

ISEU - Results

Household energy consumption, design, energy-using products, practice theory, ecodesign directive, standards, efficiency, sufficiency, electricity monitor, learning process, appropriation, experimental strategy.

DURATION OF THE PROJECT
01/01/2007 - 31/01/2011

BUDGET
709.511 €

KEYWORDS

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CONTEXT

Appliances and, more broadly, energy-using products have totally changed our lives in less than a century. However, these modern marvels convey too often an image of lightness and of lack of economic and environmental costs, as their consumption of energy (e.g. electricity, fuel coal or gas) is not directly related to practices. Public policies are increasingly encouraging the production of more efficient energy-using products. The energy efficiency of appliances is seen as a step for reducing the energy consumption of households. There are good arguments for the increase of energy efficiency of products and appliances: energy independence, energy cost and climate change. According to different models, improvements in energy efficiency since the 1970s have contributed more to our economic prosperity than traditional sources of energy supply. Energy efficiency is for this reason sometimes called "negawatt", the biggest energy source. Potential of energy efficiency improvements is still huge, but there are also doubts that it will be enough to face the major problems linked to energy consumption, as the case of appliances show.

Consumption of energy in households can be divided into the following sectors: space heating, water heating, lighting, cooking and appliances. In terms of energy consumption, space heating uses the most (53% in 2005), followed by appliances (21%) in OECD countries. But in terms of CO₂ emissions, appliances will soon catch up with residential heating. This is due to the low conversion factor from fossil energy to electricity and the steady increase of appliances in households. In OECD countries, the electricity use of appliances grew by 57% between 1990 and 2004, despite energy savings from improvements in energy efficiency. The energy share of larger appliances (refrigerators, freezers, washing machines, dishwashers and televisions) is currently about 50%.

However, this share is declining as the most rapid increase in appliance energy consumption comes from increased ownership of a wide range of mostly small appliances such as computers, mobile phones, personal audio equipment and other home electronics. Standby power accounts for around 10% of residential electricity demand. In some countries, air conditioning is also a key factor. Despite the decrease of the average unit energy consumption of big appliances put on the market (apart from televisions) their total energy consumption has increased since 1990, as households possess and use more of these appliances. For televisions, energy efficiency gains have been undermined by the consumer trend towards wide screens, which use more energy. In OCDE countries, the demand for big appliances is almost saturated. However this is not the case in other countries, where increase of energy consumption for appliances and products is expected.

According to life cycle analysis, energy-using products consume much more energy when used than when manufactured — even in the case of computers which require many resources during the production phase. In this perspective, where information is dominant, it is important that households are aware that the use of appliances is energy consuming. Most of the countries have thus developed energy-labelling schemes in order to educate consumers about the most efficient products. However the energy efficiency of appliances have been improved not because consumers are more demanding but rather labels organise the competition between producers.

When market mechanisms are not sufficient, some countries develop mandatory performance standards. At the European level the appliances have been at the political agenda through the *ecodesign* directive. According to the directive 2005/32/EC "establishing a framework for the setting of ecodesign requirements for energy-using products" (EuP), ecodesign means: the integration of environmental aspects into product design with the aim of improving the environmental performance of the EuP throughout its whole life cycle".



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OBJECTIVES

In the search for more sustainable consumption patterns, "behaviour change" has become a motto. A usual way to deal with this aim is the idea to change first attitudes of consumers, so that a behaviour change will follow. There is however more and more research showing that *practices* are not changing so easily, especially when consumption is inconspicuous as it is the case of household energy consumption. Studies from different disciplines (psychology, sociology, economics, ...) show that increased demand for energy from households depends on a wide range of mechanisms. Expectations of comfort, cleanliness and convenience have changed radically over the past few generations. Social norms have evolved quickly, leading to an increase of energy consumption. Homes, offices, domestic appliances and clothes play a crucial role in our lives, but not many of us question exactly how and why we perform so many daily rituals associated with them. There is clear evidence supporting the view that routine consumption is controlled by conceptions of normality and profoundly shaped by cultural and economic forces. Comfort is a need, but also as a social trend that can be adapted.

In the ISEU project we are concerned with the interaction between householders and objects that are associated to direct energy consumption. Thus, the focus of our research is the use of energy-using objects within homes, and especially how are working interfaces between these objects and their users: how usages are shaped by appliances, how objects are appropriated. Our main hypothesis states that the necessary change of culture of energy could be brought by objects and, in particular, through the object/user interfaces. Objectives of the research project are of three kinds: theoretical, practical recommendations and empowerment of the partners who are of different kinds (academic, advice agency, consumer organisation).

We have focussed our analyses and research on the following appliances: lighting, heating regulation, computer, washing machine, energy displays. After having analysed the ecodesign directive implementation, we have started different experiments with households: collaborative design sessions with users, use of smart meters by households. Focus groups about the idea of energy sufficiency have been conducted.

SOME RESULTS

While we know we have to transit quite fast towards a post-carbon society, the active role of users and their interaction with their appliances are hardly envisaged. The problem is that the environment does not appear in households' daily practices: households do not consume energy, they use different objects that provide them services. Therefore, rather than starting from attitudes, we think it is essential to start from what people are doing, from their everyday practices. In their daily life, households are engaged in practices (cooking, washing, working, reading, etc.) that are meaningful to them. Energy consumption is only one aspect of these practices, and it usually comes unnoticed.

The practices related to energy consumption are going to evolve in a direction that could be contradictory to our current standards of comfort. The mutation of the 'culture of energy' has to be accompanied in order to prevent social disruption and to limit environmental impacts. The transition towards sustainable energy culture will require understanding household practices in order to adapt them to the new context. In this perspective, efficiency and sufficiency approaches should not be seen as conflicting but as complementary. We do not know what will be transformed, or prohibited (e.g. light bulbs). How could practices be transformed without calling to the "good will" of users (through information instruments)?

As our research has shown, the preparatory studies for implementing the 'ecodesign directive' are mainly based on technological considerations. Users are mainly addressed as rational individuals who mobilise information about energy efficiency of appliances (through labels), while they are currently described as hedonistic (searching for comfort). When left with these two approaches, we fall inevitably in the gap between attitudes and behaviours. Furthermore, the reduction to average usage patterns on which the EuP regulation is based does not allow for experimentations with objects.



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These approaches cannot take into account the creation of new relationships between an object and its user. Other ways of conceptualizing energy consumption could be brought by the objects themselves, modifying practices. An experimental approach, based on the idea that the desires of the humans are not fixed beforehand and that practices are modified by objects, would better be more useful to yield the change of practices and related consumption. This third approach would be *experimental*, i.e. allowing redistribution within practices of the relationships between objects and users. The exploration of this experimental strategy — which already exists but is not thematised as such — is the primary recommendation we make.

CONTRIBUTION OF THE PROJECT TO A SUSTAINABLE DEVELOPMENT POLICY

Consumer organisations, and NGO's in general, are a *weak actor* of the current negotiation space. Although in the perspective of sustainable development they can claim to represent broad common interests (public health, preservation of ecosystems, future generation, cultural diversity, etc.), these organisations are seldom listened when policy has to make a decision. Even when these organisations are in line with the scientists' alarm, notwithstanding the whistle-blowers, the result is a soft and lukewarm compromise, as shown by the climate change negotiations.

In the ISEU project, CRIOC-OIVO (a consumer organisation which takes part to the standardisation bodies) has gained new insights and experiences. The various formal and informal discussions that the team members have had with different stakeholders, both at the Belgian and European levels, have resonated with new decisions, as it was perceptible in the implementation of the ecodesign directive.

Contrary to what is often stated in the debates about smart meters, we have shown that electricity monitors will not help by themselves household to reduce their consumption. Therefore the implementation of 'smart meters' has to be cautiously done.

Beyond all energy efficiency policies, the partners have gained new arguments and insights about the need to adopt complementary sufficiency policies.

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