

From structural factors to individual practices: reasoning on the main paths for action on energy efficiency

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Abstract

The debate on social structure constraints over individual's action vs. the ability of individuals to determine their actions is as old as the social sciences. Recent theoretical efforts to bring together these broad approaches, while aiming to develop a more encompassing view of social problems, highlight the potentials of both perspectives for understanding the paths to energy efficiency in a broader context of sustainability.

With this theoretical debate as a reference, this paper looks at the view of Portuguese citizens on the role and potentials of structure vs. agency in everyday practices and decision-making aiming at energy efficiency. The main question is whether they assign themselves any responsibility for energy efficiency or do they just blame public policies for the failures and successes of, or at least for failing to influence their energy saving performances? Have these different perspectives any influence on current behaviour and perception of people on energy efficiency issues?

According to several Eurobarometer studies, Portuguese citizens perceive their lack of information as the main handicap in dealing with energy efficiency issues. Moreover, their demand for proactive public policies is much lower than registered in most other European countries. Based upon a survey of citizens involved in a broader research project where social perceptions and actual practices for energy saving were brought together, this paper questions what the main drivers are for more proactive energy efficiency behaviour among citizens and their implications towards a more sustainable use of energy resources in everyday life.

Introduction

Nowadays energy is a *sine qua non* condition of modern lifestyles. Either by itself or for the services it provides to people directly or indirectly. Energy is omnipresent in everyday life and at centre stage of modern economies, while resources used to produce it give rise to some of the main environmental and also economic problems that societies have to face today. In a context of challenging environmental problems and hard economic constraints, the search for solutions aiming at lower levels of energy intensity has become one of the main focuses of governments, energy experts, managers and even citizens. Energy efficiency has emerged as a key contribution to this endeavour, representing at least partially, a possible solution.

Talking and thinking about energy efficiency has been for many years equated to concentrating on all the efficiency gains to be obtained from better technology. More efficient technologies were presented as the key factor behind a more energy efficient society. Patterns of consumption, life-styles, publicity and all its conflicting messages when compared to the official discourse on the importance of efficiency were (and in many aspects still are) ignored by most decision makers.

The somehow frustrating results of decades of energy efficiency policies have created opportunities for social scientists to highlight the complex relations between policies (and not only those directly connected with energy), technologies, and social behaviour.

In a context where structural factors, like technology drivers, or proactive energy efficiency policies, are still perceived as the most relevant factor for reducing energy consumption (as highlighted, for instance, by the recent Portuguese national energy efficiency plan), it becomes even more pertinent to explore what citizens consider as the determinants of their day-to-day

behaviour concerning their use of energy. Besides lifestyles, it is also relevant to explore routines attached to consumption behaviour and other structural policies (not directly connected to energy) as potential drivers or barriers to energy efficiency.

The results presented in this paper are preliminary, since some complimentary research tasks are still being applied in the field, namely in-depth interviews. Nevertheless, the present data highlight some trends on citizen's energy-saving behaviour. Since most of the inquiry group volunteered to participate in the project (they chose to be an ecofamily), they probably have higher awareness and interest in the energy issue. Such a context may introduce some bias in our intention to identify the main drivers and barriers behind energy-saving behaviour.

Theoretical background

The early 1970s were marked by the energy crisis and the UN Stockholm Conference on human environment in 1972. As a result our model of development and its environmental and social consequences entered the agendas of public debate. In the meantime a new research area in the vast field of Sociology emerged to identify the interconnections between society and the environment. At the core of the emergence of environmental sociology were the relationships between individual actions, structural constraints, and the environment.

Consumption is usually described as a structural element of modern developed societies. Whereas consumption is also an important constraint of environmental performance, environmental sociology has for many years faced consumption patterns as a minor area, since it represented a criticisable element of developed societies (Spaargaren and Vliet, 2000 51; Warde and Shove, 2002:231; Burgess, 2003: 265). More recently, environmental sociology began to look at this complex relation and it is considered today as a strategic element for its development (Spaargaren and Vliet, 2000: 50).

The fact is that the careers of environment and consumption in sociological theory found some theoretical similarities. Both areas are "recent" and they have barely met each other. The sociological thinking on consumption began to gather some attention, mainly due to three different reasons (Warde and Shove, 2002: 230-231):

- The work of Pierre Bourdieu highlighting the role of consumption practices in class differentiation (social position and lifestyles);
- The development of the concept of collective consumption bond to the idea that state and capital can have a role in physical, material and social reproduction;
- The opening of cultural studies focusing on the meanings and significance attributed to common goods, particularly the importance of emotional, aesthetic and experience dimensions, which allowed going beyond a utilitarian perspective.

Despite this, the environmental perspective was kept aside from sociological reflection and research on consumption practices until recently (Warde and Shove, 2002: 231).

This paper does not address general consumption habits as such. The empirical research upon which it is rooted has as its main objective to look at a specific consumption good – energy.

The challenge is to take on an everyday consumption of a particular good (one whose nature and source turns invisible) and try to understand how people connect to it, how and why they do the things they do with it, and how changes can happen.

Consumption practices are mostly analysed as ways to express identity, of belonging to certain social groups or classes, of exhibition and social distinction (Warde and Shove, 2002: 248). This approach tends to highlight what is visually attractive, socially distinctive and symbolically significant in consumption practices and choices. These conditions are not met by consumption practices that do not automatically provide people with distinctive elements. When it comes to energy, it can be more relevant to understand the way its uses are conceptualized than to highlight value judgements about them (Lutzenhiser, 2000: 8.442).

Without denying how important it can be to consider the most visual and distinctive components for analysing energy consumption, the least explored by social theory are routines, pragmatic behaviour, practices that are symbolically neutral, though socially determined and practices that are collectively imposed and not individually chosen (Warde and Shove, 2002: 248-9). They are of great relevance for some day-to-day consumption, such as the case of energy. Highlighting comfort, convenience, security, in sum, the normality of certain consumption practices is fundamental to understand the social meaning of energy consumption. This is the kind of consumption that is not easily observed and understood (energy is invisible in itself and only assumes a shape through the services it provides), nor easily connected to many environmental and social consequences that result from it.

Therefore, the objective of this paper is to look at energy consumption and contextualize it by taking all these variables into consideration, in order to provide some clues on how in each context people perceive their capacity to intervene, shape or determine the way they use energy.

Characterising the ecofamilies

This research was part of a broader study – *Ecofamilies*. The purpose of *Ecofamilies* (*ecofamilies*) study was to analyze the energy consumption behaviour of 225 families spread throughout the country, taking climatic zones into consideration, and proposing alternatives to improve energy efficiency to each family. In order to do so, all 225 families were visited twice during the project duration. The first visit was meant to apply different surveys (social background, perceptions and practices; energy using equipment; building/house characteristics) and to leave energy measuring equipment. Later, these equipment were recovered in order to retrieve data. In the final phase of the project a letter was sent to each eco-family presenting the project's main findings and specific advice on how to improve the household energy efficiency. This project was developed in 2007/2008 by *Quercus – Associação Nacional de Conservação da Natureza*, an environmental NGO, and was sponsored by *EDP Distribuição* (the Portuguese electric company) and the Portuguese "Plan for efficient energy consumption", PPEC – Plano para a Eficiência no Consumo, administered by the Portuguese regulatory commission on energy, ERSE – Entidade Reguladora dos Serviços Energéticos.

Table 1. Number of family members – Comparison between Census 2001 and the project results

Family members	Census 2001 (%)	Ecofamilies (%)
One	17	6,3
Two	28,4	24,6
Three	25	26,1
Four	19,7	27,5
Five	6,2	10,6
Six	2	2,1
Seven	0,7	2,1
Eight	0,3	0,7
Nine or more	0.1	0
		N = 142

Table 2. Age groups – Comparison between Census 2001 and the project results

Age groups	Census 2001 (%)	Ecofamilies (%)
Less than 15 years old	16,3	0
Between 15 and 29 years old	22	12,9
Between 30 and 44 years old	22	48,9
Between 45 and 64 years old	23,7	30,2
65 years old or more	16	7,9
		N = 139

Table 3. Educational levels – Comparison between Census 2001 and the project results

Educational levels	Census 2001 (%)	Ecofamilies (%)
No reading or writing	12,5	2,8
Can read and write		0,7
1st cycle	35,1	7,1
2nd cycle	12,6	9,2
3rd cycle	10,9	9,9
Secondary school	15,7	17,7
Bachelorship	0,8	5,7
University	10,8	46,8
		N = 141

Despite the efforts to guarantee an equitable distribution of some social background variables in order to make the sample to come close to the Portuguese population parameters situation (as shown by the Census 2001 – the national statistical inventory of the population), the final sample shows a few deviations on some key variables (e.g. age and education). Since most of the 225 families were involved on a voluntary base, it was not easy to come across “volunteers” in some climatic zones or in some social classes, which in turn made it more difficult to guarantee the overlap of some social variables. Finally, only 142 families of the 225 involved were included in this study. Since the sociological survey was not included from the beginning in the project objectives, considering the difficulties the team felt in visiting the 225 ecofamilies twice for the duration of the project (one year) and the time constraints of the families, in some cases the team had to sacrifice aspects of the study that were not originally in the work plan. Therefore, in the end, only around 60% of the total project ecofamilies participated to the sociological survey.

Couples with children are the most common family type to be found in the sample (70%), the most frequent situations being couples with one (41%) or two children (42%). Only 14% of the families have no children, although in some of these cases there are sons or daughters who are already independent. Hav-

ing the family home shared by 2, 3 or 4 people represents 85% of the sample. From this point of view, the sample shows similarities with the Census 2001, despite an over-representation of families with 4 or 5 persons (Table 1). On the contrary, homes with only one person are only 6% of the *eco-families* sample, while in Portugal single member families represent 17%. Considering the impact that proliferation of single member families may have on energy use when compared to larger families (Wallenborn et al, 2006), it is unfortunate that it was not possible to include more in the sample.

Concerning age, the youngest and the eldest strata are also underrepresented in the sample when compared with the country data. This means that 30-44 and 45-65 age groups are overrepresented (Table 2). When it comes to education the lowest levels are also clearly underrepresented while the highest levels are overrepresented. While only 10% of the population in Portugal have a university degree, in this sample this group is almost the half (47%). Comparisons of other categories are more complex since they include children (Table 3). They are included in the national census but are obviously excluded from this study.

Studies run in other contexts seem to highlight that families with higher education tend to exhibit more knowledge and higher capacity to understand different aspects of the energy

Table 4. Professional occupation – Comparison between Census 2001 and the project results

Professions	Census 2001 (%)	Ecofamilies (%)
Managers, Directors	7,0	5,1
Intellectual and scientific	8,5	23,2
Technical	9,5	23,9
Administrative	11	14,5
Protection and personal services	14	10,1
Agriculture and fisheries	4,0	0,7
Craftsman and industrial workers	21,5	2,9
Industrial operators	8,6	1,4
Poorly qualified workers of industry, commerce and agriculture	15	8,0
Armed forces	0,7	0
Doesn't know/doesn't answer	0	10,1
		N = 138

use issue (Wallenborn et al, 2006) although it does not mean they necessarily put them into practice as a direct consequence, particularly in what concerns energy saving behaviour (Bartiaux et al, 2006).

The education level has a similar effect on the professional occupations found in the sample. Intellectual and scientific professions are clearly over-represented (23% vs 8,5% in Census 2001) as well as technical professions (24% vs 9,5% in Census 2001). On the other hand craftsman and industrial workers (3% vs 25,5% in Census 2001) and poorly qualified workers of industry, commerce and agriculture (8% vs 15% in Census 2001) are weakly represented in the sample (Table 4). Most of the families have work as the main source of income (70%).

In some European countries property can be a relevant variable to consider when analysing household's energy efficiency. In Portugal the renting market represents a very small part of house property. Thereby, 85% of the families in the sample are house owners, which is very close to the Census (2001) values. Although it might not be a fundamental barrier, if a family knows that an investment in the house will be not only directly beneficial for them, as it will also allow them to save energy and increase the property value, it might induce them to better considering such spending, specially when more structural changes in the building are at stake (insulation; windows, etc.).

As for income, whilst bearing in mind the challenge of asking families to declare their average disposable income, the sample showed 35% of the families with 1501–3000 Euro available each month, while 22% have to manage with only 750-1500 Euro. Around 19% who responded to this question declared to have less than 750 Euro available.

Income can be an appealing variable as regards energy efficiency behaviour since it can stimulate different approaches. A higher income might indicate a higher possibility of indulging in more significant changes in order to attain a more efficient performance (for example in the house with investments on insulation). Nevertheless, some studies show that families with higher income have higher energy consumption (Bartiaux et al, 2006; DEFRA, 2002), and can more easily absorb an increase in energy prices, since they will easily be diluted in the overall monthly budget. Poorer households on the other hand, show lower capacity to invest or even to bear increases in energy prices (Boardman and Darby, 2000; Ramsay and Pett, 2003), which might often have as a consequence a reduction on their quality of life. Therefore the poorer households tend to choose

to alter their energy consumption behaviour more frequently than high income households (Bartiaux et al, 2006), probably because investments in appliances or technical solutions to promote a more efficient use of energy would imply an unbearable increase in household expenditure.

Environmental practices and energy efficiency by the families

Considering a broad spectrum of environmental practices, the results indicate that *eco-families* exhibit a high level of participation. Energy saving practices arise most frequently among the most common and easily performed daily routines. Of course, an exception has to be made for the case of mobility. *Eco-families* declare that they have considerable difficulties in switching from using the car, even if it is just for a short duration travel, or if they can easily use public transports instead. Although a difference can be highlighted when comparing with other energy efficiency practices, walking instead of taking the car for short duration travels reaches 66% if we put “always” and “sometimes” answers together. Nevertheless, the resistance attached to changing mobility routines is one of the highest. For each of the practices presented in the table below (Table 5), families could choose from a scale of 4 levels, in the first case regarding the frequency they apply each practice (always; sometimes; rarely; never) and in the second case regarding the effort attached to each practice (much effort; some effort; low effort; no effort). In order to simplify the presentation, only the two main levels chosen are presented in the table below for each of the two questions.

For many years the score achieved by energy and water saving practices indicated that the Portuguese population was relatively aware of the importance of saving these environmental resources. Despite this, results were mainly due to habits acquired when access to energy and water was scarce and typically involved a significant physical and/or economic effort. Nowadays, among older people, it is common to find saving habits that come from this background and which are not attributed to real concerns on environmental preservation.

In general, energy saving practices and perceptions of efforts do not seem to vary significantly when basic sociological variables are taken under consideration. Anyway, age groups 30-44 and more than 65 years old seem to be less positive concerning the effort necessary to maintain an environmen-

Table 5. Frequency and effort attached to different environmental practices

	Q: How often the practice is performed? Always + Sometimes (%)	Q: How much effort is attached to each practice Much effort + Some effort (%)
Buy products in reusable packaging	52	43
Using public transportation or walking for short distances	66	38
Separate waste for recycling	84	20
Turn off the water while washing the teeth or shaving	64	16
Buy environmentally friendly products	62	41
Turning lights off when not needed	89	15
Turn off the water when soaping while taking a bath	63	39
Wearing another sweater to avoid turning up the heating	85	13
Reusing water (for example bath water)	30	42
Using laundry and dish washer machines with full loads	98	9
Turning off equipments avoiding stand by	73	23
Naturally dry your clothes	96	7
In Summer lower the blinds during the day	90	5

tal friendly conduct. In the first case, the difficulty might be connected to the fact that during that stage of life professional and personal responsibilities are usually more intense and can, therefore, reduce the time, attention and will to follow environmental practices. As for people with more than 65 years of age, the social context of Portuguese society should be taken into account, since this age group is usually characterized by very low levels of income, literacy, and access to information, which might lead to more barriers to following some of the practices under evaluation.

The core categories of consumption

While dealing with energy efficiency issues and promoting changes in day-to-day habits and routines of families it is important to know where and when the bulk of energy consumption happens, and therefore, which are the main contributors to monthly energy budgets. The deficits of knowledge on energy issues by the Portuguese have been repeatedly shown by Eurobarometer cross-nation studies. This national context together with the difficulty of dealing with something intangible (if not by the services it can provide, energy is not usually seen or useful by itself in most forms) may contribute to increased difficulties when it comes to implement energy saving policy measures that ask for the citizen's direct contribution.

Although knowledge doesn't necessarily translate into action and differences can be substantial between households when it comes to the number of appliances, knowing where the main energy consumptions are in each household, although probably not decisive, can be relevant if families intend to improve their energy consumption. For example, if investments are to be made it might be important to know where investments might be more easily compensated by energy savings.

In order to understand how knowledgeable *ecofamilies* are of their main energy consumptions they were asked to identify the three main areas where they use more energy. Then, the results have been compared with official data on energy consumption in Portuguese households, which indicate refrigeration (32%), heating/cooling (17%), lighting (12%) and cloths and dish

washers (10%) as the areas with higher energy consumption and higher weight on families' monthly energy budget.

Awareness of the main areas where energy consumption occurs seems to differ considerably from the official mean data, particularly for some specific areas. According to the *ecofamilies* the perception is that washing machines have the highest energy consumption followed by refrigeration. Next, we can find entertainment, cooling/heating, and finally cooking. In any case, refrigeration and cooling/heating, although not in the same order and significance as in official data, are perceived as areas with a high contribution to monthly energy costs. As for lighting, which we find is a main consumption area in official studies, there seems to exist a lower perception of its importance in families' energy consumption. The opposite effect can be found regarding washing machines.

Besides this, the research also permitted the comparison of perceptions with real consumption, since many energy uses by the families where also measured throughout the duration of the project. Measurements indicate that refrigeration and washing and drying machines are the most significant areas of consumption in most studied households. This means that the perception *ecofamilies* have on the main areas of energy consumption might be close to those shown by real measurements. However, the distance from the official data in this case compared to the heating/cooling category, might be due to difficulties in measuring some systems or to the moment of the year when measurements were made (something that can have a significant impact on heating and cooling practices). In fact, around 30% of the total energy consumption in the *ecofamilies* homes could not be credited to any area, since it was not physically possible to measure it. This can have a significant impact in some measurements and therefore on the ability to compare the real and perceived consumptions accurately.

Outside the three main categories of energy consumption computers seem to be particularly relevant in this group, mainly when compared with data from the official studies. This seems to show that the comparison with official average data is not fully relevant for the specific group under study.

Table 6. Comparison of data on main energy consumption areas (official data; measurements by the research project and the perceptions of *ecofamilies*)

Consumption Category	Official data ADENE	Results	
	(%)	Measurement (%)	Perception (%)
Refrigeration (freezers, etc.)	32	24	21
Heating and cooling	17	9	12
Lighting	12	8	7
Washing and drying machines	10	16	28
Entertainment	9	6	13
Cooking	3	----	13
Computers	2	7	6

Table 7. Perceptions on some specific aspects regarding the future of energy

Science and technology	%
Science and technology progression is a guarantee that accessing energy in the future will not be a problem.	2,1
In order to guarantee that there will be no problems in accessing energy in the future, changing our behaviour to use less energy is fundamental	92,3
Doesn't know/doesn't answer	5,6
N = 142	
Energy model	%
In the future we will be able to maintain or increase our present standards of energy consumption	2,1
In the future we will have to significantly reduce our standards of energy consumption	93,7
Doesn't know/doesn't answer	4,2
N = 142	
Centralization vs decentralization	%
Decentralized solutions are the best way to produce electricity	82,4
Big power plants are the best way to produce electricity	5,6
Doesn't know/doesn't answer	12
N = 142	
Energy costs	%
The present price of fuels and electricity already pays for all the impacts of their production	16,9
The present price of fuels and electricity does not pay all the impacts of their production	66,9
Doesn't know/doesn't answer	16,2
N = 142	
Individual action	%
Consumer possibilities to be more efficient in the way he uses energy depend essentially on his own will and commitment	12,7
Consumer possibilities to be more efficient in the way he uses energy depend essentially on government and companies initiatives	78,9
Doesn't know/doesn't answer	8,5
N = 142	

The future of energy

When asked to think about the future of energy, most answers clearly show the notion that significant changes have to occur (Table 7). The basic idea seems to be that technology will not be enough to overcome the main difficulties ahead without a significant input from behavioural changes, namely to guarantee current life quality associated with existing production and consumption levels. Decentralized production and reducing consumption are identified as fundamental steps in the changes

to come (over 80% of respondents select these options). This largely shared notion of the fundamental role that have to be played by consumers' behaviour in shaping and promoting the solution for future challenges in the energy area, is clearly articulated with another broad position assumed by around 80% of the answers: that the increase in energy efficiency is mainly dependent on individual will and commitment instead of measures undertaken by governments or the companies. Energy prices and to what extent they integrate all costs involved

Table 8 – Implications of trying to increase energy efficiency at home

Increasing our house energy efficiency involves:	Totally or partially agree (%)	Totally or partially disagree (%)	Doesn't know/doesn't answer (%)
Changing habits, loosing some comfort and convenience	47	44	9
Spending a considerable amount of money on equipment or insulation	78	15	7
Having better comfort spending less energy and money	78	13	9
Having a significant technical knowledge	37	56	7
A constant concern with energy consumption	80	13	7
N = 142			

in energy production seems to be an area of intense debate and different opinions. However, a main trend can be identified in the sample towards the opinion that the present price of fuels and electricity do not express or consider the total impact of production on air and water pollution, climate change, etc. However, of all five different aspects analyzed, energy price is the one with the more significant number of non-responses (around 16%). In the following table results for each of the five aspects analysed are presented, indicating how respondents answered for each one.

To be efficient: what does it imply and how far are families willing to go?

A focal purpose of this study is to understand how people perceive energy efficiency as a concept. In order to explore the concept several dimensions were analyzed, among them the notions of comfort and convenience, knowledge of costs and technical knowledge.

On the one hand, respondents seem to consider that changes on their own behaviour will not be enough to increase efficiency and there will be necessary to consider some investments in equipments or insulation (78% agree total or partially with this idea). They also believe that it is possible to increase comfort while spending less energy and money (77%). But on the other hand, for almost half of the sample energy efficiency is somehow associated with the idea of some loss of comfort or convenience (46%), maybe because they tend to consider it important to assume an attitude of constant concern or alert about the way energy is used (80%). It should be noted that technical knowledge to understand and behave more efficiently in using energy doesn't seem to be as relevant as the other dimensions, maybe due to the tendency of this group to clearly highlight energy efficiency as mainly dependent on behavioural change.

The group of families in the sample has shown to integrate energy efficiency practices in their day-to-day life without much discomfort or difficulty. Nevertheless, there are always other practices or improvements to consider. Analysing the reasons more frequently chosen by the respondents to justify why other families do not do their part when it comes to energy efficiency, it is again individual reasons, namely complacency, that come in first place. Almost 60% of the respondents opted for this, followed by lack of information with 36%, and families' resistance to integrate such concerns in their daily routines, either by mere unwillingness (25%), or because they are too busy (16%). Structural factors are also highlighted by some respondents, even if in a less clear way. The lack of good practices'

example setting by civil and state organizations with power and responsibilities in the area (17%) or even lack of support when individuals want to change their behaviour (10%) are among the most frequently selected structural answers. Somewhere in between individual action and structural factors, 15% of the respondents believe that others do not do more to be energy efficient because they do not believe their effort will have any practical and visible impact.

When we analyze the reasons why the families involved in the study do not do more for energy efficiency, answers follow a similar pattern. Differences are only noticeable in the number of non-responses (higher in this case) and in the choice for lack of examples set on good practices' and not believing in the impact of individual efforts, all three with higher scores when justifying individual lack of action in this area. In both questions presented in the Table 9 multiple answers were possible.

It is also important to explore how far people are willing to accept certain consequences or "collateral damages" in order to reduce the country's energy consumption. Measures more susceptible to result in broad social or economic impact receive very little support. Support for certain measures only occur when they are more directly related with the individual sphere, such as, reducing comfort or life conditions, imposing certain restrictions on car use, or defining energy consumption limits. Unemployment, decrease in economic growth, and any increase in taxes or prices receive a clear negative adhesion.

Shared responsibility?

Despite a clear tendency to highlight individual action as the main driver for energy efficiency in households, it is fair to consider that responsibilities to achieve ambitious energy efficiency targets do not end there. As we have seen before, the role of civil and state institutions providing good practice example or acting as facilitators of new energy efficient behaviours was highlighted by many respondents. When specifically asked about which entities, institutions or organizations should be the frontrunners in solving the country's energy problems or have the responsibility to do so (and considering that this was a multiple answers question), individuals have an equal score (60%) as the government (42%) and the Ministry of Environment (18%) considered together. Organizations either at national, regional or local level (for example, schools) receive major attention when it comes to assign responsibilities, although the local level (municipalities) receives less references (around 12%). At the end, considering state organizations as a whole, its role becomes much more relevant than the one at-

Table 9. Main reasons why people (others and the ecofamilies) do not do more to save energy

	Other families (%)	Own family (%)
Complacency	58	40
Lack of information	36	25
Do not think about it	25	18
Institutions do not set an example	17	1
They are too busy	16	13
Believe there will be no practical results	15	8
Institutions lack of support	10	15

Table 10. What will you be willing to accept in order to reduce the country's energy consumption?

	yes	no	Doesn't know/doesn't answer
Car use restrictions	76	18	6
Defining limits to energy consumption (quotas for each family or individual)	64	22	14
Reducing comfort and life conditions	40	46	14
Taxes increase	24	68	8
Economic growth reduction	17	77	6
Price Increase of general goods	16	73	11
Unemployment increase	1	91	8
N = 142			

Table 11. Who has to contribute in first place for solving the country's energy problems?

Categories	%
Citizens/individuals	60
Government/state	42
Environment Ministry	18
Schools	15
Companies	15
Municipalities	12
Media	11
NGO	8

tributed to citizens by this sample of families. In comparison, companies receive very little attention (not more than 15%), as do the media and environmental NGOs.

Despite the role of state organizations in solving the country's energy problems, there are different opinions on which strategic lines are the most relevant to achieve such an objective. When faced with three sets of paths for action - incentives (money), information, or restrictive measures - it is the first that gather most preferences (54%). Providing further information and promoting national campaigns on energy efficiency are chosen by only 23% of respondents, while restrictive measures such as forbidding certain appliances to enter the market, increasing the price of energy, or to force appliance producers to provide more efficient solutions, receives around 15% of preferences.

Actually, the preference attached to incentives as a main strategic course of action to promote energy efficiency is not in line with the knowledge revealed by respondents about resources already in place to do so. In fact, 64% of respondents assume to have no knowledge of any incentives to promote energy efficiency, and an even higher number (67%) have the same answer concerning incentives on renewable energy. It is important to highlight that Portugal is not the most proactive country in the European Union in promoting energy efficiency and re-

newable energy. Even so, in recent years some campaigns have been implemented (especially regarding efficient lighting) and fiscal incentives exist in the area of renewable energy. In fact, these are the resources usually identified by the respondents that do show some knowledge of the incentives in these areas. Considering the social background of the group being studied, the lack of knowledge they reveal deserves further study.

Main conclusions

The data presented in this paper are preliminary and result from a quantitative methodology - a survey - that must now be enriched by a more qualitative approach. Considering the nature of the question under analysis and the lack of research about it in Portugal, we believe that in depth interviews are a fundamental tool to better understand the reasons behind the answers that have been analysed here.

Even so, it is possible to draw some conclusions and identify some trends to be further explored, not only about the perception of the energy efficiency concept and energy in general, but also how perceptions are translated into action by social actors.

The surveyed families seem to put some emphasis on individual action although further research is needed to clarify the

reasons behind this tendency: is this a direct result of reflexivity and responsibility assumption or is it a consequence of the social background of the group being analysed or is it nothing else but the result of an urge to assume what they believe to be a socially acceptable discourse? An in depth qualitative analysis will give us further answers.

The idea of integrating basic practices to allow a better family management of energy use appears to permeate the sample. Energy efficiency, on the other hand, seems to have a positive image based on the idea of a double saving – family budget and the environment. It is now important to go deeper and explore the technology versus behaviour dimensions.

Information on environmental issues, although not decisive in many moments can play an important role in stimulating action and the identification of constraints (both personal and structural). Such information is widely recognised to be lacking among the Portuguese when compared to the EU average. In this context, misunderstandings are common about what can be done, which priority actions to take, or even which factors are the most relevant in shaping our limits for action. These are some of the main lines of the research that will follow, although caution should always be present because of the specific social background of the group being analysed.

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