (0, ...,2)	-14.04	-4.14	<b>-1.72</b>	<b>21.45 ***</b>
Student (0,1)	-119.72 **	-19.57	<b>-58.84 ***</b>	<b>-12.47</b>
Does only voluntary work (0,1)	-25.46	12.14	-91.48 **	-34.86
<b>iv) Country-specific dummies relative to Norway:</b>				
Canada (0,1)	17.75	-9.45	-35.37 **	-12.14
Netherlands (0,1)	<b>81.65 **</b>	<b>4.84</b>	32.33 **	10.94
France (0,1)	51.10	39.54 *	13.01	-6.54
Mexico (0,1)	-91.44 **	-48.17	-61.70 ***	-30.18 **
Italy (0,1)	<b>105.02 ***</b>	<b>28.02</b>	7.04	1.61
Czech Republic (0,1)	71.81 *	27.81	<b>35.88 **</b>	<b>-16.43</b>
Sweden (0,1)	34.09	2.32	33.25 *	5.99
Australia (0,1)	56.40	34.30	7.57	11.18
Korea (0,1)	32.56	-36.28	-73.63 ***	-49.10 ***
<b>v) Attitudinal characteristics:</b>				
Concerned about climate change (0, ...,4)	-2.75	0.90	-6.84 *	-4.70
Individuals/households can contribute to a better environment (0, ..., 4)	-24.24 **	-3.32	<b>-3.86</b>	<b>-14.78 ***</b>
Environmental issues should be dealt with by future generations (0, ...,4)	-17.96 **	-8.51	-1.31	0.82
<b>vi) Goods-specific characteristics:</b>				
Number of cars owned or used regularly	<b>43.34 ***</b>	<b>0.19</b>	<b>48.92 ***</b>	<b>22.45 ***</b>
Number of motorcycles owned or used regularly	1.66	4.44	2.60	17.76 ***
Distance from a public transportation stop greater than approx. 5 km (0,1)	49.64 ***	28.11 **	<b>29.04 ***</b>	<b>13.96 **</b>
Time spent to get to closest public transportation station using your usual means of transportation exceeds 30 min (0,1)	48.09 **	64.64 ***	25.94 ***	41.20 ***
Time spent to get to work (0, ..., 5)	<b>42.11 ***</b>	<b>4.30</b>	<b>21.93 ***</b>	<b>1.55</b>
Index reflecting distance to work (0, ..., 4)	17.37	36.34 ***	28.95 ***	32.89 ***
Difference in time spent using car or public transportation for daily commuting (-5, ...,5)	4.42	9.93 ***	0.30	3.22 **
Difference in time spent using car or public transportation for education (-5, ...,5)	3.99	-5.25	<b>4.82 **</b>	<b>-1.05</b>
<b>vii) Environment-friendly behaviour:</b>				
Used car-pooling during the past year (0,1)	<b>42.06</b>	<b>-14.55</b>	<b>-9.86</b>	<b>13.33 *</b>
Used recycled/low rolling resistance tyres during the last year (0,1)	10.47	31.85	19.71	24.32 **
Changed a car for one which uses less fuel during past year (0,1)	<b>62.02 **</b>	<b>-11.09</b>	14.17	4.26
Used public transportation last year more than previous year (0,1)	-29.46	-18.10	<b>-52.93 ***</b>	<b>-29.84 ***</b>
Walked or cycled last year more than previous year (0,1)	-33.90 *	-28.35 **	-15.06 *	-21.35 ***
Adapted driving style to use less fuel last year (0,1)	49.78 ***	15.41	26.78 ***	18.46 ***
Adjusted R <sup>2</sup>	0.2471	0.2193	0.1879	0.1960

<sup>1</sup> \*\*\* indicates significance at a 1% level, \*\* indicates significance at a 5% level and \* indicates significance at a 10% level.



**Figure 6.3. Distribution of distance and mean distance personally driven in an average week, N = 8 707**



Source: OECD Survey on Household Environmental Behaviour 2008.

Again, we only focus here on one main indicator of behaviour, which is private car use. However, we know from the literature that transportation is an area where several significant gender effects are normally found. A common finding is that women have a higher probability of commuting by public transport and a lower one of driving. In this survey we find that there is no statistically significant difference between men and women in the choice of transportation mode. However, if men are the main income contributors in the family, they are less likely to use public transportation to most destinations (going to work, visiting friends and family, shopping and education) compared to other respondents. They also walk significantly less to get to work or to visit friends and family. On the other hand, they cycle much more to several destinations (visiting family and friends, shopping and sports and cultural activities). Women’s intensity of use of public transportation is also higher.

These gender differences in behaviour do not necessarily reflect different attitudes towards the *environmental* effects of car use. It is reasonable to believe that these gender differences are a result of gender differences in occupation (professional drivers), the need for transportation to work/school/shopping, etc., the time and money budgets, traditions, and other aspects that are important for the distribution of tasks within the household.

### 6.4. Organic food consumption

We have estimated the number of groups of organic food products (fruit/vegetables, dairy products, eggs, meat and bread/pasta/rice/cereals) purchased by the household. The equation to be estimated is given by:

$$orgfood_i = \alpha_0^o + \sum_f \alpha_f^o Y_{fi} + \alpha_{LT}^o LT_i + \sum_s \alpha_s^o HC_{si} + \sum_n \alpha_n^o OC_{ni} + \sum_k \alpha_k IC_{ki} + \sum_m \alpha_m^i A_{mi} + \varepsilon_i$$

The estimation includes general individual characteristics ( $IC_{ki}$ ), general household characteristics ( $HC_{si}$ ), variables reflecting the money budget ( $Y_i$ ) and the time budget ( $LT_i$ ), variables concerning attitudes ( $A_{mi}$ ) and individual and household characteristics that determine consumption of organic products ( $OC_{ni}$ ). See Table 6.4 for a complete list of variables. The samples used for the estimations are the same as the samples in the recycling and energy-saving estimations.

**Table 6.4. Results from the OLS estimations of the number of organic food groups bought by the household<sup>1</sup>**

Variable	One adult		Two adults or more	
	Male	Female	Male	Female
Constant	1.47 **	1.82 ***	1.14 ***	1.30 ***
<b>i) Time and money budgets:</b>				
Employed full time (0,1)	-0.04	0.05	<b>-0.04</b>	<b>0.07</b>
High-income household (group 10, 11 or 12)	0.19	0.04	<b>-0.11</b>	<b>0.12</b>
Low-income household (group 1, 2 or 3)	0.14	-0.14	-0.13	0.09
Earns the most (0,1)	-0.31	-0.62 **	-0.04	-0.09
<b>ii) Characteristics of the household:</b>				
Residence constructed more than 15 years ago (0,1)	-0.01	-0.22	<b>0.07</b>	<b>-0.14</b> *
Suburban or urban area (0,1)	-0.39 **	-0.07	0.15 *	-0.01
Children under the age of 18 (0,1)	<b>0.49</b> **	<b>0.06</b>	<b>0.17</b> **	<b>-0.10</b>
<b>iii) Characteristics of the individual:</b>				
Age	<b>-0.01</b>	<b>0.01</b>	<b>-0.01</b> *	<b>0.00</b>
Married or living as a couple (0,1)	0.23	0.06	-0.09	-0.27 **
Not voted in local or national election (0,1)	-0.39 *	-0.07	-0.09	0.10
Member of/contributor to and/or participant in environmental organisation (0, ...,2)	0.61 ***	0.39 ***	0.45 ***	0.49 ***
Higher education (0,1)	0.09	0.02	0.12	0.16 **
Student (0,1)	-0.28	-0.07	-0.16	-0.26 **
<b>iv) Country-specific dummies relative to Norway:</b>				
Canada (0,1)	<b>0.11</b>	<b>-0.73</b> ***	<b>-0.18</b>	<b>-0.64</b> ***
Netherlands (0,1)	<b>0.25</b>	<b>-0.37</b>	-0.35 **	-0.61 ***
France (0,1)	<b>0.24</b>	<b>-0.53</b> **	<b>0.10</b>	<b>-0.52</b> ***
Mexico (0,1)	0.85 **	0.32	1.13 ***	0.90 ***
Italy (0,1)	-0.02	-0.42	0.07	-0.03
Czech Republic (0,1)	0.14	0.10	0.70 ***	0.37 **
Sweden (0,1)	0.83 ***	0.30	0.62 ***	0.45 ***
Australia (0,1)	<b>0.22</b>	<b>-0.49</b> *	-0.49 ***	-0.56 ***
Korea (0,1)	1.12 ***	0.28	1.19 ***	1.09 ***
<b>v) Attitudinal characteristics:</b>				
Concerned about genetically modified organisms (0, ...,4)	0.26 ***	0.35 ***	0.26 ***	0.22 ***
Individuals/households can contribute to a better environment (0, ..., 4)	0.20 **	0.05	0.08	0.09 *
Environmental issues should be dealt with by future generations (0, ...,4)	0.17 **	0.12 *	0.10 ***	0.04
Technology will resolve environmental issues (0, ...,4)	0.09	-0.04	<b>0.00</b>	<b>0.13</b> ***
Environmental policies introduced by the government should not cost me any money (0, ...,4)	-0.16 **	-0.10	-0.05	-0.11 ***
<b>vi) Goods-specific characteristics:</b>				
Have primary or shared responsibility for food shopping (0,1)	-0.38	-0.03	0.34 ***	0.12
Easy to understand organic food labels/logos (0,1)	0.45 ***	0.67 ***	<b>0.45</b> ***	<b>0.61</b> ***
Adjusted R <sup>2</sup>	0.1379	0.1258	0.1465	0.1673

<sup>1</sup> \*\*\* indicates significance at a 1% level, \*\* indicates significance at a 5% level and \* indicates significance at a 10% level.

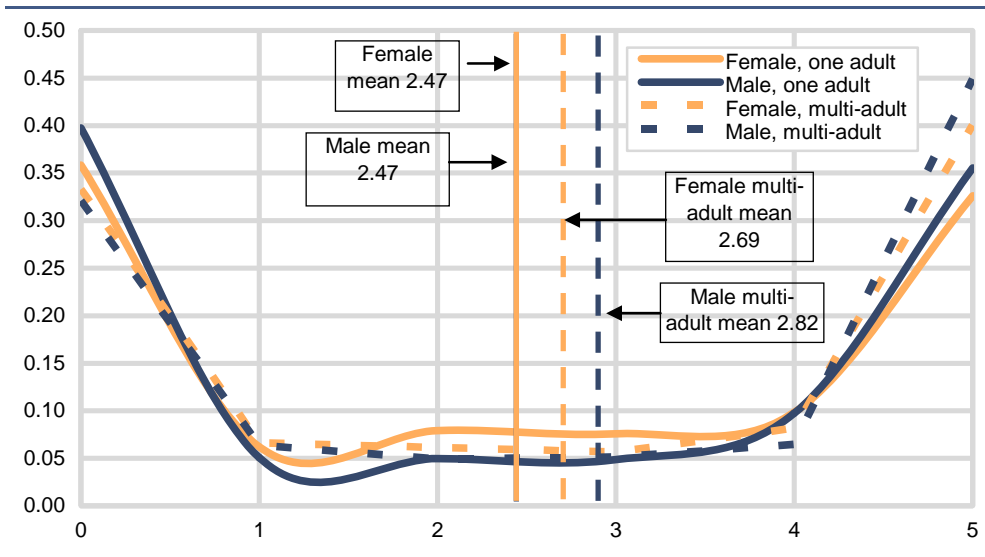
Looking at the estimation results in Table 6.4, we find several significant gender differences in the estimated coefficients, especially for multi-adult households. For single-adult households, there is a significant gender difference when there are small children at home, which has a larger effect on male consumption of organic food. We find the same effect in the multi-adult households. Thus, men purchase more organic food products when they have small children, and the effect is significantly larger than it is on women's consumption. The negative effect of being a student is significantly larger for single women, a result also found among multi-adult families. Looking at the country-specific dummies, there are significant gender differences in the coefficients for Canada, the Netherlands, France and Australia for single-adult families, and for the Netherlands and France for multi-adult households.

In multi-adult households, the effect of high income and being fully employed is larger for women than for men. The negative effect on organic food consumption of living in an older house is larger for women. Believing that technology will resolve environmental issues significantly increases organic food consumption more among women in multi-adult families, as is the case for being able to understand environmental labels and logos. An interesting finding is that, if we exclude the country-specific dummies (not shown in the table), having responsibility for shopping has a larger effect on male consumption of organic food. This indicates large differences in the distribution of tasks between the ten countries in the survey.

Looking at actual behaviour (see Figure 6.4), we see that either people purchase organic food, or they do not. There are few households that purchase only some categories. We see that men in multi-adult households consume significantly more

organic food groups than women ( $z = 2.67$ ), whereas there is virtually no difference in consumption between genders in single-adult households ( $z = 0.07$ ). However, it appears from Figure 6.4 that the largest difference in behaviour is between multi- and single-adult households, not between genders. The estimation results presented in Table 6.4 show that most significant gender differences in preferences occur in multi-adult households.

**Figure 6.4. Number of organic food products consumed, N = 10 251**



Source: OECD Survey on Household Environmental Behaviour 2008.

Contrary to the findings of previous studies, we find that men in multi-adult households report that they purchase more organic food groups than women in the same group. There may be several reasons for this. First, we have a sample which is highly educated on average, and it is possible that the gender differences in behaviour vary between households with a higher education level and those having a lower level. Secondly, since male and female respondents in multi-adult households are technically in the same group, and since the question is about the purchase of organic foods by the household, organic food consumption should not differ significantly between men and women. But it does. This is an indication that either we may have a sample selection bias (motivation is particularly important for multi-adult males to participate), or respondents of both genders tend to answer such questions differently (men brag more than women or they are less concerned about details: “yes my wife buys organic food”). Since we do not know, we need to use these results with caution when it comes to interpreting them as gender differences in behaviour. If we assume that multi-adult households equally purchase organic foods on average, irrespective of whether respondent is a man or a woman, we see that what really matters for organic food consumption is whether you live alone or not.

## 6.5. Water-saving measures

Many of the OECD countries involved in this survey experience periods of water supply shortage. Thus, water-saving measures are included in the survey. We estimate the number of water-saving measures reported by the respondent by creating a water saving index (*water*), which runs from 0 to 10. It sums up all the measures taken by the individual and by the household. Individual actions such as “often or always turning off the water while brushing teeth”, “taking showers instead of baths”, “plugging the sink while doing the dishes”, “water the garden in the coolest part of the day” and “collect rainwater/recycle water” all add one point to the index. Household investments during the last ten years such as water-efficient appliances, low-volume or dual-flush toilets, low-flow taps or shower heads, water tanks to collect rainwater and water purifiers are also included in the index. We assume that

these water-saving measures are a linear function of various general background variables and variables specifically relevant for water usage, given by:

$$water_i = \alpha_0^w + \sum_f \alpha_f^w Y_{fi} + \alpha_{LT}^w LT_i + \sum_s \alpha_s^w HC_{si} + \sum_n \alpha_n^w WC_{ni} + \sum_k \alpha_k^w IC_{ki} + \sum_m \alpha_m^w A_{mi} + \varepsilon_i^w$$

The number of water-saving measures is assumed to be a function of variables reflecting the time budget ( $LT_i$ ), general household characteristics ( $HC_{si}$ ), household characteristics concerning water use ( $WC_{ni}$ ), individual characteristics ( $IC_{ki}$ ), variables reflecting attitudes towards environmental issues and concern about water pollution ( $A_{mi}$ ), and a random error term ( $\varepsilon_i$ ). A complete set of variables is given in Table 6.5 which shows the results from an ordinary least squares (OLS) estimation of the samples' score on the water saving index. The samples are equal to the corresponding samples in the estimations of energy saving, recycling and organic food consumption.

**Table 6.5. Results from the OLS estimations of the number of water-saving measures taken<sup>1</sup>**

Variable	One adult		Two adults or more	
	Male	Female	Male	Female
Constant	-0.02	0.62	0.09	0.75 ***
<b>i) Time and money budgets:</b>				
Employed full time (0,1)	0.00	-0.13	-0.05	0.03
High-income household (group 10, 11 or 12)	<b>-0.33</b> *	<b>0.36</b>	-0.10	-0.10
Low-income household (group 1, 2 or 3)	0.08	0.01	-0.07	-0.06
Earns the most (0,1)	-0.02	-0.42 *	<b>0.14</b> *	<b>-0.05</b>
<b>ii) Characteristics of the household:</b>				
Owning current residence (0,1)	0.41 ***	0.51 ***	<b>0.27</b> ***	<b>0.45</b> ***
Detached house (0,1)	0.95 ***	0.71 ***	0.39 ***	0.44 ***
Size of residence more than 100 m <sup>2</sup> (0,1)	-0.03	0.23 *	<b>0.23</b> ***	<b>0.06</b>
Residence constructed more than 15 years ago (0,1)	<b>-0.40</b> **	<b>0.23</b> *	<b>0.00</b>	<b>-0.33</b> ***
Time spent living in current residence (1, ..., 4)	0.00	0.02	0.09 **	0.11 ***
Suburban or urban area (0,1)	-0.02	-0.23 *	-0.28 ***	-0.32 ***
Number of adults	N/A	N/A	0.11 ***	0.10 ***
Children under the age of 18 (0,1)	<b>0.15</b>	<b>0.66</b> ***	0.08	0.08
<b>iii) Characteristics of the individual:</b>				
Age	0.01 **	0.02 ***	0.01 ***	0.01 ***
Married or living as a couple (0,1)	<b>0.48</b> **	<b>-0.33</b>	0.08	0.15
Living as a single parent (0,1)	-0.19	-0.38 *	0.23	-0.11
Not voted in local or national election (0,1)	-0.34 *	-0.09	-0.27 **	-0.37 ***
Member of/contributor to and/or participant in environmental organisation (0, ...,2)	0.35 ***	0.24 ***	0.40 ***	0.45 ***
Student (0,1)	-0.29	-0.11	-0.14	-0.21 *
<b>iv) Country-specific dummies relative to Norway:</b>				
Canada (0,1)	1.32 ***	0.77 ***	1.13 ***	0.85 ***
Netherlands (0,1)	1.30 ***	1.10 ***	0.99 ***	1.06 ***
France (0,1)	1.04 ***	1.15 ***	1.01 ***	0.87 ***
Mexico (0,1)	0.58 *	1.32 ***	<b>0.99</b> ***	<b>0.42</b> ***
Italy (0,1)	1.01 ***	1.61 ***	1.14 ***	0.94 ***
Czech Republic (0,1)	0.64 **	0.59 **	1.08 ***	0.84 ***
Sweden (0,1)	0.38 *	0.46 **	0.57 ***	0.59 ***
Australia (0,1)	1.79 ***	1.89 ***	1.96 ***	1.93 ***
Korea (0,1)	-0.52	-1.07 ***	<b>-0.74</b> ***	<b>-1.30</b> ***
<b>v) Attitudinal characteristics:</b>				
Concerned about water pollution (0, ...,4)	0.08	0.16 ***	0.18 ***	0.21 ***
Individuals/households can contribute to a better environment (0, ..., 4)	0.30 ***	0.14 **	<b>0.25</b> ***	<b>0.14</b> ***
Environmental impacts are overstated (0, ...,4)	<b>0.10</b> *	<b>-0.06</b>	-0.03	-0.01
Technology will resolve environmental issues (0, ...,4)	0.07	0.10 **	0.04	0.03
<b>vi) Goods-specific characteristics:</b>				
Charged for water consumption in primary residence (0,1)	0.31	0.29 *	0.47 ***	0.40 ***
Not connected to the mains water (0,1)	0.23	0.48	0.72 ***	0.90 ***
Charged for water according to use (0,1)	0.26	0.33 **	0.35 ***	0.37 ***
Adjusted R <sup>2</sup>	0.2457	0.3223	0.2414	0.2692

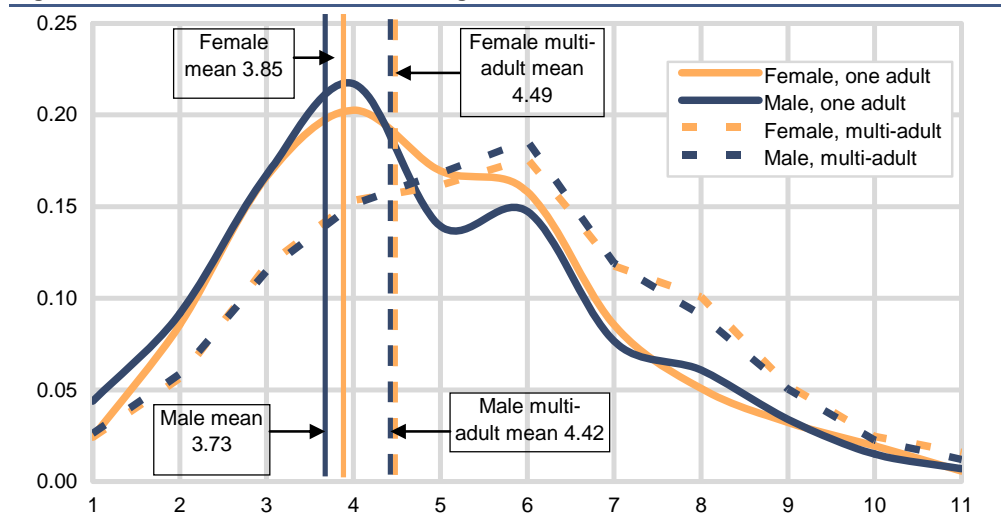
<sup>1</sup> \*\*\* indicates significance at a 1% level, \*\* indicates significance at a 5% level and \* indicates significance at a 10% level.

We see from the table that we have several significant gender effects in the way different variables affect behaviour. First, in single-adult households, we see that whether the respondent is married or not increases the water-saving effort for men and reduces it for women. We have no explanation for this, but it is possible that this variable picks up effects of other variables not included in the estimation. Secondly, high-income males in single-adult households save less water than other men, and the coefficient is significantly different from the single-adult females. Also, living in a house that is older than 15 years has an opposite effect on men and women living in single-adult households, as it reduces men’s water-saving efforts and increases women’s efforts. Having young children at home has a large and significant effect on women, whereas it is not significant for men and is significantly smaller than the female coefficient. The least significant gender differences in single-adult households are related to the belief about the effectiveness of personal involvement. This effect is rather surprising, as single men who believe that environmental impacts are overstated undertake significantly more water-saving measures than other men. This may be an indication that they do not perceive water shortages as an environmental problem. These men are more concerned with what they consider “real problems”, like water shortages, and less concerned with organic food, energy saving and recycling (see Table 6.4, 6.3 and 6.1). We see from the table that with the exception of Korea, households in all countries undertake more water-saving measures than Norwegian households, which makes sense since water shortage is not an issue in Norway today. There are significant gender differences in the country-specific coefficients for multi-adult household for both Mexico and Korea.

When it comes to multi-adult households, we also have many significant gender effects, but most of them have the same sign. For example, living in an old house reduces the water-saving measures most for women. Earning the most in the household has a significantly larger effect on men’s water-saving measures, whereas owning the residence affects women more. Finally, believing that you can contribute to a better environment has a larger effect on men’s water-saving measures than on women’s.

There are several coefficients with the opposite sign for men and women, particularly in single-adult households. These variables not only have different effects on behaviour, they also have the opposite effect on male and female behaviour. We would thus expect to see gender differences in actual behaviour with respect to water-saving measures, but this is not the case. Women tend to do more than men, but this difference is not significant for either of the groups ( $z = 1.35$  for both). We also see from Figure 6.5 that the effect of being more than one adult in the household has a much larger effect on water saving than gender. In previous literature, there are no significant gender effects reported with respect to response to water scarcity. However, as we have illustrated, this is the result of several effects pulling in different directions, as we find significant gender effects in several explanatory variables.

**Figure 6.5. Distribution of the water saving index, N = 10 251**



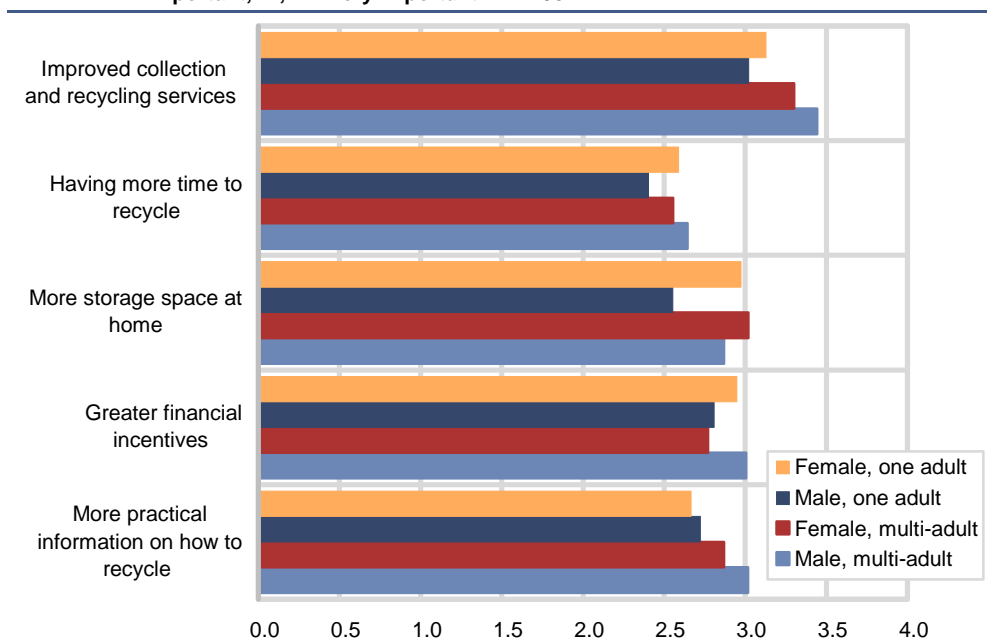
Source: OECD Survey on Household Environmental Behaviour 2008.

## 7. Attitudes towards environmental policy measures

The questionnaire included several questions aimed at analysing how people would respond to various policy measures and what would motivate them to adopt an environment-friendly behaviour. In this section we analyse possible gender differences in responses.

Questions 44 and 44a about policy measures to increase household recycling efforts asked how respondents would react to various policy measures aimed at motivating households to start recycling (see Figure 7.1) or increase their present recycling efforts respectively (see Figure 7.2). Figure 7.1 shows that extra storage space is more important for women than for men to start recycling, whereas men who do not recycle would like more practical information. For the other questions, the gender effects are not significant. What is interesting is that the responses on having more time to recycle seem to affect women in both groups equally, whereas men living in multi-adult households state this as much more important than single-adult males. The reason is probably that the recycling threshold for single-adult males is to a lesser degree related to the time budget than for men in multi-adult households. It should be noted that the sample size here is very small, since this question is intended for those who report that they do not recycle at all. Thus, the results here are very uncertain.

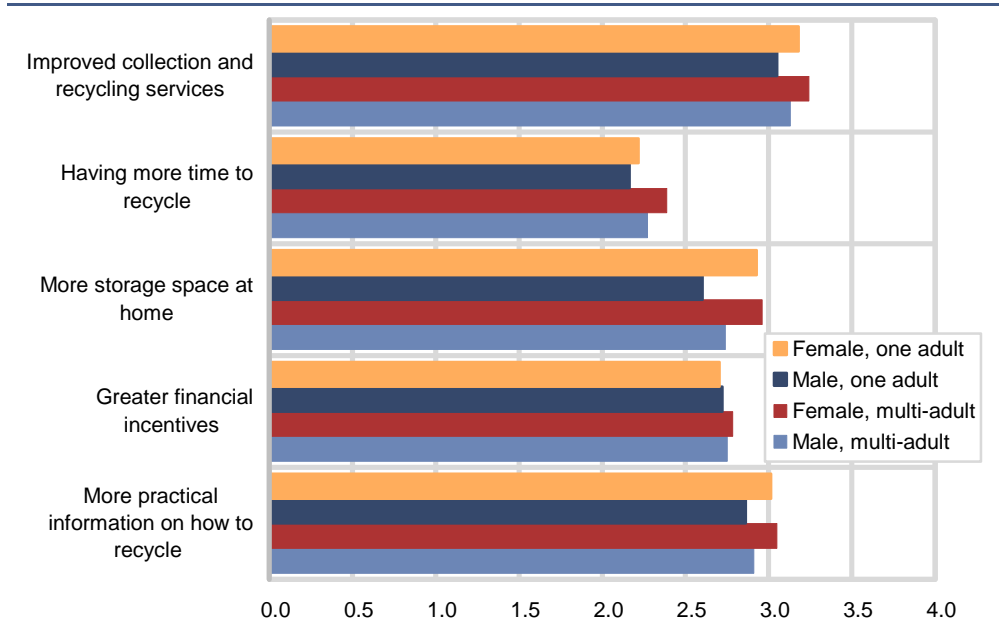
**Figure 7.1. Importance of measures encouraging households to start recycling, 1 = Not at all important, ..., 4 = Very important. N = 408**



Source: OECD Survey on Household Environmental Behaviour 2008.

Looking at Figure 7.2, one can see that improved collection and recycling services, having more time to recycle, more storage space at home and more practical information on how to recycle are more important to increase women's recycling efforts relative to men's. That is, among respondents who report to recycle at least one material, women score higher on the importance of almost every measure than men, except for single women's response to greater financial incentives. With the exception of the importance of having more time to recycle, the difference between female and male responses seems to be relatively equal irrespective of the group they belong to, single- or multi-adult households.

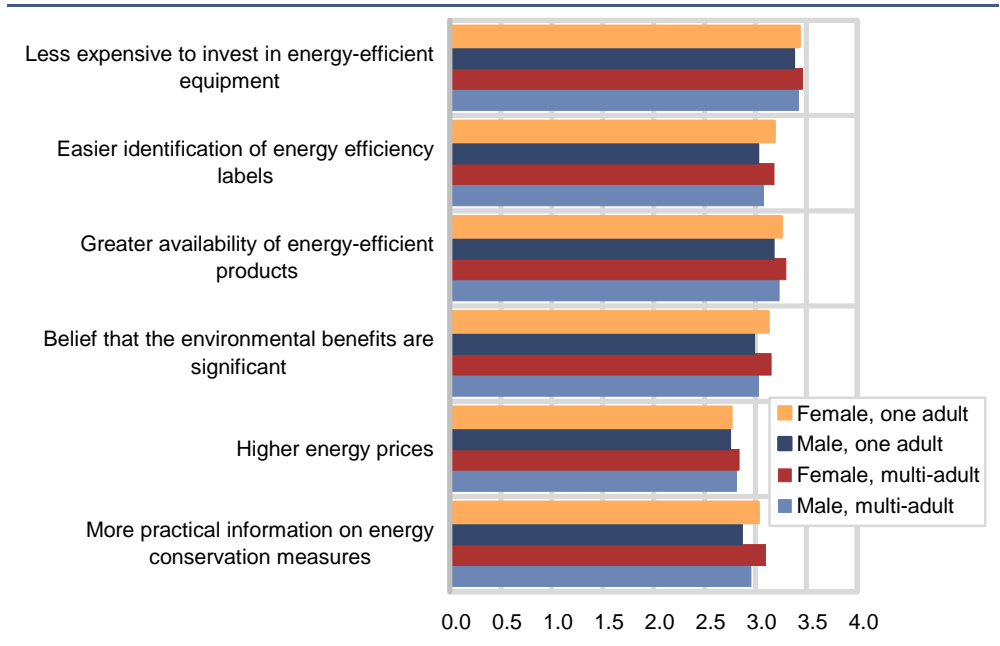
**Figure 7.2. Importance of measures encouraging households to recycle more, 1 = Not at all important, ..., 4 = Very important, N = 9 606**



Source: OECD Survey on Household Environmental Behaviour 2008.

Figure 7.3 shows the response to different hypothetical measures aimed at motivating respondents to save energy (practical information, higher energy prices, belief in significant environmental benefits, availability of energy-efficient products, identification of energy efficiency labels and less expensive energy-efficient equipment). We see that women have a higher score regarding all these questions than men, both in single- and multi-adult households. The gender difference in the responses seems to be independent of the group they belong to, with the exception of higher energy prices, where the responses of multi-adult males are higher.

**Figure 7.3. Importance of different measures encouraging to reduce energy consumption. 1 = Not at all important, 4 = Very important, N = 10 251**



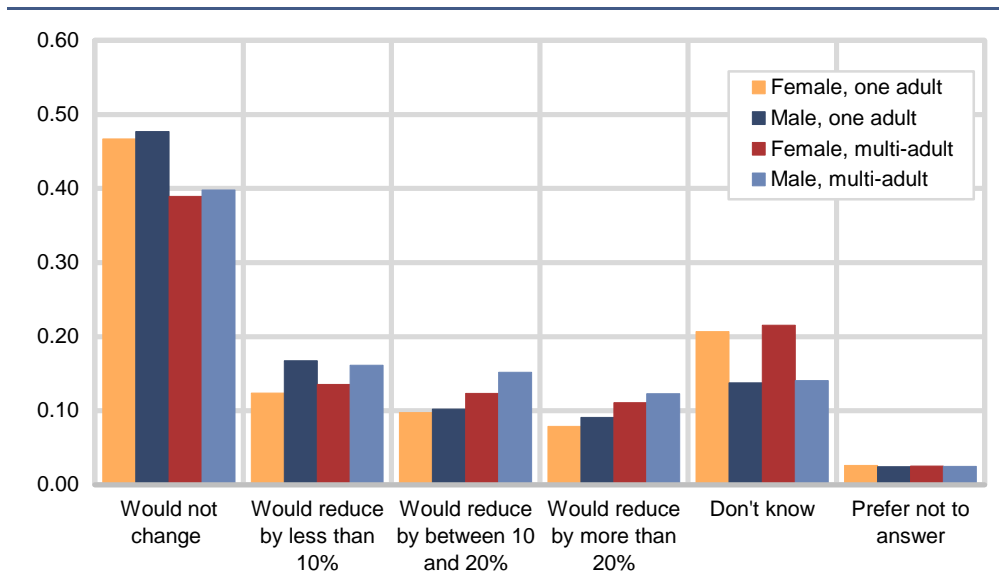
Source: OECD Survey on Household Environmental Behaviour 2008.

On the basis of these results, we would think that women are more concerned with energy saving than men. However, we know from the analysis of their behaviour that this is not necessarily true (see the discussion in Section 6.2). It is also

interesting to note that women score higher on the “belief that the environmental benefits are significant”, whereas the variable which systematically increased men’s efforts more than women’s was the belief that individuals can contribute to a better environment. Looking at Table 6.2, we see that this is particularly so for energy-saving measures. Thus, it may be unwise to conclude anything about gender differences in actual behaviour from these hypothetical questions. One explanation for these findings may be that women tend to express a more *positive attitude* towards changing behaviour than men in general.

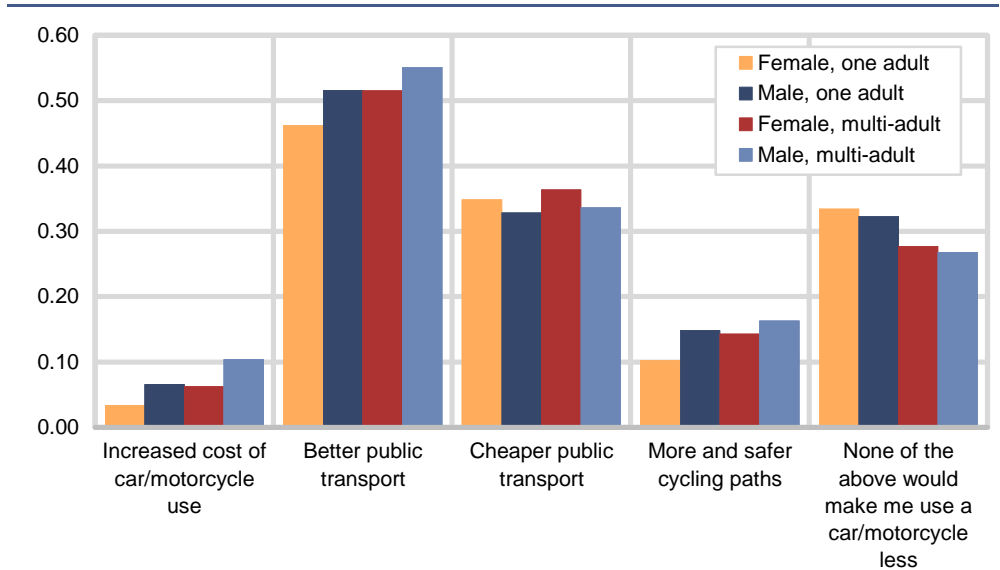
The next two figures show the responses about measures to encourage respondents to drive less. Figure 7.4 depicts the responses to the effect of a 20% increase in fuel prices on car/motorcycle use. The share of those who respond “don’t know” is significantly higher among women, which results in men tend to have a higher response to all other categories. Other than that, we cannot see any clear gender differences from this figure.

**Figure 7.4. Changes in fuel consumption for private use given a 20% fuel price increase. N = 7 915**



Source: OECD Survey on Household Environmental Behaviour 2008.

**Figure 7.5. Share that would be encouraged by different measures to drive less, N = 7 915**



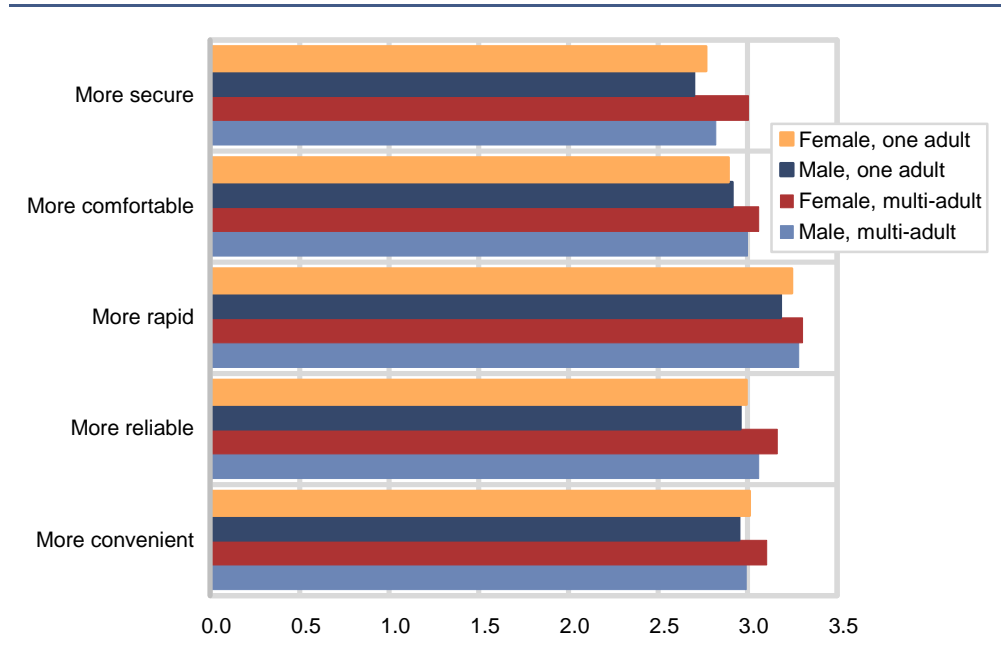
Source: OECD Survey on Household Environmental Behaviour 2008.



Figure 7.5 shows the share who would be encouraged to drive less from policy measures other than increasing fuel prices. We see that men would respond relatively more to increased costs, better public transportation and more and safer cycling paths, whereas women respond more to cheaper public transportation. However, for many of these measures, the effect of living in multi-adult households seems to be just as important as gender. For example, the multi-adult female responses to increased costs, better public transportation and more and safer cycling paths equal the responses from single-adult males. This is probably due to the increased importance of the time and money budgets in multi-adult households, as single-adult males live closer to their workplace and thus need to spend less money and time on travelling (see the discussion of Figure 5.5).

Figure 7.6 looks at aspects of public transportation that would encourage respondents to drive less. The question is only asked to those who said they would drive less if the public transportation system was better (see Figure 7.5). We see that for women, especially in multi-adult households, most of these measures are more important to change behaviour than for men. This could imply that women are more inclined to use public transportation than men. We also find that women drive significantly less than men, particularly in multi-adult households, which supports this finding. We also find that the effect of living in multi-adult households is often more important than gender. This is a trend we note in many of the results.

**Figure 7.6. Aspects of public transport that would encourage respondents to use their car/motorcycle less, 1 = Not at all likely, ..., 4 = Very likely, N = 4 164**

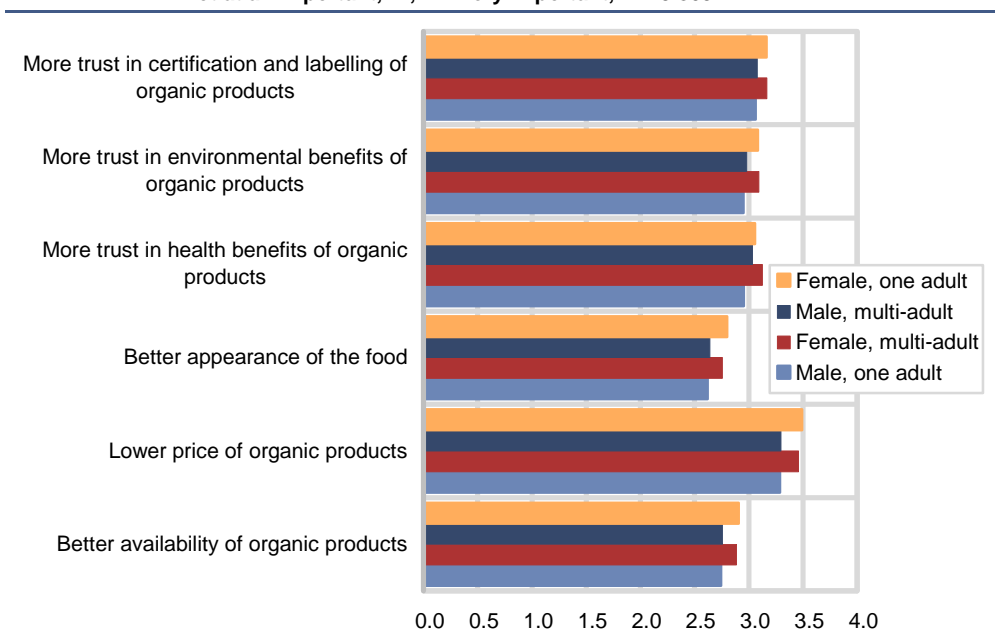


Source: OECD Survey on Household Environmental Behaviour 2008.

Figure 7.7 shows the responses to hypothetical questions concerning measures to encourage people to consume more organic foods. Again, women have a higher response to all these questions irrespective of whether respondents live in a single- or multi-adult household. This is a tendency we observe in many of these hypothetical policy questions. This result is somewhat in contrast to what we found when analysing behaviour, where the only significant gender effect is that men in the multi-adult household sub-sample report that they purchase more organic food than women and what really matters for organic food consumption is whether you live alone or not. A possible explanation is that women are more positive towards actions to improve the environment than men. There may also be a gender difference in the way people answer a questionnaire. What we see is that women in our sample do not buy more organic food, but say they are willing to do so in the future, much more often than men. Since we do not know the reasons for these

differences, it is risky to infer anything certain on which gender will actually change behaviour the most.

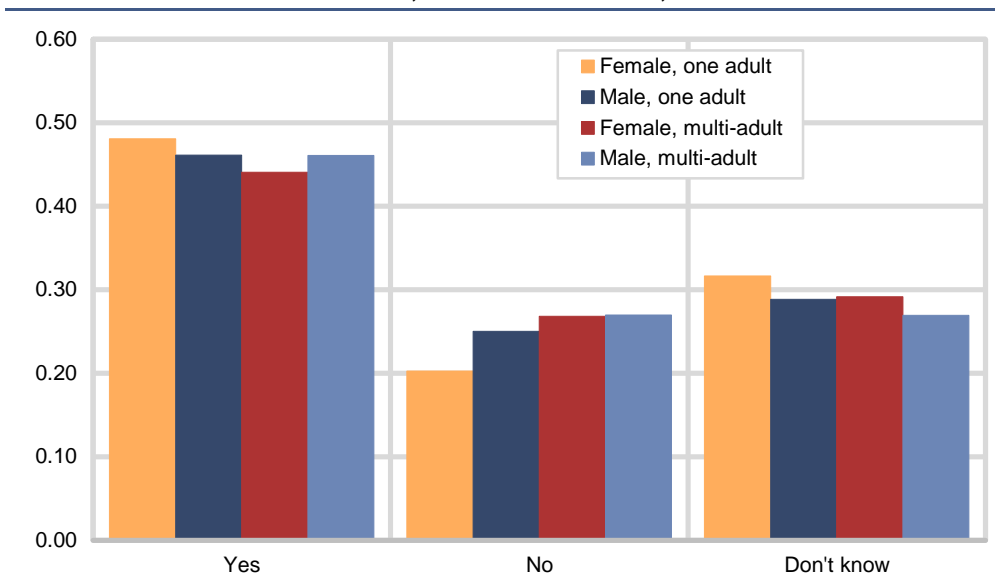
**Figure 7.7. Factors to encourage starting consuming or consuming more organic products. 1 = Not at all important, ..., 4 = Very important, N = 9 809**



Source: OECD Survey on Household Environmental Behaviour 2008.

Figure 7.8 shows the share that would start or continue to consume organic food if it was found that it is better for the environment, but not for one's health. Here the gender differences are small, perhaps with a slight tendency that men in single-adult households would not continue as much as women.

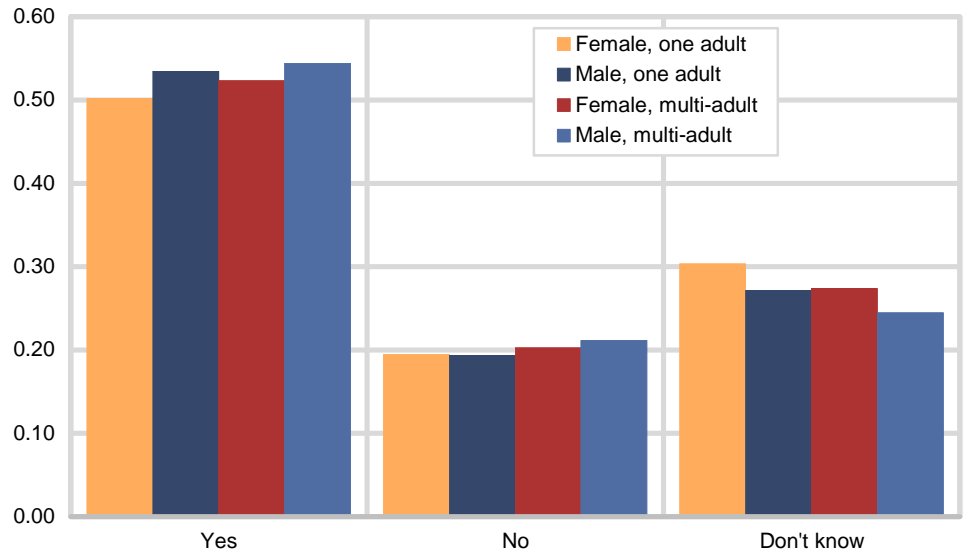
**Figure 7.8. Share that would start or continue to consume organic food if it was found that it is better for the environment, but not for one's health, N = 10 188**



Source: OECD Survey on Household Environmental Behaviour 2008.

With respect to the question whether they would start or continue to consume organic food if it was found that it is better for one's health, but not for the environment, we see no significant gender differences (Figure 7.9).

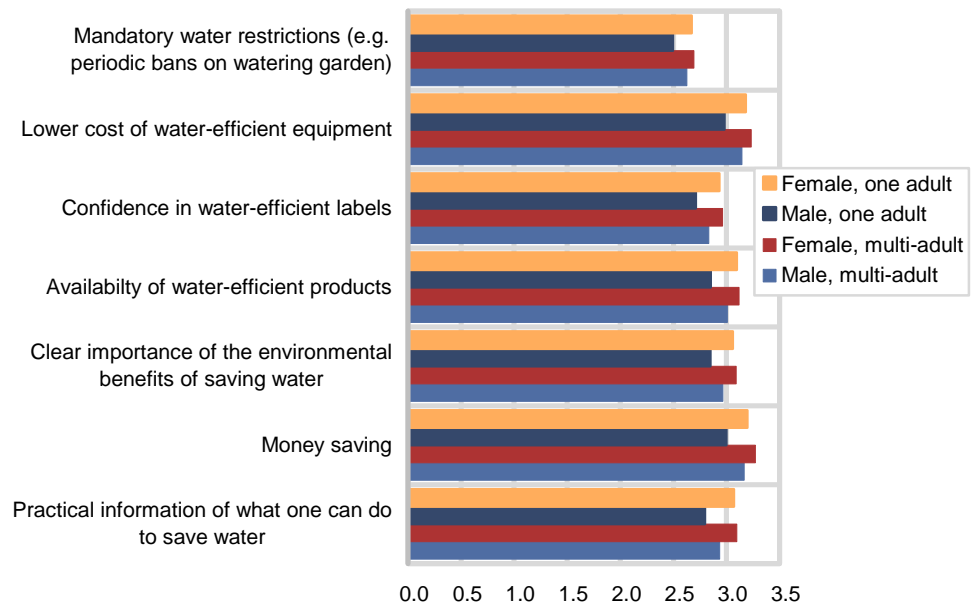
**Figure 7.9. Share that would start or continue to consume organic food if it was found that it is better for one's health, but not for the environment, N = 10 188**



Source: OECD Survey on Household Environmental Behaviour 2008.

For water-saving measures we observe the same pattern as for many of the other hypothetical policy measures, with women on average stating that they are more willing than men to change their behaviour in the future (see Figure 7.10). This pattern seems very stable, independently of whether the respondent lives in a single- or multi-adult household, and it is not reflected in the reported behaviour (see also Figure 6.5).

**Figure 7.10. Importance of different factors in encouraging a reduction in water consumption, 1 = Not at all important, ..., 4 = Very important, N = 10 251**



Source : OECD Survey on Household Environmental Behaviour 2008.

## 8. Policy implications

In these analyses, we have found several significant gender differences in preferences, background variables, behaviour and in the way people respond to questionnaires. We do not know the reason for these differences, we only know they exist. So, what are the policy implications of these gender differences? How relevant are they when designing policy instruments to attain environment-related goals?

It is not obvious if and how these gender differences should influence the choice of environment-related policy instruments. Does it really matter for the environment whether it is a woman or a man who drives the car or sorts the waste? On the other hand, it may be important to achieve gender equality, but not for the environment-related goals discussed in this chapter. If the aim is to protect the environment rather than change the distribution of tasks within the household, what is important is the effect of those actions on the environment, not who consumes or does the work.

Secondly, it is not possible to differentiate most policy instruments by gender without wronging one or the other, at least not when it comes to taxes and direct regulations. However, it is possible to target information campaigns on one gender or the other, but there is the risk of falling into stereotypes. This may be viewed as degrading by some people if not handled tactfully. Gender stereotypes are perhaps not particularly taboo in most countries but if we consider exogenous characteristics other than the gender of the consumer, the problem becomes more apparent. We would rightfully think twice before using information on racial differences in behaviour when defining environmental policies. However, this is not fundamentally different from using information about gender differences.

Having said this, there might be cases where acknowledging gender differences in behaviour may help improve the effectiveness of information campaigns. We should however be careful in using the results from this and other similar surveys as a basis for better targeting, as there are clear indications of gender differences in the way to respond to hypothetical questions. These differences do not necessarily translate into gender differences in behaviour. Thus, the result of a policy measure may not be the one that is expected.

An alternative approach to focusing on gender in policy recommendations is to focus on the underlying cause of a problem rather than on whether the person who takes the decision is a man or a woman. For example, if men tend on average to use the car more and public transportation less than women because they have a higher opportunity cost of time, the focus should be on the reliability and supply of public transportation, and not specifically on gender. If driving is the problem rather than who drives, then an increase in the fuel tax could be a more efficient policy measure than using information campaigns to convince men to use public transportation more. Targeting the policy instrument on the cause of the problem is more effective and much less stigmatizing than focusing on gender.

## 9. Conclusions

We have found many gender differences in this analysis, both in the way various explanatory variables affect behaviour and in background variables resulting from previous decisions (choice of education, labour force participation, choice of residence, etc.). However, these differences do not result in pronounced gender differences in behaviour. The exception here is transportation, where gender differences are large and clear. For the other behaviours measured in this survey, the number of adults in the household is often more important for your choices. Whether this is a reflection of interactions between family members or differences in needs is unclear, but we have reasons to believe that all these factors are important.

The sector where gender differences affect behaviour most is transportation, as we would expect from previous literature. Men have a higher probability of owning a car, and own on average more cars and motorcycles than women. And given that male respondents own a car, they drive significantly more than women. This is partly because they live further away from their workplace, because a higher share of them is professional drivers, and a lower percentage avoid driving even if they own a car. This last case is particularly pronounced among female respondents living in families with other adults.

When it comes to men's attitudes towards the environment, the belief that they can actually contribute to a better environment seems to be an important motivator, very often significantly more important than it is for women. The other individual attitudinal variables do not show the same pattern of being more important to one of the genders. In this survey, we have little and only categorical information about issues of relevance for the time and money budgets. However, from the variables we do have, there is no clear trend in gender differences in behaviour.

As for responses to hypothetical policy measures, the effects of living in single- or multi-adult households is often just as important as gender effects. When gender effects are present and independent of the number of adults in the household, women tend, almost without exception, to respond more to all questions than men. We do not find a similar pattern when it comes to reported behaviour. This is an indication that there are gender differences in the way people respond to a questionnaire, which probably reflects gender differences in the way people communicate. Thus, it is difficult to infer from gender differences in responding to questions how the various groups will behave in the future. This seems to be a particular problem with respect to hypothetical policy measures not directly linked to time and/or money budgets.

One main conclusion on the policy relevance of the observed gender differences in preferences and behaviour is that, even if analyses of such gender differences are always interesting and many times relevant, it does not necessarily imply that gender differences in environmental behaviour should be taken into account in *environmental* policies. Focusing on gender differences may lead to inferior policy recommendations because it shifts the focus away from the major aim: which is to improve the quality of our environment.

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## Appendix A: The Questionnaire

### ENVIRONMENT DIRECTORATE



### OECD QUESTIONNAIRE ON HOUSEHOLD ENVIRONMENTAL BEHAVIOUR

CANADIAN EDIT MASTER – ENGLISH VERSION

2008

This international household survey covers five key areas: waste, transport, energy, food and water. It is carried-out by the Organisation for Economic Cooperation and Development (OECD), an international organisation with 30 member countries. This survey provides you with a unique opportunity to express your views on these important issues and to compare them with other respondents in your country and overseas.

In order to save you time, it would be useful to have your water bills at hand (if applicable). Note that for some questions you are requested to respond as a representative of your household, while for others your individual response is requested – we will indicate this clearly for each question.

This survey is being run across the following 10 countries:

Australia  
Canada  
Czech Republic  
France  
Italy  
Korea  
Mexico  
Netherlands  
Norway  
Sweden

We really appreciate your input and we know that some of you will be eager to know the outcome of this project. If you would like to receive an extract of the results, please tick here:

We would like to remind you that the answers that you provide in this survey, as for all our surveys, will remain confidential and that they are not personally identifiable.



## SURVEY ON HOUSEHOLD BEHAVIOUR

### 1. How would you define your status in your current primary residence?

1. Married or living as a couple
2. Living with parents or other relatives
3. Living alone
4. Living as a single parent
5. Sharing a house/flat with non-family members

### 2. Thinking about purchasing responsibilities for the household (utility bills, grocery shopping etc), would you say that:

1. You have primary responsibility for these decisions
2. You share responsibilities for these decisions
3. You have no responsibility for these decisions -> **CLOSE SURVEY**

-----

**Part A - SOCIO-DEMOGRAPHIC CHARACTERISTICS**

-----

**3. Are you :**

1. Male
2. Female

**4. What year were you born?****INSERT DROP DOWN LIST**

1989	1978	1967	1956	1945	1934
1988	1977	1966	1955	1944	1933
1987	1976	1965	1954	1943	1932
1986	1975	1964	1953	1942	Before 1932
1985	1974	1963	1952	1941	
1984	1973	1962	1951	1940	
1983	1972	1961	1950	1939	
1982	1971	1960	1949	1938	
1981	1970	1959	1948	1937	
1980	1969	1958	1947	1936	
1979	1968	1957	1946	1935	

**h\_age RECODE Q4 AS FOLLOWS:**

1. 18-24 (1989-1983)
2. 25-34 (1982-1973)
3. 35-44 (1972-1963)
4. 45-54 (1962-1953)
5. 55+ (1952-Before 1932)

**5. How many adults of 18 years old or more (including yourself) live in your household?**

1. 1
2. 2
3. 3
4. 4
5. 5+

**6. How many children, under 18, live in your household?**

1. 0
2. 1
3. 2
4. 3
5. 4
6. 5+

**ASK Q6b TO THOSE WITH CHILDREN (Q6=2-6)****6b. How many of these children are under 5 years old?**

1. 0
2. 1
3. 2
4. 3
5. 4
6. 5+

**Q7. Which of the following regions do you currently live in?**

1. Alberta
2. British Columbia
3. Manitoba
4. New Brunswick
5. Newfoundland
6. Nova Scotia
7. Ontario
8. Prince Edward Island
9. Quebec
10. Saskatchewan

**8. What is the highest level of education that you have completed?**

1. Did not graduate from High School
2. High School Graduate
3. Some Post-Secondary Education
4. Bachelor's Degree (BA)
5. Post Graduate Degree (Master or PhD)
99. Prefer not to answer

**9. What is your current employment status?**

1. Employed full time
2. Employed part time / casual
3. Retired
4. Homemaker - househusband/wife
5. Seeking a job/unemployed
6. In employment but not currently working (e.g. sick leave, maternity/paternity)
7. Student
8. Volunteer work only
98. Other

**ASK Q10 IF Q9=1, 2, 3, 6 ("EMPLOYED" or "RETIRED" or "IN EMPLOYMENT BUT NOT CURRENTLY WORKING")**

**10. How would you characterise your current occupation (or previous occupation if retired)?**

*Please select the classification which most closely characterises your occupation*

1. Liberal profession (e.g. medical doctor, lawyer) and teachers
2. Middle/senior executive
3. Self-employed in commerce, industry or agriculture
4. Salaried employee (office)
5. Manual worker (manufacturing, agriculture, etc.)
98. Other, please specify: **OPEN END**

**11. Which of these ranges best reflects the approximate combined annual income of everyone in the household, after tax?**

*Please include income from all sources, including wages, government pensions and benefits and investments*

1. \$1 - \$14 800
  2. \$14 801 - \$22 200
  3. \$22 201 - \$29 100
  4. \$29 101 - \$35 200
  5. \$35 201 - \$41 300
  6. \$41 301 - \$47 500
  7. \$47 501 - \$54 700
  8. \$54 701 - \$62 900
  9. \$62 901 - \$73 500
  10. \$73 501 - \$91 700
  11. \$91 701 - \$119 200
  12. More than \$119 200
- a. Don't know
99. Prefer not to answer

**h\_income RECODE INCOME AS FOLLOWS**

**< \$54 700 (codes 1-7)**  
**> \$54 700 (codes 8-12)**  
**Other (codes 97 & 99)**

**12. Are you the person who earns the most in your household?**

1. Yes
2. No
97. Don't know

**13. Do you and/or another member of your household own your current primary residence?**

1. Yes
2. No

**14. Is your primary residence:**

1. An apartment in a building with less than 12 apartments in total
2. An apartment in a building with more than 12 apartments
3. A detached house
4. A semi-detached / terraced house
98. Other (specify)

**14a. Approximately how many months per year do you live in your current primary residence?****DROPDOWN MENU WITH NUMBERS FROM 1 TO 12****16. How many rooms are there in your home?***Please exclude bathrooms*

1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
8. 8
9. 9
10. 10
11. 11
12. 12 or more

**15. What is the approximate size of your primary residence in square feet? (Please estimate)****2 DROP DOWN MENUS**

- **Residence**

1. Less than 270 ft<sup>2</sup>
2. 270 ft<sup>2</sup> - 540 ft<sup>2</sup>
3. 541 ft<sup>2</sup> - 1070 ft<sup>2</sup>
4. 1071 ft<sup>2</sup> - 1610 ft<sup>2</sup>
5. 1611 ft<sup>2</sup> - 2150 ft<sup>2</sup>
6. More than 2150 ft<sup>2</sup>
97. Don't know

- **Garden/ Terrace/ Balcony**

1. No garden/ terrace/ balcony possessed
2. Less than 110 ft<sup>2</sup>
3. 110 ft<sup>2</sup> - 540 ft<sup>2</sup>
4. 541 ft<sup>2</sup> - 1610 ft<sup>2</sup>
5. 1611 ft<sup>2</sup> - 3230 ft<sup>2</sup>
6. More than 3230 ft<sup>2</sup>

97. Don't know

**17. How would you best describe the area in which you live?**

1. Isolated dwelling (not in a town or village)
2. Rural
3. Suburban (fringes of a major town/city)
4. Urban

**19. Approximately how long ago was your primary residence constructed?**

1. Less than 5 years ago
2. Between 5 and 15 years ago
3. Between 16 and 30 years ago
4. Between 31 and 50 years ago
5. Between 51 and 80 years ago
6. More than 80 years ago
97. Don't know

**20. Approximately how many years have you lived in your primary residence?**

1. Less than 2 years
2. 2 to 5 years
3. 6 to 15 years
4. More than 15 years

**21. What is the postal code of your primary residence?**

**– AUTOMATICALLY PICKED UP IN MOST COUNTRIES**

-----

**Part B - ATTITUDINAL CHARACTERISTICS**

-----

**22. Please rank the following issues in order of their importance to you. DYNAMIC RANK, RANDOMIZE ITEMS**

*1 stands for the most important and 6 for the least important.*

*Drag or double click on an issue on the left to move it to the right hand side. If you want to reorder an issue once it is on the right hand side, select it and then use the up and down arrows*

1. International tensions (terrorism, war)
2. Economic concerns (unemployment, inflation)
3. Environmental concerns (waste, air pollution)
4. Health concerns (Bird flu, AIDS)
5. Social issues (poverty, discrimination)
6. Personal safety (crime, theft...)

**23. How concerned are you about the following environmental issues?**

*Please select one answer per row*

**RANDOMISE ITEMS**

	Not concerned	Fairly concerned	Concerned	Very concerned	No opinion
Waste generation					
Air pollution					
Climate change (global warming)					
Water pollution					
Natural resource depletion (forest, water, energy)					
Genetically modified organisms (GMO)					
Endangered species and biodiversity					
Noise					

**24. Have you voted in any of the following types of elections in the past 6 years? MULTI**

*Please select all that apply*

1. National/ general elections
2. ~~Provincial elections~~
3. Local elections
99. None of the above

**25. In the past 24 months have you given any of your personal time to support or participate in activities of any of the following types of groups/ organisations? MULTI**

*Please select as applies*

1. Parent-teacher association
2. Environmental organisation
3. Local community organisation
4. Charitable organisation
98. Other association/ organisation
99. None of the above **EXCLUSIVE**

**27. Are you currently a member of, or contributor/donator to, any environmental organisations?**

1. Yes
2. No

**28. To what extent do you agree with each of the following statements? GRID, RANDOMIZE ITEMS**

*Please select one answer per row*

	Strongly disagree	Disagree	Agree	Strongly agree	No opinion
Each individual/household can contribute to a better environment					
Environmental impacts are frequently overstated					
Environmental issues should be dealt with primarily by future generations					
Environmental issues will be resolved primarily through technological progress					
Environmental policies introduced by the government to address environmental issues should not cost me extra money					

**29. Please rank the following sources of information on environmental issues in terms of their trustworthiness.**

*1 stands for the most trustworthy and 5 for the least trustworthy*

**DYNAMIC RANK  
RANDOMISE ITEMS**

1. Independent researchers and experts
2. National/ Local governments
3. Environmental non-governmental organisations (NGOs)
4. Consumers' organisations
5. Producers' and retailers' associations



**31. For each of the following categories, how often does your household choose to use the products listed, rather than the alternatives? GRID**

*Please select one answer per row*

	Never	Occasionally	Often	Always	Don't know
Paper with recycled content (e.g. stationery)					
Products with reduced toxic content (e.g. environmentally friendly cleaning products)					
Refillable containers (e.g. bottles, washing detergents)					
Reusable shopping bags					

**ASK Q32 WHEN CODES 1-2 AT Q31 SELECTED FOR "NEVER"**

**32. Which factors discourage you from buying [PIPE IN PRODUCTS SELECTED IN Q31=NEVER]? MULTI**

*Please select all that apply*

1. Product availability
2. Product quality (e.g. considered inferior)
3. Product appearance (e.g. colour, packaging)
4. Price (too expensive)
5. Not familiar with the product(s)
6. Not interested

**33. Among the following logos/ labels, please select the ones you are familiar with:**

**LIST OF LOGOS TO BE PROVIDED AND INCLUDED AS CLICKABLE  
RANDOMISE LOGOS**

99. None of the above

**SKIP Q34 IF Q33=NONE OF THE ABOVE**

**34. Among the following logos/ labels, select the ones you take into account in your purchasing decisions:**

**SHOW LOGOS SELECTED IN Q33, INCLUDE AS CLICKABLE**

-----

**Part C - WASTE**

-----

**INSERT WASTE PICTURE**

The following section will cover waste and recycling.

**35. How often is your household mixed waste collected (by a third party) from your primary residence or from containers where you dispose of your waste?**

*This excludes waste sorted for recycling/composting*

1. More than once a week
2. Once a week
3. Less than once a week
97. Don't know

**36. On average, how much mixed waste does your household put out for collection **each week?****

*Please indicate the approximate number of bags, taking the size of the bags in the picture below as a reference*

**DROPDOWN MENU**



**Mixed waste for collection**

Number of bags

None

1

2

3

4

5

6

7

8

9

10

11

12

13

14 or more

Don't know

**39. What are the waste collection services available for recyclable materials in your area?***Select all that apply***GRID, MULTI PER ROW, MULTI PER COLUMN**

	Door-to-door collection	Drop-off centres/containers	Bring back with refund (to the retailer/manufacturer)	Bring back with no refund (to the retailer/manufacturer)	No service available	Don't know (code 97)
Glass bottles/containers						
Plastic bottles/containers						
Aluminium, tin and steel cans						
Paper/cardboard						
Food or garden waste						

**ASK Q40 IN A LOOP FOR ITEMS SELECTED IN DOOR-TO-DOOR IN Q39****40. How often are X collected door to door?**

1. More than once a week
2. Once a week
3. Less than once a week
97. Don't know

**37. Which of the following materials does your household recycle? MULTI**

1. Glass bottles/containers
2. Plastic bottles/containers
3. Aluminium, tin and steel cans
4. Paper/Cardboard
5. Food waste
6. Garden waste
7. Batteries (domestic)
8. Pharmaceuticals/medicines
99. None of the above **EXCLUSIVE**

**ASK Q41 IN A LOOP FOR ITEMS SELECTED IN Q37 EXCEPT FOR CODES 6, 7 & 8**

**41. Please indicate approximately what percentage of [PIPE ITEM SELECTED IN Q37] your household recycles?**

**It includes returns to the retailer/manufacturer**

1. 25%
2. 50%
3. 75%
4. 100%
97. Don't know

**ASK Q42 IF Q37 != 99****SKIP Q42 IF Q37=99, GO TO Q44**

**42. How important are the following factors in motivating your household to recycle? DYNAMIC GRID**

*Please select one answer per row*

	<b>Not at all important</b>	<b>Not important</b>	<b>Fairly important</b>	<b>Very important</b>	<b>Not applicable</b>
It is beneficial for the environment					
It is mandated by the government					
I want to save/receive money					
I think it is my civic duty					
I want to be seen by others as a responsible citizen					

**ONLY ASK IF THEY RECYCLE (Q37 != 9)**

**43. Approximately how many minutes does your household spend on average each week on recycling activities? SINGLE**

*Time spent to (clean) sort and store your recyclable waste as well as bring it to drop-off containers/centres or door-to-door collection*

1. Less than 5 minutes
2. 5 to 14 minutes
3. 15 to 29 minutes
4. 30 to 59 minutes
5. 1 to 2 hours
6. More than 2 hours
1. Don't know

**IF Q37=99 => ASK Q44**

**44. How important would the following factors be in encouraging your household to start recycling? GRID**

*Please select one answer per row*

	Not at all important	Not very important	Quite important	Very important
More practical information on how to recycle (what is recyclable, services available, etc.)				
Greater financial incentives (saving/ receiving money)				
More storage space at home				
Having more time to recycle				
Improved collection and recycling services (more frequent, more accessible)				
Stronger belief that the environmental benefits are significant				

99. None of the above would encourage my household to start recycling **EXCLUSIVE**

**If Q37!=99 => ASK Q44a**

**Q44a. How important would the following factors be in encouraging your household to recycle more?**

	Not at all important	Not very important	Quite important	Very important
More practical information on how to recycle (what is recyclable, services available, etc.)				
Greater financial incentives (saving/ receiving money)				
More storage space at home				
Having more time to recycle				
Improved collection and recycling services (more frequent, more accessible)				
Stronger belief that the environmental benefits are significant				

99  None of the above would encourage my household to recycle more **EXCLUSIVE**

**45. If the current system were to be changed in such a way that you need not separate your waste at home at all, but this is done on your behalf by a third party, how much would you be willing to pay each month for this service? **DROPDOWN MENU****

*Please select one*

1. \$0
2. \$1
3. \$2
4. \$3
5. \$4
6. \$5
7. \$6
8. \$7
9. \$8
10. \$9
11. \$10
12. \$11
13. \$12
14. \$13
15. \$14
16. \$15
17. \$16
18. \$17
19. \$18
20. \$19
21. \$20
22. \$21
23. \$22
24. \$23
25. \$24
26. \$25
27. \$26
28. \$27
29. \$28
30. \$29
31. \$30 or more
97. Don't know

**IF Q45=1 ASK Q46**

**46. Why would you not be willing to pay anything?**

1. Prefer to be responsible for recycling
2. Cannot afford it
97. It does not concern me
98. Other, please specify: **OPEN END**

**49. How would you characterise the issue of illegal dumping\* in your area? SINGLE**

\* By illegal dumping we mean the disposal of household waste in a non-permitted area.

Please select one

1. Not an issue
2. Minor problem
3. Moderately important problem
4. Major problem
97. Don't know

**SKIP Q48 IF Q49 = 1****48. How do you think illegal dumping\* could be more effectively controlled?**

\* By illegal dumping we mean the disposal of household waste in a non-permitted area.

Please select all that apply

1. Regulation against illegal dumping should be better enforced (including fines)
2. Waste collection services should better meet household demand (availability, accessibility)
3. Information on available waste disposal services should be increased
4. Charges for collection and management of waste should be lower
5. No opinion **EXCLUSIVE**

**50. How is your household charged for the collection and management of mixed waste in your primary residence?**

Please select one

1. Flat fee (e.g. lump sum included in property taxes, charges or rent)
2. Volume-based unit charge/ price (per bag, container etc.)
3. Weight-based unit charge/ price (per kg, pound etc.)
4. Frequency based charge (according to how often the waste is collected)
5. Charge/ price based on household size
6. Other form of charging, please specify: **OPEN END**
7. Not charged
97. Don't know

-----

**Part D - TRANSPORT**

**INSERT TRANSPORT PICTURE**

The following section will cover personal transport.

In this section, when using the word "car" we also include vans and sport utility vehicles (SUV).

-----

**52. How many vehicles are owned or used regularly by your household (including company cars)?**

**DROPDOWN MENUS, USE FOLLOWING ANSWER LIST:**

Number of car(s)

- 0
- 1
- 2
- 3
- 4
- 5 or more

Number of motorcycle(s)

- 0
- 1
- 2
- 3
- 4
- 5 or more

**IF Q52 NUMBER OF CARS=0, ASK Q53**

**53. What is the main reason for your household not having a car?**

*Please select one*

1. Cant afford a car
2. Can get everywhere we want without a car
3. No one can/ wants drive
4. Environmental concerns
98. Other, please specify: **OPEN END**



**IF Q52 NUMBER OF CARS != 0, ASK Q54**

**54. Please enter the information concerning the car you use most often. 4 DROPDOWNS NEXT TO EACH OTHER**

	Fuel type	Age of the car (years)	Seating capacity (persons)	Engine Size
Car used most often				

**Fuel Type:**

1. Unleaded
2. Leaded
3. LPG (liquefied petroleum gas)
4. Diesel
5. Hybrid
6. Biofuels
7. Electric
97. Don't know

**Age of the car**

1. Less than 1 year old
2. 1 year old
3. 2 years old
4. 3 years old
5. 4 years old
6. 5 years old
7. 6 years old
8. 7 years old
9. 8 years old
10. 9 years old
11. 10 years old
12. 11 years old
13. 12 years old
14. 13 years old
15. 14 years old
16. 15 years old
17. 16 years old
18. 17 years old
19. 18 years old
20. 19 years old
21. 20 years old
22. 21 years old
23. 22 years old
24. 23 years old
25. 24 years old
26. 25 years old or older
97. Don't know

**Seating capacity**

1. 1 person
2. 2 people
3. 3 people
4. 4 people
5. 5 people
6. 6 people
7. 7 people
8. 8 people
9. More than 8 people

**Engine size**

1. Less than 1 litre
2. 1 - 1.5 litres
3. 1.6 – 2 litres
4. 2.1 – 3 litres
5. More than 3 litres
97. Don't know

**18. How far is your primary residence from the public transport stop/station which is most convenient for your daily commute? 2 DROPDOWNS NEXT TO EACH OTHER**

*Please select the corresponding means of transport usually used to get there (walking, driving, public transport) and indicate the time required in minutes*

Usual means of transport	Average time in minutes (one way)	Don't know (code 97)	No public transport stop/station available	Not applicable
<ol style="list-style-type: none"> <li>1. Walking</li> <li>2. Car/motorcycle</li> <li>3. Public transport</li> <li>4. Bicycle</li> </ol>	<ol style="list-style-type: none"> <li>1. Less than 5 minutes</li> <li>2. 5 to 15</li> <li>3. 16 to 30</li> <li>4. 31 to 45</li> <li>5. 46 minutes to 1 hour</li> <li>6. More than 1 hour</li> </ol>			

**SKIP IF Q52 CAR = 0 AND MOTORCYCLE = 0**

**55. How many kilometres do you personally drive (car/motorcycle) during a typical week? SINGLE**

1. Do not drive
2. Less than 30km
3. 31 - 100 km
4. 101 - 250km
5. 251 - 500km
6. 501 - 700km
7. 701 - 900km
8. 901 km – 1000
9. More than 1001 km
97. Don't know

**ASK Q56 IF Q55 != 1**

**56. What would encourage you to drive (car/motorcycle) less? MULTI, RANDOMISE ITEMS**

*Select all that apply*

1. Increased cost of car/motorcycle use
2. Better public transport
3. Cheaper public transport
4. More and safer cycling paths
98. Other (please specify): **OPEN END**
99. None of the above would make me use a car/ motorcycle less

**IF Q56=2, ASK Q57**

**57. What aspects of public transport are likely to encourage you to use your car/motorcycle less?**

**GRID, SINGLE PER ROW, MULTI PER COLUMN**

	Not at all likely	Not very likely	Quite likely	Very likely
More convenient (e.g. stops closer to home and destination)				
More reliable (e.g. fewer delays, strikes)				
More rapid (e.g. higher frequency, speed)				
More comfortable (e.g. less crowded)				
More secure (e.g. improved personal safety)				

**ASK Q58 IF Q55 != 1**

**58. What would be the likely effect of a permanent increase in fuel prices of 20% on your fuel consumption for your personal car/motorcycle use? (e.g. by driving less, buying a more fuel efficient vehicle, etc.)**

*Please select one*

1. Would not change
2. Would reduce by less than 10%
3. Would reduce by between 10% and 20%
4. Would reduce by more than 20%
97. Don't know
99. Prefer not to answer

**59. What is your main mode of transportation for each of the following activities?**

*If you use a combination of modes for a given activity please select more than one answer per row*

**GRID, MULTI PER COLUMN, MULTI PER ROW**

	Walking	Car	Public Transport	Bicycle	Motor-cycle	Not applicable
Daily commute to and from work						
Travel undertaken for your usual professional activities						
Visiting family and friends (excluding vacation/weekend trips)						
Shopping						
Education						
Sports and cultural activities						

**IF Q59 WORK != "NOT APPLICABLE", ASK Q60**

**60. Approximately how long does it take you to get to work (one way)?**

1. Less than 15 mins
2. 15 – 30 mins
3. 31 – 45 mins
4. 46 mins – 1 hour
5. More than 1 hour

**61. For the following travel purposes, how long does it take you to use public transport compared to driving a car or a motorcycle (one way)? 3D GRID**

**SHOW "WORK", "SHOPPING", "EDUCATION" IF THEY'RE NOT SELECTED AS "NOT APPLICABLE" IN Q59**

*When applicable please select one answer per row*

	Less time						More time						
	- 60 mins	- 46 to 60 mins	- 31 to 45 mins	- 16 to 30 mins	- 5 to 15 mins	Same time	+ 5 to 15 mins	+ 16 to 30 mins	+ 31 to 45 mins	+ 46 to 60 mins	+ 60 mins	Not possible <b>EXCLUSIVE</b>	Don't know <b>EXCLUSIVE</b>
Daily commute to and from work													
Travel undertaken for your usual professional activities													
Shopping													
Education													

**62. What are the approximate costs associated with your own travel each month for the following? GRID**

*Please fill in as appropriate and provide your answer to the nearest dollar*

	Amount in \$ per month <b>OPEN END, ACCEPT 0 VALUE, ACCEPT ONLY INTEGERS</b>	Not applicable <b>RADIO BUTTON</b>	Don't know <b>RADIO BUTTON</b>
Fuel			
Parking			
Charges for road usage (e.g road/city tolls)			
Public transport			

**63. During the past year, have you done any of the following? MULTI***Select all that apply*

1. Used car sharing/pooling
2. Used recycled tires/low rolling resistance tires
3. Offset your carbon emissions
4. Changed a car for another one which uses less fuel
5. Used public transport more than the previous year
6. Walked or cycled more than the previous year
7. Adapted your driving style to use less fuel (e.g. reduce speed, reduce air conditioning use)
8. Changed a car for another one which uses less polluting fuel
99. None of the above

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**Part E - ENERGY**

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**INSERT ENERGY PICTURE**

The following section will cover residential energy use

**64. Which of the following sources of energy do you use in your primary residence?**

*Select all that apply*

1. Electricity
2. Natural gas
3. Fuel oil
4. Wood or wood chips
5. Coal
6. District heating
7. ~~Renewables\*~~
98. Other (please specify): **INSERT OPEN END**

**65. In your household, which of the bills do you pay according to your household consumption?**

*Select all that apply*

**FILTER LIST ON Q64, BUT EXCLUDE RENEWABLES**

1. Electricity
2. Natural Gas
3. Fuel Oil
4. Wood or wood chips
5. Coal
6. District heating
98. **INSERT ANSWER FROM Q64, CODE 8, IF SELECTED**
99. None of the above

**ASK Q66b ONLY IF q64=ELECTRICITY**

**66b. Does the electricity price paid by your household vary according to the time of use?**

*This would imply that your household would pay a lower price during off-peak period (e.g. night time) and a higher price during peak period (e.g. early evening).*

1. Yes
2. No
3. Don't know

**ASK Q67 ONLY IF Q64=ELECTRICITY**

**67. Does your household take special measures to buy renewable energy from your electricity provider?**

*By renewable energy we mean energy sources such as wind, solar, geothermal, hydro*

1. Yes
2. No
97. Don't know

**IF Q67=2 ASK Q68**

**68. Please state why you do not buy renewable energy.**

1. Service not available and our household is not interested
2. Service not available, but our household would be interested to do so
3. Service available, but our household is not interested
4. Energy from electricity provider is already from renewable energy sources
5. I don't know anything about these kind of services

**69. What is the maximum percentage increase on your annual bill you are willing to pay to use only renewable energy?**

*Please assume that your energy consumption remains constant*

1. I would not pay anything additional
2. Less than 5%
3. 5%-15%
4. 16%-30%
5. More than 30%
97. Don't know

**70. Did you take energy costs into account when purchasing or renting your current primary residence?**

1. Yes
2. No
3. Not sure

**71. Which of the following appliances do you have in your primary residence? MULTI**

1. Dishwashers
2. Clothes washers / clothes washer-dryers
3. Clothes dryers
4. Fridges / fridge-freezers
5. Separate freezers
6. Ovens
7. Microwave ovens
8. Electric water heating boilers
9. Televisions
10. Set-top boxes
11. Computers
12. Air conditioners
- ~~13. Space heaters~~



**71b. How many of the following appliances do you have? DROPDOWN FOR EACH PRODUCT, FILTER PRODUCTS ON THOSE AMONG THE 7 BELOW SELECTED IN Q71**

1. Fridges
2. Separate freezers
3. Televisions
4. Set-top boxes
5. Computers
- ~~6. Space heaters~~
7. Air conditioners

**DROP DOWN**

- 1
- 2
- 3
- 4
- 5 or more

**72. How often do you perform the following in your daily life? GRID, SINGLE PER ROW, MULTI PER COLUMN**

*Please select one answer per row*

	Never	Occasionally	Often	Always
Turn off lights when leaving a room				
Cut down on heating/air conditioning to limit your energy consumption				
Wait until you have full loads when using washing machines or dishwashers				
Turn off appliances when not in use				
Switch off standby mode of appliances/electronic devices				

**73. Has your household installed any of the following items over the past ten years in your current primary residence? GRID, SINGLE PER ROW, MULTI PER COLUMN**

*If these measures are not feasible in your house/apartment or if they would need to be carried out by the landlord, select "not possible".*

	Yes	No	Already equipped	Not possible (code 96)
Energy-efficiency-rated appliances (e.g. top rated washing machines, refrigerators )				
Low-energy light bulbs (compact fluorescent)				
Thermal insulation (e.g. walls/roof insulation, double-glazing)				
Efficient heating boiler (e.g. condensing boiler)				
Renewable energy (e.g. to install solar panels, wind turbines)				

**FOR ITEMS SELECTED AS YES IN Q73**

**74. For which of the following has your household benefited from support from the government (for instance grants, preferential loans, energy audits)?**

**FILTER ITEMS SELECTED IN "YES" IN Q73**

+ 99. None of the above **EXCLUSIVE**

**75. How important are the following factors in encouraging you to reduce your energy consumption? GRID, SINGLE PER ROW, MULTI PER COLUMN**

\* By energy conservation measures we mean for instance investments in energy efficient equipment (fridge), thermal insulation.

	Not at all important	Not important	Fairly important	Very Important
More practical information on energy conservation measures*				
Higher energy prices				
Belief that the environmental benefits are significant				
Greater availability of energy-efficient products				
Easier identification of energy efficiency labels				
Less expensive to invest in energy-efficient equipment				

**Part F - ORGANIC FOOD**

**INSERT ORGANIC FOOD PICTURE**

The following section will cover organic food consumption.

By organic we mean a production process where, depending on the standard, fewer chemicals (i.e. pesticides, fertilizers, drugs, additives), if any, are used.

-----

**76. Do you have primary (or shared) responsibility for food shopping in the household?**

1. Yes
2. No

**77. Please estimate your household's average weekly expenditures on food for the following items: **INSERT OPEN END BOX NEXT TO EACH ITEM (OPEN END ANSWER AND DON'T KNOW TICK BOX ARE MUTUALLY EXCLUSIVE)****

*Please do not include expenditures in restaurants or canteens*

	<b>Amount in \$ per week</b> <i>Please provide your answer to the nearest dollar</i> <b>OPEN END BOX</b>	<b>Don't know</b> <b>TICK EXCLUSIVE</b> <b>BOX</b>	<b>Not applicable/ product not consumed in the household</b> <b>TICK EXCLUSIVE</b> <b>BOX</b>
1. Fresh fruits and vegetables			
2. Milk and other dairy products			
3. Eggs			
4. Meat and poultry			
5. Bread, pasta, rice and cereal			

**ASK Q78 FOR EACH OF THE ITEMS IN Q77 DIFFERENT FROM "NOT APPLICABLE/ PRODUCT NOT CONSUMED IN THE HOUSEHOLD"**

**78. Please estimate the percentage of expenditures of your household for the following items which are organic products:**

**GRID, SINGLE PER ROW, MULTI PER COLUMN**

*Please select one answer per row*

	0%	1%-5%	6% - 10%	11%-25%	26%-50%	51%-75%	76%-99%	100%	Consume organic products but % unknown	Don't know if consume organic products at all
1. Fresh fruits and vegetables										
2. Milk and other dairy products										
3. Eggs										
4. Meat and poultry										
5. Bread, pasta, rice and cereal										

**IF AT LEAST ONE ITEM SELECTED IN "CONSUME ORGANIC PRODUCTS BUT % UNKNOWN" => CONSIDER Q78 != 0% => ASK Q80, Q83b, Q83 WITH OPTION "What would encourage you to consume more organic products?" AND ASK Q81 WITH OPTION "Would you continue to consume (or buy) organic food if it was found that"**

**IF ALL ITEMS SELECTED IN "DON'T KNOW IF CONSUME ORGANIC PRODUCT AT ALL" => CONSIDER Q78 = 0% => SKIP Q80, ASK Q83b, Q83 WITH OPTION "What would encourage you to start consuming organic products?" AND ASK Q81 WITH OPTION "Would you start to consume (or buy) organic food if it was found that"**

**ASK Q80 ONLY IF AT LEAST 1 ITEM IN Q78 IS DIFFERENT FROM 0%**

**80. Please rank the following factors in terms of the importance of their effect on your motivation to consume (or buy) organic food? DYNAMIC RANK, RANDOMISE ITEMS**

*1 stands for the most important and 5 for the least important*

1. Respect animal welfare
2. Better for health
3. Better taste
4. Support small and local farmers
5. Preserve the environment

**ASK Q83b FOR EACH OF THE ITEMS LISTED IN Q77 EXCEPT FOR BABY FOOD**

**83b. What is the maximum percentage price increase you are willing to pay for organic products of the following categories compared to conventional substitutes?**

	0%	1-5%	6-15%	16-30%	31-50%	> 50%	Don't know (code 97)
Fresh fruits and vegetables							
Milk and other dairy products							
Eggs							
Meat and poultry							
Bread, pasta, rice and cereal							

**83. IF ALL ITEMS IN Q78 = 0%, ASK**

**What would encourage you to start consuming organic food products?**

**IF AT LEAST ONE ITEM IN Q78 !=0%, ASK**

**What would encourage you to consume more organic food products?**

**GRID, SINGLE PER ROW, MULTI PER COLUMN**

*Please select one answer per row*

	Not at all important	Not important	Fairly important	Very Important
Better availability of organic products				
Lower price of organic products				
Better appearance of the food				
More trust in health benefits of organic products				
More trust in environmental benefits of organic products				
More trust in certification and labelling of organic products				

99. None of the above

**Q83a DELETED**

**81. IF AT LEAST 1 ITEM IN Q78 IS DIFFERENT FROM 0%, ASK****Would you continue to consume (or buy) organic food if it was found that:****IF ALL ITEMS IN Q78 = 0%, ASK****Would you start to consume (or buy) organic food if it was found that:***Please give one answer per row*

	Yes	No	Don't know
Organic food is better for the environment, but no indication that it is better for personal health.			
Organic food is better for personal health, but no indication that it is better for the environment.			

**84. In your opinion, how easy is it to identify organic food labels/logos when buying products?**

1. Very difficult
2. Quite difficult
3. Quite easy
4. Very easy
5. No opinion

**85. In your opinion, how understandable are organic food labels/logos?**

1. Very difficult to understand
2. Fairly difficult to understand
3. Fairly easy to understand
4. Very easy to understand
5. No opinion

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**Part G - WATER**

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**INSERT WATER PICTURE**

The following section will cover water consumption and use.

**87. Is your household charged for water consumption in your primary residence?**

- 1. Yes
- 2. No
- 3. Not sure

**IF Q87=2, ASK Q88**

**88. What would best describe your situation in your primary residence?**

- 1. Not connected to the mains water (using a well/bore, a rainwater tank)
- 2. Connected to the mains water but not charged for water consumption
- 97. Don't know

**IF Q87=1, ASK Q89**

**89. How is your household charged for water consumption?**

- 1. Charged according to how much water is used (e.g. via a water meter)
- 2. Flat fee (e.g. lump sum included in charges or rent)
- 97. Don't know

**ASK IF Q87 != 2**

**90. Approximately how much was the total annual cost for water consumption for your primary residence?**

*Please indicate if possible amount in \$ and corresponding annual consumption in m<sup>3</sup>*

**NOT OBLIGATORY**

Amount in \$ per year <i>Please provide answer to the nearest dollar</i> <b>OPEN END</b>	Volume of water consumed in m <sup>3</sup> <b>OPEN END</b>
<b>NOT OBLIGATORY</b>	<b>NOT OBLIGATORY</b>

97. Don't know **EXCLUSIVE**

**91. How often do you do the following in your daily life?***Please select one answer per row*

	Never	Occasionally	Often	Always	Not applicable
Turn off the water while brushing teeth					
Take showers instead of bath specifically to save water					
Plug the sink when washing the dishes					
Water your garden in the coolest part of the day to reduce evaporation and save water					
Collect rainwater (e.g. in water tanks) or recycle waste water					

**92. Has your household invested in the following appliances/devices in the past 10 years in your current primary residence?****If these measures would need to be carried out by the landlord, select "Not possible".**

	Yes	No	Already equipped	Not possible (code 96)
Water efficient washing machines				
Low volume or dual flush toilets				
Water flow restrictor taps / low flow shower head				
Water tank to collect rainwater				
Water purifier for drinking water				

**93. For which of the following has your household benefited from government support to make this investment (for instance grants and incentives)?***Please select all that apply***1. Filter items 1-4 selected in the "yes" column in Q92**

97. Don't know  
98. None of the above

**94. How important are the following factors in encouraging you to reduce your water consumption? RANDOMISE ITEMS**

	Not at all important	Not important	Fairly important	Very Important
Practical information on things you can do to save water at home				
Money savings				
Clear importance of the environmental benefits of saving water				
Availability of water-efficient products				
Confidence in water-efficiency labels				
Lower cost of water-efficient equipment				
Mandatory water restrictions (e.g. periodic bans on watering garden)				
None of the above (code 99)				



**95a. Do you drink tap water for your normal household consumption?**

1. Yes
2. No

**95. Are you satisfied with the quality of your tap water for drinking?**

1. Yes
2. No

**IF Q95=2, ASK Q96****96. In your tap water, what is of most concern to you? SINGLE**

1. Taste
2. Concern about health impacts
99. Neither of these

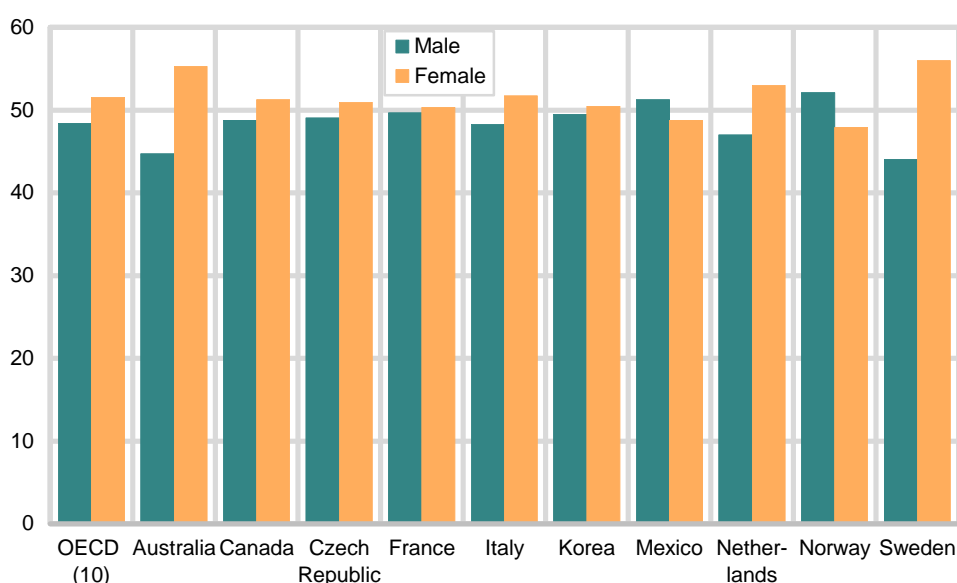
**IF Q95=2, ASK Q97****97. What is the maximum percentage increase you would be willing to pay above your actual water bill to improve the quality of your tap water, holding water consumption constant?**

1. Nothing
2. Less than 5%
3. Between 5% and 15%
4. Between 16% and 30%
5. More than 30%
97. Don't know

## Appendix B: Data to corroborate

How well the results describe the underlying structure of preferences and behaviour in the population depends on how representative the sample is with respect to variables of particular importance when it comes to gender differences in behaviour. Thus, we compare the distribution of gender and family size (measured by the number of adults in the household) in the sample and in the population. In addition, we compare employment status, household income and education level, as these are main variables with respect to environmental preferences, and the time and money budgets. Since we have 10 different countries, it is difficult to obtain good statistics describing the population for all variables in all countries. Thus, we focus the comparison on statistics from Norway as an indication.

**Figure B1. Gender distribution in the full sample and by country in the sample. N = 10 251**

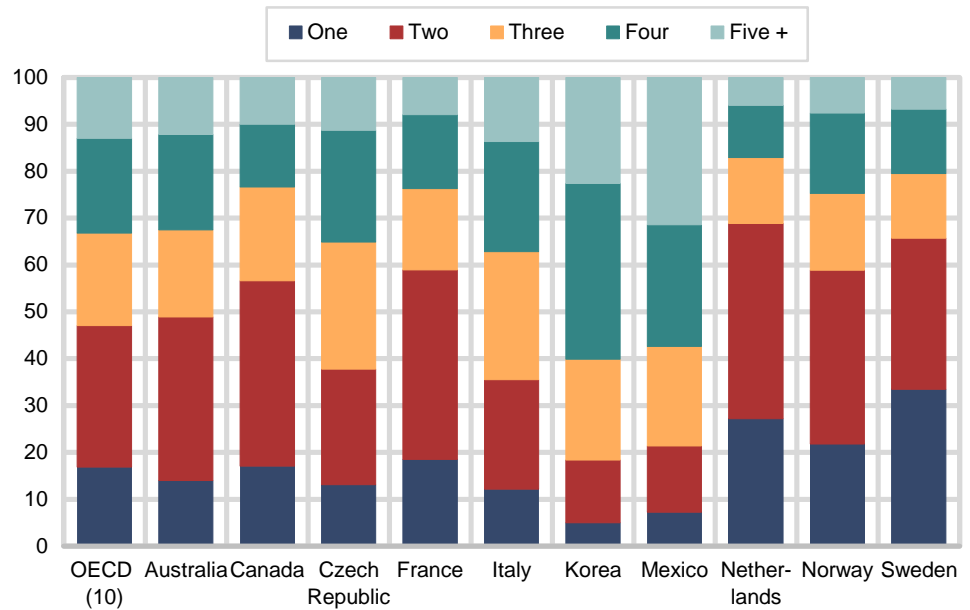


Source: OECD Survey on Household Environmental Behaviour 2008

We start by looking at the gender distribution in the sample (see Figure B1). We see from the figure that the distribution across genders is approximately 50/50 in most countries. A few countries, especially Sweden and Australia, have a larger share of women. In the full sample, marked OECD(10) in the figures, the gender distribution is 48/52 between males and females. The reason for this relatively smooth gender distribution is that gender was one of the variables the sample was stratified by. This has ensured an even gender distribution in most countries.

In our analysis, we focus on the difference between respondents who do not have to consider other household members and those who do. In addition, many of the variables used in the analysis are the result of the aggregate behaviour of all household members. It is thus important to see if the distribution in the sample with respect to family size is representative of the population. Figure B2 illustrate the distribution of households according to family size by country in the sample. We see that the household size varies considerably between countries with much larger households in e.g. Korea and Mexico than in e.g. Sweden and the Netherlands. This may be a result of differences in family structure across countries or because the sample is not representative with respect to household size. If we compare two countries in the sample which should be relatively similar, namely Norway and Sweden, we find that they differ quite much with respect to household size. This is an indication that some of these differences may be due to sampling problems.

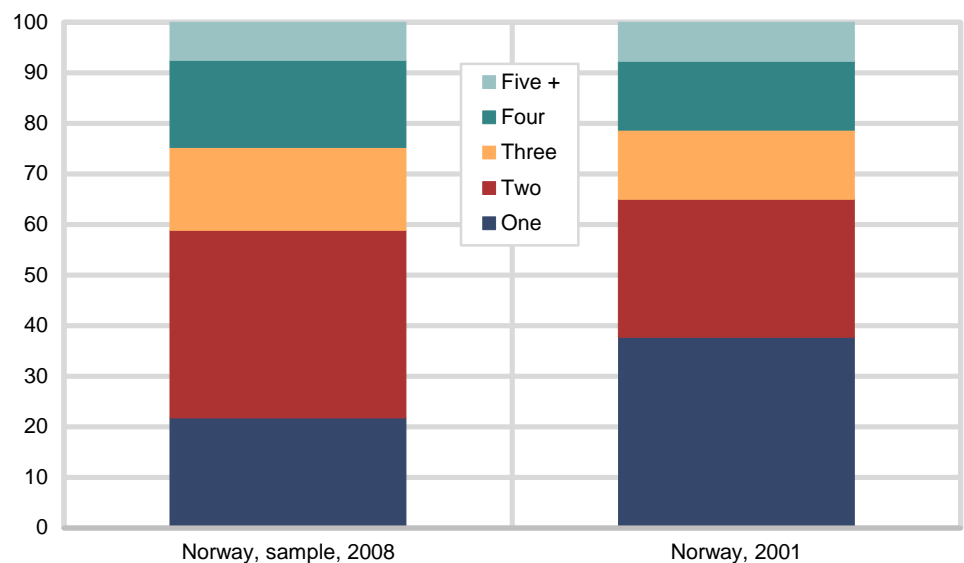
**Figure B2. Household size in the full sample and by country in the sample. N = 10 251**



Source: OECD Survey on Household Environmental Behaviour 2008

To test whether the Norwegian sub-sample is representative of the Norwegian population, Figure B3 compares the household size in the Norwegian sub-sample with the Norwegian population as given by the Norwegian Population and Housing Census 2001. We see that despite that Norway has one of the largest shares of one-person families in the sample, there are far too few one-person households in the sample compared to the Norwegian population. We cannot make any clear conclusions with respect to the other sub-samples, but it appears that the share of small households is too small. This is particularly problematic in our analysis, as the sample is no longer representative with respect to the share of respondents who need to take into consideration the preferences of other household member when making a decision. We thus cannot automatically conclude that the gender differences we find in the sample are of the same magnitude as in the population unless we find a way to correct this sample bias.

**Figure B3. Household size in Norway, 2001, and in the Norwegian sample, 2008**

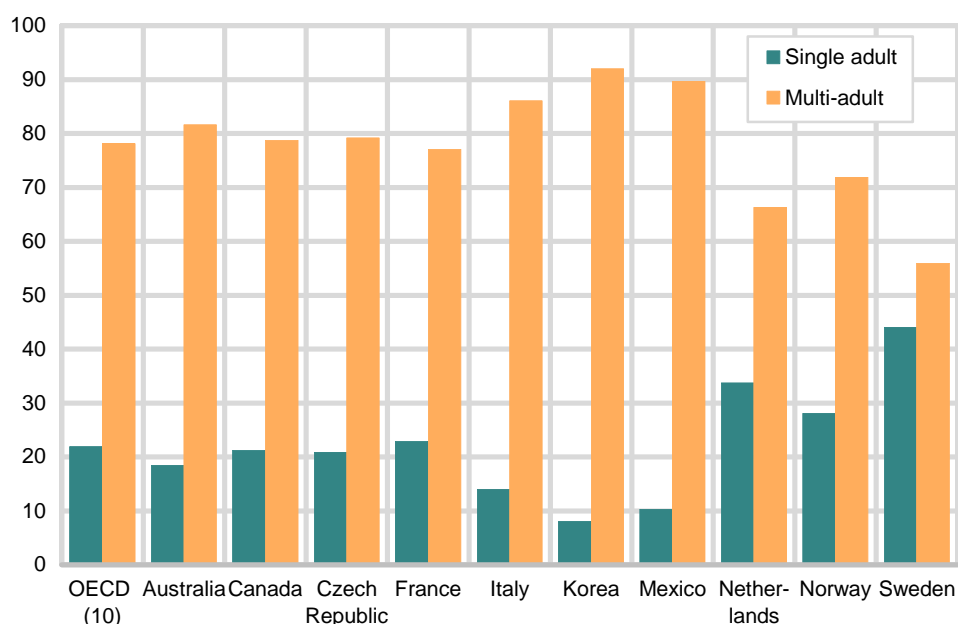


Source: Survey on Household Environmental Behaviour 2008 and Statistics Norway, Population and Housing Census 2001

In the analysis, we assume that it is the adults who make the decisions. Thus, it is important to check the distribution of single- and multi-adult households. Figure

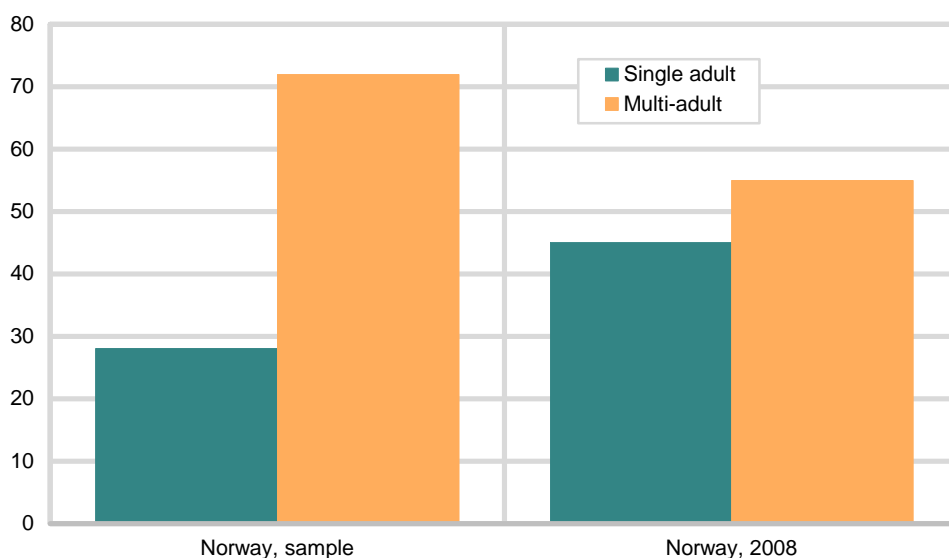
B4 show that most countries have a much larger share of multi-adult households than of single-adult households in the sample. This is particularly true for Korea, Mexico and Italy. The Swedish sub-sample has the largest share of single-adult households in the sample, followed by Norway and the Netherlands.

**Figure B4. Share of single- and multi-adult households in the full sample and divided by country. N = 10 251**



Source: OECD Survey on Household Environmental Behaviour 2008

**Figure B5. Share of single- and multi-adult households in the Norwegian sample and in Norway population, 2008**

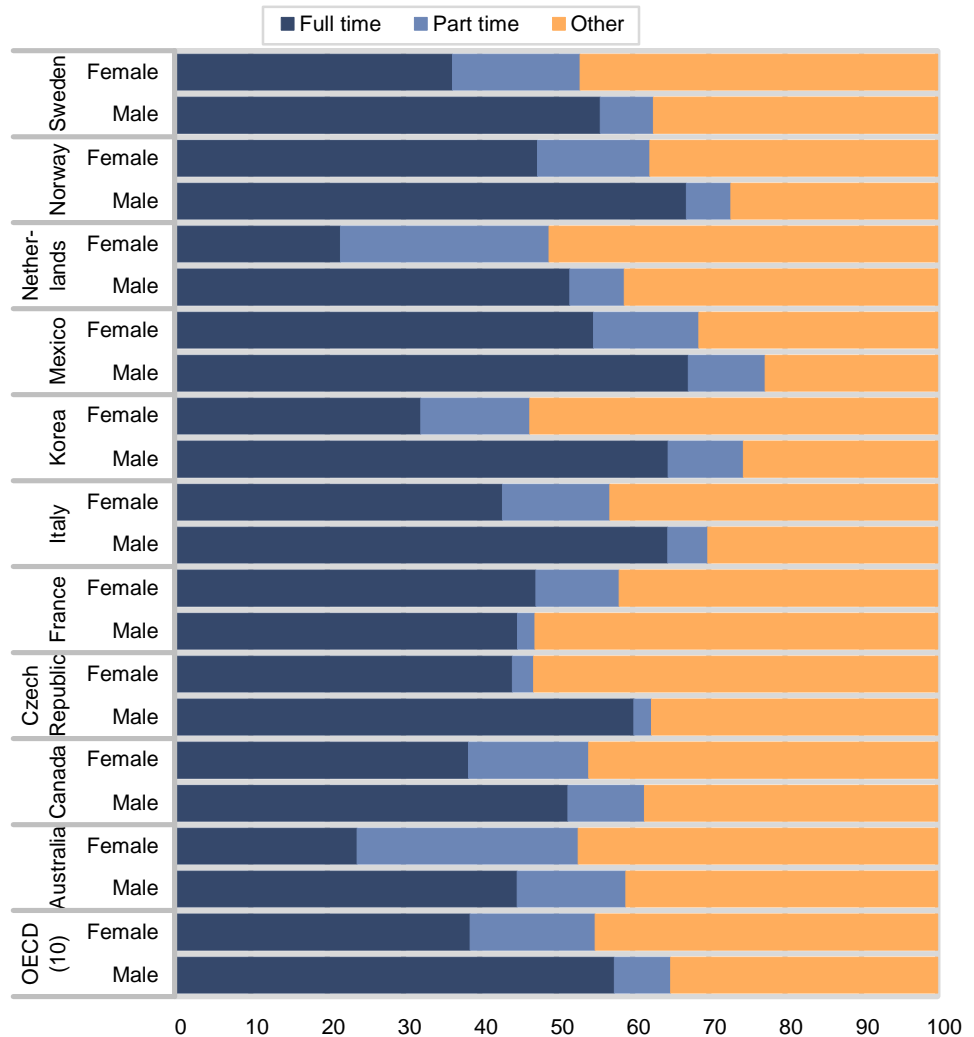


Source: OECD Survey on Household Environmental Behaviour 2008 and Statistics Norway 2008

Figure B5 shows that the share of households in Norway with more than one adult is much larger in the sample than in the Norwegian population. This means that single-adult households are much underrepresented in the Norwegian sub-sample. We also see that the distribution in the Swedish sub-sample more closely resembles the Norwegian population, which is an indication that this sub-sample has a better distribution with respect to single-adult households. Again, we cannot make any clear conclusions with respect to the other sub-samples, but it appears that the share of single-adult households is too small in most countries.

From previous literature, we have reason to believe that there may be gender differences in the time and money budgets. Thus, we check the representativity of the sample with respect to employment status and income in addition to education level, which is important in determining both attitudes and the type of work available.

**Figure B6. Share of males and females with full and part time job in the sample. N=10 251**



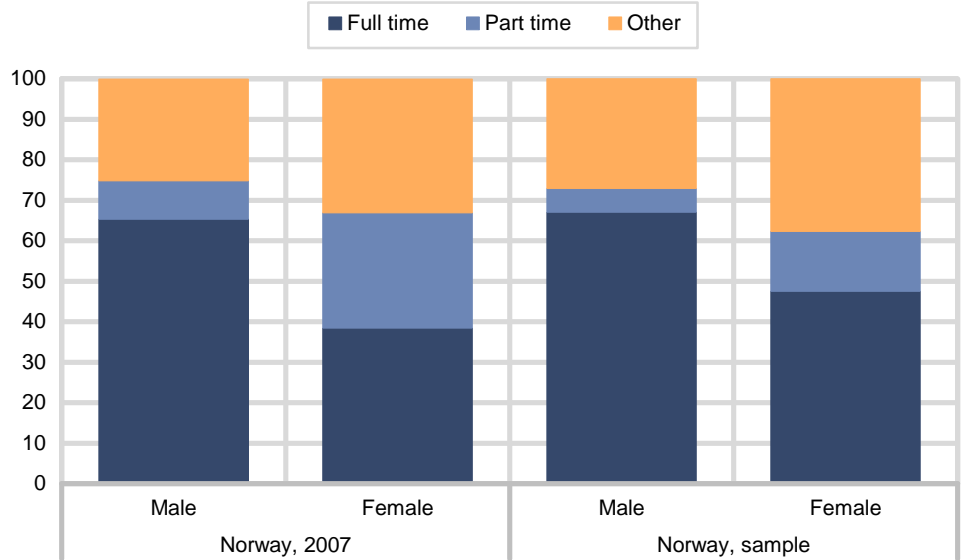
Source: OECD Survey on Household Environmental Behaviour 2008

Figure B6 show the share of males and females with full and part time jobs in the sample by country. The share of the sample who is employed full time varies considerably across gender and countries, but there are some trends. Men have higher labour force participation than women in all countries except France. We also see that there are large differences between genders and countries in the use of part time positions. In Mexico and Norway more than 60 percent of both males and females possess a full or part time job. If we compare Norway and Sweden, we notice that the work force participation is much higher in the Norwegian sample for both genders. This is a bit unexpected because we have reason to believe that Norway and Sweden are quite similar. This is a result of a higher share of full-time workers in the Norwegian sub-sample. This is an indication that the sample may not be representative with respect to work force participation.

This impression is enforced when we compare the share of males and females with full and part time jobs in the Norwegian sample with the official statistics for the population (see Figure B7). We see that the participation in the work force is quite similar in the Norwegian sample as compared to the population, but the number of full time workers is too high, especially for females. Based on this, we would

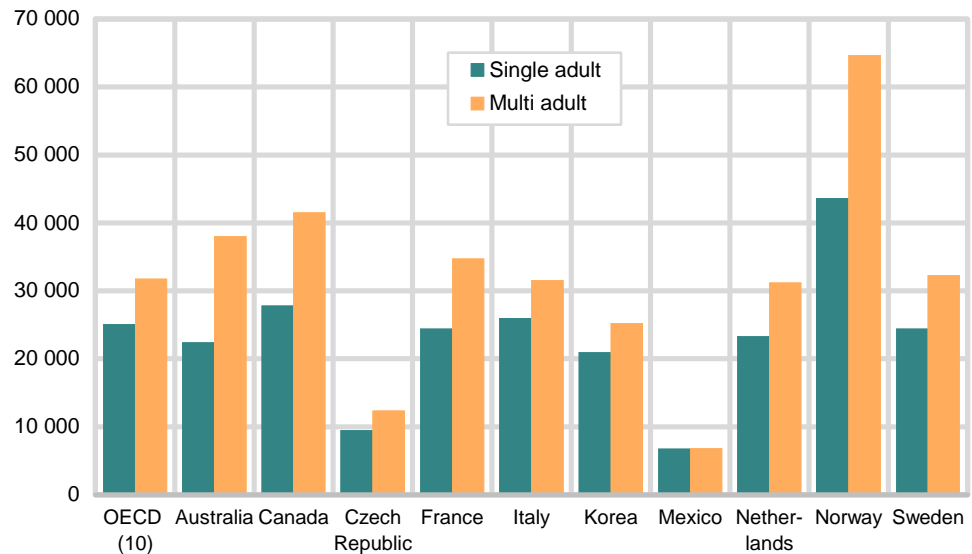
expect the income level in the Norwegian sub-sample to be higher than in the population (discussed in Figure B8 and B9). It is, however, possible that some respondents working long part-time (90 - 95 %) will define themselves as full-time workers. If this is the case, the difference between the sample and the population diminishes.

**Figure B7. Share of males and females with full and part time jobs in the Norwegian sample and in Norway, 2007**



Source: OECD Survey on Household Environmental Behaviour 2008 and Statistics Norway 2007

**Figure B8. Mean gross household income after taxes in single- and multi-adult households in the sample. Euro**



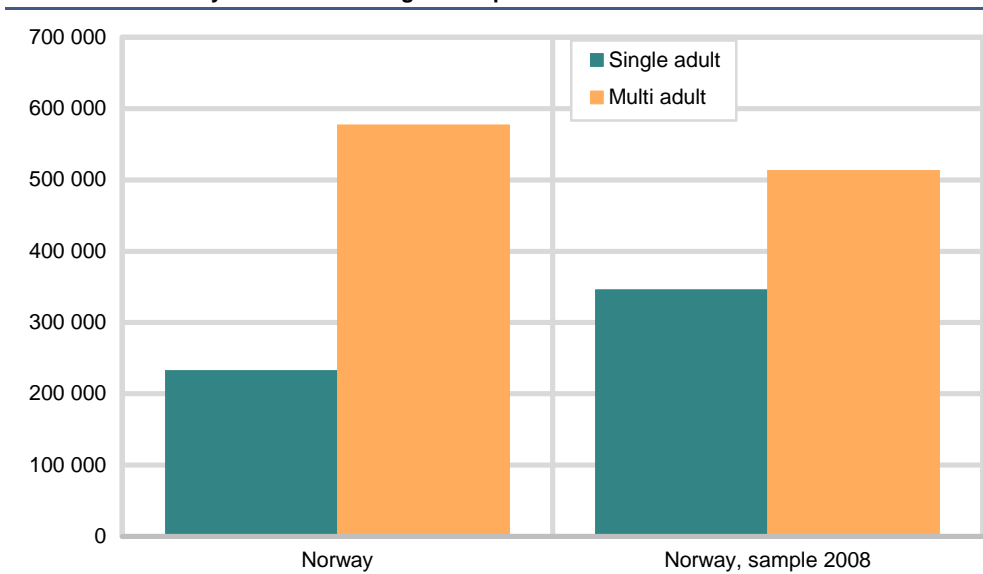
Source: OECD Survey on Household Environmental Behaviour 2008 and Statistics Norway 2007

Figure B8 shows the mean gross household income after taxes in single- and multi-adult households in the sample by country. In the questionnaire, the households placed themselves in one of 12 income categories. The category for the highest incomes was an open category. Thus, we do not know the exact mean household income. Figure B8 can therefore only be used as an indication of the mean household income in each country in the sample divided between single- and multi-adult households. Figure B8 shows that there are large differences in the mean income between countries, and that the difference between single- and multi-adult households is very modest for most countries. This difference is approximately zero in Mexico. The difference in income across countries may be due to real income differences in the population, the use of exchange rates that do not reflect

purchasing power differences across countries, sampling difficulties or to misinterpretations of the questionnaire. For instance, the fact that household income does not differ between single- and multi-adult households in Mexico is a clear indication of problems interpreting the responses to the income question in the questionnaire for this sub-sample. The difference between the household incomes of single- and multi-adult households also seems on the low side for the Czech Republic, Korea, the Netherlands and Sweden, but we are not able to test if this is actually the case. We see a large difference in income levels between Sweden and Norway, which we did not expect to see. Indeed, Norway has by far the largest income level in the 10 sub-samples.

Since we have too few single adult households in the Norwegian sub-sample, we would expect to find that the reported mean household income is higher than in the population. This is indeed what we find. The Norwegian mean income in the full sample is €58 627 (NOK 465 617). The mean income for all household types in the Norwegian population is €52 604 (NOK 417 780 ). Even if the mean household income is higher in the Norwegian sub-sample as compared to the Norwegian population, the household income in the Norwegian population is still much higher than the mean household income in the Canadian sub-sample, which has the second highest income level in the sample with a mean at €38 548. This, together with the fact that the difference between multi- and single-adult households is relatively small for many countries, is a clear indication that many respondents have interpreted the question as personal and not household income.

**Figure B9. Mean gross household income after taxes in single and multi adult households in Norway and in the Norwegian sample. NOK**



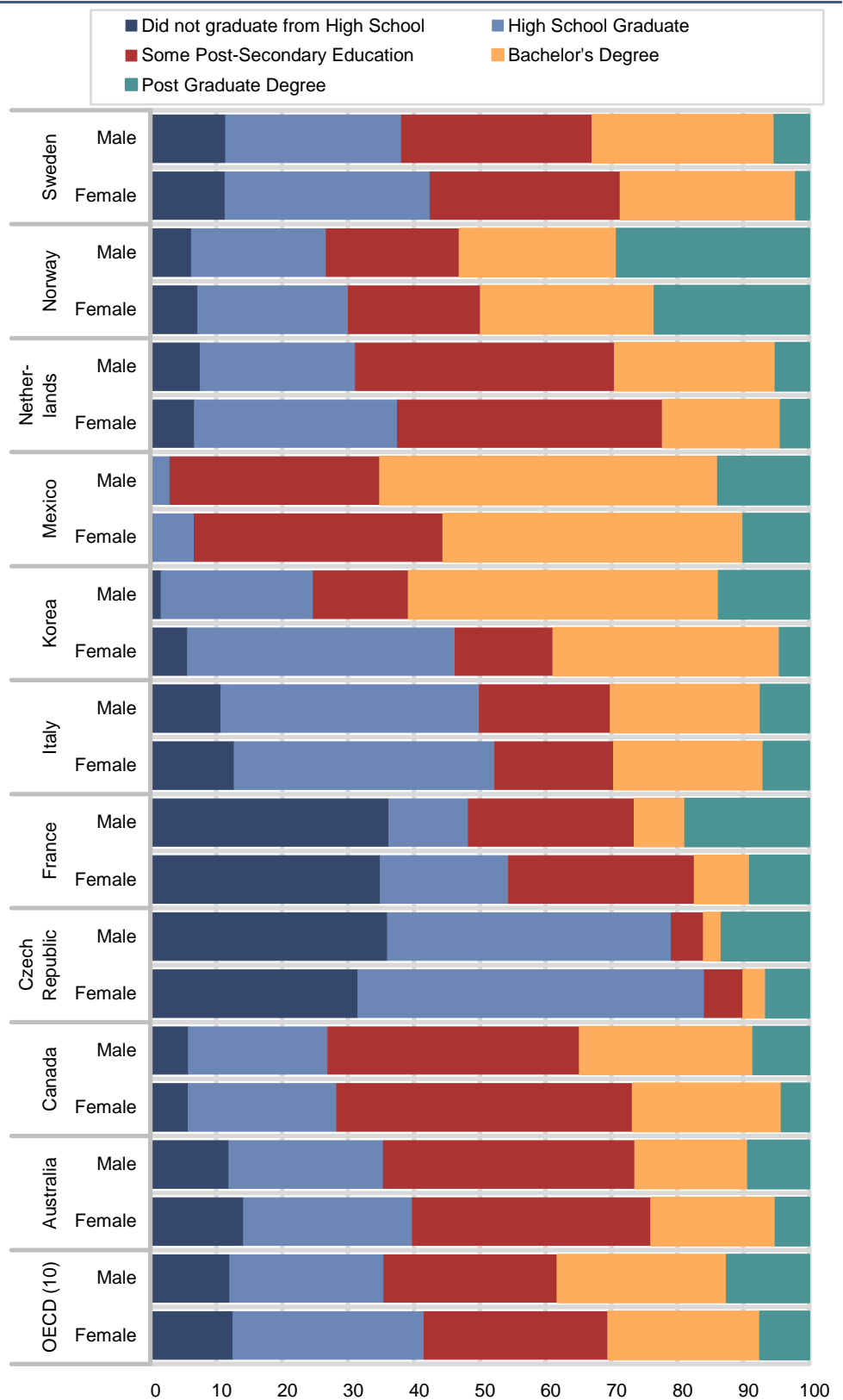
Source: OECD Survey on Household Environmental Behaviour 2008 and Statistics Norway 2006

To see if the high income in the Norwegian sub-sample is due to too many large households in the sample, Figure B9 compare the mean income in single- and multi-adult households in the Norwegian sub-sample and in the Norwegian population.<sup>3</sup> We see that the main difference in income between the Norwegian sub-sample and the population does not seem to stem from the lack of single adult households in the sample. The figure shows that the mean income in the single adult households is much higher in the sample than in the Norwegian population while the mean income in the multi adult households is higher in the population. One possible explanation for the last finding is that some Norwegian respondents have interpreted the question as personal and not household income. An explanation for the high mean income in single-adult households in the sample may

<sup>3</sup> The income labelled Norway in the figure is based on the 2006-income in the Norwegian population with a 10 percent growth added to it, which was the average growth in income from 2006 to 2007.

be that the respondents in this group work more full-time than what we see in the population (see the discussion of Figure B7). Another explanation may be that the sample is more educated than the population, and thus earn more.

**Figure B10. Education level in the sample by country and gender. N =10 107**

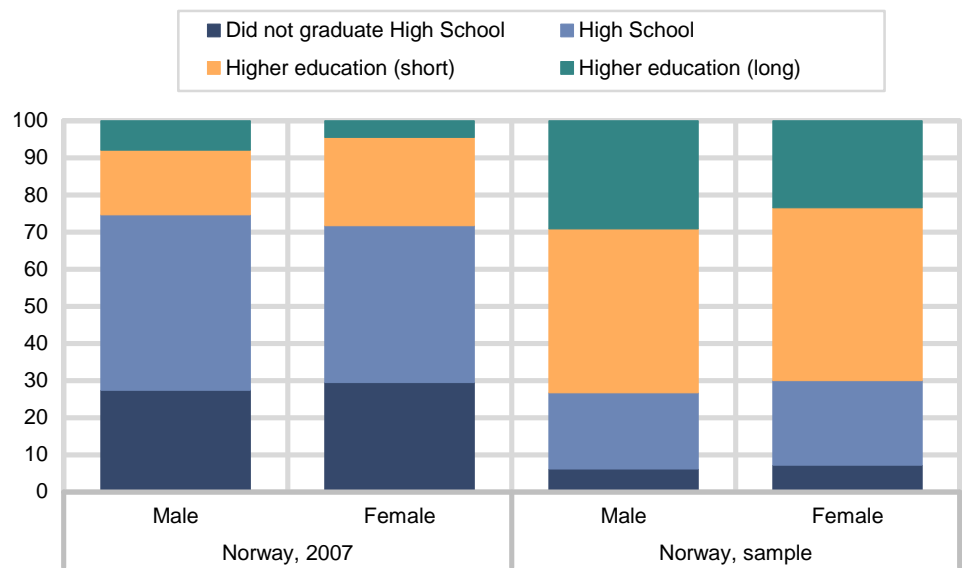


Source; OECD Survey on Household Environmental Behaviour 2008



Since the survey was web-based, we have reasons to suspect that we have too many respondents with higher education in the sample. We thus want to see if the sample is representative with respect to education level. Figure B10 illustrates the level of education in the sample by country and gender.<sup>4</sup> The figure shows that the education level varies much more between countries than it does between genders, but males have a longer education than females in all countries (this is particularly true in Korea). We also see that the countries with the highest education level are Mexico and Korea. France and the Czech Republic are the sub-samples with the lowest education level. There is reason to believe that this does not reflect real differences in education level across countries, and is a clear indication of sampling problems in many countries. The high education level in Mexico and Korea is probably because this was a web-based questionnaire, which demands access to a computer and a network.

**Figure B11. Education level in Norway and in the Norwegian sample**



Source: OECD Survey on Household Environmental Behaviour 2008 and Statistics Norway 2007

To see if the high income in the Norwegian sub-sample may be due to a too high education level, Figure B11 shows the education level in the Norwegian population compared to in the Norwegian sub-sample by gender. The classification used for different education levels in the questionnaire is not directly comparable to the Norwegian statistics in that area, but by combining two middle categories in the questionnaire (“Some Post-Secondary Education” and “Bachelor’s Degree”) into the category “Higher education (short)” we get an illustration of the education level. We see from the figure that there are very small gender differences in both the Norwegian population and sub-sample, although males have a tendency to have a longer education. The most striking difference in the figure is that the education level in the Norwegian sub-sample is much higher than what we see in the Norwegian population. There are too few in the two lowest education categories, and too many in the two highest categories for both genders. This means that even if Norway is a highly educated country, the sampling procedure used have favoured respondents with high education.

<sup>4</sup> The education level is mainly equal for respondents living in single and multi adult households in most countries represented in the sample. We thus focus on the gender issue in this comparison.

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