Household energy consumption and consumer electronics: The case of television ☆

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Abstract

In recent years, there has been a dramatic rise in the number of consumer electronics in households. These new technologies and the services that support them enable new highly energy intensive behaviours. Using in-depth interview data collected from 20 households in 2006, this paper explores these energy intensive behaviours, using the example of the use of televisions. In doing so, it illustrates how the design and marketing of consumer electronics, and the services which support them, actively encourage energy intensive behaviours and how householders are reconfiguring their homes and lifestyles to fit these behaviours. This latter point is significant because, as householders change their homes and daily lives to fit energy intensive consuming behaviours, it will become increasingly difficult to encourage people to reduce their household energy consumption. This paper concludes with the implications of the research findings for policies designed to reduce household energy consumption.
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1. Introduction

In recent years, there has been a dramatic rise in the number of consumer electronics[1] in households. In the UK, as in other affluent countries, at least one computer is found in most homes, analogue television and radio equipment is being supplemented by digital equipment,[2] and the stocks of mobile telephones, sound systems, videos, DVDs, camcorders, answering machines, digital cameras, printers and scanners are growing rapidly. Given this proliferation of consumer electronics the prediction that they will constitute the biggest single sector of domestic electricity consumption in the UK by 2010 (Owen, 2006, p. 34) is unsurprising. What is more remarkable is that, until relatively recently, concern over the energy used by consumer electronics has been all but bypassed by UK energy policy and energy saving initiatives. For example, energy labelling[3] for most white goods, i.e. washing machines, refrigerators and dish-washers, etc., has been in place since the early 1990s and is now mandatory (MTP, 2006a) but there are currently no

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[1] This paper uses the term consumer electronics to refer to all electronic equipment used in the home for entertainment and information purposes and therefore includes computing equipment.

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[2] In 2005, OFCOM estimated that some 63% of the UK households have digital television and this is growing at approximately 6%/year (OFCOM, 2005a).

[3] The EU Energy Label, used for white goods in the UK, is primarily an energy-efficiency label, as the most important message is the relative ranking of the appliance on a scale from A to G (Boardman, 1997).

plans to introduce compulsory energy labelling for consumer electronics (MTP, 2006a).

There have been some recent moves by the UK government to set up a voluntary partnership for retailers to commit to sell energy efficient consumer electronic products, with the aim of significantly reducing carbon emissions from these products by 2010 (DEFRA, 2006). It is however surprising that more comprehensive policies designed to reduce the energy used by consumer electronics are not being developed given the current UK governments commitment to making an ambitious 60% reduction in UK carbon dioxide (CO_2) emissions from 1990 levels by 2050. This demands a reduction in emissions of CO_2 per head from around three tonnes of carbon per year in 1990 to around 1 tonne of carbon per head in 2050.

Reducing carbon emissions through the design and development of low carbon housing is a policy priority for the UK government (DTI, 2002). This policy approach is part of a wider European commitment to reduce household energy consumption (European-Council, 2003; European-Commission, 2005a). Or in other words, the search is on for technologies that might contribute to the mitigation of household energy consumption and associated carbon emissions (Crosbie and Guy, in press) and as consumer electronics represent the most rapidly growing sector of household electricity use they offer a considerable opportunity in this regard. The Energy Saving Trust estimates that "*by 2020, entertainment, computers and gadgets will account for an extraordinary 45% of electricity used in the home*" (Owen, 2007, p. 3), with the total consumption of consumer electronic equipment in the home reaching 49.6 TWh (Owen, 2007, p. 12). By then, domestic televisions in the UK will consume an estimated 19.3 TWh/year (MTP, 2006b) this is greater than the total estimated energy consumption of consumer electronics in UK homes in 2004, which then stood at around 18 TWh (Owen, 2006, p. 34).

Recently, there have been some efforts to improve the efficiency of all appliances including consumer electronics at the European policy level. For example, as part of its Integrated Product Policy (IPP) the European Parliament adopted a directive on the eco-design of energy-using products, in April 2005, which aims at improving the environmental performance of products throughout their life cycle by the systematic integration of environmental aspects at the earliest stage of their design (European Commission, 2005b). The problem with the eco-design directive is that most of its initiatives focus on improving the energy efficiency of the product and/or disposal of the product at the end of its life cycle (Charter and Belmanel, 1999, p. 26) with little attempt to understand the behaviours and infrastructures that shape energy use, which are an essential element of developing and marketing energy efficient products (Crosbie and Guy, in press). The research presented in this paper works towards filling these gaps for household consumer electronics. The approach

adopted in this work builds on previous research exploring household lighting practices (Crosbie and Guy, in press).

In order to explore the factors framing the increase in the energy used by consumer electronics in the home, this paper examines the energy implications of the ways in which televisions are used in contemporary households. To do so, it uses in-depth interview data from 25 respondents conducted in the summer of 2006. The interviews were designed to explore how research participants use consumer electronics in their homes, how this may differ from the past, what type of consumer electronics they aspire to in the future and why they choose particular consumer electronics. The aim of this paper is to illustrate how an understanding of these factors can provide a sound basis from which to evaluate policy options and assess potential energy savings for this important aspect of household electricity consumption.

2. Research methods

Snowball sampling[4] was used to recruit the 15 women and 10 men that took part in the research. Ten of the interviewees are couples living in the same household, whereas the remaining 15 interviewees were the only members of their households interviewed. One of the respondents is single and lives alone, the other 24 respondents live with their spouse or partner and 16 of these respondents have children living at home. All the interviewees live in single-family houses in urban areas. All those taking part in the research have midrange household incomes, with none falling into the lowest or highest quartile of UK household incomes, and in common with 70% of the UK population (ONS, 2006) all interviewees are owner occupiers. These households were selected because it was felt that they would more readily represent average behaviour in regard to the ownership and use of consumer electronics than either high or low income households, or those living in rented accommodation.

The interview guide approachs were taken in this research (Patton, 1990). Therefore, the interview was guided by a list of topics but the interviewer was able to vary the wording and order of the questions. This approach has the advantage that it provides systematic and comprehensive data while allowing the interviewer to tap into the issues that are most relevant to each respondent (Patton, 1990). As is usual when using the interview guide approach the interviews were recorded and later transcribed for analysis. The interviews took place in respondents' homes allowing the interviewer to confirm some of the respondents' responses. The length of the interviews varied, between 45 min and an hour and 20 min, depending upon the length of the responses given by respondents.

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[4]The initial research participants were recruited at a community group meeting and then referrals from initial respondents were used to generate additional subjects.