

Finding local opportunities for energy efficiency in households

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Abstract

Household interest in the environment increased in the 1990s, and environmental protection has been cited as a reason for becoming more energy efficient. However, people's attitudes concerning sustainable development and their stated willingness to behave in environmentally sustainable ways do not always have affect their actual behavior. Good intentions are not always translated into actual everyday practices. How can this be explained? More importantly, how can this be changed so that good intentions are also implemented in people's routines?

The public policy literature has established the "window of opportunity" concept to discuss how and why ideas must be put into practice at particular times (Kingdon 1984). In relation to planning, Svane (2008) has discussed "situations of opportunity" when sustainable choices can be made. Similarly, I will discuss household energy efficiency in relation to "local opportunities" to act in energy-efficient ways. In what situations do these opportunities occur in households? When is it possible to reach

households and help them change their routines and behavior, making them more energy efficient? How can one develop household-directed policy measures that exploit local opportunities for reducing energy use and increasing the implementation of energy-efficiency measures. These general matters will be discussed drawing on material from in-depth interviews with energy consultants and householders in Sweden.

Keywords: Energy efficiency, Households, Windows of opportunity, Behavior, Sustainable, Environment

Introduction

Household energy use has long been treated as a “black box,” something one might, should, or could not intentionally attempt to influence. It has usually been regarded as something to be regulated only by individual consumers. Notwithstanding this, a possible means of control is general information provision, as formulated in phrases such as: “Turn off the light when leaving a room,” and “Do not waste water.” The state then tries to influence the private realm, i.e., its citizens, using logical argument to persuade them to do the “right” things. The strategy of disseminating the same general information to all households, however, has been criticized by both energy advisors and households, because households cannot relate their everyday lives to such general advice (Palm 2009). How and when is it then possible to reach these households?

Household interest in the environment increased in the 1990s, and a desire to protect the environment has been cited as a reason for becoming more energy efficient. However, people’s attitudes to sustainable development and their stated willingness to behave in environmentally sustainable ways do not always affect their actual behavior. Good intentions are not translated into actual everyday practices. How can this be explained? More importantly, how can this situation be changed so that good intentions are also implemented in people’s everyday routines? In this paper, I will discuss energy efficiency in households in relation to “local opportunities,” that is, situations in which it is possible to reach households and persuade them to make their routines and behavior more energy efficient.

Aim

In this paper, I will discuss local opportunities for improving energy efficiency that arise in households’ everyday practices. What opportunities can be identified? What opportunities do

households exploit and put into practice? What opportunities are “missed” and not realized? How can we explain why some opportunities are taken while others are missed?

Finding and making use of local opportunities

Strong pro-environment attitudes and values (i.e., environmental consciousness) are common among Swedish citizens, and people generally claim to be willing to undertake activities promoting environmental sustainability. However, the challenge is to translate these attitudes and claims into everyday routines and make them part of everyday practices. For example, despite recent increased interest in sustainably produced food, consumption of these products remains unchanged at no more than 3% of total food expenditures (SCB 2006). There is thus a gap between a stated willingness to live in accordance with environmental awareness and the actions taken.

There are also examples of people actually changing their behavior, and one profound one in Sweden concerns waste sorting. According to a 2008 study for the Swedish Environmental Protection Agency, 57% of Swedish citizens had increased their waste sorting activities over the previous two years (Söderberg 2008). Clearly, this is one area where translating norms into behavioral change has been relatively successful. In the case of waste sorting, personal behavioral norms appear pronounced and society’s infrastructure supports the activities. Interestingly, the perception that recycling is extensive in other households tends to have positive spillover effects on households. It is stated that a combination of these factors largely explains why norms are more likely to be translated into action in this area than in others (Söderberg 2008, p. 14).

Guy and Shove (2000) state that people develop knowledge that fits the framework in where they live, and knowledge of energy is no exception. Earlier studies have found that environmental concerns are becoming increasingly important as symbolic issues. People want to show to others that they are environmentally aware and are thinking about climate problems (Pedersen 2000; Hedrén 2008; Skill

2008; Tengvard and Palm 2009). There is a symbolic aspect to environmentally friendly behavior: by leaving sorted waste in the proper containers at public collection locations or installing a PV panel on the roof, a household can show its neighbors that it actually has a sustainable lifestyle. At the same time, earlier studies have detected inconsistencies in the green consumption area. For example, consumers who recycle materials do not necessarily favor green energy products (Faiers and Neame 2006, p. 1799). Strengthening the sustainable lifestyle in other areas, however, involves encouraging people both to engage in particular activities and to assess everyday choices. How can this be done so that all these good intentions are actually implemented in people's everyday routines?

In the public policy literature, the “window of opportunity” concept has been used in discussing how and why different ideas have their time, so to speak. Kingdon (1984) bases his approach on the “garbage can” model developed by Cohen et al. (1972). This model explains decision making in organizations as something other than a rational process. The understanding of a policy problem in an organization may be rather poor, people enter and exit the organization, and learning is difficult to achieve. The organization’s garbage can is a collection of issues, choices, and solutions looking for problems, as well as suitable decision situations in which an issue can be put forward. The actors in the organization dump their various problems and solutions in the garbage can. The outcome is a mixture of participants, problems, and resources. Kingdon developed this notion by arguing that the agenda consists of three streams: the problem, policy, and political streams. The critical situation is when these three streams merge and a problem is recognized and a solution is found that can be accepted by the political community and where resources are possible to uphold—a window of opportunity for policy change has been opened.

Later on, Örjan Svane (2008) used similar terms, stating that it is important to identify a Situation of Opportunity, that is, *what* to do, but also discussing *when* to do it. This includes the importance of taking account of the cost of *missing* an opportunity. An opportunity situation can be a chance lost or a chance taken. Opportunity situations are periods when actors have a wide influence on the outcome of a process. According to Svane (2008), the concept of opportunity differs from that of policy window

in that the latter is used in analyzing historical policy-making processes, while the situation concept is used in the early identification of opportunities in a process, as well as in retrospective analysis (pp. 82–83).

What are the local opportunities for increased energy efficiency in households? When and how do these opportunities arise? If we see households' everyday energy-related behavior as comprising more or less conscious choices, we see most as relying on routines and habits established over a long time. When and where do local opportunities appear in everyday activities, opportunities for habits to change and become more energy efficient? Which local opportunities are taken and which are missed? In addition, is it possible influence and affect the local opportunities chosen and implemented in households? That will be discussed below.

Five case studies

The paper is based on several case studies involving in-depth interviews with homeowners, tenants, and tenant/owners in which their energy use and efficiency potential were discussed. One case study was conducted in a Swedish municipality where homeowners have been part of an energy use reduction project arranged by municipal energy consultants. In another ongoing research project, we interviewed householders who had invested or are interested in investing in wind turbines, PV panels, and/or solar heating. A third case study concerned households that had built new houses. The fourth case study included tenants living in apartments. The last case study involved households that had bought their apartments and were members of housing cooperatives. In all case studies, we partly used the same interview guide, which asked about: awareness of energy use, ability to decide on energy-related factors, energy-efficiency measures and their implementation, and information and opinions on energy policy. Altogether, we interviewed 23 homeowners, 8 tenants, 15 tenant/owners (i.e., housing cooperative members), and 17 homeowners who recently built their houses. The interviews were recorded using an MP3 recorder/player and then transcribed.

In discussing the results of these case studies, I will consider the householders' views on energy efficiency according to whether they rent or own their homes. I will use four categories: tenants, tenant/owners (i.e., housing cooperative members), buying homeowners (who had bought an already built house), and building homeowners (who had built their own house sometime over the previous three years).

The interviewed householders are made anonymous in this paper and will be referred to as: tenants (T1-8); tenant/owners (TO1-15); home-owners (HOBuy1-23) and; homeowners who recently built their houses (HOBUILD1-17). Where two members of a single household were interviewed, this is indicated by appending 'a' or 'b' to the number.

Local opportunities for energy efficiency in households

Using an inductive method, I will discuss the results of the in-depth interviews and the local opportunities for energy efficiency that appeared during our discussions.

Swedish households are familiar with traditional energy use reduction advice

Regardless of whether the householders rented or owned their homes, most of them knew the general energy-efficiency advice, for example, "turn off the light," "wash with a full machine," and "turn off stand-by." One householder said:

I have begun to think about the stuff we have at home, and, like, aha, this is an energy thief!
(HOBUILD1)

Only two tenants and one tenant/owner did not recall these common tips.

The importance of different housing forms

Whether the householders rent or own their homes was important to how they perceived their opportunities to reduce their energy use at home. Tenants and tenant/owners perceived fewer opportunities to influence their energy use than did people who owned their homes. This is because it is the owner of the building or the local cooperative that is responsible for the construction and for keeping the technical services of the building operating in a reasonable and energy-efficient way. In an apartment, all appliances, such as refrigerators and freezers, are installed by the landlords, and the tenants cannot influence the quality or brand used. The tenant/owners felt that they also had little influence in such matters, because it was up to the board of the housing cooperative. During the interviews, the tenants and tenant/owners generally said that it was easier to influence their electricity than their heating use.

Homeowners who had owned their houses for several years felt that they could influence and control almost every part of the energy system and their energy use—ranging from wall insulation to the appliance stand-by functions. Those who had recently built new houses stated that they had little impact on choice of heating system, insulation, windows, appliances, and so on. On the other hand, they claimed to have great influence on energy efficiency during when *maintaining* the building, just not during the building process. This strikes me as rather surprising and noteworthy. The construction phase of the house is a local opportunity to make choices that influence household energy consumption over a long period; nevertheless, the families interviewed missed that opportunity—why?

Lack of influence on the building process

The main reason the householders gave as to why they did not try to exert greater influence on the building process was time: the time was limited, and there were many decisions to make and so much to arrange. The households had just a few weeks to decide on many issues, ranging from choice of wallpaper to heating system. The reason for this time pressure was that the contractor, Myresjöhus, was late in building the first houses, which influenced the whole building process in the area.

Anything the householders wanted built differently from the standard specifications had to be decided on very quickly:

It happened so fast, too. They rang in the morning and wanted a decision the same day. And everything was like that some days. They were very quick choices, so we could not look around and, for example, influence the choice of craftsmen ... It was very frustrating.

The building homeowners uniformly told us that they were essentially forced to choose the heating system that the vendor of the house offered by default: “We had to take district heating—it was the only option discussed” (HOBUILD1). In addition, they were all forced to pay the EUR 4500 connection fee to the district heating network regardless of whether or not they wanted to connect to it.

Those who had looked at alternatives such as bedrock or lake heat pumps had to raise the issue and explore the possibility of those options themselves. However, in the end, they still had to pay the connection fee for district heating, so they did not press the issue.

One family that thought they had little opportunity to influence the building process itself, in that they knew nothing about the materials used or how they had been transported. They would have liked to have more information about many things:

Everything, everything, everything! I would have liked to have been more active in my choices, as I think these things are important. (HOBUILD8)

Most building homeowner interviewees said they did not have the opportunity to choose different windows to install or greater wall thicknesses than those included as standard. Some said they had the opportunity to choose windows of a different u-value but did not feel that they wanted to make any changes. They received information about standard and triple-glazed windows and their u-value, as

well as about wall thickness. This was included as standard equipment, and "would be good", according to the saler.

The building homeowners felt that it was difficult to influence the choice appliances installed in their homes. Among other matters, one householder noted that the dishwasher did not have a good short program, so she instead uses the more energy-wasting standard program. Other building homeowners saw little opportunity to adjust the thermostat to lower the temperature and reduce the energy consumption.

However, most building homeowners did not actively look for available alternatives to the standard equipment installed in their new houses. The households that did not look for other alternatives said that they would have liked more information, for example, on alternative heating systems and energy efficient solutions. If they knew more about these matters, they believed, in retrospect, that they would have made more active choices and not just installed the offered standard equipment.

The limited choices were, at the same time, sometimes perceived as something positive,

There were so incredibly many choices to make, so we thought it was easiest to take district heating. There were so many other choices to make, that it felt almost too much to have to choose heating system as well. (HOBuild4)

The local opportunity this household had to influence their energy use over the long term vanished due to lack of time and having too many choices to make. Energy issues seemingly were assigned a low priority or disappeared in the process because of lack of information.

Information

If we turn to information regarding energy efficiency, interest in this matter varied between the different household categories. Tenants and tenant/owners rarely asked for any information about energy efficiency and did not actively search for it either:

Nah, it is nothing. It is what you get through TV, but nothing except that. (TO10b)

The tenants and tenant/owners, for example, knew less about their indoor temperature than did the homeowners. One tenant said that the heat in the apartment could not be adjusted: “It is always warm and that [i.e., the temperature] is controlled centrally, even if you turn off the radiators. You must open the windows to get air and ventilation” (T1). Three tenants also believed that they could not directly influence either electricity or heat consumption in the home. The tenants generally also had less knowledge of how much electricity different appliances consumed.

Those who built new houses felt they lacked information about the benefits of alternative, environmentally friendly heating systems and about the up-front costs and cumulative savings of such systems. They also requested descriptions of the various heating systems, and asked how they could be combined with each other, how much money could be saved by reducing the heat one degree, and how they could visualize their energy consumption. All this information would have been useful during the actual building of the house.

They wanted, however, more individually tailored, specific information related directly to their houses or living conditions.

Homeowner demands for specific information

The buying homeowners were generally more critical than were the other categories of households regarding the information available and the energy advice offered, for example, by municipal energy

consultants. They often thought that the public energy advisers were ignorant and that they just gave “simple” energy-saving tips that could simply be looked up in a brochure at any time. The buying homeowners wanted to have home visits and individual inspections in which consultants measured the family’s energy use and gave feedback on how family habits could change in order to reduce energy consumption. They had specific questions for which they had sought and not found answers, for example: Should you turn off the water heater when leaving the house for longer periods? How successful is it to let Gull fiber plastic products interact with sawdust? How much energy should a house built in 1964 use?

Advice linked to specific action was successful

General advice was not implemented. Energy use was successfully reduced only when specific information was combined with concrete measurement techniques and experimentation. This was done in one of our case studies, the one where homeowners have been part of an energy use reduction project arranged by municipal energy consultants.

We monitored the freezer in the basement for a month. We defrosted it and tracked how much we could save by defrosting it more often. We got a meter [from the energy consultant] that we put in the electrical outlet to check how much energy we saved. It was very useful. ... I was surprised at how much energy we could save. (HOBuy13)

Although awareness of energy and environmental issues can be high, it was sometimes difficult to understand the implications of this awareness in practice:

We’ve measured and been shocked, especially my partner, about how much [energy] things consume when on stand-by and, you know, with 6–7 computers at home ... it becomes a substantial saving. So there really has been an awakening. (HOBuy11)

It was also difficult to grasp just how much money a family could save by many small energy-efficiency measures in the aggregate:

Yes, the most shocking thing was to see how much [energy] the television consumed, and all the other appliances. It was the biggest shock. ... And you think then when you hear people talk about “do this and that” and you can save SEK 100 and SEK 200, but the total sum of that can be a big deal in a year ... It is quite another thing to see how much you can save. Because you don’t see the money before you try to put into practice the different tips at home. (HOBuy11)

Saving money due to energy-efficiency investments was often mentioned as a motivation. At the same time, investment costs were mentioned, most often by homeowners, as the biggest barrier to action. For tenant/owners, in contrast economic incentives were surprisingly weak, and no one emphasized energy efficiency as a way for the family to save money. They felt that they earned enough money to allow themselves not to bother about their energy consumption. All our tenant/owners only had access collective measures of both electricity and heat, so in practice they lacked individual economic incentives to reduce their energy consumption.

The tenants did not see energy efficiency as a way to save money in the same way as the homeowners did. Often this seemed to result from not knowing how much electricity different appliances used or how much money they could actually save by implementing various measures.

Someone else's responsibility

Tenants, tenant/owners, and those who had built new houses often felt that someone else was, or should be, responsible for achieving energy use reduction goals:

There is nothing individual apartment [residents] can do. Perhaps HSB [i.e., the local housing cooperative association] may be interested. (TO5a)

Another householder did not think energy efficiency was a matter for the individual household. He also believed that the people working on energy issues in the housing company were familiar with the topic and were doing what was expected of them. (T3)

One factor that emerged in the interviews with homeowners who had recently built new houses was that they relied on the houses already meeting a certain standard in terms of window u-value, wall thickness (i.e., r-value), and general energy efficiency. For example, one householder claimed to know about the building contractor Myresjöhus, saying: “They are generally very environmentally aware. It feels as if they are trying to hold down energy costs.” She trusted their standard equipment in the case of appliances and the like, and believed that they built dense and energy-efficient houses. Therefore, she felt justified in being fairly passive in her decision making, a view she shared with most of the interviewed households.

The building homeowners generally believed that Myresjöhus had a major responsibility for making the houses energy efficient—“Myresjöhus does, of course, build energy-efficient buildings”—so the households themselves felt they did not need to do much when it came to the building envelope:

Yes, it feels like they really have more responsibility than I do, because I, as an individual, have so little knowledge of the available options, the possibilities. So the construction industry should have the greatest responsibility. (HOBUILD4)

One householder said that he, as a consumer, had the fewer possibilities to exert influence, so great responsibility is borne by those who build houses and do have a voice: “Because I cannot do that as a buyer: I buy a turn-key house and hope it is good.” He came back to the point that the individual already has a great deal to think about in connection with house buying and building; energy efficiency is just one more bothersome issue to keep track of, and responsibility for it should mainly belong to house builders and policy makers.

Conclusions

Local opportunities for energy efficiency exist in the households' everyday lives. Every time someone switches off a light when leaving a room or washes with a full machine, she or he is exploiting a local opportunity. Most households were familiar with these traditional tips for reducing energy use. They could repeat such advice, though that did not indicate that they had implemented it.

General energy efficiency advice was often so general that households had difficulties relating to it. They could not grasp what it would actually mean for their energy consumption if they implemented this advice. That is why it was only when such advice was combined, for example, with the installation of a meter that measured the reduction in energy use, that households realized the practical implications of, for example, advice to turn off the lights systematically. The combination of advice and direct feedback from a meter exemplifies how an often missed local opportunity can be turned into a seized opportunity.

Owning one's own house produces many local opportunities to influence energy consumption, both when renovating the house and buying appliances. Tenants and tenant/owners did not have as many local opportunities, seemingly making them less reflective on energy efficiency in general. Finding ways to involve tenants in the housing company's discussion of energy efficiency seems to be an important way to increase tenant awareness and interest in general. Involving tenants in fulfilling energy-efficiency goals could lead to increased reflection on all local opportunities for energy efficiency in their everyday lives, which in turn could lead to the exploiting of more local opportunities.

Homeowners can save more money from energy-efficiency investment than can tenants, which contributed to their interest in finding information about available efficiency measures. While

homeowners looked for specific information, the tenants and tenant/owners did not ask for any information at all.

Disseminating information on energy efficiency to tenants and tenant/owners is one way to increase their awareness of local opportunities for energy efficiency. Today, most public energy-efficiency information, such as municipal energy counseling, is directed toward homeowners. This seems to be a waste of time and resources and a missed opportunity for municipal counselors, because homeowners already have this information. It would be wiser to target the tenants and tenant/owners with this information.

The buying homeowners regarded themselves as responsible for achieving an energy-efficient home. The building homeowners, on the other hand, often regarded the building company as responsible for energy-related issues. In addition, tenants and tenant/owners often identified actors other than themselves as responsible for energy efficiency. Making someone else responsible leads to permanently missed local opportunities, because no one is ready to leap into action to seize opportunities when they appear.

In my view, the biggest missed opportunities found in our case studies were those missed by the building homeowners. The building homeowners missed the opportunity to influence their energy consumption for years to come and most of them did not even realize this. Several of them lacked information on their opportunities to choose energy-efficient materials, heating systems, and appliances during the building process. Moreover, when households did have this information, they lacked time to apply it; instead, they had to rely on the building company and its standards. There are many ways to increase the chances of making this local opportunity an opportunity taken, for example, by giving building homeowners information about energy efficiency in connection with the building permit application.

As mentioned above, various local opportunities for energy efficiency appear in our everyday lives. Today we have both considerable knowledge and sustainable energy-efficient technology, but the problem is diffusion. To exploit the local opportunities that emerge in everyday life, they must first be identified by both households and policy-makers. One important step in this direction would be to differentiate and categorize the households and discuss the different opportunities each category has, as was done here, depending on whether they own or rent their homes. Exactly what opportunities appear, and when they appear, differs slightly between household categories. If we can define relatively large household categories that still retain key distinctive features, we will also be able to identify and influence the local opportunities appearing in these households' daily lives.

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