

Does environmental information overcome practice compartmentalisation and change consumers' behaviours?

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Abstract

This paper questions the long-held paradigm of consumers' rationality as well as its corresponding policy tool, the supply of information. Theoretical considerations as well as empirical evidence from a research on residential energy consumption in Belgium show that both environmental information – namely on climate change – and customised advice to save energy at home are neither just taken in as such by consumers nor translated into corresponding practices. In consumerist societies, practice compartmentalisation and moods are indeed normalised mechanisms for not adopting 'green' lifestyles that would threaten social normality as defined in valued networks.

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1. Introduction

With a mainly sociological approach, this paper questions the long-held paradigm of consumers' rationality as well as its corresponding policy tool, the supply of information.¹ In particular, how do consumers call up either general information on climate change, renewable energy and standby consumption, or customised housing labels, in their energy-related practices and projects? Under which conditions can this information be a lever for changing consumers' behaviours towards a more sustainable society?

These questions were the focus of a recently ended research project on residential energy consumption in Belgium

(the SEREC project²). A conceptual framework is first constructed to address the conditions required in order for environmental information to be efficient in changing daily practice or in motivating homeowners to undertake energy-saving works. Then, the presentation of the results follows this double line: firstly, the effect (or lack thereof) of general information about environment on daily practices, and secondly, the effect (or lack thereof) of customised and expert advice on energy-saving works, especially on boiler change and on insulation works.

2. Conceptual framework

This section first presents the rational-actor assumption and discusses it, with cognitive arguments and with arguments

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² The SEREC research project (Sociotechnical factors influencing Residential Energy Consumption) is a two-year project associating the Institute of Demography of the University of Louvain (UCL), the Flemish Institute for Technological Research (Vito) and the Danish Building Research Institute (SBI). The Belgian Science Policy Office financed this project (2004–2005).

mainly drawn from social theories of practice and from recent developments of Bourdieu's work.

2.1. The rational-actor assumption

Analysing how “public bodies are seeking to implicate people in contributing towards a more sustainable future”; Macnaghten and Urry [1] outline dominant assumptions, which “can be read as part of a modernist tradition”. For them, the main assumption is the following: “People are presented as individual agents acting ‘rationally’ in response to information made available to them. Ignorance about environmental issues can be rectified by the provision of information; information will engender concern; and concern will translate into both personal and political behaviour changes...” (pp. 217–218).

This contribution, as theirs did, will show that this assumption is not supported by empirical evidence. But before presenting our results, we will first discuss this assumption in this section. Indeed, it reflects quite well the paradigm of rational action, which is best exemplified by two leading theories in social psychology: the theory of reasoned action of Ajzen and Fishbein [2] and the theory of planned behaviour of Ajzen [3]. In sum, both theories predict behaviour by the intention to adopt this behaviour and by the attitudes towards it; in turn, the attitudes are predicted by the personal beliefs about the consequences of the behaviour and the evaluation of those consequences – a rational calculation thus – while the intention results from these attitudes and the subjective norms. The subjective norms are themselves explained by the beliefs on the expectations from significant others about this behaviour as well as by the motivation to comply and meet these expectations. Finally, and this is the addition of the theory of planned behaviour, both the intention and the behaviour itself are also determined by the perceived control over the obstacles and over facilitating elements.

On the whole, these theories and the researches they have inspired stress individual preferences, consumers' choices and freedom. For Shove [4], “People are primarily addressed as autonomous ‘shoppers’ whose choices, in the aggregate, determine the fate and future of the planet.”

2.2. Information is not enough...

By placing the individual beliefs at the first step of the causal model of behaviour, and especially the beliefs about the consequences of behaviour, both theories award a central role to information, which can modify these beliefs and consequently the attitude and the intention to behave. In terms of policy, the dominant policy tools are information, education and persuasion; these tools can also include taxation and other price signals: governments and other agencies have invested heavily in overcoming the barrier of ‘popular ignorance’ (Ekins [5]) and in providing consumers with information such as labels and advice “to inform consumers of the consequences of their actions and exhort them to behave differently” (Shove [4]). In the theoretical approach of ecological modernisation of consumption, “modernity is correlated

with a belief in rationality (...) [and with] a general trust in systems (...) like eco-labelling bodies” (SIFO [6]). Therefore, “questions of consumer knowledge and perception of the meaning of environmental information are important” [6].

However, several sociological studies on the changes of behaviours towards environmentally friendlier ways have demonstrated that individuals are not just taking in new information or environmentally oriented advice as such, and then behaving accordingly. For example, Shove [4] shows that efforts to persuade householders to turn down the heating for the sake of the global environment have not been strikingly successful: in fact, average temperatures in British homes have been rising steadily over the last 30 years, from around 17 to 21 °C.

Before turning to the conditions that are necessary for environmental information to become efficient, the following section outlines approaches focused on practices and used in sociological studies on consumption.

2.3. A focus on practices, embedded in social life

Most sociologists working on consumption agree upon putting practice at the forefront and have developed analytical frameworks accordingly. When analysing behavioural change, a possible effect of information is thus always mediated through a practice or one of its components. Furthermore, environmental effects, such as CO₂ emissions, occur because of practice, not because of opinions or attitudes.

Bourdieu encompasses practice in a larger sociological framework with his concept of *habitus*, “this generating and unifying principle that retranslates the intrinsic and relational characteristics of one position into a unitary lifestyle, that is, a unitary set of choices of persons, goods and practices” ([7], p. 23). Later, French sociologist Corcuff has argued that this concept of *habitus* presupposes unity and permanence of the person and does not pay due attention to discontinuities and plurality. He thus recommends thinking “the plurality of dispositions and of capacities [of one person], the diversity of his/her types of engagement in the world, the variability of circumstances witnessed, his/her contradictions and ambiguities” ([8], p. 118). As shown later in this paper, this possibility of personal ambiguities questions a straightforward effect of environmental information on behaviours.

Other sociologists rely more on Giddens' theory of structuration [9]. For Halkier, interactions, interpretations and practices are the three concepts related to experiences, the key concept of her everyday life analytical framework [10]. In his abridged account of a theory of practice for consumption studies, Warde [11] proposes (following Schatzki) to define practice as a coordinated entity of understandings (what to say and what to do), procedures (explicit rules) and engagements (purposes, beliefs and emotions); in this framework, each of the three components is made of cognitions and practices. Shove [12] has reconstructed regimes of practices that encompass sociotechnical arrangements, sociocultural conventions and ordinary routines.

As “it is only through practice that ways of understanding and doing are shared and made real” (Hand et al. [13]), practices are embedded in social life. The frameworks reviewed

above vary in their reflection of the social dimensions of practice, but only Halkier's explicitly includes interactions, "the carrying out of practices and interpretations as part of social relations (...) with known others in social networks as well as with distant others in imagined communities": indeed, "the possibilities and limitations of resources, living conditions and social networks obviously also influence which experiences the individual goes through."

The next sections first review more cognitive conditions and then more practical ones that are necessary for environmental information to become efficient. Of course this is too sharp a distinction between cognitions and practice since "a sharp distinction between reflexive and routinised consumption is impossible to sustain in empirical analysis" (Halkier [10]).

2.4. When is information efficient to change behaviours?

Mainly cognitive conditions

2.4.1. Discursive consciousness

The first condition is the necessity of bringing new knowledge from practical (and "hidden") to discursive consciousness (Hobson [14], following Giddens [9]). Previously unquestioned practices became questioned (thanks to environmental information spread by a campaign called 'Action at Home'), and this started the process of changing some habits.

2.4.2. Environmental concern

In this process of bringing practical knowledge to discursive consciousness, the role of a pre-existing environmental concern should deserve further research. Psychologists have indeed shown that "the fear [of climate change] induction had no effect on the extent to which high-concern participants systematically processed the information" while the reverse was true for participants whose initial level of concern was low (Meijnders et al. [15], p. 963). However, for Boardman et al. [16], a majority of people in Europe are concerned neither with climate change nor with environmental issues. The intensity of a concern for the environment may be quickly changing, though.

2.4.3. Convergence of knowledge

For environmental information to become efficient, another condition is the required "convergence and not the quantity of knowledge that determines its effectiveness in promoting ecological behaviour" (Goldblatt [17]). As a consequence, the disagreements between experts regarding both causes and consequences of climate change are a convenient rationale for inaction for both individuals (Meijnders et al. [15]) and some governments (Dessai et al. [18]).

And this necessary convergence points at the important role played in these respects by institutionalised and legitimated energy policies: "the willingness to cooperate (...) would be strengthened if demand reduction became normalised and received strong institutional support" (Darby [19], p. 1339).

2.4.4. Dealing with "moods"

Martuccelli has shown that information does not necessarily bring about changed behaviours as disturbing information

may be quickly transformed into moods a "socialised way" of "feeling a disengaged implication" that "in rendering the moral experience of heartbreaking choices commonplace, makes further choices easier" ([20], pp. 548–550).

2.5. When is information efficient to change behaviours?

Mainly practical conditions

2.5.1. Looking for social normality through compartmentalisation of practices and networks

Compartmentalisation is a socialised way, other than moods, to keep green reflections out of certain practices, as shown by Iversen [21] and Halkier: "consumption practices are characterised by compartmentalisation in relation to environmental consideration" [10].

For example, in her research on young Danes consuming organic food, she meets a young worker whose dream is to buy a car and a young lady who is very concerned about her food but "finds it tiresome to locate a bottle bank". In the field of energy consumption, numerous studies, summarised by Lutzenhiser [22] and Shove et al. [23], show that consumers are not often aware of the energy consumption that is required in their energy-related practices.

An interpretation is that this compartmentalisation allows to avoid adding a new identity dimension to oneself — as someone concerned by environmental protection — whose management would require a supplementary and "never-ended physical and mental zapping" (Dortier [24]). Yet, this zapping supposedly requires all the more energy that the dimensions to be conciliated are numerous (Bartiaux [25]), whereas individuals are constantly choosing "strategies that are cognitively economical" (Kaufmann [26]).

For Halkier [10], compartmentalisation makes it possible "to signal social normality". Social normality is associated with behaviour predictability and thus, with trustworthiness (Ilmonen [27]) as well as with self-esteem, even when it comes to household chores (Kaufmann [28–30]). In his account of a theory of practice, Warde [11] also underlines that "practitioners are looking for social acceptability and recognition, as internal reward of at least some of the practices in which they engage".

2.5.2. Supporting social interactions

Social support appears indeed to be a key variable and is obtained from the individuals' social networks, either real, with familiar persons, or virtual, via the mass media. In a Norwegian study, environmental information appeared indeed to be most effective in bringing about environmentally friendlier practices when it was provided through "socially embedded ways of communication", especially by friends, or when it was combined with contextual measures — a waste separation scheme for example — (Vittersø [31]). In Austria, participative and user-led innovations in the field of solar energy began with introductory lectures arranged by local organisations so that "the scepticism towards the unknown is largely reduced, resulting in more interest" (Ornetzeder and Rohrer [32], p. 1103).

From this review, it appears that to influence households' practices, environmental information appears to necessitate

simultaneously discursive consciousness, convergence of knowledge and supporting interactions: these factors must be strong enough to compensate for two socialised ways of dealing with contradictions (moods and compartmentalisation processes) in societies characterised by demand escalation and standardisation of consumption (Shove [12]).

3. Knowledge of environmental issues in Belgium

What is the knowledge, in the Belgian public, of standby consumption, climate change and renewable energies? Public sensitisation on residential energy consumption is a regional matter in Belgium and at the time of our survey, the three regions have taken uncoordinated and rather timid actions.

3.1. Data

During the SEREC research project, a phone survey on energy-related practices, knowledge and representations was realised in 2004 on a representative sample of 1000 households in Belgium. In the questionnaire, several questions were asked to evaluate the level of knowledge in the Belgian public of three issues related to residential energy consumption: standby consumption,³ climate change⁴ and renewable energies.⁵ In addition, more than 20 in-depth interviews were realised with lay persons from different socioeconomic backgrounds. Results from these qualitative and quantitative data are presented in Sections 3 and 4.

It should be stressed that by its focus on individuals and by its duration (20 min in average per respondent), this large-scale phone survey is not adequate to illustrate the social processes that produce and reproduce (new) regimes of comfort, convenience, appropriateness and cleanliness, and that Shove [12] has so well deciphered and depicted.

3.2. Knowledge on environmental issues

Eighty-one percent of the interviewees know (or claim to know) that a television in standby mode consumes electricity. The same level of knowledge is not obtained on renewable energies (the mean score is 5.8/10). The mean score on knowledge about global warming and its causes is 7/10, which is

much higher than in 1998, when the same score was on average 4.9/10 (Bartiaux [33]). It can be hypothesised that the 2003 heat wave and the numerous interventions in the media on this topic have increased the Belgian public's awareness on climate change.

Whereas the general level of environmental knowledge is high or fairly high in Belgium, there are large variations between some socioeconomic groups, these groups being defined according to household income, composition, age group and gender of the respondent. The higher the income is, the better the knowledge is on the three issues reviewed. Knowledge on environmental issues usually increases with household size and is (much) higher for men than for women. The age group often reveals significant differences: the youngest (18–29 years) are the least informed on the issue and factors of climate change and the best informed on renewable energies. With regards to standby consumption, young people have the same level of knowledge as their parents' generation (50–69 years) and are less knowledgeable than them on climate change! Significant differences between regions are not observable for these three issues.⁶

4. Information on energy and subsequent practices

Is people's knowledge on environmental issues an important motivation to change daily energy-related practices? This section will show that knowledge and practices are not often associated, at least in the way that would be consistent with the rational-actor paradigm.

4.1. Standby consumption

Eighty-one percent of the respondents know (or claim to know) that a television in standby mode consumes electricity. However, the results of pre-tests questionnaire revealed that everyone, even young people accustomed to computers, do not always know the concept of “standby mode”. But that does not mean that these people do not use the “standby mode” function. This is why we asked the respondents having a television if they turn it off only from the remote control “always, often, sometimes or never”.

Only 1% of the respondents do not have a television. Among all the others, 29% never leave it in standby mode, 17% do it sometimes, 17% often and 37% always do so. There are no statistically significant differences between male and female respondents, or between household types, but there is one between types of dwellings and another between age groups.⁷ If we add up the answers “always” and “often”, respondents who are less than 30 years old are the ones who put their television in standby mode most regularly (67%). It seems also that the smaller the dwelling, the more frequent the TV is on standby mode (42% of the people in apartment always leave it on standby, whereas 31% of the people living in detached houses do). “Yes, I switch it off always, well, there

³ The question was: “According to you, does a television that is turned off from the remote control consume electricity? (yes, no, does not know)”.

⁴ The score of knowledge on global warming is thus constructed: the people who answer that the climate would be warmer in 20 years have three points. Moreover, every time the respondent correctly answers about the possible causes of global warming, s/he gets one more point. The presented causes are automobile traffic, pollution of underground water, domestic heating, nuclear power plants, to throw dangerous products in the dump, the smoke rejected by the factories and the deforestation of Amazonia.

⁵ The questions were the following: “Have you heard of renewable energies?” (If yes, 3 points), “Have you heard of solar energy?” (1 point), “Do you know the solar photovoltaic?” (1 point), “Do you know the solar thermic?” (1 point), “Have you heard of windmills?” (2 points), and “Have you heard of the biomass?” (2 points). Each question had to be answered with either yes or no and the weighted sum of ‘yes’ gives the final score.

⁶ Figures may be found in Bartiaux et al. [34], p. 31.

⁷ Figures may be found in Bartiaux et al. [34], p. 29.

Table 1
Standby mode use according to knowledge on standby

Does a TV in standby mode consume electricity?	Total sample (%)	TV in standby mode when not used (%)			
		Never	Sometimes	Often	Always
Yes	80.8	30.3	17.0	17.9	34.8
No	12.3	19.0	17.2	15.5	48.3
Does not know	6.9	30.8	15.4	13.8	40.0
Total	100.0	29.0	16.9	17.3	36.8
Sig. (X^2)		0.099			

Source: SEREC survey (Belgium, 2004), $N = 962$.

I just have [forgotten]... But usually, it is always off.” (Maria, 65 years old, is living in an apartment.)

“*[We should] probably [try to] pay more attention, even more attention to the computers and the audiovisual equipments. Well, we try to be aware of [the fact that] when we switch them on, we really need to switch them on.*” José summarises the results displayed by Table 1: knowledge does not bring about appropriate practices by itself. One-third of the respondents who know that a TV in standby consumes energy always turn off the television set only from the remote control while nearly half of those respondents who do not know about it always does so. A better knowledge is thus weakly and statistically not significantly associated to an energy–sound practice.

4.2. Climate change knowledge and related practices

As shown here, few energy-related practices are significantly associated with the score for climate change knowledge (in this section) or with the score of knowledge on renewable energies (in the following section).

4.2.1. Bathing and showering

This interpretation gains support when it comes to bathing and showering, as no difference in knowledge on climate change is significantly associated with a higher (or lower) number of baths per week and per household or of showers per person (Table 2). A significant effect exists for the number of baths per person – those taking less than two baths per week being more knowledgeable than the others, whereas the reverse is true for the number of showers per household and per week (those having more showers per week being more knowledgeable on climate change).

Bathing and showering thus appear to be rather unrelated to environmental awareness and this result shows that an energy policy that would aim for a reduction of sanitary hot water consumption could fail if it was presented as based on environmental protection.

4.2.2. Heating-related practices

When it comes to heating-related practices, the respondents have a significantly better knowledge of climate change if they report that they lower the temperature during the night or during absences of several hours in the wintertime. There is no significant relationship, though, between the level of awareness about climate change and the estimated temperature in

Table 2
Knowledge on climate change and renewable energies according to bathing and showering practices

Energy-related practices	Total sample (%)	Knowledge	
		Climate change (mean score/10)	Renewable energies (mean score/10)
Total sample	100.0	7.00	5.77
Number of baths per week and per household			
≤4	68.3	7.06	5.75
>4	31.7	6.88	5.80
Sig. (F)		0.134	0.794
Number of baths per week and per person (average)			
<1	39.5	7.09	5.85
1 ≤ baths < 2	24.9	7.15	5.89
≥2	35.7	6.81	5.58
Sig. (F)		0.027	0.248
Number of showers per week and per household			
≤4	33.4	6.82	5.39
>4	66.6	7.10	5.95
Sig. (F)		0.020	0.001
Number of showers per week and per person (average)			
≤1	20.0	6.75	5.27
1 ≤ showers < 5	40.6	7.07	5.87
≥5	39.4	7.07	5.90
Sig. (F)		0.066	0.013

Source: SEREC survey (Belgium, 2004), $N = 962$.

the living room during a winter day; nor is there one with the practice of turning off the heat while airing in the wintertime (Table 3).

4.2.3. Appliances use

Surprisingly enough, the score of knowledge on climate change is exactly the same for the respondents having

Table 3
Knowledge on climate change and renewable energies according to heating practices

Energy-related practices	Total sample (%)	Knowledge	
		Climate change (mean score/10)	Renewable energies (mean score/10)
Total sample	100.0	7.00	5.77
Estimated temperature (living room, winter day)			
≤19°	14.9	7.16	5.77
20°	26.7	7.01	6.26
≥21°	58.4	6.97	5.54
Sig. (F)		0.523	0.001
↓ Temperature (absence of several hours, winter)			
Yes	82.6	7.06	5.86
No	17.4	6.67	5.37
Sig. (F)		0.008	0.027
↓ Temperature during the night (winter)			
Yes	89.7	7.04	5.82
No	10.3	6.46	5.32
Sig. (F)		0.002	0.075
↓ Temperature while airing			
Yes	59.9	6.90	5.90
No	40.1	7.10	5.60
Sig. (F)		0.078	0.083

Source: SEREC survey (Belgium, 2004), $N = 962$.

CFL (compact fluorescent lamps) and for those who do not (Table 4). The habit of switching off the light when leaving a room for 5 min is associated with a higher knowledge, but the differences are small, so the statistical significance of this relationship is weak (0.064).

Concerning appliances (number and use, Table 5), there are few differences according to knowledge on climate change, except for the total number of large appliances in the household, the frequency (per household member) of use of the washing machine and of the dishwasher: the more appliances but the lower usage, and the better knowledge. Although the relationship is not statistically significant, it should be noted that the respondents who use the remote control more often to switch off their TV sets are all the more knowledgeable on climate change. Awareness is thus not enough to change daily routines and current definition of comfort and convenience.

This apparent mental compartmentalisation is consistent with results found in other studies. In Sweden for example, 60% of the people consider themselves as having a good knowledge on energy-saving, but the real energy-saving behaviour is not in concordance with this result. Røpke discusses [35] this global knowledge amongst the public and, according to her opinion, most of the people are preoccupied with managing their everyday life and do not realise that they live in any kind of luxury.

4.2.4. Electricity consumption

To see whether knowledge on climate change influences electricity consumption, a multiple classification analysis (MCA) is performed on electricity consumption as a dependant variable: the household income quartile and the number of household members are introduced in the model for they are the main explaining variables of electricity consumption, both in Belgium and in Denmark (Bartiaux and Gram-Hanssen [36]) and the knowledge on climate change, recoded in three categories, is also introduced (Table 6). This last variable has no significant effect on electricity consumption ($F = 2.182$, $\text{sig} = 0.114$) whereas all other variables do have a significant effect, including the interaction between household income

Table 5

Knowledge on climate change and renewable energies according to electricity-related practices

Electricity-related practices	Total sample (%)	Knowledge	
		Climate change (mean score/10)	Renewable energies (mean score/10)
Total sample	100.0	7.00	5.77
Number of large appliances			
1–5	6.0	6.83	5.11
6–10	57.1	6.87	5.54
11–15	30.6	7.08	6.22
>15	6.4	7.78	6.19
Sig. (F)		0.001	0.000
Has at least one appliance with label A or B			
Yes	74.3	7.06	6.12
No	25.7	6.86	4.94
Sig. (F)		0.135	0.000
Appliances: use			
Use of the washing machine/week $\times$ person	94.1		
Less than 1 time	20.5	7.35	6.03
At least 1 time	79.5	6.91	5.72
Sig. (F)		0.002	0.143
Use of the dryer/week $\times$ person	64.9		
Less than 1 time	51.4	7.05	5.65
At least 1 time	48.6	6.96	6.08
Sig. (F)		0.513	0.034
Use of the dishwasher/week $\times$ person	57.3		
Less than 1 time	29.5	7.44	5.91
At least 1 time	70.5	7.09	6.29
Sig. (F)		0.025	0.103
TV in standby mode			
Always	36.7	7.12	5.73
Often	17.3	7.10	5.97
Sometimes	17.1	6.82	5.50
Never	28.9	6.91	5.79
Sig. (F)		0.186	0.422

Source: SEREC survey (Belgium, 2004), $N = 962$.

Table 4

Knowledge on climate change and renewable energies according to lighting-related practices

Electricity-related practices	Total sample (%)	Knowledge	
		Climate change (mean score/10)	Renewable energies (mean score/10)
Total sample	100.0	7.00	5.77
Has CFLs (compact fluorescent lamps)			
Yes	64.2	7.00	5.86
No	35.8	7.00	5.66
Sig. (F)		0.963	0.255
Switching off the light when leaving a room for 5 min			
Always	23.2	7.13	6.14
Often	13.4	7.11	6.27
Sometimes	20.9	7.12	5.89
Never	42.4	6.82	5.34
Sig. (F)		0.064	0.000

Source: SEREC survey (Belgium, 2004), $N = 962$.

Table 6

Annual electricity consumption (kWh/year) according to the knowledge on climate change, household income and size (covariate)

Factors	N	Unadjusted	Adjusted for the other factor	Adjusted for the other factor and covariate (household size)
Knowledge on climate change				
Bad (score: 0–5/10)	93	3890.3	4019.7	4103.0
Fair (score: 6–7/10)	243	4331.9	4408.2	4318.9
Good (score: 8–10/10)	237	4455.7	4326.9	4385.6
Household income quartile				
Q1 <1510€	143	2984.0	2986.0	3738.4
Q2 <2260€	143	3680.4	3686.6	3863.1
Q3 <3380€	143	4517.5	4514.1	4241.2
Q4 $\geq$ 3380€	144	6063.4	6058.7	5401.6

Source: SEREC survey (Belgium, 2004), $N = 573$ (573 respondents have given their annual electricity consumption).

quartile and knowledge on climate change ($F = 2.489$, $\text{sig} = 0.022$). The results show higher electricity consumption where the householder has a better knowledge of climate change and these differences are only attenuated when the electricity consumption is adjusted for household income and size. Environmental knowledge is thus not sufficient to counteract the massive effect of household income on electricity consumption.

4.3. Renewable energies

The pattern here is more confused than for climate change knowledge, as most tested relations between an energy-related practice and the score of knowledge on renewable energies are either non-significant or non-linear: the conclusion is that a better knowledge of renewable energies is not associated with a practice that saves more energy.

There are several exceptions to this result, though, for respondents are significantly more knowledgeable on renewable energies if they have the following ‘energy–sound’ practices: they lower the temperature during absences of several hours in the wintertime (but the differences are not sufficient to be statistically significant for lowering the temperature during the night or while airing), they have at least one appliance with label A or B, and they often or always switch off the light when leaving a room.

However, the SEREC survey also shows that Belgian respondents significantly know more about renewable energies if they take more showers per week (both per household and per household member), if they own more appliances and if they use the dryer more frequently, when taking household size into account.

In the Swedish population, such a discrepancy between knowledge about renewable energies and energy-saving behaviours is also observed (Viklund [37]). Swedes generally tend to be environmentally friendly and they are highly and openly concerned with perceived nuclear energy danger and CO₂ emission causing global warming. With participating referendums, they strongly support wind and solar power as alternative energy sources but their energy-saving behaviours are not in concordance with their knowledge.

4.4. Concern, climate change knowledge and electricity consumption

Although the level of knowledge on global warming is fairly good, it is higher for the respondents who have a higher-concern

for the environment ($R = -0.098$, $\text{sig} = 0.01$). The concern for the environment has been measured in this survey by the answers to the following question: “Being concerned about the environment is urgent, otherwise one heads towards catastrophe”: a strong agreement with this sentence is a proxy for a very high-concern, an agreement is a proxy for a high-concern and the other answers are thought to reflect a low-concern. The linear association between environmental concern and knowledge on climate change holds true in each income quartile, except in the second one (Table 7).

This result is consistent with the one of Meijnders et al. [15] for whom “negative emotion increases the extent to which information is systematically processed” (p. 962).

When it comes to electricity consumption, neither environmental concern ($F = 0.518$, $\text{sig} = 0.596$) nor knowledge on global warming ($F = 3.548$, $\text{sig} = 0.060$) has a significant influence when household income and size are also introduced in the model. None of the two-way interactions (between household income, household size and environmental concern) are significant either, and the three-way interaction is also insignificant. Concern for the environment has a non-linear raw effect on electricity consumption, but when adjusted for household income and size, the effect is lessened and it goes in the other direction. The next adjustment for the level of knowledge on climate change nearly annihilates the differences played by the concern for the environment on the household annual electricity consumption (Table 8).

4.5. General information and subsequent practices: summary

Summing up, households that are better informed on climate change issues and factors or on renewable energies are not acting in an environmentally friendlier way: this is only the case for five practices, of the 16 under review, that are associated with a higher level of knowledge about climate change, and for three practices with respect to renewable energies. Often, for most practices, the reverse is true since a better knowledge is not associated with energy–sounder practices.

To go somewhat further than these absent statistical associations, a quote from one interviewee is useful: “Well, it’s true that there are things to do and not to do when it comes to the environment. But I think that one can ring alarm bells as much as one wants, only those who want to hear it will hear it” (Catherine). I would thus propose the hypothesis of a reversed relation: environmentally friendlier practices raise the

Table 7
Mean score of knowledge on climate change according to environmental concern and household income quartile

Environmental concern	Q1		Q2		Q3		Q4		Total	
	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
Very high	6.69	149	6.86	145	7.23	151	7.72	129	7.11	574
High	6.49	74	6.85	77	6.89	74	7.32	93	6.91	318
Low or middle	6.30	16	7.01	19	6.06	16	6.38	19	6.46	69
Total	6.60	239	6.87	242	7.05	240	7.46	241	7.00	962

Source: SEREC survey (Belgium, 2004), $N = 962$.

Table 8
Annual electricity consumption (kWh/year) according to environmental concern

Factors	N	Unadjusted	Adjusted for household income and size	Adjusted for household income and size and for knowledge on climate change
Environmental concern				
Very high	329	4301.5	4390.1	4367.3
High	197	4399.8	4184.9	4214.5
Low or middle	47	4013.6	4292.3	4327.2

Source: SEREC survey (Belgium, 2004), $N = 573$ (573 respondents have given their annual electricity consumption).

openness to environmental information. Similarly, it may be hypothesised that environmentally friendlier practices raise the concern for environmental protection.

The last part of this article explores some of the conditions, other than general information about environment, that are necessary to make information more acceptable and, therefore, better translated into practice. In particular, is customised advice such a condition?

5. Customised information and subsequent practices

5.1. Background: few recommendations implemented

In another part of this SEREC research project, 40 households volunteered to have a complete energy assessment of their dwelling.⁸ At least half of them received recommendations on windows and doors or on the insulation of the distribution pipes, of the outer walls or of the roof as well as advices to replace the boiler or to install a solar one. Each of these recommendations would lead to a yearly saving of primary energy of 1000–6000 kWh (Bartiaux et al. [34]).

To sum up, the more the advices are customised, the more the participants appreciate them: more general advices are not really used by the participants who seek information relative to their own energy consumption. This does not imply, however, that the participants use this customised information by implementing the recommendations they have received. Indeed, this research clearly establishes that precise, professional and customised information does not often bring about many changes in energy consumption: one year after the assessment, these volunteer households have actually implemented some 11% of all proposed measures. In general, these measures were the smallest interventions: insulation of distribution pipes or installation of saving showerheads. However, the householders were still planning to put in practice some 23% of the proposed measures. These measures could result in much larger energy-savings, but they also required larger interventions in the house (Bartiaux et al. [34]).

⁸ It has to be stressed that due to the recruitment methods we used, all participants were interested in the topic of energy-savings. Two tests undertaken during this research with (more) randomly selected samples brought about much less interest.

5.2. Data and objective

Why are so few recommendations implemented? Several potential reasons that are linked to information processing are presented below. Other reasons such as lack of time or other priorities during home renovation are not discussed here but in Gram-Hanssen et al. [38].

This analysis is based on 12 in-depth interviews, which were realised with some of these 40 householders, who volunteered for receiving a full energy assessment of their dwelling. Nine were interviewed two or three months after this assessment, during the winter 2004–2005, and three were interviewed one year after the assessment.

5.3. From discursive consciousness to explicit discursive interactions

According to Hobson [14], the condition for implementing received advice is to transfer it from practical consciousness to discursive consciousness. Our results do not fit well in this framework, partly because of the practical consciousness characteristics and partly because of the insufficiency of a discursive consciousness.

5.3.1. A vague practical consciousness on insulation techniques

In Belgium, dwellings are the least insulated of Europe and the norms for the insulation of new dwellings are low, in European standards, according to EURIMA [39]. Moreover, several respondents have mentioned that these norms are not really enforced. Thus, at the time of the energy assessments (2004) and for existing dwellings, insulation appeared to be largely optional.

Although the techniques and materials are rather similar since many years, practical knowledge previous to the assessment was generally low, if present at all. As hypothesised at the end of the previous section, this lack of practice makes it difficult to “hear” information about it, whether the information is delivered by an expert or not. For example, one woman did not know that it was possible and energy-efficient to insulate the ceiling of a cellar and although she was certainly the most concerned interviewee by the environment, she did not consider following this advice, thinking that it was certainly not worth doing it.

This practical consciousness may also come from practical experience and physical perceptions [21,10]. The following two quotes illustrate opposite situations, the first one being much more widespread among our respondents: “We do not feel any discomfort [for not insulating the roof]” (Marie) “The usefulness of insulation, you feel it” (Sofie).

5.3.2. A vague discursive consciousness on insulation techniques

In this context, practical and detailed information on insulation techniques and materials were needed but not often provided either in the report that the dwellers received after the energy assessment or during its oral presentation. Furthermore, the concept of compartmentalisation helps to understand why several interviewees had “already forgotten” advice they

had received a few months earlier. This forgetting clearly prevents discursive consciousness.

5.3.3. Need of consistent information through social interactions

Consistent information is also necessary if one is to implement received advice, as shown by Goldblatt [17] and by the two following situations. Two interviewees had an old boiler and in both cases, the energy expert recommended to have it replaced: this will be done in the first case because this advice is congruent with two other trusted sources of information (his father-in-law, an engineer, and the journal of the main consumers' organisation) whereas the second man would not replace his boiler as this advice is contradictory with the one given by his installer.

It may thus be hypothesised that these comparisons, as well as the search of consistency within someone's social networks, are a different mechanism than bringing new information to discursive consciousness in order to enable changes. This additional condition is related to the necessity of social support, discussed below.

5.4. Necessity of social support

All actions or new practices have to remain in the acceptability limits of the social environment of the individuals. Friends, colleagues, neighbours, family members, and the media (watched, read or listened) are all elements of the social support. In energy matters as in other matters, people are involved in various social relationships, and they are expecting support for their action from the persons, or the networks, they value the most.

5.4.1. From the family

The support of family members is also quite important. For example, Clara is “a little green” and she “thinks that she could do more” to be better informed and to act up. But her husband is “not (interested), he follows the movement a little” and does not offer her enough support for them to change their habits or to undertake large energy-saving works. She can only have moods, as described by Martuccelli [20]. In another couple, where both partners have “an ecological conscience”, Antoine speaks about “the thermostat that we planned to install anyway.”

In two other families, the renovation works were supervised and partly realised by the woman's father. As he was not supportive about energy conservation — probably a generational effect — external expert advice on this topic was not followed. When one woman tells that story, she concludes very rapidly that nothing was to be done: “There was a possibility to better insulate the walls [in the attic], which was an important work for the few potential results. So, in fact, for us, there was no real modification to do in the house to have a better [energy label]” (Marie). Following expert advice could thus appear as a public disapprobation of the help of the woman's father.

5.4.2. From the social network

For example, after the energy assessment, one interviewee (an executive in a big company) bought and installed a few

CFLs and he was asked by some persons whether he would now “light up with candles”. His interest for new technologies and a mild environmental concern for “protecting our blue planet as one says, isn't it?” are probably not always sufficient to counteract the pressures of his social network for not showing a need for saving energy or a competence for it. This seems to be especially the case for the persons who had a rapid social upward mobility (Bartiaux [33], Bourdieu [40]).

5.4.3. From policies

After the success of the household-waste sorting policies in the '90s in most Belgian municipalities, policies that have no equivalent in the field of home insulation, it may be hypothesised that a perceived obligation is a modality of explicit and discursive interactions with the conversations between acquaintances and neighbours that these policies brought about.

Policies and perceived obligation also provide citizens with socially legitimated rationale: this would be welcomed by some interviewees who do not have economical reasons or environmental concerns that are usually presented as ‘the’ reasons for energy-saving. A young woman illustrates this by always explaining her practices with other reasons than an environmental concern she does not have (she has no car because she lives nearby supermarkets and because her enterprise provides her with a seasonal train ticket, she has no dryer as she has a garden, and so on and so forth).

5.5. Customised advice and subsequent practices: summary

Summing up, the customised character of the energy-saving advice is certainly not a condition of ‘successful’ implementation of information, for few recommendations (11%) are applied after one year.

To be followed by the householder and translated into practice or into home renovation works, energy expert advice and customised information need to be corroborated and supported by previous conversations with familiars or with other persons whose opinion is valued by the householder(s) as most significant in that matter. Without the support of these social interactions, customised information appears to be quickly forgotten or disregarded.

6. Conclusion

Individual consumers are neither just taking in information or environmentally oriented advice as such, nor do they behave accordingly. A recent research done in Belgium has demonstrated the limits of “the information-barrier” line of thought and of the rational-actor paradigm: households that are better informed on climate change issue and factors are not acting in an environmental friendlier way. Another important result is that interested householders who receive customised and expert advice to save energy rarely follow this advice (11% of the received recommendations were implemented after one year).

I would thus propose the reverse hypothesis, which is consistent with the theories of practice outlined by Warde [11]: environmentally friendlier practices raise the probability of other such practices and the openness to environmental information. Indeed, when it comes to dwelling insulation, the lack of practice makes it difficult to “hear” information about it, whether the information is delivered by an expert or not.

The gap between information and action is finally not surprising in societies where sociotechnical innovations and evolving sociocultural conventions on comfort and convenience converge into daily practices demanding an ever increasing amount of energy (Shove [12]). Furthermore, ambiguities and contradictions are inevitable in our societies (Corcuff [8]) and obviously, this is the case since information or advice for environmental protection often conflicts with the norms and practices of escalating consumption. Our societies have developed socialised and normalised ways of handling these ambiguities, such as moods – described by Martuccelli [20] and illustrated by one interviewee (Clara) – and practice compartmentalisation, as shown by the often missing link between environmental information and practices. This result is consistent with Halkier’s for young Danes: “consumers are capable of handling ambiguities of practices in normalised ways in everyday life” [10].

It may be especially the case in Belgium, a multi-cultural society not only in terms of language and culture, but also in terms of political preferences and religious or atheist backgrounds (Ladrière [41]); not to mention the presence of citizens from all European Union countries, nor the differences of visibility and political power of Green parties in the three regions. In such a context with daily but conflicting messages on environment and consumption, this research has shown the importance of supporting interactions with familiars, for homeowners coordinate their practice (or their absence of practice in insulating their dwelling) with the ones of their social network. Significant others thus have a positive (or negative) role in supporting (or not) energy-saving advice or information on climate change. These family interactions are also socially shaped, for they produce and reproduce gender roles and patterns of solidarity between generations. Socially embedded ways of environmental communication appear thus to be more efficient to change behaviours, as already found by Vittersø [31].

When “exploring the idea that private routines and rationales represent working responses to collective concerns and societal anxieties”, as Shove [12] invites us, the anxiety may be one of the social isolation from usual network(s). This again echoes one result of Halkier [10]: “it often seems more important and consequential for consumers to take care of the immediate needs of partner, children or job rather than the problems of global climate changes or pesticide use in agriculture.” On a theoretical point of view, I would thus suggest, following her, to include interactions in an ordinary-consumption analytical framework.

To have environmental information translated into practice, this research has also specified the conditions of social support – through interactions or policies – and the one of

information convergence – again through interactions and social comparisons. Furthermore, the shift from practical consciousness to discursive consciousness appears to be socially shaped and is not just a matter of transferring knowledge to consumers seen as individual agents. Indeed, the example on insulation shows how the frame of reference – in terms of (lack of) practical knowledge and detailed information on insulation techniques, problematization as optional – that is prevalent in the social network does matter and so do contextual characteristics – in the same terms and in terms of prevailing sociotechnical arrangements.

All these dimensions indicate potential policy implications in various forms, in terms of energy, employment, training and so on. On the whole, this research calls for visible policies of sustainable consumption, as these policies would provide social legitimacy and relief from making individual “choice” that would be conflicting with social normality, as contextually defined.

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