Energy Policy 84 (2015) 250–256

Contents lists available at ScienceDirect

Energy Policy

journal homepage: www.elsevier.com/locate/enpol

Low carbon thermal technologies in an ageing society – What are the issues?

Rosie Day*

School of Geography, Earth and Environmental Sciences, University of Birmingham, Edgbaston, Birmingham B15 2TT, UK

HIGHLIGHTS

- The specific needs of older people must be considered in low carbon transitions.
- The vulnerability discourse however dominates in a way which is unhelpful.
- Some physiological aspects of ageing affect person-technology fit.
- Cultural aspects influence the success of integration of LCTs into domestic settings.
- More inclusive design is needed if older people are to benefit from LCTs.

ARTICLE INFO

Article history:
Received 24 June 2014
Received in revised form
24 September 2014
Accepted 12 November 2014
Available online 29 November 2014

Keywords:
Older people
Elderly
Low carbon
Thermal comfort
Energy transition
Domestic

ABSTRACT

This paper is a commentary on the theme of this special issue, low carbon thermal technologies and older age, and the Conditioning Demand project. Drawing on the project findings, I discuss some key aspects of ageing that are relevant to the roll-out of low carbon technologies in domestic settings in ageing, developed societies. These include biological, cognitive, institutional and social dimensions. I conclude with some suggestions for ways of working to maximise the potential benefits of low carbon thermal technologies for older people.

1. Introduction

I was a member of the advisory board for the Conditioning Demand project, from which this special issue arises, a role which I was very pleased to be invited to; having interests in energy vulnerability and in ageing in my own work, I was particularly enthusiastic about the exploration of low carbon technologies and thermal management in a diversity of domestic and residential spaces inhabited by older people. Low carbon thermal technologies, which include a range of devices large and small, from heating controls and thermostats to boilers, ground or air source heat pumps, solar panels, insulation and more, offer opportunities for households to make adjustments to their material infrastructures that should allow them to achieve the same or improved thermal comfort on an ongoing basis, with lower fuel consumption and lowered carbon emissions. This potentially offers significant benefits to older people, as well as others, especially any suffering from fuel poverty. Nevertheless, there are several considerations that would need to be evaluated in order to assess the suitability of a given intervention in a specific domestic setting. Where older people are the residents, the issues may be distinctive. In this paper I do not intend to review a list of specific low carbon thermal devices and assess their suitability for older people, but I offer some commentary and reflection on the issues as I see them surrounding the roll-out of low carbon thermal technologies in societies with growing numbers of older people. I do this with particular reference to the preceeding papers in this special issue, as well as drawing on wider work. I start by considering the extent to which older people should be expected or required to take part in a low carbon transition, before discussing the ways in which older age may bring up specific concerns, considering what we have learned from the Conditioning Demand project and related research, and finally pointing to some ways forward.

* Fax: +44 121 414 55 28.
E-mail address: r.j.day@bham.ac.uk

http://dx.doi.org/10.1016/j.enpol.2014.11.017

2. Older age and carbon responsibility

Indisputably in developed countries the proportion of our population that is considered 'older' is growing, with follow-on effects on demand for services of various kinds. Given the potentially different needs, daily routines and consumption habits of older people compared to younger cohorts, it seems reasonable to expect that the ageing of a population may be accompanied by changes in patterns of energy consumption and associated carbon emissions. The small number of relevant studies on this question by and large bear this out, and suggest that older people use more energy at home than younger households do. For example, Yamasaki and Tominaga (1997) found that over 60s in Japan were spending more than others on lighting and on fuel, which they attributed to rising demand for air conditioning in this age cohort, and Tonn and Eisenberg (2007) in the US and Brounen et al. (2012) in the Netherlands found that older households consumed more energy than other age groups, largely driven by greater heating use (in the Netherlands case, this was regarding gas only).

Looking forward, Hamza and Gilroy (2011) conclude that population ageing in the UK will lead to a future rise in energy demand, again driven by heating demand, based on evidence that older people spend more time at home and tend to live in larger, less efficient dwellings. They also foresee a growing demand for energy consuming assistive devices as more people age in their own homes. They further speculate that future cohorts of older people comprising the baby boomer generation will be higher consumers of all kinds of goods and services than current cohorts – not only those associated with the needs of older age-bringing their domestic energy demand even higher.

One or two pieces of modelling work do suggest that across all sectors, not only the domestic, an ageing population might result in an overall decrease in energy use and carbon emissions, because of a reduced work force resulting in slowed economic growth (Dalton et al., 2008; Garau et al., 2013) Conversely however, Menz and Welsch (2012) find that for OECD countries, carbon emissions rise as the proportion of older people rises, as well as the proportion of people born after 1960.

Overall then, the indications are that as the number of older households in developed countries increases, domestic energy consumption rises, and that the rate of increase may also be rising. Given that the domestic sector is highly significant in energy demand and carbon emissions, there is clearly an argument to be made that any low carbon transition will need to include older people. As significant energy consumers and a sizeable proportion of the population, their energy demand must be addressed.

Running counter to this however are concerns about older people's welfare. Their higher energy consumption appears to be largely due to managing thermal comfort – through heating and cooling – and this is specifically an area where older people are likely to have different needs from younger people, as they are more susceptible to being too cold or too hot. In the UK, this shows up clearly in the excess winter mortality statistics, which record tens of thousands of extra deaths each winter, compared to the summer, mostly among older people (Office for National Statistics, 2013). Largely for this reason, UK energy policy classifies older people, along with young children and the disabled, as 'vulnerable', and prioritises them for action regarding fuel poverty (Department of Energy and Climate Change, 2013). The greater impact of hot weather on older people was starkly apparent in the numbers of deaths among older people recorded during the European heatwave of 2003 (Conti et al., 2005; Fouillet et al., 2006), and indeed there is concern that this vulnerability to heat among the aged is not sufficiently recognised (Abrahamson et al., 2005). Given these situations, it may be argued that older people should not be expected or asked to reduce their heating and cooling consumption – rather, policy ought to be aiming at ensuring they are actually heating and cooling enough. To put this in social or environmental justice terms it can be argued that it is a matter of justice as 'recognition' (Fraser 1995; Schlosberg, 2007) to take into account the particular energy service needs of older people (see Walker and Day (2012)).

These two imperatives of reducing energy consumption and accompanying carbon emissions, and ensuring the welfare of older people, may seem to be in conflict, but a widely advocated 'solution' is that infrastructure changes that increase energy efficiency and provide energy services at a reduced carbon output – i.e., low carbon technologies, or LCTs – can tackle both these at the same time. If older people's domestic settings can be fitted with technologies that reduce the amount of energy needed for heating and cooling especially, then they can have secure thermal comfort whilst at the same time keeping their energy consumption down. This appears a win–win proposition. However, plenty of work has shown that introducing new technologies into households is not necessarily straightforward and that the inhabitants of homes do not always do things in a way that designers think they should (Gram-Hanssen, 2010; Guerra-Santin and Itard, 2010). In order to manage such interventions successfully therefore, we need a good level of understanding of the dynamics between infrastructures and people.

In the case of older people, there is much to investigate. Older age is a quite complex phenomenon, and there are great differences between the situations of different older people, in terms of their income, health, where they live, family situation and so on. Individuals may be unwilling to identify themselves as either old or vulnerable which goes some way to explaining the reluctance of significant numbers of older people to see themselves as at risk of thermal stress (Abrahamson et al., 2005) or to take up recommended interventions and behaviour changes (Day and Hitchings, 2011; Barnett et al., 2013) even when there might seem to be good reason why they should. The deployment of too simplistic a notion of older age then can be experienced as a form of injustice through oppression and misrecognition (Young, 1990; Day, 2010) even when the objective is older people's welfare.

We need therefore to approach this question of how older people and low carbon thermal technologies interact more carefully. Rather than making assumptions, we need to ask, in what ways is older age relevant to the deployment of domestic low carbon technologies? This is what I will spend much of the rest of this paper discussing, drawing especially on the findings of the conditioning demand project and the papers in this special issue.

3. Dimensions of older age

One way into thinking about how, when and why older age is relevant to the deployment of LCTs is to draw from some social gerontological work on the construction of older age, which Lewis (2015) has already alluded to. These perspectives see age not just as a simple fact or a natural process, but as multidimensional, and at least in part, socially constructed. Laslett's (1989) dimensions of age are chronological, biological, social (age as attributed by others), personal (how one judges oneself in terms of lifecourse position) and subjective (how one feels, which is apparently often rather timeless). Coupland et al. (1991) add the dimension of contextual age, which relates to social judgements made in specific contexts, and Aapola (2002), who approaches age primarily as a discourse, points to several more dimensions including institutional age, symbolic age and ritual age. These perspectives do not seek to deny the physicality of ageing, but they draw attention to the complexity of (older) age and help us to think about the