EXPLORING DIFFERENT COMMUNITY ATTITUDES TO SUSTAINABLE TECHNOLOGIES

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Abstract

The adoption of sustainable technologies to mitigate high energy use by home owners has not been extensive. As a result of legislation there are a number of initiatives to help resolve this situation, some which recognise that communities could be a good site of influence to effect this change. Communities have different socio-economic backgrounds, which may constrain their choices. This affects their attitudes to sustainable technologies, and how they might go about adopting them. This paper refers to pilot research studying attitudes in two socioeconomically different communities in Birmingham, aiming to inform a larger study about successful interventions. These communities underwent the adoption of sustainable technologies via different interventions, here defined as an identifiable activity bringing sustainable energy technologies into an area. The interviewees presented a positive attitude to the intervention in their area, but displayed a difference in their perception of a sense of community. Socio-economic data raises important questions about a community's capability to intervene which was supported by the interviewees. The pilot suggests that interventions can enable interactions which allow positive information transfer necessary for increasing acceptability of sustainable technologies, which will be explored in the larger study.

Keywords: communities, sustainable technologies, attitudes, intervention.

INTRODUCTION

In 2008, the UK Government passed the Climate Change Act, obliging the UK to cut its greenhouse gas emissions by 80% by 2050, to mitigate against potentially dangerous climate change. As part of this, there has been some UK policy encouraging the generation of energy from renewable technologies (DTI, 2005). There is also a role for community based generation of energy (Hain *et al* 2005).

However, change has been slow. Information campaigns have not lead to as wide an uptake of sustainable energy technologies or energy efficiency measures as governments had hoped (Owens & Driffil 2008), and it is often difficult for governments to know which will be the best intervention and best use of resources, especially in times of economic hardship.

This research is a pilot for a larger study which aims to look at the success of interventions using communities to direct change in sustainable energy behaviours in individuals, and was designed to inform the larger study. The pilot aims to identify some important areas of study,

to establish what can be found out from individuals about successful interventions, and to establish whether the style of intervention is important. Individual attitudes are related to the process of an intervention; if people have a positive attitude to sustainable technologies themselves and the process of sustainable technology interventions in their area, interventions are potentially more likely to be successful. This is important if we want to see the widespread adoption of such technologies in order to address climate change. This paper will look at the responses of individuals from two different communities: residents of Moseley, who are benefitting from a community-led project; and residents of Northfield, who benefitted from a top-down intervention. This pilot was useful to inform a larger study looking at how different types of intervention in different contexts can encourage positive attitudes towards sustainable energy technologies.

The Communities

Moseley is situated to the south of Birmingham city centre, and is one of the more affluent neighbourhoods of the city. It is a well educated area, with a reasonably high average income, and a skilled workforce (see figure 1). The neighbourhood has a strong sense of identity that became evident in 1978 in retaliation to the threat of a relief road that was planned to run through the centre of the 'village'. The local residents succeeded in stopping this road, and formed the Moseley Society in 1979. Since then a number of groups and associations have arisen in the area including Moseley Forum, of which Sustainable Moseley (SusMo) became a working group in 2007 (Moseley Forum 2010).

SusMo are working to cut carbon emissions across their neighbourhood. In January 2010 they became one of 14 communities across the UK to win a British Gas Green Streets award. With this they will install photovoltaic (PV) panels on a number of community buildings and one home, as well as other energy saving measures such as condensing boilers, loft insulation and solar thermal panels in other homes. For this project, SusMo formed partnerships with the local Mosque, St Mary's Church, Moseley Church of England School, and MaDAHAL Allotments, and developed close working relationships with all of them. This project will be referred to as a community-led intervention for the purposes of this paper.

	Moseley	Northfield
Education		
No Qualifications	24.06%	34.64%
Level 1 (1 -4 General Certificates of Secondary Education or	10.09%	18.45%
equivalent)		
Level 2 (5+ General Certificates of Secondary Education or	14.04%	19.47%
equivalent)		
Level 3 (2+ Advanced levels or equivalent)	8.73%	6.79%
Level 4/5 (First Degree, Higher Degree or equivalent)	39.33%	13.34%
Other (Level unknown)	3.75%	7.32%
Income		
Average weekly household income	£500	£450
Occupation		
Managers & Senior Officials	14.45%	11.19%
Professionals	28.12%	9.69%
Associate Professional & Technical	18.10%	12.63%
Admin & Secretarial	10.80%	15.91%
Skilled Trades	6.03%	12.87%

Personal Services	5.36%	8.05%
Sales & Customer Services	5.17%	7.01%
Plant & Machine Operatives	5.20%	10.35%
Elementary	6.75%	12.30%

Figure 1: Table showing education, income and occupation statistics for Moseley and Northfield. Office for National Statistics 2011

Northfield has a very diverse cross-section of financial situations, with pockets of deprivation and vulnerability. It has a varied education profile (with a high proportion of people with no qualifications), a slightly lower average income than Moseley, and a more varied skill level among the workforce (see figure 1).

Birmingham Energy Savers is a large project being run by the local authority, Birmingham City Council (BCC). It aims to cut carbon emissions as well as create local jobs and help fuel poor or vulnerable households. During the pilot phase over 50 households (mostly within Northfield), 6 business premises and 2 social enterprises were fitted with PV panels, paid for by BCC. BCC will recoup the outlay by taking the Feed in Tariff – a mechanism whereby an amount (approximately 40p) is paid per kWh generated to the owner of the technology, as an incentive for generating energy renewably. This project will be referred to as a top-down intervention for the purposes of this paper.

LITERATURE REVIEW

There are many descriptions and theories of how society might change so that people will readily adopt more energy efficient technologies (Geels, 2005). Although change in individuals is required, the extent of the change needed to address global warming needs to be more widespread and comprehensive. Thus, the debates and theories need to address the fundamental problem of the way individual agents act in a wider social and structural situation. Theories of community (e.g. Bourdieu 1986, Wenger 1998) argue that individuals are overpoweringly influenced by history, identity and norms such that they are obliged to act in particular ways. However, theories of psychology (Ajzen 1991) see individuals as independent agents with attitudes, motivations and behaviours continually interacting with other individuals. In practice, most conceptions work with individuals, groups and their context simultaneously, and therefore we need to explore individual attitudes at the same time as exploring the way in which individuals see communities, technology and different types of intervention.

Attitudes

Attitudes and behaviours need to be modified if sustainable energy technologies are to be widely adopted. Attitudes towards these technologies will be influenced by many things, including the amount of factual knowledge a person has access to (Stutzman and Green 1982), their evaluation of the outcome of this behavioural choice, and the likelihood of that outcome (Kaiser *et al* 1999). However it is a paradox that apparently pro-environmental attitudes are not reflected in behaviour (Owens & Driffill 2008). Kaiser *et al* (1999) refer to the theory of planned behaviour (Ajzen 1985) in trying to explain this. As well as attitudes, a person is influenced by social norms (the expectations of significant others) and values when thinking about whether or not to behave in a certain way, such as adopting certain technologies. If both attitudes and social norms are conducive to this, an intention to perform

a particular behaviour is formed. This intention is then affected by contextual factors outside one's control.

A definition of 'attitude' throws up another interesting point. Allport (1935) defines attitude as a learned predisposition to respond to an object in a consistently favourable or unfavourable way. Just as people may have attitudes about sustainable energy technologies, so too may they have attitudes about governance arrangements. People may have negative attitudes towards a local authority (Frith and Bennetto), or towards particular community group members (McAreavey 2006, Derkzen and Bock 2009). This will affect the success of different types of interventions.

Communities

Most research on communities is focussed on their emerging internal conditions in relation to wider social norms, whether to do with crime, health or enterprise. This often relates to the breakdown in communities and the reduction in social capital (Putnam 2000). However the theory of social learning postulates that we acquire and evaluate our activities from our social context (Bandura 1977). This provides a much more positive role for community in determining meaning, identity and action of its members, giving opportunities for action and change. The Government would like to move responsibility and empowerment to communities which would then become important locations of decision making and action (DEFRA 2008). Therefore, policy issues of subsidiarity, collaborative management and ownership in common are starting to surface (Krishna 2003). The role of communities as agents of management and ownership or as givers and receivers of social capital has been studied within the social capital discourse (Bourdieu 1986; Shorthall 2004; 2008). However some commentators are sceptical of the abilities and capacities of local communities to deliver effectively with local action being far more complex and conditional than the theory suggests (Upton 2009; Andersson and Gibson 2006).

An understanding of socio-economic status (SES) can help to understand why particular interventions (for instance, community action) are confined to certain contexts. As Liberatos et al (1988) explain: "According to Weber, differential societal position is based on three dimensions: class, status, and party (or power). Class is assumed to have an economic base. . . and is indicated by measures of income. Status is considered to be prestige or honour in the community [and implies] 'access to life chances' based on . . . factors such as family background, lifestyle, and social networks". Therefore, occupation, education and income are used most often to measure SES. Income as an indicator clearly falls into Weber's economic or class realm, influencing opportunities for education, and providing access to certain lifestyles. Occupation is a good indicator of SES since different occupations are perceived differently in terms of prestige, require different amounts of education, and give different monetary pay-offs. Education confers differential status and provides the qualifications to acquire differential occupations and income, and so is a useful proxy for economic variables (Liberatos et al 1988). The idea of social and human capital (Coleman 1988) is also useful here - resources achieved through social connections (social capital) and nonmaterial resources as education (human capital) are readily connectible to processes directly affecting well-being, and access to life's chances (Bradley & Corwyn 2002).

Thus, different communities will not respond in the same way. Interesting questions arise as to what gives communities cohesion and whether communal action can arise other than neighbourliness. Yet there are many examples of communities operating successfully in different ways, whether in top down interventions through some authority structure, or

bottom up using the collective action of members. It is their 'success-in-context' in achieving the aim of sustainability that is of interest here. In particular, there is the potential for concerns about sustainability and energy issues to provide a new cohesion and meaning to communities (Wals 2007), providing a locus around which the community can work together.

Technological Change

In an attempt to conceive of the problem of the lack of transition to energy sustainable technologies, researchers have used concepts of socio-technical regimes. Theories of technical change had hitherto been based in a techno-economic view of the world, whereby the non-adoption of proven energy efficiency technologies is the result of social barriers usually consumer ignorance or market distortions (Guy & Shove 2000). However, Rip and Kemp (1998) have shown that firms and technologies are embedded within wider social and economic systems: "socio-technical regimes". Smith et al (2005) show that the current sociotechnical regime of energy production is dominated by rules and practices relating to long established centralised, large-scale power technology, and high voltage alternating current grid infrastructures, which make it difficult to make individual choices about how the energy one consumes is produced. In this regime, people have relinquished responsibility to gain convenience and dependability. However, transition from a regime of energy production based on fossil fuels to a different regime is necessary, given the legislation described above. This requires individuals to accept responsibility, and the technology and the way it is introduced needs to encourage this.

The interface between people and technology is therefore complex; people make choices about and use energy sustainable technologies as individuals in a social world. Owens and Driffill (2008) show that a large number of social factors come into play to influence energy behaviour, such as trust, habits, cultural norms, as well as financial constraints and these become important concerns in any intervention.

Interventions

Local and central governments are best placed to make large changes to the contexts in which sustainable technologies may or may not be adopted. Smith et al (2005) point out that governments have a role in guiding transitions of socio-technical regimes. Foxon et al (2008) explore this further by looking at the different pathways such guided transition could take. Hischemoller et al (2006) also suggest governments as key players in governing the transition to sustainable technologies. However interventions are not always successful; Owens and Driffill (2008) point out that government messages that driving contributes to climate change are difficult to act on when price signals provide a powerful counter-incentive to getting the train (HM Treasury 2010) and these continue to remove responsibility from individuals.

However, increasingly there is a role for communities to govern that transition in their localities, sometimes with government support (Walker et al 2007), or in partnerships with other agencies (Shucksmith 2000). Partnerships often come with their own difficulties for the community members, who may feel unable to put their priorities on an equal footing as the priorities of professional agencies (Mayo and Taylor 2001). However, this is not always the case – Mackenzie (2006a, b) gives the example of the North Harris Trust, a community trust that owns the North Harris Estate, and has installed a wind turbine.

METHOD

Studies of such complex situations and their change are difficult to undertake, thus requiring detailed studies of individuals, communities and their contexts. Thus, pilot studies are needed to determine what can be found and how best to find this. This investigation sought to determine differences in attitude in the communities and the impact of the interventions on this. A social constructionist approach was adopted where social life is understood to be constructed rather than objectively determined (Easterby-Smith et al 1991). This approach was taken in this pilot study because whether or not an individual decides to sign up to a project like BES or Green Streets, and adopt a sustainable technology, is a personal choice made on the basis of personal perceptions. Thus the focus is on individuals and their experience. This approach seeks to unpack these perceptions; to better understand why individuals respond in the way they do to sustainable energy projects.

In this pilot study, in-depth interviews were used to explore how we can find out about individual attitudes, as well as they way individuals see their communities, technology and different types of intervention. Four interviews were carried out with beneficiaries of different sustainable technology projects - two Northfield residents who had benefitted from BES, and two Moseley residents who had benefitted from SusMo's Green Streets project. Of the Moseley residents, one was having PV installed on his own house; the other was speaking as a representative of the mosque which was having PV installed on its roof. The sample size was small since this was a pilot, but this allowed the attitudes and experiences of each interviewee to be properly explored. Interviewees were asked to explain how they became involved in the projects they were benefitting from, if they had noticed a change in their energy bills (where applicable) and how they felt about energy. Interviewees were then asked to discuss their views on climate change, and whose responsibility they considered it to be to do something to tackle it. They were then invited to talk about their community in general, before moving onto perceptions of and attitudes towards the agencies (SusMo or Birmingham City Council) who were delivering the projects they were benefitting from, including if there had been any change in these.

RESULTS

The Moseley residents were both involved in SusMo's Green Streets project. As the technologies were not yet installed only provisional energy attitudes were explored. One interviewee explained that his family was not wasteful with energy at all, but were looking forward to being able to spend even less on energy. The other interviewee felt that once the PV was installed on the roof of the Mosque, people would be able to see it, making it easier to educate them about saving energy. Both interviewees were concerned about climate change, and explained what they personally were doing to combat it. Both were members of SusMo; one was starting to encourage food growing initiatives at the mosque, and the other was going to attend a course on energy advice. Both interviewees noted a sense of community in Moseley which seemed to cut across ethnic and religious groups:

"There's a strong sense of community in Moseley, it's diverse, people get on".

Both interviewees knew their neighbours well, as well as the wider Muslim community. They perceived the wider community of Moseley to be fairly well informed about climate change, and to be doing their bit. One interviewee was impressed with SusMo members for giving up so much of their time for Green Streets, which had in a way negated the need for any local authority initiative in the area, the other explained how SusMo had to do this kind of work, since the local authority had fewer financial resources and were moving too slowly.

"Nowadays, the government don't have money for anything, what can they do, just give you money to do these things, but now they haven't got any money to give, so it's up to us"

The Green Streets project has changed the Moseley interviewees' attitudes towards themselves and their role within the community;

"I'm a completely different person to how I was last year. I did have all these things in the back of my mind, these are the things that you do when you retire, but this year I said, you know you don't have to wait until you retire, you do them now"

and their attitude to sustainable energy:

"we have these habits [of not being wasteful], but it's nice now to incorporate the environment, and put these habits to a greater cause"

The Northfield residents were both council tenants who were at home during the day. They both noticed a saving in their energy bills. Both interviewees thought that climate change was an important issue, and that something should be done about it. Both interviewees saw a very strong role for the council in providing facilities that allowed the opportunity for green behaviour, such as recycling facilities, water butts and composters, or PV panels, as was the case here.

"well things should be done about [climate change] cos it can't go on like this forever can it? but somebody's got to start the ball rolling for other people to get involved"

They also saw a role for the local authority in helping those who could not afford to 'be green' even if they wanted to;

"at the end of the day if I didn't get the solar panel fitted on the roof I couldn't have afforded to do it on my own".

Neither Northfield interviewee noted a particular sense of community in their local area, were not close to their neighbours, nor members of community groups. However there may be an opportunity to change this as a result of BES – with their experience of the technologies the beneficiaries could act as trailblazers, and discuss the technologies with other members of the community – enhancing social capital as more links are made between individuals. The interviewees mentioned the difficulty of getting started without such prior knowledge:

"for a community that gonna come together without the actual experience of the solar panel, it's harder, but like us as a community then that have it fit in, it's good for us to be involved"

The interviewees mentioned that people were asking them about their PV panels since they had been installed:

"Oh I've had them knocking on the door! . .and stopping me in the street asking me for phone numbers and that [to find out how they can get panels aswell]"

The Northfield interviewees do see a role for individuals, but their discussion of that role was set in the context of council facilitation;

"it is, [laziness]... it's like when you see bits of furniture and everything lying all around, they've only got to make a phone call to the bulk rubbish [a council service] and they come and fetch it, it's what you pay your poll-tax for!"

Both interviewees were pleased with the local authority for having instigated BES, which allowed them to have the PV:

"They're doing something really worthwhile".

Both interviewees also discussed issues of trust – they trusted BCC to do a good job, to use reputable companies, and to deal with any problems that would emerge with the technology. Both feared 'dodgy' or 'cowboy' companies, and felt that a company being registered with the council was a stamp of approval.

"The council would never take up for instance a dodgy company to come here and do certain type of job. Normally when they came here, you know it's a proper company that register with BCC. So BCC wouldn't send like a dodgy company come to your house and stuff like that so I would feel more comfortable doing it with the council"

DISCUSSION

According to the interviewees, both the Northfield and Moseley interventions although different, were successful. The pilot suggests that success could best be defined for the larger research study as having a positive attitude to the intervention, saving energy, and having the potential to induce a wider, community based change in behaviour. The pilot also suggests that the style of intervention is important. Thus, an in-depth study needs to investigate how the style of intervention in different contexts can lead to positive attitudes towards that intervention, and hence greater adoption of sustainable energy technologies.

Moseley residents believed that in difficult economic times, BCC must target its resources where they are most needed. Moseley, being a more affluent area, cannot benefit from BCC led interventions. Therefore Moseley's only option is a community-led intervention. This pilot raises an interesting question about why community led interventions are possible in Moseley and directs us to look at the 'capability of the community'. This can be characterised by socio-economic status (SES), which if measured by education, occupation and income (Liberatos et al 1988), can be said to be high, certainly higher than that of Northfield. Nearly 40% of Moseley residents have a very high level of education, and nearly a third of its residents are professionals, of which nearly a half are teaching and research professionals (Office for National Statistics 2011). Bradley & Corwyn (2002) consider capital (social, human and financial) to best embody the meaning of SES. Moseley clearly has a wealth of capital (as shown by its large number of community groups made up of

active, capable and resourceful individuals) particularly so within SusMo itself (many members participate in multiple groups). SusMo's committee is made up of individuals with high levels of education and sustainable technology related experience (human capital), and its members can support each other and share skills within the group (social capital). This capability enabled SusMo to inspire the two residents interviewed here, and include them within SusMo itself. This led to a positive attitude to the project between the interviewees, and therefore a willingness to adopt the sustainable energy technologies.

The community of Moseley is diverse – there is a strong Muslim community, and numerous other communities of interest based around community groups. SusMo's Green Streets project by formally partnering with the mosque, the church, the local allotment association, the school, was able to incorporate all of these communities and build a community of place cutting across faith and interest groups. Therefore the in-depth study should also investigate the potential of interventions in such areas to draw sub communities together and create 'community cohesion' which enables further activities. Moseley does indeed have a strong sense of place and having won awards for its farmer's market and 'Moseley in Bloom', it has become a place that people are proud to live in and be part of. This is reflected in the ability of SusMo's project to interest all faith and interest groups, and more generally in the large number of community groups to be found in Moseley (which provide social capital for their members). Such support enables residents to become involved in projects such as Green Streets, and act on their own initiative to tackle issues around climate change. This can also lead to human capital, further facilitating such projects as residents become more able to become involved, and learn the skills needed to organise and run them.

SusMo's intervention in this particular context (of a capable community) has clearly led to positive attitudes amongst residents amongst the Moseley residents interviewed here. The two interviewees are well informed about climate change, and saw individuals as having a key role to play in its mitigation. Both interviewees explained how they *personally* were 'doing their bit', by reducing their consumption of energy by changing their behaviour, and by becoming involved with SusMo both as beneficiaries and as committee members. It is clear that SusMo provided these residents with the opportunity to be involved in the management and running of a climate change project leading to positive attitudes towards the technologies and the process of intervention. The suggestion for an in-depth study would be to investigate how the style of intervention here can lead to positive attitudes and thus 'success in context'.

BCC's Birmingham Energy Savers is specifically aimed at communities in need and is well positioned to intervene in communities like Northfield. The SES of Northfield as a whole is diverse, and residents have a wider spread of educational attainment, but with a much larger proportion of people with no qualifications at all. Since educational achievement can influence occupational level, it is not surprising to see many residents in lower skilled jobs, with not such a large proportion of residents in one particular highly skilled area. However, the financial status of the Northfield council tenants interviewed here is straightforward – they must be of a lower socioeconomic status, and have lower financial capital in order to qualify for a council tenancy. In such circumstances, these residents would ordinarily be unable to adopt sustainable technologies, being constrained as they are by their financial context.

The two Northfield interviewees had varying levels of understanding about climate change, but saw a strong role for the local authority in mitigating its effects. This is unsurprising,

these tenants would not have been able adopt such sustainable energy technologies as PV without council aid. BES was the only opportunity these residents have to choose to do something about climate change in such a manner. As council tenants they also rely on the council for the maintenance of the technologies, as they rely on the council for the maintenance of their houses. Therefore they trusted the council over any other agent to install these panels.

This pilot gives evidence that the BCC intervention in this particular context led to a positive attitude to sustainable energy technologies in the two people interviewed here and thus 'success in context'. The residents trusted the council over other organisations to install the technologies, saw a strong role for the council in leading this type of project, and saw them as doing something "worthwhile". They were therefore willing to be a part of Birmingham Energy Savers and agree to the installation of the sustainable energy technologies. Neither Northfield interviewee noted a particular sense of community in their local area, were not close to their neighbours, nor members of community groups. This suggests that as a result, they had little structure through which they could act together with others and little opportunity to gain access to any skills or knowledge that other residents may have had about issues of climate change and sustainability.

The suggestion for an in-depth study would be to investigate how the style of intervention here (top-down) might be most appropriate to engender positive attitudes towards sustainable energy technologies and facilitate their uptake. The pilot also suggests that it would be interesting to further explore how a top-down intervention could also lead to an increase in community groups and action (social capital) and hence draw communities together in the future. The BES beneficiaries here, with their experience of the technologies could act as trailblazers, and discuss the technologies with other members of the community – thus increasing community cohesion and thereby the capability of the community as a whole.

CONCLUSION

The value of exploring attitudes to sustainable energy interventions in this pilot study has been to identify some important areas of study, to establish what can be found out from individuals about successful interventions, and to establish whether the style of intervention is important. This pilot does indeed suggest that the style of intervention is important to establish 'success in context', and this requires further study. It also raises important questions for further study about how interventions encourage 'community cohesion'; involving sub communities working together to interact and affect each others' attitudes.

The Northfield council tenants, having financial concerns and feeling less of an identity with the community, had 'success in context' from a top down intervention from a trusted body - BCC. An in-depth study would provide more conclusive evidence for whether top-down or community interventions are more appropriate in helping communities that are unable to act unsupported, and whether or not the local authority is the most appropriate and trustworthy body to suggest the take-up of these technologies; thereby effecting a positive attitude towards them.

The Moseley residents, being from a more affluent area, were unable to benefit from Birmingham City Council's project, but were more able to make use of their connections with friends and neighbours in the community in order to self organise. An in-depth study would provide more conclusive evidence for whether or not community interventions are appropriate in these communities since residents are skilled and can support each other to make such interventions work, and inspire the rest of the community. This is not to say that top-down interventions in communities like Moseley would *not* be successful. Therefore an in-depth study would also provide more conclusive evidence for whether or not community interventions in communities like Moseley (who can afford to be more critical of their local authority, being less dependent on them) can lead to *more* positive attitudes about sustainable technologies and the process of interventions, than would a top-down intervention. It would further refine whether the 'capability of the community' is necessary for 'success in context' here, and whether this can be developed in less cohesive communities as part of the intervention.

In a study looking for more successful interventions, it is important that we find out about individual attitudes, as well as they way individuals see their communities, technology and different types of intervention. This pilot study highlights some areas for investigation within top-down and community-led interventions. Potentially an in-depth study could also look at a third approach to interventions: the *facilitation* of a community-led intervention.

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