



Centre for Environment and Society Research
Working Paper series no. 20

The Balanced European Conservation Approach (BECA) Project – behaviour change in social housing

Beck Collins

The Balanced European Conservation Approach (BECA) Project – behaviour change in social housing

Beck Collins
Birmingham School of the Built Environment, Birmingham City University

Working Paper Series, no. 20
2013

ISBN 978-1-9048-39-71-2

© Author, 2013

Published by
Birmingham City University
Centre for Environment and Society Research
Faculty of Technology, Engineering and the Environment
City Centre campus, Millennium Point, Curzon Street, Birmingham, B4 7XG, UK

CONTENTS

Abstract	iii
Introduction	1
Saving resources and behaviour change	2
The seven BECA pilot sites	3
Belgrade	3
Darmstadt	4
Havirov	4
Manresa	5
Öbrero	5
Ruse	6
Torino	6
Difficulties of tenant engagement	6
Suggestions from elsewhere?	9
Conclusion	12
References	13

Illustrations

Figure 1: Webpage for BCC's 'My Care' service	10
Figure 2: NHS 'choose well' poster for NHS East and Coastal Kent	10

Abstract

This paper was originally written as a report for colleagues at TU Darmstadt, while the author was on a work placement contributing to their work on the BECA project. The BECA project aims to reduce the overall resource consumption of social housing across Europe through both resource management and through increasing tenant awareness of resource use to help change behaviour. This paper focuses on the behaviour change element of the project and examines the first step in that process; engaging tenants. At the time of the author's involvement in the project, TU Darmstadt was experiencing difficulties in this area. The paper explores possible reasons for this and makes comparisons with relevant UK and German projects in order to identify some potential solutions.

Key words: *BECA Project, Social housing, behaviour change, energy practices, tenant engagement.*

The Balanced European Conservation Approach Project – behaviour change in social housing

Beck Collins

Birmingham School of the Built Environment, Birmingham City University, Millennium Point, Curzon Street, Birmingham B4 7XG, UK. E-mail: beck.collins@bcu.ac.uk

Introduction

The Balanced European Conservation Approach (BECA) project¹ is a three-year European project² aiming to enable sustained reductions in the use of key resources in social housing. It plans to do so by providing tenants with ICT-based services to help them regulate and optimise their use of energy and water. The BECA project provides two services – the Resource Use Awareness System (RUAS) which gives tenants direct timely feedback on their resource consumption; and the Resource Management System (RMS), which helps to avoid peak consumption, optimise consumption in line with supplier requirements and tariffs, to manage the production and distribution of renewable energy and support greater system efficiency. The project is ‘balanced’ as it addresses heating energy, electricity and hot and cold water, and because it is based in pilot sites in seven different European countries; the Czech Republic, Spain, Germany, Italy, Sweden, Serbia and Bulgaria.

This project contributes to Europe’s ongoing commitment to cutting carbon emissions, and is particularly interesting for its explicit focus on behaviour change, as well as physical improvements. This project is working from the assumption that it is as important to address the behaviour of energy users in reducing resource use, as it is to address the efficiency of the buildings and resource systems. It also works from the assumption that the way to address behaviour is through the provision of information.

The author contributed to this project as part of a work placement with the Technische Universität Darmstadt, in Germany, which took place in Autumn 2012. At the time, TU Darmstadt was involved in implementing the two systems in the German case study, and asked the author to write a report anticipating any potential problems and suggesting possible solutions. This paper is the result of that request. The information presented here about the BECA project is drawn from the project grant agreements and other documents and project meetings with colleagues. The paper will first discuss the sense and necessity of delivering such a project within Europe. It will then discuss the differences in the contexts and approach in each of the seven pilot sites, focusing on RUAS (the author’s area of interest) rather than RMS. Finally, it will discuss a key difficulty in this project, which has varied to a greater or lesser extent across the pilot sites; that of tenant engagement. Comparisons will be made with UK and German projects with which the author is familiar, in order to identify some potential suggestions or solutions.

¹ <http://www.beca-project.eu/home/>

² The project is partially funded under the ICT Policy Support Programme (ICT PSP) as part of the Competitiveness and Innovation Framework Programme by the European Community.

Saving resources and behaviour change

The European Union has committed to reducing greenhouse gas (GHG) emissions of member states by 20 per cent of 1990 levels by 2020 (European Commission, 2007). This is for a number of reasons. The threat of climate change as a result of anthropogenic GHG emissions is increasingly of concern as the Intergovernmental Panel on Climate Change (IPCC) publishes ever more research supporting the link and the severity of the consequences (for example Pachauri and Reisinger, 2007), and as extreme weather events are increasingly felt around the world. The debate surrounding 'Peak Oil' (Hirsch, 2006) also calls for a reduction in humanity's use of energy from fossil fuels, as they quite simply run out, and become less economically viable to extract. Finally, unstable political situations in fossil fuel-producing states also points to the danger of over-reliance on oil and gas.

Buildings are often seen as a key sector for tackling these issues. The EU Energy Performance of Buildings Directive (European Commission, 2010) states that buildings account for 40 per cent of the energy consumption of the Union. However, it is not buildings themselves that use energy, it is the people who use them. Consumption in identical homes, even those designed to be low-energy dwellings, can easily differ by a factor of two or more depending on the behaviour of the inhabitants (Sonderegger, 1978; Curtis, 1992-93; Keese, 2005).

Unfortunately, people may have little awareness of how much energy they use, and where and when they use it. As previous research has shown, energy and power are not terms that householders normally use in everyday language (Dobbyn and Thomas, 2005). Gas and electricity usage are subconscious considerations³ which are subsumed by the overt need for heat, light and hygiene, and there often appears to be little understanding of how energy consumption within the home can actively be reduced.

Early studies point to feedback about energy use as an effective learning tool (Darby, 2006), but also that context is important (Hutton *et al.*, 1986). Darby (2006) reviews types of feedback for energy, looking at direct feedback, from a meter or display monitor, and indirect feedback from bills, and sometimes disaggregated billing by end use. Informative billing initiatives in Norway showed how customers appreciated improved accuracy and extra information, including historic and comparative feedback, and that they appreciated a guide to which end-uses generated the highest consumption. They thus began to read their bills more frequently and with more understanding, and began to alter their behaviour (Wilhite, 1997; Wilhite *et al.*, 1999). Such research has led to the EU Energy End-Use Efficiency and Energy Services Directive (European Parliament, 2006), which requires that member states shall ensure that, in so far as it is possible and reasonable, customers are to be provided with competitively priced individual meters that accurately reflect actual energy consumption and that provide information on actual time of use. The UK-based Energy Demand Reduction Project (Raw and Ross, 2011) emphasised the benefit of smart meters and real-time displays in helping householders to take control of their energy use. This project was working from a theoretical framework based on giving householders the means, motive and opportunity to change behaviour. It pointed to the importance of coupling this feedback (which must itself be relevant and timely) with advice. Darby (2006) points out that due to the synergies between feedback and other information, it is not always easy to separate these effects.

³ My point here is that we do not tend to think explicitly – or consciously – about energy use; rather we think about how warm we are, and whether or not it is now too dark to read without turning the light on.

As well as addressing behaviour change, the BECA project is also necessary because of its balanced approach. It is 'balanced' in that it looks at energy use in pilot sites across Europe; north, south, east and west Europe have very different energy contexts. The countries involved in BECA need energy for different reasons (the need for cooling is far greater in southern Europe, whereas heating is more necessary in the north), have different histories of energy provision and infrastructure, and hence different attitudes to the price and availability of energy. BECA is also 'balanced' in that it looks at water as well as energy use. Whereas policy makers and scientists are currently preoccupied with the notion of the 'carbon footprint', there is increasing concern over the 'water footprint' of nations, and individuals' consumption (Hoekstra and Chapagain, 2007; Hoekstra and Mekonnen, 2012).

The BECA project therefore deals with timely issues of resource consumption. As previously stated, EU member states are required by law to reduce their energy consumption, and although much is being done to improve the fabric of buildings in social housing across Europe,⁴ as previously discussed much needs to be done to address householders' understanding and awareness of energy, in order to make further resource savings. The BECA project provides over 5000 social tenants across Europe with the means and opportunity to make those savings through the RUAS, an internet portal where they can access timely and comprehensible feedback on their energy and water consumption.

The seven BECA pilot sites

The seven pilot sites selected for the BECA project are Belgrade in Serbia, Darmstadt in Germany, Havírov in the Czech Republic, Manresa in Spain, Örebro in Sweden, Ruse in Bulgaria and Torino in Italy.⁵

Belgrade

This pilot site includes three high-rise buildings in the municipality of Palilula, which together comprise 184 dwellings. These buildings are typical of 1960s Serbian housing with poor thermal insulation and high energy consumption. Heating is provided by central boilers for each building, which have been converted from fossil fuel to biomass boilers as part of the project. Hot water is provided through individual electric boilers. Electricity is paid for individually through monthly bills of actual usage. Heating is paid for collectively as a function of the size of the dwelling. The cost of water is shared amongst the tenants of the building, and paid for every two to three months. The tenants themselves are generally educated to a medium level, with some tenants having university-level qualifications, however only 30 per cent of tenants have access to the internet.

Heating and hot water pricing are controlled by utility companies which are themselves controlled by Belgrade City Authority. Central government controls electricity pricing, and until recently these prices were kept at low, uneconomic values as a result of recent wars and sanctions. However this system has recently been changed, with electricity prices increasing by

⁴ For example the AFTER project in Europe (2011) Decent Homes in the UK (Directgov, 2010), and the work in France of the National Association for the Improvement of Housing (Levy-Vroelant, 2007).

⁵ The information for this section is taken from the BECA website (<http://www.beca-project.eu/home/>), and from Korte *et al.* (2012).

10 per cent in 2012, and new laws being introduced for heating and water pricing. As a result, tenants are interested in BECA as they perceive that it will help them to save money.

Through the BECA project, tenants will receive heat meters for each building and heat allocators for each dwelling. They will also have access to an internet portal in an allocated room within the building that gathers information on their water, energy (for heating) and electricity consumption. Heating energy consumption measurements will take place through the heat cost allocators. The tenants will be made aware of the project initially by distributing newsletters, posters and face-to-face communications. A meeting to introduce the web portal will then be held in a computer room in one of the buildings. The presidents of the tenants associations will be informed of the programme in advance, and will be familiarised with all planned activities, in order to reassure other tenants about the project.

Darmstadt

The pilot site of Darmstadt includes 45 buildings in Darmstadt and in the nearby smaller towns of Dieburg, Weiterstadt and Bensheim. The buildings together have 688 dwellings accommodating approximately 1,514 tenants. The buildings were built between 1959 and 1986 and the facilities for energy, heating and water were installed between 1974 and 2003. Hence their facilities for resources vary from medium to poor. Heating is provided collectively for each building as a whole, and heat cost allocators allow tenants to be billed for the heat they use annually. Hot water is also provided by the central boiler, and is paid for annually. Cold water is individually metered, and paid for annually. All of these utility services are provided by the housing company. Electricity is provided to individual dwellings by a separate utility company, and again is billed annually. A high proportion of tenants in the pilot site dwellings receive social welfare benefits and have a migration background. They are varying in age (18 to 85) and have a medium/low educational background. Again, a high proportion of tenants have no internet access.

Through the BECA project three different ICT configurations will be employed to influence tenants' behaviour and technical staff to better manage energy systems. In the basic system, buildings will be equipped with heat cost allocators and water sub-metering services. In the medium system, buildings will in addition have a service enabling the energy manager to optimise the heating curve of the central heating system according to the real demand of the tenants. In the highest-level system, buildings will additionally have access to a full internet portal. The tenants will be informed about the project through face-to-face meetings. There will also be posters about the project, and an 'Energy Day' will be organised to announce the project and distribute information and set up future training sessions.

Havirov

Havirov is a new city in the Czech Republic, and the case site includes two buildings in an attractive downtown area, which are typical of the local municipal stock. Heating and hot water are provided by the city district heating network. Heat is produced at a heating plant 15km away, and distributed to 176 heat transfer stations across the city, each of which supply heat to several residential buildings. Heating and hot water is billed to tenants annually. Tenants pay a proportion of the total of the building according to the size of the apartment. If heavy consumers use less, the entire building will pay less. Cold water is metered individually in each dwelling, and also billed annually. Electricity is provided by a utility company, and billed annually. The

tenants are long-term occupants, many of whom use the internet. Most tenants are Czech, and have medium to low education levels.

Under the BECA project, smart metering devices will be installed in these buildings to optimise the provision of resource consumption information. This will include intelligent metering of water consumption and heating energy consumption, and the tenant portal itself, which will help to inform tenants about their actual consumption. The portal will be presented and explained to the tenants through personal visits, and they will also receive a written web user guide. There will also be letters and posters. If few tenants participate at first, a competition will be organised.

Manresa

This pilot site consists of three newly-built buildings, with incorporated energy efficiency measures such as high levels of insulation, natural ventilation and glazed galleries. The buildings incorporate 130 dwellings in total. Heating and hot water are provided centrally through a solar thermal system and low temperature condensing boiler back-up systems. Tenants pay a fixed sum every month for their energy consumption, which amounts to approximately 35 per cent of their rent. If their actual consumption exceeds this, they must pay extra at the end of the year. Electricity is provided by an external utility company, and is billed monthly. Cold water is metered for the whole building, and all tenants pay a proportion of the cost annually. The tenants at this site are young to middle aged, with a high number of migrants. Internet access is likely to be low. Tenants see the BECA project as an opportunity to make savings on their bills.

Through the BECA project, these three buildings will be equipped with a RUAS which collects information on water, electricity, gas, solar production, recycled water, space heating and hot water consumption every 15 minutes. Tenants will be able to access this information through the web portal. There will be posters, training sessions, and at least two face to face meetings per year. Once the project is up and running, those tenants who do not have the internet at home will be able to get online at a computer in the housing company's office.

Örebro

This pilot site includes several buildings in different areas of the city, comprising 431 dwellings. The largest of these buildings is a typical Swedish 1960s building. Heating and hot water are provided by district heating from a geothermal pump. The cost of these are included in the rent, and there is little incentive for tenants to save resources here. Electricity, in contrast, is paid monthly, and is billed according to actual usage. Many of the tenants are of foreign origin and many of them have access to the internet. Their education level is medium to low.

The BECA project will provide a RUAS to tenants for cold and hot water, which will help raise tenant awareness of consumption. The tenants will have access to their consumption data through both their invoices and via a web service, and text message. It is hoped that the new ability to measure and pay for personal water use (thus eliminating occasions where one might pay a share of one's neighbour's water costs) will interest tenants and cause them to sign up. Tenants are also being invited to attend focus group meetings, and offered free cinema tickets and the chance to get one month's rent for free, if they attend. It is hoped that these focus group attendees will act as ambassadors of the project to other tenants, and may be offered

further tokens of appreciation. Newsletters, posters, tenants' meetings and articles in the tenants' magazine will also raise awareness of the project.

Ruse

This pilot site in Bulgaria's fifth-largest city focuses on two buildings comprising a total of 120 dwellings, which were built in 1999 and 2001. Heating and hot water are provided by electric boilers in each flat, and is billed monthly to each individual tenant. Electricity and cold water is billed the same way. Within Ruse, the German company E.On is the sole provider of energy, using a tariff system whereby daytime, on-peak use is expensive, and night-time, off-peak use is cheaper. As the provider has a monopoly over energy provision, tenants cannot choose other providers. As the price of resources is going up and incomes are frozen, people are increasingly having to try and make savings on their resource use.

Under the BECA project, 75 dwellings will be equipped with BECA services. The tenants that will benefit vary in age, have a medium to high education level, are mostly Bulgarian, and generally have access to the internet at home. Under the RUAS, tenants will have access to a web portal which will provide energy and water consumption information for each dwelling, and will receive monthly reports with energy-saving tips, and helpful graphic comparisons of energy consumption with similar households and previous periods. Tenants will be recruited through information letters, workshops, and competitions for the chance to win a new energy efficient electrical appliance. Tenant meetings will also be organised.

Torino

This pilot site comprises three buildings built between the late 1980s and 2006 (renovated between 2005 and 2009) together comprising 697 dwellings. Two of the buildings have a high energy performance, one is rated medium. Heating and hot water are provided for the whole building by central gas boilers, and tenants pay a proportion of the total cost for that energy, on an annual basis. Cold water is provided and billed individually, again on an annual basis. Electricity is metered individually to tenants, and they are billed bi-monthly for what they use. The tenants living in these buildings have low to medium levels of education, and migrants are well represented. Few tenants have access to the internet in their homes.

A BECA web portal will provide RUAS to the tenants, so that they can check their energy consumption. The tenants of two of the buildings will also be able to monitor their cold water consumption. Tenants will receive information on energy-saving behaviours through lectures on site or in the offices of the housing company.

Difficulties of tenant engagement

When the author was working with TU Darmstadt () on the BECA project, during the autumn of 2012, the pilot sites were at the stage of recruiting tenants, and inviting them to agree to participate in the project and have the web portal and other measures installed. Of all the potential difficulties, therefore, this report will focus on tenant engagement and recruitment.

The progress reports for the project for all pilot sites demonstrated that they were experiencing a similar problem; not many of the social tenants are interested in saving energy and water, and

there have been difficulties in recruiting tenants to participate in some sites. In Darmstadt, conversations with colleagues demonstrated that this was very much a problem; for example, 100 people were invited to a meeting about the BECA project, and yet only 15 to 20 people came. Such disengagement could be for a number of reasons. In some pilot sites, such as Örebro and Darmstadt, saving resources is not as much of a concern because their cost is included in the rent. In Darmstadt, tenants receiving social security payments have their rent (heating and hot water included) paid directly by government to the housing provider, and they never see the exact breakdown of rent and energy payments, and nor do they need to worry about them. Other reasons include the priority given in the minds of tenants to making improvements to the fabric of the building, either for energy efficiency purposes or simple maintenance. These tenants sometimes feel that this ought to be done before they attempt to reduce their energy use through behavioural change. Many pilot sites, especially those in Western Europe, had a high percentage of tenants who had no access to the internet. Many sites also had a high proportion of older people, who have less experience with, and even dislike, technology and the internet. Trust is also a potential difficulty. One researcher at Darmstadt involved in conducting the baseline survey explained that once many tenants opened their door and saw an unfamiliar face, they merely closed it again.

These problems are similar to those the author has experienced in her own research into energy projects in Birmingham. In early phases of the Birmingham Energy Savers programme, many of the council tenants who were offered a solar panel to help with the cost of their electricity said they were happy with what they were paying already. At other times they did not want the inconvenience or disruption (as they perceived it) of having it fitted. Many did not understand how the technology worked and did not trust it. Others suspected that there was 'a catch', and did not see why they would be offered something for free. Birmingham also has a very large proportion of what are called Black and Minority Ethnic (BME) groups (migrant groups), and the difficulties of language and cultural differences here made it difficult to even begin a conversation about the project. Trust of the provider could also have been a problem. In the UK many companies, utilities included, knock on people's doors to try and persuade them to buy a new product or switch energy providers, and many people have since become suspicious of strangers trying to sell them things on the doorstep. Birmingham City Council (BCC) believes itself to be considered more trustworthy than such companies, and Birmingham Energy Savers was a City Council project. They had hoped, therefore, not to encounter such difficulties. However those knocking on tenants' doors to sign them up were from another company, a social landlord called Family Housing Association. The employees from this company wore Family Housing-branded clothing, and hence it was difficult for residents to see that this was actually a BCC project. Initially, take-up of the project was very low for these reasons, among others.

Further to this, the author also has experience of a project very similar to BECA. The community group SusMo (Sustainable Moseley) won goods and services from the utility company British Gas, and installed energy efficiency measures such as insulation and more efficient boilers and some renewable energy technologies (namely solar photovoltaic and solar thermal panels) on the homes of 20 people. Most of these householders were social housing tenants. As part of the project, SusMo asked the project beneficiaries to sign up to iMeasure, a website where they could upload their meter readings and compare their consumption with those of similar households, and with their own previous consumption. SusMo found that it was very difficult to persuade their 20 beneficiaries to sign up to iMeasure and use it. It was 'too much bother' to upload their meter readings, or it wasn't an activity which was part of their daily lives. Many of these beneficiaries were not in the habit of using the internet for this purpose, if they used it much at all.

A helpful analogy here comes from Shove and Pantzar (2005) who have discussed the incorporation of artifacts into daily practices in their discussion of Nordic walking. It appears that Nordic Walking has 'diffused' across parts of Europe; having begun in Finland it is now popular in Germany, Japan, Norway and the USA. They argue, however that it is actually more truthful to say that although the necessary and sometimes novel ingredients (in this case a particular type of walking stick) may circulate widely, they are always pieced together in a manner that is informed by previous and related practice. In fact it is reinvented in each new location. In the same way, objects which use energy are incorporated into local practices in locally meaningful ways. In Norway, for example, it is common to light a home with many small lamps which give a 'cosy' atmosphere (Shove *et al.*, 1998). This is a very energy-intensive way of lighting a home, but it is done within the context of the practice of domestic life in Norway. In Japan, it is traditional to eat a hot evening meal around a table atop an oven, and then to go to bed early. In these different contexts, objects which use energy are differently incorporated and used in different ways into people's daily lives. The BECA web portal is another object which must be incorporated into peoples' daily practices. For many of the BECA tenants, an internet-based piece of technology which is aimed at bringing into the conscious mind something which is normally *unconscious* (Dobbyn and Thomas, 2005), is an object which currently has little place within their every day lives. It certainly has little place in their energy practices, which revolve around affective perceptions of warmth, light and cleanliness, rather than rational-utility thoughts of resources and costs.

The difficulties of persuading tenants to make a rational decision to use a web portal for monitoring and reducing their energy and water consumption are great. Given the way many of the tenants pay for their resources – often collectively, with estimated allocations – a better approach might be to focus who gives the message and how, and instead to promote a social practice of not wasting. The BECA web portal could be promoted as a product, or an element of such a practice, in the hope that with this idea in circulation (among other complementary ideas) the chances of inventing a social practice of not wasting will be increased.

Possible difficulties with tenant engagement were discussed at the BECA Project meeting in Barcelona in 2011 (Vogt and Korte, 2011), and many of the above problems were anticipated. A series of strategies to overcome low motivation and barriers to participation were suggested. Incentives such as competitions and lotteries were proposed, as well as explaining the financial benefits of the housing company having to spend less on energy, such as having money for other repairs. It was also suggested that tenants could be motivated by somebody that they know acting as an agent for the project. Children could be targetted and told about the project at the local school, and could then help their parents learn new ways of working with energy through 'pester power'. Events to explain the project could be made enjoyable with food for attendees and games for children, to make it easier for parents to attend. These are just some of the ideas that were suggested, and yet unfortunately, such suggestions are not being routinely followed in all of the pilot sites. Many of the sites are relying on raising awareness through posters and letters, before launching into 'awareness days' and 'training sessions'. Örebro and Belgrade are different in this respect: in Örebro the tenants are offered incentives join focus groups and it is proposed that those attendees be encouraged to act as 'ambassadors' to spread the message to other tenants. In Belgrade, the presidents of the tenants' associations will be informed in advance and will be familiarised with all planned activities, so that that they can form a bridge between the BECA project, staff, and tenants, and reassure the tenants as to the legality of the project.

Suggestions from elsewhere?

This section suggests strategies for tenant engagement, drawn from the UK and elsewhere in Germany. These strategies are aimed at dealing with four ‘themes’ of engagement difficulties; lack of trust, working with immigrant groups, low awareness of energy saving, and the difficulty of using a web portal as an ‘impersonal’ object or device.

In order to engage social housing tenants with a new object and a difficult concept, the message must come from someone they trust. Community groups of all types and religious organisations are often very well trusted. In SusMo’s project, this community group worked with a local mosque and church, and recruited householders to benefit from their project through these religious organisations, sometimes overcoming a lot of initial resistance in this way. The project therefore came with a ‘stamp of approval’ from a trusted source. In the UK there are many faith based organisations which express some concern with climate change. Faith and Climate Change was formerly a key group, which began in 2006, to work with places of worship and faith communities in the West Midlands to support them in activities to tackle climate change (Faith and Climate Change, 2011). Another example is the Birmingham Churches Green Group, which runs events helping churches to tackle climate change. Within Darmstadt, there are a number of churches and a mosque which could be more trusted starting points to engage social housing tenants, and attempt to begin moving social norms away from an acceptance of energy wastage. Schools are another key potential area; Family Housing Association worked with a local primary school in Birmingham and developed Eco Radio, a project which raised awareness of energy issues and promoted the contribution that changes in lifestyle can make to reduce carbon emissions (Can UK, 2009). The Energiereferat at Stadt Frankfurt am Main is also making use of these strategies in its work trying to reduce electricity consumption. It has been going into different neighbourhoods and initiating local campaigns, working with community groups, sports clubs, schools and religious groups in order to complement their workshops, events and mailings.

Building on this community approach, it might also be useful to ‘piggyback’ on meetings or gatherings already going on, rather than calling a new meeting specifically to talk about the BECA project. The author, when working as a community officer at the environmental and regeneration charity Groundwork West Midlands, often introduced new projects by arranging to take up five minutes at the beginning of (for example) a coffee morning, or elderly people’s bingo club, or mums-and-tots group, and so on. This allowed the author to reach several people at once, at an event which was already part of their daily routines and therefore was of no inconvenience for the attendees.

Trust could also be gained through a peer-to-peer approach. Stadt Frankfurt am Main has piloted the *Stromspar-Check für einkommensschwache Haushalte* (‘power saving check for low income households’) project (Stromspar-check, 2010). Working with a church organisation, the project brings long-term unemployed people into work and trains them in energy efficiency. These people then go into other low-income households and provided advice on saving energy and some low-cost physical measures, such as power downs and energy-saving lightbulbs. This project has been proven to pay off financially, and the central government is now rolling it out in different German cities. Having someone give energy advice who has had the same experiences as the householder is therefore considered more effective; the energy advisor and householder are more likely to identify with each other, and the energy advisor is able to explain energy saving in a more empathetic and meaningful way. There have been similar projects in the UK, run by the environmental and regeneration charity Groundwork West Midlands (Groundwork West Midlands, 2012). In the Warmer Homes Apprentice Energy Assessor

Scheme, Groundwork has used the concept of taking long-term unemployed people out of employment and training them to give energy advice to low-income households (mostly social housing tenants) to tackle fuel poverty (E.On, 2012).

This idea of peer-to-peer engagement could be taken up in pilot sites that have a large number of migrant tenants, such as Örebro and Darmstadt. Many cities in the UK have large proportion of BME people. Birmingham's population is just under one third BME, and Leicester is over one third BME (ONS 2011). In some wards in London, only one third of the population is white British. As a result, many British cities have experience in communicating with people for whom English is not their first language, and whose heritage derives from many different ethnicities. For example, when providing information about its services, Birmingham City Council (BCC) will illustrate this information with pictures of people that are representative of those that will use the service (Figure 1).



Figure 1. Webpage for BCC's 'My Care' service (reproduced with permission).

Birmingham's approach is very different to a similar information poster in the county of Kent, where the BME population is much lower (Figure 2). Birmingham City Council also provides information on its services in at least 10 different languages. These strategies are fairly common across the UK in areas where there is a high proportion of BME people.

Initial awareness is another difficulty that must be overcome. As previously explained, during the Birmingham Energy Savers Programme's initial stage, many people were reluctant to agree to have a free solar panel. However at the beginning of the second stage the project moved to a different neighbourhood of Birmingham, where a 'Warm Zone' had previously operated. 'Warm Zones' offer householders free insulation if they do not have it already, and advice on how to stay warm while conserving energy where they can (Warm Zones, 2012). Birmingham Energy Savers found that it was easier to get people to agree to have a solar panel in this neighbourhood. The organisers of the project attributed this to the fact that the previous 'Warm Zone' work had made local people more aware of energy efficiency, and so they were more open to the discussion; they had been primed for it. Building on or making reference to past work in energy efficiency projects that social housing tenants are already aware of could help begin conversations about BECA which may have been otherwise difficult.



Figure 2. NHS 'choose well' poster for NHS Eastern and Coastal Kent.⁶

Finally, a major difficulty for BECA is the fact that the RUAS service is web-based, and therefore will be in an unfamiliar and possibly disconcerting format for the many older tenants in the pilot sites. If tenants are to engage with the web portal, it must be explained to them in such a way that they will take that information on board. Importantly, energy-saving advice to help them to reduce their consumption must also be explained in a similarly engaging way. The benefit of in-the-home, tailored advice to help tenants understand the web portal and how to make changes to their consumption, cannot be overstated. As part of their work in their local neighbourhood, SusMo attempted to support an energy advice surgery, which operated from a local community building. Householders were encouraged to book an appointment with an energy advisor, and then go to this community building to get this advice. The take-up of this project was very poor. Members of SusMo compared the project with the local Green Doctor project, which offered energy advice to people across Birmingham, but within their own homes. The Green Doctor project was much more successful, and had a much greater take up; it was less inconvenient for tenants to get the advice, and it was far more relevant to them. It appears that this sort of approach is being followed in Havirov, where all 72 apartments in receipt of the web portal will be visited and trained individually. The author's own research has included an interview with a Birmingham Green Doctor. The Green Doctor explained how he had helped a householder set the timer and time settings on their boiler, so that the heating would come on before she got up so the house would be warm. Previously the timer had been set correctly, but the clock in the boiler was wrong and so the heating came on in the middle of the night, and had turned off by the morning leaving the house cold. This advice and help understanding a technology helped the householder to make savings. Previous research has shown that an understanding of energy saving technologies and how to install them or use them effectively is important if people are to actually conserve energy (Costanzo *et al.*, 1986). That advice and understanding is best given face-to-face, and in the home.

⁶ This Trust ceased to exist in March 2013 and specific copyright permission was thus unavailable.

A report on the Green Doctor project also showed that most beneficiaries of that project did actually follow the advice of the Green Doctors about the behavioural changes they could make to reduce their energy use and bills. It was found that behavioural changes had been sustained in 90 per cent of households 12 months later (Alison Millward Associates, 2011). As previously mentioned, Stadt Frankfurt am Main's own experience with its *Stromspar-Check für einkommensschwache Haushalte* has been very successful in bringing about behaviour change and saving energy and money. This personal, in-the-home tailored approach to energy behaviour change is well supported.

Conclusion

Behaviour change in resource use can lead to significant reductions in energy use and carbon emissions, something that is necessary in order to meet Europe's emission reduction targets, and respond to future water scarcity threats. This is well recognised in the BECA project, which seeks to bring about behaviour change through timely feedback from a web portal, which can be used by householders to make savings. This is particularly important in social housing, where householders are on lower incomes and sometimes struggle with utility bills.

Of all the potential difficulties in the implementation of the BECA project, the most pressing at this stage is the recruitment of tenants. In some pilot sites, there is little rational incentive for tenants to change their energy behaviour, where social security payments cover the cost of rent, which itself includes the cost of (for example) heating and hot water. It is suggested that instead of appealing to rational incentives, a social practice of not wasting resources be encouraged. Community-facing methods are best positioned for achieving this, where householders can hear this message from someone they trust, and together build social norms of not wasting, and benefit from face to face advice in their own home. Where brochures and posters are used, especially in buildings with a large number of migrant families, these posters should visually reflect the people to whom they are addressed, and their experiences. Translating this information into migrants' own languages is naturally helpful.

Making a reduction in household consumption of energy and water is an important contribution to cutting carbon emissions and helping to meet the EU's 2020 reduction targets. The author argues that an inclusive, community-focussed approach to tenant engagement could help make this much needed project as success.

References

- AFTER Project (2011) < <http://afterproject.eu/> > accessed on 16th November 2012
- Alison Millward Associates (2011) *An evaluation of Green Doctor* < <http://www.westmidlands.groundwork.org.uk/pdf/Green%20Doctor%20Final%20Report.pdf> > accessed on 16th November 2012
- Can UK (2009) 'Eco Radio: in the green heart of Lozells' < http://www.eco-radio.co.uk/eco-radio.co.uk/Eco_Radio_Lozells.html > accessed on 16th November 2012
- Curtis, T. (1992-93) *Greenhouse Programme: report on the heating advice project carried out on the Packington and Market Estates 1991/92 and 1992/93* Energy Information Centre, Islington Council, London
- Costanzo, M., Archer, D., Aronson, E. and Pettigrew, T. (1986) 'Energy conservation behaviour: the difficult path from information to action', *American Psychologist* vol. 41 pp. 521-528
- Darby, S. (2006) *The effectiveness of feedback on energy consumption. A review for DEFRA of the literature on metering, billing and direct displays* DEFRA, London
- Directgov (2010) *The Decent Homes Standard* < http://webarchive.nationalarchives.gov.uk/+/www.direct.gov.uk/en/homeandcommunity/socialhousingandcarehomes/repairstocouncilhomes/dg_10021332 > accessed on 16th November 2012
- Dobbyn, J. and Thomas, G. (2005) *Seeing the light: the impact of microgeneration on the way we use energy. Qualitative research findings*. Hub Research Consultants, London, on behalf of the Sustainable Consumption Roundtable
- E.On (2012) *Apprentice energy assessors hitting Coventry streets* < <http://pressreleases.eon-uk.com/blogs/eonukpressreleases/archive/2012/02/08/1790.aspx> > accessed on 16th November 2012
- European Commission (2010) *EU Energy Performance of Buildings Directive (2010/31/EC)* < <http://www.energy.eu/directives/2010-31-EU.pdf> > accessed on 16th November 2012
- European Commission (2007) *Climate change energy package* < http://ec.europa.eu/clima/policies/package/index_en.htm > accessed on 16th November 2012
- Faith and Climate Change (2011) < <http://faithandclimatechange.org/about/> > accessed on 16th November 2012
- Groundwork West Midlands (2012) < <http://www.westmidlands.groundwork.org.uk/> > accessed on 16th November 2012
- Hirsch, R.L. (2006) 'Peaking of world oil production: an overview', paper presented to the Atlantic Council Workshop on Transatlantic Energy Issues, October 23, 2006 < <http://unknown.shambalayogi.net/vipreports/hirschpeakingatlanticcouncil06.pdf> > accessed on 16th November 2012
- Hoekstra, A.Y. and Mekonnen, M.M. (2012) 'The water footprint of humanity', *Proceedings of the National Academy of Sciences* vol. 109 no. 9 pp. 3232-3237
- Hoekstra, A.Y. and Chapagain, A.K. (2007) 'Water footprints of nations: water use by people as a function of their consumption pattern', *Water Resources Management* vol. 21 no. 1 pp. 35-48
- Hutton, R.B., Mauser, G.A., Filiatrault, P. and Ahtola, O.T. (1986) 'Effects of cost-related feedback on consumer knowledge and consumption behaviour: a field experimental approach', *Journal of Consumer Research* vol. 13 pp. 327-336
- Keese, M. (2005) *Setting a new standard – the zero energy home experience in California* Sacramento Municipal Utility District, Sacramento
- Korte, W.G.V., Heilmann, G., Lazic, D., Savic, R., Adzic, M., Conrad, M., Clauss, F., Busch, D., Vimmr, T., Kwapulinkska, M., Danov, S., Carné, F., Oliveras, J., Tannerstad, J., Larsson, L., Unemo-Mohlin, M., Pavlov, T., Leto, P., Camus, B., Lesperrier, T. and Renz, I. (2012)

- Deliverable 1.1 Requirements for BECA Services and Systems. Balanced European Conservation Approach* Unpublished BECA project documentation
- Levy-Vroelant, C. (2007) 'Social housing in France', in Whitehead, C. and Scanlon, K. (eds) *Social housing in Europe* London School of Economics and Political Science, London
- Pachauri, R.K. and Reisinger, A. (eds) (2007) *Synthesis report – contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* Intergovernmental Panel on Climate Change, Geneva
- Raw, G. and Ross, D. (2011) *Energy demand reduction project: final analysis* < <http://www.ofgem.gov.uk/Sustainability/EDRP/Documents1/Energy%20Demand%20Research%20Project%20Final%20Analysis.pdf> > accessed on 16th November 2012
- Shove, E. and Pantzar, M. (2005) 'Consumers, Producers and Practices: Understanding the invention and reinvention of Nordic walking', *Journal of Consumer Culture* vol. 5 pp. 43-64
- Shove, E., Lutzenhiser, L., Hackett, B., Guy, S. and Wilhite, H. (1998) 'Energy and social systems', in Rayner, S. and Malone, E. (eds) *Human choice and climate change* Battelle Press, Columbus, OH
- Sonderegger, R.C. (1978) 'Movers and stayers: the resident's contribution to variation across houses in energy consumption for space heating', *Energy and Buildings* vol. 1 no. 3 pp. 313-324
- Stromspar-check (2010) < www.stromspar-check.de > accessed on 16th November 2012
- Warm Zones (2012) < <http://www.warmzones.co.uk/the-zones/west-midlands/birmingham> > accessed 16th November 2012
- Wilhite, H., Hoivik, A. and Olsen, J.-G. (1999) 'Advances in the use of consumption feedback information in energy billing: the experiences of a Norwegian energy utility', in *Proceedings, European Council for an Energy-Efficient Economy, 1999. Panel III, 02* < http://www.eceee.org/library/conference_proceedings/eceee_Summer_Studies/1999/Panel_3/p3_2/paper > accessed on 24 July 2013
- Wilhite, H. (1997) *Experiences with the implementation of an informative energy bill in Norway* Report 750, Ressurskonsult, Oslo
- Vogt, G. and Korte, W. (2011) 'BECA Project Meeting, November 10-11', presentation to BECA meeting, Barcelona