

# Energy-related practices, representations and environmental knowledge: A sociological study

Lorise Moreau and Anne-Laure Wibrin  
Institute of Demography  
University of Louvain (UCL)  
Place Montesquieu, 1 bte 17  
1348 Louvain-la-Neuve  
Belgium  
moreau@demo.ucl.ac.be / wibrin@demo.ucl.ac.be

## Keywords

energy-related practices, knowledge, representations, environment, socio-demographic characteristics, households, social determinants, values, behaviours, opinions

## Abstract

In this paper we present results from a study that combines a qualitative and a quantitative approach. In order to understand the role of technical or environmental knowledge and representations on energy-related practices, we conducted a survey based on a representative sample of 1 000 Belgian households as well as seven in-depth interviews.

With data from the survey we explain energy-related practices (use of electrical appliances, standby consumption, and so on) by social determinants. Moreover, we study the relationships between these determinants, i.e. between: knowledge (about global warming, renewable energy, etc.), environmental representations and demographic characteristics (age and gender).

Data from in-depth interviews were used to study how and why people behave the way they do. We try to establish if there are links between behaviours, opinions and social determinants.

As for them, the in-depth interviews concern: practices (how people heat and light up their homes, how they do the washing and so on), to what these practices are related (habits, education, social representations) and the relationships between practices and values.

The data from both the survey and the interviews shows that a good environmental knowledge is not necessarily associated with a strong environmental concern nor is it consistent with environmentally friendly practices. This finding questions theories that purport actor rationality.

## Introduction

This paper presents a study that combines a qualitative with a quantitative approach. We would like to understand the role of environmental knowledge and representations in energy-related practices. The study is based on a survey using a representative sample of 1 000 Belgian households as well as seven in-depth interviews.

The research presented in this paper is part of a larger project that tries to establish the links between technical factors and social determinants that can explain aspects of energy consumption of Belgian households<sup>1</sup>.

The first stage of data collection is nearly over and we give in this paper a first description of the results which could be useful for policy makers, as this paper gives an overview of some particular practices and relates them with socio-demographic characteristics, opinions and knowledge. It is evident that in order to modify certain practices, it is necessary for these policy makers to identify target-groups (and this analysis is a first step towards this target-groups identification) as well as the levers enabling these changes. However, we must remind here that there are multiple logics of actors,

---

1. SEREC: Socio-technical and Economics factors influencing Residential Energy Consumption. Institut de démographie – UCL, Vlaamse Instelling voor Technologisch Onderzoek, Danish Building and Urban Research. Project financed by the SPP Science Policy Office, Belgium.

and that a policy or a programme, even taking into account the target-population, could not foresee and fundamentally modify the acts of a whole population. We want to underline that the purpose of this paper is not to develop a theoretical analysis.

We use the collected data to explain the energy-related practices (use of electrical appliances, standby consumption...) by social determinants. Moreover, we study the relationships between these determinants themselves, i.e. between knowledge, environmental representations and sociological characteristics (habits, education, social representations, values, fashion...). The concept of representation can be defined by sociologists as "les images de soi, des autres, du monde que chacun s'est forgées. En même temps, ces images constituent la « carte » que chacun se construit pour se repérer et agir sur le « territoire » social"<sup>2</sup> (Morin, 1996).

First, we will briefly describe the methods of data collection and then, we will mention some practices related to energy consumption. We will approach in particular the practices concerning heating, lighting, cooking, washing and standby. Then we will try to establish the relationship between these practices and some explanatory factors (habits, education, respect of the environment, ecological value, motivations, knowledge...). We will also attempt to observe the reasons of a change, or lack thereof, in consumption habits and what people would be willing to undertake to make energy savings.

We want to stress upon the fact that all the results presented in this text come from a first analysis of our own data collection. The novelty and interest of this research consists in offering a study of energy consumption in Belgium. Energy policies being regionalised, most researches on this topic only bear on a regional level, which up to now gives an incomplete vision of the situation in Belgium.

## Data collection methods

### QUANTITATIVE SURVEY

The quantitative data was collected through a phone survey<sup>3</sup> conducted in September 2004 drawing upon a representative sample of 1 000 Belgian households. The randomised sample is stratified by region (N=200 in the area of Brussels, N=400 in Flanders and N=400 in Wallonia). It has then been weighted according to the four following variables: region, type of housing, quartile of income and number of adults in the household.

By the means of a questionnaire, we approached various topics a few of which we will study here: practices related to electricity use in general (lighting up, washing, standby consumption, and so on) and heating (while away, at night, airing), knowledge on global warming as well as "technical" knowledge (energy audits, renewable energy, energy efficient light bulbs ...) and motivations to reduce energy con-

sumption, environmental representations related to the environment. A part of the questions referred to the household and another part to the individuals, this explains why the weight is different according to the level of inference. In this study, we remain at the individual level.

The collected data enables us not only to quantify the practices, the knowledge and the representations related to the environment, but also to describe statistically significant relations between these different aspects. In order to do that we performed statistical analysis using cross-tabulations and chi-square tests.

### IN-DEPTH INTERVIEWS

In addition we pursue a qualitative approach. It allows to understand underlying issues that cannot be gauged from survey data. The sociologist is listening to the interviewee who can take the time to explain what he/she does and why he/she does it, why it's important for him/her.

The interviews enable us to take mainly interest in people's discourse, their representations, and lesser to their practices. If an interviewee tells us for instance that he puts the light off every time he leaves a room, what is important for us is not to check if in practice he really does it, but rather to know that for him it is important to switch off the light, and that it is therefore probably a way to make energy savings.

We are inspired by Kaufmann's method describes in his book "L'entretien compréhensif" (1995). This author being interested in daily life (washing, cleaning, etc.), his approach can enlighten us on how to make people talk of their everyday life, the acts they do unconsciously and repetitively.

The question list is focused on everyday life practices such as heating, cooking, washing, lighting up. The questions are open-ended. For us, it was important to have a list in order to compare the interviews. But we wanted to keep that list flexible, so the respondent could have the feeling that he/she could answer freely.

With the intention of not giving more importance to energy consumption than it has for the respondents, we presented our research as a research about comfort. Furthermore, to begin with this theme allowed us to easily explain that there are no good or bad answers: everybody has his/her own definition of comfort. Therefore everyone was able to teach us something. It is interesting to note that the interviewed persons themselves immediately made a link between comfort and energy. It can be at a basic level (to be connected to electricity or to running water) or at a little more comfortable level (to have the heating).

When the persons live in a couple, we tried to meet both partners together. Thus, the speech and the questions of one partner enrich the speech and the questions of the other. Everyone takes time to explain to the other why he/she acts what he/she does. We gave the choice to the persons to receive us together or not. This is an important choice, especially when there are some tensions in the couple. The in-

2. "images of oneself, of others, of the world that each one has built up. At the same time these images constitute the "map" that each one draws up to find one's way and act on the social "territory". (translation of the authors)

3. There are several biases linked to this type of survey: in certain groups having no fixed telephone line is widespread (youths, isolated persons), in other groups (financially well off), not to appear in the phone book is also frequent, older people sometimes answer less willingly to this kind of survey, people who are often away from home are hard to get in touch with, and so on...

interviews took place at the home of the interviewees. They lasted an average of one hour. All interviews were recorded and transcribed. To ensure the anonymity of the interviewees, fictitious first names have been given to all of them.

It is important to outline that our research is still in progress. At this stage, we have seven in-depth interviews. Let us remember that this qualitative method doesn't pretend to any representativity. To this day, we don't have any saturation. These seven interviews can absolutely not be generalised to represent the habits and opinions of the whole Belgian population.

We intend to conduct around twenty interviews in the frame of this study. The interviewees are chosen in a randomised manner. We have tried to have certain diversity, particularly for age and social groups.

**COMBINING QUANTITATIVE AND QUALITATIVE APPROACHES**

There are many ways to combine a quantitative and a qualitative approach. The qualitative approach can be used before to the quantitative approach (sequential QUAL-QUANT analysis) or inversely (sequential QUAN-QUANT analysis). Both approaches can also be not place one after the other, but be simultaneous (concurrent mixed analysis) (Tashakkori, A. and C. Teddlie, 1998).

In this research, we have chosen to use the general explanatory interviews first to formulate the questions of the quantitative questionnaire and then make a concurrent analysis of different data, method known as parallel mixed analysis or triangulation of data sources (Tashakkori, A. and C. Teddlie, 1998). This method enables us to quantify and find statistically valid relations between variables and also enables us to enter more in-depth in the complexity of the actors' logics.

We treat the data by theme, even if the questions are not directly comparable to bring out the complementarity of the two approaches as well as the differences or similarities of the findings.

**Results**

**THE DIVERSITY OF PRACTICES WITH A LINK TO ENERGY CONSUMPTION AND THE EXPLANATORY FACTORS**

**The practices: how do people light up, heat up, do the washing ...**

In this part, we try to understand what sense is hidden behind the practices with a link to energy consumption. Why do people act as they do? What are their selection criteria when they choose their heating system? Efficiency, aesthetics, respect of the environment, profitability, or something else? What about the lighting, cooking, the laundry or bathing...?

*Heating*

As can be seen in Table 1, if the reduction of the temperature while they are away (82,7% of the respondents) or at night (90,2% of the respondents) seems generalized among people who have the possibility of controlling the tempera-

**Table 1. Reduction of temperature in some situations.**

	Reduction of the temperature during absences of several hours in the winter time	Reduction of the temperature during the night in the winter time	Turning off of the heating while airing in the winter time
Yes	82,7%	90,2%	59,7%
No	17,0%	9,8%	39,5%
Doesn't know	0,3%	-	0,8%
Total	100,0%	100,0%	100,0%

Source: SEREC, September 2004.

ture in their dwellings, turning off the heating while airing is much less frequent (59,7% of the respondents).

Moreover, we observed statistically significant differences between sexes regarding the reduction of the temperature during absences and during the night.

Indeed, women declared more often than men that they reduce the temperature of their homes: 85,2% of the women assert to do so during absences of several hours in the winter time (against 79,8% of men) and 92,6% assert to do it during the night (against 87,4% of men).

Concerning the age groups, there is no clear gradation between generations. However, we observed that the 30-39-year age group declare more than the others that they lower the temperature during their absences (94,2%), while the 70-and-more-year-old persons are only 62,1% to do so. Then the less-than-30-year-old persons are those who lower the less their heating (77,8%). This order remains almost the same regarding the reduction of the temperature at night in the winter time or the turning off of the heating while airing the rooms. Therefore it seems that the men, the oldest and the youngest respondents are those who pay the least attention to the savings in heating.

The practices are really different in each household. Some prefer to heat as little as possible, the busier rooms, for example, and they switch off the heating as soon as they leave or even a little sooner. Others heat everywhere, all the time. All the interviewed persons asserted that they prefer to heat "not too much". But the average temperature varies from a dwelling to another.

"Not too much" is thus very subjective and can mean different temperatures. What is common is the feeling that it is not good to stay in an overheated house. This feeling is well formulated by Daniel who cannot regulate his flat temperature and who suffers from the heat: *I had to get used to a high temperature I don't like and which I find unhealthy. For instance, at night 18° is too much. If I am cold, I just have to cover myself. And if it's 19°, 20°, it's too much, it's unhealthy. It's too dry, it's really unhealthy. It's unhealthy. It's an unhealthy lifestyle. And everyone, whatever the temperature seems to find that: Sometimes you can wear an extra jumper! Rather than going around in a bikini, eh! (Louis).*

All the interviewees mentioned the convivial and aesthetically side of an open fire. Some have already bought one, others envisaged of doing so. Louis, who has one, says: *We have an open fire too... But of course we only use it for displaying... Well, not display, but for the pleasure of looking at the flames. But it's not efficient at all, eh...*

For the couples, the temperature control has to conciliate the expectancies of both partners. The differences are known, they have already been discussed. The respondents can thus speak very clearly about it. Catherine and Eric, for instance, have divergent opinions about the heating and knew it:

Catherine: *There, we are totally different!*

Eric: *Divergent opinion! Well for me, I'm used to being often outside for my job, so inside I'm hot! But why is the heating still working on?*

Catherine: *When I came home, it was 15°. Sorry, but it was a bit...It was not very cold but...I had the impression it was damp. So then what did I do? I put on the heating. And in an hour or two, I'll cut it off...But the house is slightly warmed up and it feels nice.*

It is more often the woman who has the feeling of being cold than the man. For Louis, for example: *It's rather between the parents that it has to be discussed whether the temperature is nice! But of course one sees that it's logical...The wife who remains at home, who moves less...eh, hum, who sits down for a while... who is cold more quickly than someone coming in from outdoors and for whom it is automatically already hotter, eh!! Or someone moving about or who only has a few hours at home, he. So I imagine that has to be considered, sure...*

The solar panels or other heating systems are envisaged by the more "environmentally concerned", but despite a subsidy the investment remains too heavy for them.

#### Lighting

Hardly a quarter of the respondents declared switching off the light each time they leave a room only for five minutes and 41,5% declared never doing it (Table 2). The difference between sexes is statistically significant: 46,7% of the women asserted to never switch off the light for five minutes against only 34,7% of the men.

The difference between the age groups is not significant from a statistical point of view, but we noticed that the oldest respondents have more blunt answers (51,1% of the 70-and-more-year-old persons answered "never" and 25,0% answered "always") that young people.

When we asked the interviewees what aspects of their energy consumption they care about, the first answer was generally about electric lighting, which often comes before heating. It seems likely that the persons have a wrong representation of their consumption. The light is visible, so it is probably over-represented in the proportions of domestic consumption.

Not only does the way of lighting change heavily from a respondent to another, but the importance given to the way

of lighting varies heavily as well. Some persons keep the original lighting and don't ask themselves any questions about modifying it. Others consider the house lighting as something fundamental, as the main factor of the house's atmosphere. According to the interviews already done, the lighting is visibly less important for the persons who watch television a lot and more important for the persons who have more intellectual professions and/or read a lot. It would be interesting to undertake more interviews to test if this result remains true on a larger scale. Charlie, for instance, lights his living room only with the light from the television: *Because I come in, I light TV. In fact the TV set lights up everything*, he says while Daniel prefers some luminous spots: *I read a lot on evenings. I like lamps with a lamp-shade and since I lived here, I have installed a complete system of economic bulbs, so that I have a system of several luminous spots, the contrary to my education where there was a single luminous point just enough to read for economical reasons. And today I use a system of economic bulbs; I light up two, three luminous spots. I therefore live with several lighted spots, plus the spot where I read or at the desk I work on.*

For those who switch off the light as soon as they leave a room, it seems absolutely logical to do so: *it is like that because it is of course like that!*, so logical that they couldn't explain it. It is a completely integrated gesture. Catherine explained it:

Catherine: *We light up where we are...*

Anne-Laure: *And it's...? To save money then ...? Or? Rather not to waste?*

Catherine: *It is because it is not necessary to light a room where there is nobody!*

The seven interviewed persons have already heard something about energy efficient light bulbs. They told us something about it without us having to ask them if they knew that it existed. Those who do not own any criticise their aesthetic. They find either that the bulb is not pretty or that the light is not pleasant. Let us note that it is not necessarily those who consider themselves as the most environmentally conscious who use energy efficient light bulbs.

#### Cooking

We do not have quantitative data regarding cooking, except for the possession or not of electrical appliances.

We don't want to spend a lot of time about the cooking practices because it is a quite large topic and it would be possible to do a research only about that. Let us only note that for what we are directly interested in, namely the energy consumption, only Louis makes a link between cooking and energy consumption. For the others, it doesn't seem to have any connection. It is not there that they can reduce their consumption. Louis, even if he knows that this system consumes more than another, decides to buy a plate ceramic stove for its aesthetic look. Consequently, because he chose something that consumes more, he particularly takes care to use it well, to switch it off before his cooking is entirely finished. He has thus a very rational use, even if it is not necessarily the most economical one. And it is maybe because he bought something that consumes more that he is going to consume less! *What we have is a ceramic stove. Aesthetically, it's really nice! (Laughs). I was talking about aesthetics earlier. It's truly excellent from that point of view. It probably consumes. But we really try to use it well... Therefore we don't give lessons, but we're certainly not an example to follow...But we're not either, hum, I*

**Table 2: Switch off the light when leaving a room for five minutes by gender**

	Men	Women	Together
Never	34,7%	46,7%	41,5%
Sometimes	22,1%	20,7%	21,2%
Often	16,2%	11,3%	13,5%
Always	26,9%	21,3%	23,8%
Total	100,0%	100,0%	100,0%

Source: SEREC, September 2004.

would say, obnubilated by the necessity of respecting everything and to consume the least possible, etc.... Try to find the happy medium... (...) I try to tell myself to use it very reasonably, not too long, not to leave it on, to cut it off a little sooner... And that ceramic stove has helped us with this kind of reflex. Somehow, we have the advertising talk of the salesmen of vitro-ceramic stoves which help us to respect environment a little, eh, compared to town gas, etc....(Laughs).(Louis)

All of our respondents own many electric appliances that are used at variable frequencies between the households. But never were the energy-related motivations evoked for the non- or under- utilisation.

*Washing*

Only 3,8% of the respondents do not have a washing machine and the great majority (66,5%) that has one declared it used several times a week.

We notice in the Table 3 that the frequency of use of the washing machine depends on the region. Let us specify that it is the only practice which varies significantly according to the region. That seems to be due to the differences in household size between the regions. Indeed, in the area of Brussels, where the answer "once a week" comes in second place after the answer "several times per week", the households are smaller than in Flanders or Wallonia.

In other analyses, we observed that if the practices do not vary significantly according to the region (except the frequency of use of the washing machine), the representations and the motivations depend strongly on this variable.

The practices and programs used can greatly vary from a respondent to another. Arthur and Alexandre, both young singles from Brussels, go to a Laundromat. One always does his washing on 30°, the other always on 60°. And they have the same arguments... to explain different practices. They do what they do because they do not want to rack their brains, to sort out. For Arthur: *They explain I had to put program 2 at 30°. And so I put program 2 at 30°. I don't rack my brain.* (Arthur). As to Alexandre: *I like what is rather easy. So I don't have to rack my brain. I take the 60° program. I mix everything. Colours, white...I put everything together.* (Alexandre). And when we asked him why at 60°, he answers, *because I am afraid that at 90° it will shrink. I don't know if, hum, if I am right to be afraid...* (Alexandre). He does not even consider the possibility of washing his clothes at less than 60°. This comparison between Alexandre and Arthur is all the more interesting because the one who does his washing at 60° is the one who considers himself as particularly environmentally

respectful. While the boy who does his washing at 30° pays attention only in a minor way.

So it appears that the actors do not always act in a "rational" way (in the sense of "efficient"). Alexandre does not rationally make his laundry, however, he has good reasons to do so: he is convinced that 60° is necessary to obtain clean dresses, as her mother told him that. For Boudon, the information of the individuals is always limited so they can not make a rational choice. For this author, it is more important to analyse the actor's intentions rather than to attribute him an unlikely perfect rationality. This does not mean that before any decision, the actor optimally adjust the means to his goals: simply, the actor generally has good reasons to act as he does (Boudon, 1986, 1997). Thus it is important to make the difference between the economic (efficient) rationality and the rationality in the sense "having good reasons".

*Standby mode*

Another practice strongly correlated with the consumption of electricity is the standby mode for certain electrical appliances such as the television, the video recorder, the computer, etc. During the pre-tests of the questionnaire, we realized that all the people, even young people accustomed to computers, did not inevitably know the concept of "standby mode". That does not mean that these people do not use the function "standby mode". This is why we asked to those who had a television if they turn it off only from the remote control "always, often, sometimes or never".

Only 0,7% of the respondents do not have a television. Among those who have at least one set, only 28,6% never leave it in stand-by mode and 36,6% always do so.

There are no statistically significant differences between men and women but there is one between age groups. If we add up the answers "always" and "often", the less-than-30-year old are those who put their television in standby mode most regularly (66,2%). Concerning the 45-49-years old, 45,9% declare to often or always do it. There is no gradation according to the age.

**Explanatory factors related to these practices of energy consumption: habits, education, and respect of the environment**

What is the main motivation to make energy savings? Some would answer the economic factor, others the ecological concerns, but there exist many other reasons that we tried to grasp. The following data is related to the energy consumption in general but the answers can vary according to the fields of energy consumption concerned.

**Table 3. Frequency of use of the washing machine by region and total.**

	Flanders	Wallonia	Brussels area	Total
Several times a day	4,4%	9,4%	0,0%	5,7%
Once a day	23,1%	17,7%	10,4%	20,4%
Several times a week	66,5%	59,8%	65,7%	64,2%
Once a week	4,8%	9,1%	19,4%	7,4%
Less than once a week	1,0%	3,1%	4,5%	2,0%
Doesn't know	0,2%	0,8%	0,0%	0,3%
Total	100,0%	100,0%	100,0%	100,0%

Source: SEREC, September 2004.

**Table 4. Principal motivation to make energy savings by age groups.**

	Less than 30 years	30-39 years	40-49 years	50-59 years	60-69 years	70 years and more	Total
1. To protect the environment	29,0%	29,0%	29,4%	28,3%	33,0%	23,6%	28,9%
2. To avoid wasting	13,0%	27,1%	28,1%	26,1%	17,5%	29,2%	25,0%
3. By sense of collective responsibility	15,9%	18,7%	18,9%	16,3%	19,4%	11,2%	17,3%
4. For economic reasons	15,9%	13,5%	12,7%	17,4%	15,5%	15,7%	14,9%
5. By education	13,0%	2,6%	6,1%	8,7%	12,6%	16,9%	8,6%
6. By interest for new technologies	13,0%	9,0%	3,9%	2,2%	1,9%	2,2%	4,8%
7. Has no motivation	0,0%	0,0%	0,9%	1,1%	0,0%	1,1%	0,6%
Total	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Note: The possible answers were not proposed in this order. There are listed here by beginning with the most frequent answer and then by descending order.

Source: SEREC, September 2004.

The most frequent answer is the ecological motivation (28,8% of the respondents), while the economic reasons come only in fourth position with 14,9% of the respondents. Between these two answers, we find “to avoid wasting” (25,0% of the respondents) and “by sense of collective responsibility” (17,3% of the respondents).

If the motivations are not statistically related to the gender, they are related to the age. It is in the 60-69-years old group that we find the greatest proportion of people who mention the ecological motivation (33,0%) as their principal motivation to make energy savings (Table 4). It is also in this same group that the sense of collective responsibility is the most mentioned (19,4%). The oldest people mention firstly “to avoid wasting” (29,2%) and in third position “by education” (16,9%). On the contrary, it is in the less-than-30-year old group that the interest for new technologies is most important (13,0%).

#### Habits

Many gestures are done by habit or routine. The people who act do not realise when they do it and they do not always explain why they do it, as the practices are so much established. It is something like “I’ve always acted like that, without thinking about it”. Perhaps there are other things that intervene and we realise finally we don’t know, finally it comes from somewhere from within ourselves... Well, we don’t, we don’t think about it! (Catherine)

Some gestures or some preoccupations can become a habit. Cédric, for instance, pays particular attention to his consumption and it is so deeply established that he does it naturally: *It’s no longer a worry. For water consumption that always comes up! I’d say we’re obsessed but it’s finally not even... It’s no longer a concern! Then it’s much nicer to have a shower!* (Cédric)

To change habits takes a lot of time. Anne comes from a family where they do not pay any attention to energy consumption. Her husband however gives it a lot attention for ecological reasons. Progressively Anne joins Cedric’s convictions and she finds that people have to care about environmental issues. Despite this conviction, it took her not a couple of weeks or months to change her habits, but... six years:

Anne: *In my place it’s different. Because I wasn’t brought up like Cédric. So, hum, my mother leaves the tap water running for hours to obtain hot water, etc... She leaves the door open with the heating to have warmth everywhere (...). So when we met, when we started living together, it was harder for me! I had to adapt myself. But now, hum... Now it is just different because... After years of common life, well, hum... we have learned the way it works... eh! !*

Cédric: *Isn’t it too hard for you? (Laughs) (...)*

Anne-Laure: *And in the end are you glad you have changed and...?*

Anne: *Oh yes! Because now when I go to my mother’s and that I see that she leaves the tap run for five minutes to have hot water, it irritates me, you see. Because in addition, afterwards she heats it in the microwave! So, hum ... It is a little shocking anyway (...). Yes, since we live together, so I would say since about 6 years now, we’ve been living together longer... Since 91. But I would say it’s now six years I think like that. I don’t know if you understand? It’s as if I had integrated it, hum...*

Let us insist about the long duration that is needed for a modification. While she was persuaded of the well-foundedness of the modification, Anne needed years to integrate it fully. So we can suppose that for someone who does not see any or not much interest, it takes even more time to integrate an imposed change in habits.

#### Education

Some gestures are the reproduction of what is done by the parents. This reproduction can be an unconscious imitation. On the contrary, it can also be a fully deliberate choice: *we decide consciously to do the same because we find that the parents’ practices are the good ones and the ones that we want to pick up. I do as they do because I was brought up like that... (...). I fully comply with what I was shown. I fully agree... (Alexandre).*

Parents do teach some gestures to their child. For Cédric and Anne, parents of four children aged 6 to 11, it is fundamental to make them aware of consumption:

Cédric: *I couldn’t stand seeing the water run while I brush my teeth for instance! No, no, no, I am even a bit excessive on that point but... hum...*

Anne-Laure: *Excessive, how is that?*

Cédric: *Well I... I will scold the children easily if they, hum, let the water run or if they use too much water in the glass, or then... Yes, I try to make them aware of that!*

Anne-Laure: *So yes you would scold them to make them aware...*

Cédric: *Not to spoil water, hum, toilet paper, hum... Anything in the house! Yes I would! (Laughs) Yes, Yes of course! I think that's education too, eh!*

(...)

Anne-Laure: *And so you would teach them for energy consumption, paper...*

Cédric: *Yes... To switch off the light, shut the doors in winter, things like that. Yes.*

Anne: *Cut the heating when nobody's in the room...*

Louis, a father of four older children (the youngest girl is 18), has a similar speech and he notices with satisfaction that once the children leave the house, they continue to pay attention to consumption, often more than himself, and in a more natural way because they grew up with this preoccupation. *We really taught them to pay attention yes. Perhaps because we started having children at the time of the first oil crisis at the beginning of the 70s'. That surely left a mark (...). But I believe they are grateful now because I feel they are more economical than even we are! Somehow more attentive! And definitively more respectful of the environment. Yes (...). I would say that children are... are somehow more ecological than us... And would be inclined to lower a little, lower the valve a little bit (...). Because generally younger generations are more aware of that. Much more, much more than we were at the time. (...). Because we taught them and because it becomes more of a sixth sense, than we at the time when... we consumed, eh (Louis).*

#### *Aesthetics, fashion*

Some choices are made considering aesthetical or fashion criteria, even if, when they make this choice, people are aware of the fact that they take no account of the criteria of economy, ecology or efficiency. It is often the case for lighting, for some radiators or other heating systems. Louis for instance: *We also installed a wood stove in a room we would say, is the study. We don't use it a lot... We haven't always exploited the possibilities of a wood stove in the sense that we haven't made openings in the ceilings to heat the top. So it's very hot in that room. This is a bit ridiculous... (Laughs). But it's perhaps because of aesthetics that we don't have made a hole in the ceiling...*

#### *Wasting*

What is considered as a waste for one is not automatically a waste for someone else. But all decri it. And if all interviewees dislike wasting, reasons can be very personal (economy, ecology, or even virility for a military who likes hard life and who does not see why he would live with more when he can live with less...). Charlie, for instance, does not have to pay his heating consumption, but he considers that it is stupid to waste:

Charlie: *Say, here I put maximum 20°. But only when it's cold you know (...). I pay attention to that! Because I tell myself it uses energy! And then, hum, even if we pay a lump sum (...) and in spite of what I think... So the heating... And... For the landlord downstairs, he... He is the one who pays everything. But fundamentally I say to myself it's stupid to sometimes leave it on (...)*

Anne-Laure: *And then why does it worry you?*

C: *The waste of energy, simply. It's stupid, eh. It's very stupid... Why waste so much energy? And in addition it pollutes! Even if it is gas... It always pollutes even a little you know! They may say what they want, it pollutes, nothing to it. So there, no, it's waste (...). It's true that my father doesn't give a damn (...). Each time he says I shouldn't give a damn anyway. It's counted in the rent anyhow! And each time I say, hey, you don't realise and what? It's the poor guy downstairs. So he is going to pay for me? First, it's disgusting. I wouldn't like to be in his place. Because in addition he's a pal. Even so! Because of ecology. I don't know... But it costs in any case! And I don't like wasting! But it may be my generation that is like that, eh? It's the 70s' generation, hum... Now I don't know how youths are nowadays but we were nagged a lot about that, eh. Generation, waste, ecology...*

#### *Economy – Ecology*

According to the interviews carried out, we noted that the energy consumption practices are often motivated by economical and ecological criteria. Those two motivations are dependent. Some organize them in a hierarchy, others put them on an equal level, but no respondents restricted their choices to either economical or ecological criteria.

Some practices, motivated by economical criteria, will have positive ecological consequences. Louis, for instance, explains what his criteria were when he had his house built: *It was at the time of the first oil crisis beginning of the 70's, and then one of the things we remembered was to make small openings on the North side of the house. So we did that, we have very few opening on that side. We built the house rather high up on the plot. So that we have the South and the view on the same side. So... So on the South side, we put more bay-windows. There are three door-windows. And a terrace. So that the house is... so to say... passive, hum... on an economical level. But... That is something. So we didn't invest in heat pumps. We didn't invest in solar panels... etc... We keep our stupid system of fuel heating since, eh, 30 years. And, hum..., but it isn't, even if we live in the Ardennes, a really cold house... So that, that was a priority... (Louis)*

The ecological motivation was not sufficient. Often it appears as a complement of other choice criteria. When it has to do with buying an electrical appliance, a washing machine, a fridge, the criteria are multiple and in the list we often find the environmental respect. *It's our second or third washing machine. Our criterion is... well... quality. That it doesn't break down. And then of course there was a criterion, I don't remember... because we bought it a long time ago... But that it relatively, hum, respects the environment. (...) That was important too. I don't mean that it was the top-of-the-list criterion, insulated, etc... But it was taken into account in any case. We took it into account, yes. But it is mainly solidity to have a machine that is... that is good, and that gives us no worries... (Louis).*

Louis thus has an ecological criterion but it is “lost” among other reasons, and, in this case as in a lot of others, it is not this one that overtakes the others. In most cases, environment and energy consumption do not represent big pre-occupations. As Charlie says: *Concern, no! But it's true that I think about it! (Charlie)*

Louis again explains that it is difficult to separate the economical reasons from the ecological ones.

But even when the ecological motivation is primordial and plays an important role in the lifestyle of families, the ecological motivation is not the only one. Cédric explains

**Table 5. Principal level of necessary actions in order to reduce energy consumption by principal responsible for pollution.**

Principal responsible for pollution	Level of the actions in order to reduce energy consumption must be carried out				
	Within each household	By local groups	By public authorities	By industrialists	Total
The companies	44,4%	3,0%	22,4%	30,2%	100,0%
The population	52,6%	4,0%	32,8%	10,6%	100,0%
Total	48,6%	3,5%	27,8%	20,1%	100,0%

Source: SEREC, September 2004.

**Table 6. Principal solution in order to reduce energy consumption by principal responsible for pollution.**

Principal responsible for pollution	Principal solution in order to reduce energy consumption				
	Creation of innovative technological projects	Campaigns of information and sensitisation of the households	Improvement of the systems of industrial production	Rise of energies prices	Total
The companies	23,9%	44,3%	24,1%	7,7%	100,0%
The population	20,3%	54,4%	15,4%	9,9%	100,0%
Total	22,1%	49,5%	19,6%	8,8%	100,0%

Source: SEREC, September 2004.

that for him energy consumption is an everyday life preoccupation and for him, energy consumption and environment are heavily related.

Anne-Laure: *And would you say that it is one of the big priorities of your everyday life? Or would it be exaggerated to say that?*

Cédric: *... I would say, it's a big priority, but, but it is not... It doesn't interfere, hum... with my comfort and my everyday life, so to say. That's it. I don't know how to say it but it's an important priority, but, hum ...*

Anne-Laure: *Not the first one...*

Cédric: *No, not the first one, even if it's an important priority. It's not a restraint to our comfort in life, I'd say. It becomes something, it's something that's natural... Yes, that what I'd say....*

#### *Responsibility for pollution and levels of action*

The respondents were really divided when we asked them to point out who they thought was principally responsible for pollution. 51,4% of the respondents mentioned the population while 48,6% mention the companies. We also observed (Tables 5 and 6) that a large majority of people think that the actions in order to reduce energy consumption must be carried out within each household (48,6% of the respondents) and that there should exist campaigns of information and sensitisation of the households (49,5% of the respondents). This trend is verified among those who indicate the population as principally responsible for pollution as well as among those who mention the companies. However, those who mentioned population tended also to designate the public authorities more frequently as a possible level of action (32,8%) than those who mentioned the companies (22,4%). Inversely, these respondents called upon the industrialists (30,2%) more than the others. We also observed that local groups were rarely mentioned.

Concerning the principal solution to reduce energy consumption of the households, if the large majority of the respondents mentions the campaigns of information and sensitisation of the households, the people who think that

the companies pollute more than the population easily mention the improvement of the systems of industrial production. We have to notice in the Table 6 that the creation of innovative technological projects was mentioned by 22,1% of the respondents and that the rise in the price of energies was rarely mentioned (only 8,8% of the respondents).

#### **THE CHANGE**

When we asked them if they did the uttermost to make energy savings in their household, 19,6% of the respondents answered "completely". Among the others, the reason for not doing the uttermost is generally that the respondents do not want to lose any comfort (35,7% answered "completely" or "rather yes"). It also seems that a quarter of the people have the impression that their efforts would not have an impact and answer that it would be a drop in the ocean. On another side, a quarter of the respondents estimate that they do not have enough financial means. However 95,6% of the people who think they do not do the uttermost declare that it is not because they do not see the utility.

We can retain that the economic reasons play a significant role but not a fundamental one for the majority of people. A large part of the respondents, even if they think that energy savings are useful, do not want to change their way of life and/or their action appears insignificant to them.

Concerning the actions the people would be ready to undertake, almost nine people out of ten among all the respondents have already carried out or are in favour of almost all the actions we proposed to them. As can be seen in the Table 8, the proposal "to install a more efficient heating system", action which requires a significant financial investment had been carried out by only 12,4% of the respondents and 59,8% of the people are in favour of it, which is less than for the other proposals. In the same way, only 45,2% of the people do not use an electric dryer or agree to do without it. Perhaps it is because this action requires a loss of comfort?

**Table 7. Reasons for not having done the uttermost to make energy savings.**

	Completely	Rather yes	Neither yes nor no	Rather no	Not at all	Total
Doesn't want to lose comfort	3,5%	32,2%	5,2%	29,8%	29,3%	100,0%
Would be a drop in the ocean	2,4%	23,1%	3,7%	26,4%	44,5%	100,0%
Doesn't have financial means	1,7%	23,3%	5,2%	30,4%	39,4%	100,0%
Requires too many efforts	1,9%	19,4%	4,8%	30,8%	43,1%	100,0%
Doesn't know what is necessary to do	3,3%	15,7%	4,7%	33,4%	42,9%	100,0%
Doesn't see the utility	0,5%	3,5%	0,4%	23,5%	72,1%	100,0%

Source: SEREC, September 2004.

**Table 8. Actions the respondents would be ready to undertake.**

	Have already done it	Completely	Rather yes	Neither yes nor no	Rather no	Not at all	Total
To improve the insulation	28,5%	31,6%	27,0%	2,2%	7,1%	3,6%	100,0%
To install economic showerheads	24,1%	36,6%	26,8%	2,9%	6,4%	3,1%	100,0%
To install (more) energy efficient light bulbs	20,8%	39,0%	27,6%	1,6%	6,8%	4,2%	100,0%
To pay more for an electric appliance which consume less	19,2%	30,8%	38,5%	2,7%	6,4%	2,6%	100,0%
Not to use electric dryer	16,7%	10,3%	18,2%	4,9%	24,6%	25,3%	100,0%
To decrease the temperature of the dwelling by one degree	14,7%	31,6%	35,7%	2,5%	11,2%	4,3%	100,0%
To install a more efficient heating system	12,4%	28,9%	30,9%	3,9%	15,3%	8,6%	100,0%
To use renewable energies	1,9%	38,6%	41,7%	5,4%	8,9%	3,4%	100,0%

Source: SEREC, September 2004.

**Table 9. Some actions concerning heating and electricity consumption by principal motivation to make energy savings.**

Principal motivation to make energy savings	Lowens the temperature during absences of several hours in the winter time	Lowens the temperature during the night in the winter time (sign.) <sup>4</sup>	Turns off the heating during the airing in the winter time	When the respondent buys electric appliances, the low level of energy consumption is a criterion to buy it (sign.)	Never turns off the television only from the remote control (sign.)	Always switches off the light when leaving a room for five minutes (sign.)	Total on row
By education	79,1%	86,6%	56,1%	77,9%	33,8%	28,2%	<b>28,9%</b>
For economic reasons	83,6%	90,7%	70,0%	81,1%	28,5%	25,4%	<b>25,0%</b>
By sense of collective responsibility	90,9%	93,8%	64,3%	88,5%	28,9%	22,9%	<b>17,3%</b>
To protect the environment	83,3%	89,8%	58,1%	87,4%	33,6%	24,1%	<b>14,9%</b>

Note: For the modalities on row, we retained only those which represent more than 10% of the whole sample

Source: SEREC, September 2004.

Compared to the actions already undertaken, it is the insulation improvement which is most named (28,5% of the respondents). Then we find actions which do not require a significant financial contribution such as “installing economic showerheads” or “installing (more) energy efficient light bulbs”.

We have to note that only 1,9% of the respondents declared to be using renewable energies but that 80,3% were in favour of them.

**RELATIONS BETWEEN PRACTICES AND ECOLOGICAL VALUE / MOTIVATIONS**

The relation between practices which are “environment-friendly” and the ecological motivations is not always verified. As can be seen in Table 9, it is not inevitably the people who say they act in order to protect the environment who have the most adequate actions. It also seems that the statistically significant differences are made on actions which refer to electricity and more particularly to the field of visible

**Table 10. Some actions concerning heating and electricity consumption believed by have done some energy savings as much as possible.**

Thinks to have done as well as possible to make energy savings	Lowers the temperature during absences of several hours in the winter time	Lowers the temperature during the night in the winter time	Turns off the heating during the ventilation in the winter time (sign.) <sup>5</sup>	When the respondent buys electric appliances, the low level of energy consumption is a criterion to buy it (sign.)	Never turns off the television only from the remote control (sign.)	Always switches off the light when leaving a room for five minutes (sign.)	Total on row
Completely	81,2%	91,0%	62,4%	78,3%	38,3%	34,2%	19,6%
Rather yes	87,0%	90,5%	67,2%	87,5%	34,7%	27,3%	31,9%
Rather no	79,9%	89,3%	51,1%	84,8%	18,2%	16,3%	40,1%

Note: for the modalities on row, we retained only those which represent more than 10% of the whole sample

Source: SEREC, September 2004.

**Table 11. To leave the television in standby mode consumes electricity.**

		To turn off the television only from the remote control				
		Never	Sometimes	Often	Always	Total
A television in stand-by mode consumes electricity	Yes	29,9%	17,2%	18,0%	34,9%	100,0%
	No	18,8%	17,7%	14,6%	49,0%	100,0%
	Total	28,5%	17,2%	17,6%	36,7%	100,0%

Source: SEREC, September 2004.

electricity (lighting, standby mode), rather than on what relates to heating.

It is especially the people who mention the sense of collective responsibility as principal motivation to do energy savings that have the most beneficial practices for the environment; and concerning the “visible” practices, it is rather those who mention education.

We find the same thing concerning the people who declare to have done the uttermost to make energy savings (Table 10). Indeed, they are not inevitably those who have the most adapted practices to make energy savings, except concerning the “visible” actions (statistically significant relation). Maybe it is the fact of taking these “visible” actions that gives them the impression to pay close attention to energy in general.

It is striking to observe that it is not necessarily those who defend most energetically the ecological values who have the friendliest environmental practices, on the contrary. Alexandre, for instance, is among the most convinced. *Well, usually, I notice that the people I appreciate are those who also have this concern. I couldn't have a very... someone I really like who wouldn't care about environment. That's really a part of me... of my personality... Part of my values in fact, yes!* (Alexandre). But he does not necessarily switch off the heating when he airs out, he washes everything on 60°, does not know the existence of the standby function, would bathe and not shower if he had the possibility, thus, has never made any links between consumption practices and pollution.

Others clearly say that environment is only a minor concern to them, “No stress about that” (Eric) and they find that the speeches of the ecologists are exaggerated. They thus do not have ecology in their basic values, but they can have very friendly environmental practices (by economical choice very often).

Those who act considering ecological values do so in the aim of preserving the planet. They do not necessarily think that we are heading towards an ecological disaster and they do not have a more alarmist speech than others. Those we met (but we would have to interview more people) rather declare: “*If everybody does a little, the planet will remain as it is today, and even if it's not at its best, it's not too bad, as we are living well.*” It seems to us that they are not alarmed because in such a scenario, everything can be controlled: they make a little action, don't find it difficult, and they consider that everyone could do so, so let's not worry, everything (or at least a little) can be mastered... Moreover, several among them repeated that they paid attention to the respect of the environment “*to give a clean planet to their children and grandchildren*”. It is in respect to them, the people we actually know, that we agree to mobilise, change the practices. And not only for the planet in general.

#### RELATIONS PRACTICES –TABLE. KNOWLEDGE

Among the questions we asked on knowledge, we can distinguish two sub-groups of questions: those concerning technical knowledge and those concerning general knowledge on global warming.

For example, we asked if the people thought that a television in standby mode consumes electricity. 87,5% of the respondents said yes, 11,7% say no and 6,1% do not know. If we take into account only those who answered yes (87,5%) or no (12,5%) and that we do not consider those who answered “doesn't know”, the relation between the knowledge on standby mode and the fact of turning off or not the television set only from the remote control is significant. Indeed, we notice in the Table 11 that among the respondents who answer that a television in stand-by mode consumes electricity, 29,9% never turn off their television only from the remote control (against 18,8% for those who answered

**Table 12. Knowledge on the causes of the global warming by gender.**

	Men		Women		Together	
	Yes	No	Yes	No	Yes	No
The smoke rejected by the factories	<b>93,9%</b>	6,1%	<b>94,0%</b>	6,0%	<b>93,9%</b>	6,1%
The deforestation of Amazonia	<b>94,5%</b>	5,5%	<b>90,0%</b>	10,0%	<b>92,1%</b>	7,9%
Automobile traffic	<b>89,5%</b>	10,5%	<b>91,7%</b>	8,3%	<b>90,8%</b>	9,2%
Domestic heating	<b>82,2%</b>	17,8%	<b>76,0%</b>	24,0%	<b>78,6%</b>	21,4%
To throw dangerous products in the dump	64,3%	<b>35,7%</b>	82,0%	<b>18,0%</b>	74,4%	<b>25,6%</b>
Nuclear power plants	58,0%	<b>42,0%</b>	78,2%	<b>21,8%</b>	69,5%	<b>30,5%</b>
The pollution of underground water	48,9%	<b>51,1%</b>	65,6%	<b>34,4%</b>	58,4%	<b>41,6%</b>

*Note: The factors likely to be a cause of the global warming are shaded. The answers were not proposed in this order.*

*Source: SEREC, September 2004.*

no). On the contrary, among the respondents who think that a television in standby mode does not consume electricity, 49,0% always leave their television in standby mode (against 34,9% for those who answered yes).

In this case, we can say that at the aggregated level, the practices are related to knowledge. However, we observed that at the individual level, to have a good knowledge does not always mean having good practices.

We also wonder if the knowledge on global warming is on the one hand related to the motivations which guide or would guide to make energy savings and/or on the other hand to practices which have a less negative impact on the environment.

According to a strong majority of respondents (84,3%), the climate will be warmer in 20 years' time. This is more frequent among women (86,4%) than men (81,2%) but the women are mistaken more regularly on the possible causes of this global warming (Table 12). On the other hand, if among the generations, there are differences on general knowledge, they disappear when we look at the causes.

To test the relation between the knowledge on the global warming and the practices, we constructed a composite indicator of knowledge. The people who answer that the climate would be hotter in 20 years have three points. Moreover, every time the respondent correctly answers about the possible causes of the global warming, he gets one point. Then, with a hierarchical clustering we created five groups. The group 1 has very few points, while the group 5 has the most points.

There is no clear result. The knowledge on global warming seems to be related to some practices like heating or to switch off the light for less than five minutes, but there is no relation with the standby mode. However, we can notice that in the first group, 45,8% of people answer that the principal motivation to make energy savings is or would be "to protect the environment"!

Strikingly, it is in the group 1 that the environmental motivation for making energy savings is the most cited (45,8%) even though it is the group with the weakest knowledge concerning the global warming. On the other hand, in the group 5, only 28,4% of the respondents name the environmental motivation.

### Conclusions

Several conclusions can be drawn. Firstly, the fact that even within a small country like Belgium, practices are not uniform and have a great diversity.

Secondly, the social explanatory determinants of the practices related to energy consumption are neither simple nor logical. Indeed, the motivations of each individual are complex and multiple, even if some motivations (ecology, economy, habits) take precedent on the others. Moreover, if the technical knowledge is (sometimes) related to the practices at the aggregated level, this is not often verified at the individual level. In the same way, the people who assert to have ecological values or motivations are not those who have the practices more in adequacy with the protection of the environment. This part of the conclusion is important because the policy decisions (as some scientific researches) are often based on a wrong belief in actors' rationality, rationality understood in the sense of efficiency and predictability. Yet, contrary to theories such as the one of planned behaviour (Ajzen, 1991), we can not predict a standard behaviour, because, like we have seen it, behaviours depend on personality, moment, education, etc.

Let us emphasize the complementary nature between the qualitative and the quantitative approaches. The complexity of the actors' logics can be revealed by the in-depth interviews, whereas the quantitative survey enables us to establish statistically significant relations. Those are not the addition of individuals, but relations existing on a group level. Indeed, a relation between practice and knowledge existing for an individual does not necessarily exist at an aggregated level and conversely.

Thirdly, certain results from this research can be used directly for policies and action programmes. Let us remember that 48,6% of the respondents think that the actions for reducing the energy consumption of the households have to be carried out within those same households. Moreover, 49,5% of the respondents designate as principal solution campaigns of information and sensitisation of the households. Those campaigns could contradict some wrong beliefs such as the fact that paying attention to the energy consumption does not necessarily goes with a loss of comfort and that this action is not a drop in the ocean. A work about motivations can also be made.

Fourthly, even if the majority of people think that the actions in order to reduce energy consumption must be carried out at the household level, few people have already undertaken some of them. The actions already undertaken are generally related to insulation or those which have a low cost. If people are mainly in favour of change, they are less convinced when the actions have a high cost or require a loss of comfort.

To finish, let us notice that the data from the quantitative survey and from the in-depth interviews coincide. They thus offer a complementarity in the explanation of practices related to energy consumption of the households, while having different points of view (quantification and statistical relations or comprehension).

## References

- Ajzen, I., "The theory of planned behaviour", in *Organizational Behavior and Human Decision Processes*, 1991, vol. 50, n°2, pp. 179-211.
- Banks, N., "Causal models of household decisions to choose the energy efficient alternative: the role of values, knowledge, attitudes and identity", 1999, [http://www.eci.ox.ac.uk/lowercf/pdfdownloads/ECEEE99\\_NB.pdf](http://www.eci.ox.ac.uk/lowercf/pdfdownloads/ECEEE99_NB.pdf), last access: 14 January 2005.
- Bartiaux, F., "A socio-anthropological approach to energy-related behaviours and innovations at the household level", in *ECEEE 2003 Summer Study, Time to turn down energy demand*, 2003, pp. 1239-1250.
- Blanchet, A. and A. Gotman (1992), *L'enquête et ses méthodes : l'entretien*, Nathan, Paris.
- Boudon, R. (1986), *L'Idéologie*, Fayard, Paris.
- Boudon, R., A. Bouvier A. and F. Chazel, eds (1997), *Cognition et sciences sociales*, PUF, Paris.
- DeYoung, R., "Some psychological aspects of reduced consumption behavior - the role of intrinsic satisfaction and competence motivation", in *Environment and Behavior*, 1996, vol. 28, n°3, pp. 358-409.
- Gram-Hanssen, K., "Technology and Culture as Explanations for Variations in Energy Consumption", in *Proceedings of ACEEE 2002 Summer Study*, 2002, Washington D.C.
- Hackett, B. and L. Lutzenhiser, "Social Structures and Economic Conduct: Interpreting Variations in Household Energy Consumption", in *Sociological Forum*, September 1991, vol. 6, n°3, pp. 449-470.
- Hallin, P. O., "Energy, Lifestyles and Adaptation", in *Geografiska Annaler*, 1994, vol. 76, n°3, pp. 173-185.
- Kasanen, P. and T. R. Lakshmanan, "Residential Heating Choices of Finnish Households", in *Economic Geography*, April 1989, vol. 65, n°2, pp. 130-145.
- Kaufmann, J.-C. (1996), *L'entretien compréhensif*, Nathan, Paris.
- Kaufmann, J.-C. (2004), *L'invention de soi. Une théorie de l'identité*, Armand Colin, Paris.
- Kestemont, M.-P. and al. (2001), *Points d'ancrage pour une politique de Développement Durable: Production et Consommation*, rapport SSTC, Bruxelles.
- Leonard-Barton, D., "Voluntary simplicity lifestyles and energy conservation", in *Journal of Consumer Research*, December 1981, vol. 8, pp. 243-252.
- MacKellar, F. L., W. Lutz and A. Goujon, "Population, Households, and \$CO\_2\$ Emissions", in *Population and Development Review*, December 1995, vol. 21, n°4, pp. 849-865.
- Martuccelli, D., "Sociologie et posture critique", in *À quoi sert la sociologie ?*, B. Lahire ed., La découverte, Paris, 2002, pp. 137-154.
- Miles, M. B. and A. M. Huberman (2003), *Analyse des données qualitatives*, De Boek Université, Bruxelles.
- Morin, J.-M. (1996), *Précis de sociologie*, Nathan, Paris.
- Norman K. J., Uiterkamp T. S., eds (1998), *Green Households? Domestic Consumers, Environment and Sustainability*, Earthscan Publications, London.
- Ropke, I., "Analysing long-term changes of everyday life in an environmental perspective", Paper presented in the International Workshop: Driving forces of and barriers to sustainable consumption, Leeds, 5-6 March 2004, <http://www.env.leeds.ac.uk>, last access: 14 January 2005.
- Shove, E. (2003), *Comfort, cleanliness and convenience: the social organisation of normality*, Berg, Oxford and New York.
- Tashakkori, A. et C. Teddlie (1998), *Mixed Methodology: Combining Qualitative and Quantitative Approaches*, Sage, London.
- Wilhite, H., and al., "A cross-cultural analysis of household energy use behaviour in Japan and Norway", in *Energy Policy*, 1996, vol. 24, n°9, pp. 795-803.