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A rethink of how policy and social science approach changing individuals' actions on greenhouse gas emissions

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Abstract

Social scientists from all areas are developing theories and testing practical approaches to change individuals' actions to lower greenhouse gas emissions. In the UK context, policy-makers, local authorities, companies and organisations are using these theories to invest resources to change individual's actions. The problem is that social scientists are delivering fragmented science based on narrow disciplinary views and those using this science are cherry picking whatever theory suits their agenda. We argue that with substantial GHG emission reduction targets to be achieved, a multidisciplinary application and view of social science is urgently needed.

Keywords: Behaviour, practice, attitudes

Introduction

There is much work currently under way to develop and implement practical approaches to change people's attitudes, values, behaviours, habits, practice and the society they live from a lifestyle with a relatively high greenhouse gas (GHG) emissions to one with a much lower impact on climate change. For example, recently the UK government's Cabinet Office Behavioural Insights Team (also known as the 'nudge unit') recently published a report on how to change individual's behaviour on energy use (Behavioural Insights Team, 2011) and the Scottish government published a review of behaviour change initiatives that have attempted to reduce the carbon intensity of consumption practices (Southerton et al. 2011). Previous papers in Energy Policy have also provided empirical evidence and theory on the matter (for example Arkesteijn and Oerlemans, 2005; Ek and Söderholm, 2010; Heiskanen et al, 2010; Kok et al, 2011; Lindén et al, 2006; Moloney et al 2010; Owens and Driffill, 2008; Rajan, 2006). We argue in this paper that policies to change individual's actions on GHG emissions should use use of a package of measures based in a multi-disciplinary view of research evidence and theories rather than favoured individual social science theories. This is the only way, we contend, to change individuals' actions in a meaningful way to contribute the large reductions in GHG emission targets that are required.

Hence, we particularly build on Stephenson et al's (2010) "Energy Cultures Framework", which we discuss later, and support their view that "wider social, environmental and economic forces [should] *structure* but not *determine* people's cognitive norms, practices, and material cultures" (p. 6127). This means that

individuals use their own approaches to solve their specific contextual barriers to significantly change their actions while being directed down the low carbon route. Individuals also have the freedom to self organise and/or influence policy makers and other actors to create this structure (see Dobson, 2003; Moloney et al, 2010).

Policies and practical approaches to change individual's actions are based on academic theories ranging from the theory of planned behaviour from social psychology to the sociology of habits and practice. There is a tendency for policies to be based on a school of thought such as the 'nudge unit' report (Behavioural Insights Team, 2011) exclusively uses social psychology and behavioural economics while the Scottish report (Southerton et al. 2011) is from a more sociological perspective. We feel that this disciplinary bias creates practical approaches that are short-term at best and counterproductive at worse because they are piecemeal. This view is supported in part the recent House of Lords report on behaviour change in general which included low carbon policies (Science and Technology Committee, 2011). It criticised the development of government policies that just use non-regulatory 'nudge' policies because they were ineffective. It recommends that government policy should comprise of a package of measures covering the full range of policies shown in Table 1. We agree with this and go further and suggest that any organisation of influence - be it central government, local authorities, public institutions (such as the NHS), companies, community groups and charities should use a package of measures that impact on the individual, community and the wider context. For policy-makers, developing policies that change actions should use state of the art systematic research reviews (Kok et al, 2011) and be consistent across government (Owens and Driffill, 2008).

Table 1: House of Lords behaviour change report’s table of interventions (Science and Technology Committee, 2011 p10)

	Regulation of the individual		Fiscal measures directed at the individual		Non-regulatory and non-fiscal measures with relation to the individual					
	Eliminate choice	Restrict choice	Choice Architecture (“Nudges”)							
Guide and enable choice										
Interventions category			Fiscal disincentives	Fiscal incentives	Non-fiscal incentives and disincentives	Persuasion	Provision of information	Changes to physical environment	Changes to the default policy	Use of social norms and salience
Examples of policy interventions	Prohibiting goods or services e.g. banning certain drugs	Restricting the options available to individuals e.g. outlawing smoking in public places	Fiscal policies to make behaviours more costly e.g. taxation on cigarettes or congestion charging in towns and cities	Fiscal policies to make behaviours financially beneficial e.g. tax breaks on the purchase of bicycles or paying individuals to recycle	Policies which reward or penalise certain behaviours e.g. time off work to volunteer	Persuading individuals using argument e.g. GPs persuading people to drink less, counselling services or marketing campaigns	Providing information in e.g. leaflets showing the carbon usage of household appliances <i>*Regulation to require businesses to use front of pack nutritional labelling, or restaurants to provide calorific information on menus</i>	Altering the environment e.g. traffic calming measures or designing buildings with fewer lifts <i>*Regulation to require businesses to remove confectionery from checkouts, or the restriction of advertising of unhealthy products</i>	Changing the default option e.g. requiring people to opt out of rather than opt in to organ donation or providing salad as the default side dish	Providing information about what others are doing e.g. information about an individual’s energy usage compared to the rest of the street <i>*Regulation to require energy companies to provide information about average usage</i>

Note: * Demonstrates how regulation of businesses might be used to guide the choice of individuals, thus distinguishing it from regulation which restricts or eliminates the choice of individual.

Here we will just capture a flavour of the theories that are being used to develop practical approaches to changing individual’s actions. Firstly it is worth pointing out the differences in terms different disciplines use. These are set out in Table 2. Throughout this article we are only interested in the outcome of an individual’s “action”, i.e. does it cause substantial reductions in GHG emissions from the

individual's lifestyle? We use the term "action" instead of "behaviour" or "practice" because, as explained in the next section, they are used by different disciplines.

Table 2: Definition of different terms and the disciplines(s) using them

Term	Explanation	Disciplines concerned
Behaviour	The act of behaving.	Economics and Psychology
Practice	Actions are directed by habit, structure and culture.	Sociology
Cognitive	Elements of the actions that are rational, or knowledge related.	Economics and Psychology
Agency	The freedom of directing action.	Economics and Psychology
Affective	Elements of actions that relate to values, attitudes, or opinions.	Psychology
Habitual	Elements of actions that are subconscious, including instinct, habit.	Sociology and Psychology
Norms	Collective understandings of how people should behave and society should work.	Psychology and Sociology
Social Context	Human or non-human properties that are drawn on in order to facilitate change. This includes infrastructural, institutional, economic, and cultural resources.	Sociology and Economics
History	The cumulative effect of the performance of practices over time on norms, habitual and affective elements.	Sociology

In general there are three general barriers to low carbon lifestyles. These are; resource limitations (economic, cultural, social), normative requirements (e.g. the need to 'fit in') and material and infrastructural arrangements (e.g. access to choices) (Southerton et al, 2004). We will now outline the numerous theories from the disciplines contending to understand how to change individuals' actions, including some useful results from empirical studies and social experiments. We classify theories and evidence into three areas, empowering individuals, empowering communities and changing the wider context to change the actions of individuals. We then put forward our 'wheel of change' framework showing the approaches that practitioners should implement as a package for their initiatives to have real impact.

Empowering individuals to change their actions

The theories surrounding our first category, "empowering individuals" rely on changing actions by persuading, educating and providing information for individuals to reduce GHG emissions themselves. This relies on changing people's attitudes, for example through social marketing so that they will (hopefully) translate this to changing their own actions. In (social) psychology different models are used such as the theory of planned behaviour, rational choice model and norm activation model. According to a review of 46 social psychology studies in this area, people's attitudes, perceived behavioural control and moral norm strongly influence their intention to perform an action (Bamberg & Möser, 2005).

The tools used to influence attitudes are traditionally information sharing and economic incentives. See Rajan (2006) for a nice list of social psychological

approaches for reducing car dependence as an example. Individuals having knowledge of climate change (Arkesteijn & Oerlemans, 2007) and how information is presented are important (Ek and Söderholm, 2010). However, methods of communicating information such as social marketing can in some instances be counterproductive (Corner & Randall, 2011) or ignore how individuals place values on different contexts e.g. the home versus holiday (Barr et al, 2011). For example the 'Act on CO₂' cross UK government campaign in 2007 was largely seen as a failure because it relied wholly on providing information (Science and Technology Committee, 2011). There is shown by evidence of an 'attitude-behaviour gap', which refers to the disparity between stated attitudes and actual behaviour on environmental issues (Jensen, 2002; Kollmuss & Agyeman, 2002; Maiteny, 2002). Even committed ethical consumers find they do not have the time to research for information, interpret it and change their actions (Lindén et al, 2006; Young et al, 2010).

Environmental citizenship advocates that education on low impact lifestyles takes place within the formal education sector such as in schools citizenship teaching and education for sustainable development programmes at Colleges and Universities (Dobson, 2003). For long high quality long running programmes children's attitudes and knowledge can be positive as well as the affect on their families (Vaughan et al, 2003). Economic incentives and disincentives such as taxes and subsidies can have an impact on individual's actions but can only work in the context of education - more importantly, along with clear opportunities available for new actions (Science and Technology Committee, 2011).

Changing the 'pre-set' options that individuals are routinely presented with, to include a low carbon option can be effective and to make them feel like their actions make a difference (Cotte & Trudel, 2009; Pichert & Katsikopoulos 2008). However additional interventions can be needed by requiring goal setting, and feedback (Abrahamse & Steg, 2009).

Product labelling has increasingly become a popular method of informing consumers of the GHG emissions of products they are only effective with universal and consistent application (Vandenbergh, 2011). For example the EC energy label on large household appliances has largely been a success in moving consumers to buy more efficient versions and forcing manufactures to produce lower energy ones (Science and Technology Committee, 2011). This is due to its benchmarking comparability (Young et al, 2010).

Individual's actions have to be both experienced and evolve over time. This has a series of implications, including that each action that someone engages in can have an impact on further actions such as openness to new information (Bamberg & Möser, 2005; Thøgersen & Møller, 2008). Other barriers not mentioned so far include ideological worldviews that tend to preclude pro-environmental attitudes and actions, previous financial commitment costs, suspicion of experts and authorities and perceived risks of change (Gifford, 2011).

However, various authors in the sustainable consumption literature have criticised such enthusiasm for voluntary and individualistic perspectives (Burgess et al, 2003; Maniates, 2002; Middlemiss, 2010; Sanne, 2002; Southerton et al, 2004). There is no

doubt that internal determinants of change (such as individual's knowledge and attitudes) are important but relying on voluntary measures for attitudinal change to eventually result in behavioural change is a rather weak approach to climate change policy.

Empowering communities to change individual's actions

Our second category of theories focus on empowering communities to change individuals' actions. There is increasing evidence that this is an effective but time consuming approach compared to (for example) social marketing. An important factor in supporting an individual's positive attitudes and motivation is influencing their social networks (Corner & Randall, 2011) and social norms. This is family, friends, work colleagues, neighbours as well as sectors, shared interest or social media (Heiskanen et al, 2010). Behavioural economics is becoming popular with policy makers as a method of behaviour change because it recognises that individuals are not rational all the time and incorporates the social context such as social norms and peer pressure (Collier et al, 2010).

According to Heiskanen et al (2010), communities are formed to overcome four factors that hinder individuals changing their own actions. These are:

1. Reframing the social dilemmas of low-carbon lifestyles;
 2. Tackling the social conventions that constrain individuals from shifting to a low-carbon lifestyle;
 3. Dealing with the lack of infrastructure for individuals to change their actions;
- and,

4. Overcoming the individual's feeling of helplessness in the face of global problems.

A British study found that social motivations were stronger levers for ethical behaviour than personal ones (Freestone & McGoldrick, 2008). Importantly it found that not only that social motivations strengthen actions of those with positive attitudes, it also will change an individual with no or little ethical behaviours if the social benefits are explicit. In addition, as an individual increases their ethical behaviour they increasingly see the benefits from such behaviour, which provides another motivator. This is supported by a Belgian study that found that experiencing social pressure from family and friends explains individual's intentions to buy, despite negative personal attitudes (Vermeir & Verbeke, 2006). The advantage of community projects is they help develop this social pressure and involve individuals in practice. Through community groups individuals become more sensitized to information in the news, and by extension take on new sustainable practices where possible (Middlemiss, 2009). Those with a history of community engagement also find new enthusiasm through their involvement in community sustainability activities.

Evidence from programmes such as the Global Action Plan's Ecoteams, for instance, suggests that structural change (in the form of extensive social support) can have lasting impacts that enable voluntary action (Middlemiss, 2010; Staats et al, 2004). Such intense participatory activities tend only to attract previously engaged participants, but they are documented to have long-lasting effects on actions. Finally, a study of people's response to advice on climate change issues also saw that for

advice to be retained, it had to be collaborated with and supported by the householder's closest social network (Bartiaux, 2008).

All this evidence suggests that for people engaged in low carbon activities, some kind of learning process is occurring over time, which would tie in very well into the argument for theory of environmental citizenship. This advocates education and political movement. It is important to note that social norms can also act as a barrier to positive attitudes such as the norm being to drive children to school to fulfil norms of status - as well as other values such as work and consumerism (Woodside, 2011). However community activities can only go so far without the wider context changing. According to Moloney et al (2010) government has to "play a critical role in supporting community-based organisations and practices, through systemic support structures, funding models, infrastructure projects and policy and regulatory mechanisms" (p.7622).

Changing the context to change individual's actions

One clear point from previous sections is that without changing the infrastructure, economic incentives and social practice, positive attitudes and community support can only get you halfway. However, changing the context can have limiting impact without attitude change and community support. For example, a major study in Denmark where 500 car drivers participating in an experiment received a free one-month travel card suggested that economic incentives affect the unengaged only during the period of intervention (Thøgersen & Møller, 2008). During the experiment, car drivers increased their use of public transport, and even displayed some

attitudinal change towards public transport (although most had negative attitudes to public transport). When the experiment ended, car drivers returned to their cars. In other words, while they received a structural incentive they thought it was worthwhile to travel by public transport, after the structural incentive disappeared they did not (Shove, 2003). Hence the limitations of economic incentives - they do not provide space for individuals to deliberate and engage more deeply with environmental issues, provoking instead a rational, self-interested reaction. This includes individuals attempting to avoid London's congestion charge (Dobson, 2003).

Changing infrastructure does have a larger impact on changing behaviour than relying on marketing alone. Installing dedicated bus and bicycle lanes increases use of buses and bicycles more than just encouraging people through social marketing (Science and Technology Committee, 2011). However this of course comes at a higher cost.

The sociological slant is that the evolution of consumption patterns over time can dominate behaviour (Shove, 2003). For example a global understanding of a comfortable building temperature of 22°C has gradually emerged, overriding local norms of comfort, such that office buildings in New York and Dubai now aspire to keep their premises at the same temperature despite radically different climates (Ramsden, 2007). This is an important empirical observation, as it suggests that consumption is somehow gradually shifting over time, and that such shifting norms of consumption can have a substantial impact on resource use.

For reluctant individuals, structural changes will make them engage in actions despite themselves. Introduction of interventions needs to take into consideration the different cultural and infrastructure contexts for the greatest impact.

A multidisciplinary approach to changing individual's actions

The importance of a multidisciplinary approach in research design, results interpretation/reporting and practical approaches has already been recognised (e.g. Collier et al, 2010; Owens and Driffill, 2008; Stephenson et al, 2010; Stern, 2011). Stephenson et al (2010) in particular suggest an “Energy Cultures Framework” that has cognitive norms, material culture and energy practices as core concepts to frame influences on consumer energy behaviour. We focus not on energy but GHG emissions and how actors such as governments, companies, public institutions and non-governmental organisations should implement a programme of change using a multidisciplinary view of research evidence and theories. As indicated earlier we think that the theories that contribute to our understanding of how to change individual's actions fall into three areas, which then translate nicely into practical approaches as shown in figure 1. We advocate that for a low carbon initiative by governments, local councils, companies, public institutions and community groups to succeed they should use approaches from all three areas to help change the actions of the individual. This means enabling individuals to take action themselves, enabling the community to change individuals through a mixture of social pressure and support and finally changing the individual's context to reinforce and dictate action change.

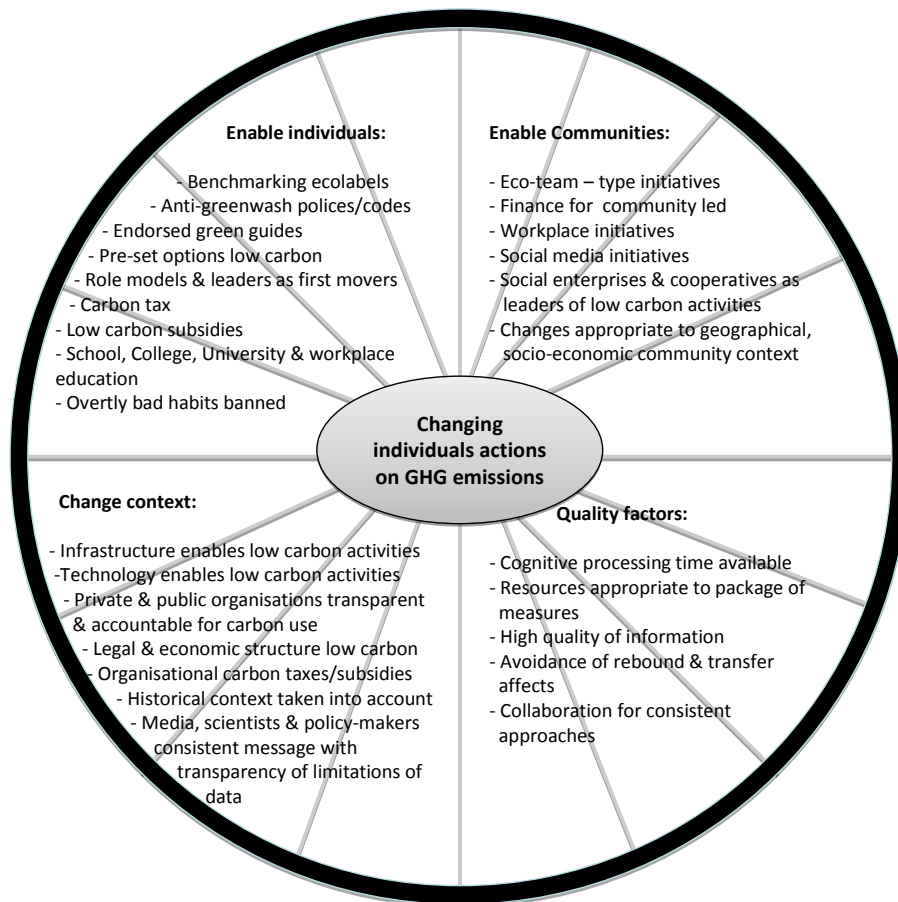


Figure 1: Wheel of change framework

The fourth area in figure 1 is what we have termed ‘quality factors’, which are required for all the practical actions to succeed. The first is to make sure individuals have enough time to process new information and translate the advice to their situation. The second factor is to make sure that the information provided by all parties is transparent and unbiased especially from companies where there has been a tendency to confuse well-meaning consumers (Ramsden, 2007). The third factor is to make sure that in the drive to lower GHG emissions there are not any unintended rebound effects - such as drivers over using their efficient cars thereby wiping out any eco-efficiency benefits. Included in this factor is to avoid moving the impact of an activity from climate change to another area such as the over consumption of water

or biodiversity loss that can have higher priority for action than climate change (Rockström et al, 2009). Finally and always the driver is the resources available for an initiative. This is more than financial and includes knowledge, expertise, meeting places and institutional support. These need to be appropriate to the programme and under resourcing can be counterproductive by putting people off the topic when they see no or little results.

The 'wheel of change' framework shows the limitations of the 5 trails recommended by the Cabinet Office's Behavioural Insights Team ('nudge unit') (Behavioural Insights Team, 2011). Without a package of incentives and penalties, nudging actions will not achieve much. There are some important potential interactions between some of these elements, which need to be teased out. We can also see instances in which the absence of action on one element will affect another. For instance a lack of infrastructure, in the form of recycling collection, is likely to reduce the chance that those unable or unwilling to take materials to a collection point will act. Evidently the relationships between the elements we have identified, and the policies that address them, are an area where further study would be welcome.

Conclusions

Low carbon initiatives need to encapsulate a package of approaches because individuals are not able to change themselves to achieve GHG reduction targets because of the 'noise' from other sources which crowd out time and actions. We argue that it is dangerous to restrict policy to just one measure type (whether economic incentives or voluntary measures) in an area where change is particularly

difficult to stimulate. The House of Lords behaviour change report recommendations for the use of a package of policies is important for this area (Science and Technology Committee, 2011).

However it is not just up to government policies - responsibility must fall to those who have control over particular contexts (Gifford, 2011; Middlemiss, 2010). Government interventions need to change patterns of individual actions (Science and Technology Committee, 2011) such as reducing energy and waste from clothes. Other organisations such as companies can change smaller individual actions - such as washing clothes at a lower temperature shown by M&S's change of care label instructions on clothes to wash at a lower temperature, and Unilever's marketing that their laundry products are best in market at washing at lower temperatures. However joined up thinking is needed, through schemes such as the Sustainable Clothing Roadmap originally set up by Defra but now run by the Waste and Resources Action Programme (WRAP, 2011). It is based on the collaborative effort of clothing and fashion stakeholders from designers and retailers to recyclers and trade bodies.

For social scientists working in this area, there needs to be further collaboration, transparency and acknowledgement of limitations. Bringing together evidence and theory from these different disciplines is not an easy task, and here we can only go so far as to identify the strengths of each discipline, and make a plea for more tolerance and integrative working. We recognise that there are philosophical and methodological traditions in each of the different disciplines that make potential collaborations rather fraught. We are left with the conviction that each of the disciplinary perspectives could benefit from knowledge and theory developed to the

same end - to understand low carbon lifestyles. In a sense, most researchers working on climate change mitigation from within a discipline are guilty of prioritising certain concepts in explaining the empirical problem as a result of their disciplinary background. This works to the detriment of the richer empirical picture, and has substantial policy implications.

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