

Society and a low-carbon future: individual behaviour change or new social values and priorities?

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ABSTRACT: Although Scottish and UK governments have ambitious targets for climate change mitigation, and there is increased understanding of the risks to future prosperity of fossil fuel energy dependence, limited practical progress has been made by the advanced economies in reducing carbon emissions, especially when embedded emissions in imported consumer goods are taken into account. Significant contributory factors are the social and cultural values, beliefs and practices, which result in risks of climate change being regarded as secondary to short-term pressures for economic growth and increased consumer spending. The result is that climate change and transition to a low-carbon society become ‘back of the mind’ issues. Current policy designed to lower carbon emissions from household consumption treats society as a series of individuals, each responding rationally to market incentives to maximise short-term personal gain. ‘Greener choices’ are incentivised and encouraged by social marketing, but, at best, this approach will achieve only very gradual change. An alternative model treats society as comprising historically evolving, dynamic social systems and cultures that are capable of dealing with transformational change, when there is a shared understanding of the reasons for acting. From this perspective, society can implement step changes in behaviour through collaborative action in the interests of the longer-term common good. Political momentum can be gathered for new legislative and/or taxation measures, as for example in the case of the strong programme for tobacco control legislation in Scotland and the UK. By focusing on social and technical infrastructures, the built environment, and the regeneration of local economies, rather than on individual behaviours, government investment can have far greater impact. A distinctively Scottish narrative for a low-carbon society can create momentum for transition through shared understanding of the risks of climate change, and its meanings for social life, cultures, economic relationships and values.



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Societal reliance on energy from fossil fuels has a very short history; it is a matter of some 200 years since the industrial revolution, powered initially by coal, transformed human life and living standards. Yet now almost every aspect of production and consumption in the more affluent parts of the world is fundamentally dependent on fossil fuels for electricity, heat, transport, food and water. In the face of climate change and associated environmental degradation, we need to find the means of dismantling that dependence, and enabling transition to a low-carbon society. Yet this challenges the founding assumptions of modern societies about progress, wealth creation and economic development, all of which have depended on increasing exploitation of natural resources (Beck 2010). European, UK and Scottish commitments to cut emissions radically, and enable transition to a low-carbon society, imply a very different society with different priorities. Rather than assuming, for example, that rising demand for energy is inevitable, and in many ways a positive indicator of economic advance, UK policy now states:

‘We will need to radically reduce demand for energy and decarbonise the energy we use in our homes almost totally by 2050. . . . All households will need to play a part in this’ (DECC 2009, p. 80).

In UK policy, responsibility for around half of territorial emissions is attributed to individuals and households; domestic heating and electricity are estimated to be 25% of the total, with private transport accounting for a further 24%. The

Scottish Climate Change Delivery Plan (Scottish Government 2009a) sets 2020 targets for a 40% reduction (from 2006 levels) in emissions from energy use in housing, and around 30% reduction in emissions from private transport. Meeting the early reductions set by carbon budgets in Scotland in the next decade therefore depends on significant changes in domestic consumption patterns.

In considering the policy challenges posed by dominant social values and priorities, this paper comments on the meanings given by society to climate science, how these meanings shape the science, and the potential implications for social action. These issues are important because the actions of society will influence the ways that climate change unfolds. If we are able to use scientific knowledge to recognise the risks to be faced, and to inform constructive action to mitigate climate change, then we should suffer fewer damaging consequences and be better equipped to adapt. This paper draws on evidence from academic, policy and practitioner literature, as well as evidence gathered during the RSE Inquiry, and quantitative data from the Scottish Environmental Attitudes and Behaviours Survey 2008 (SEABS08; Scottish Government 2009b). The latter provides insight into current public responses to evidence about climate change and to government policies aimed at changing behaviour with respect to household consumption, energy use, waste and transport. The policy framework is illustrated through analysis of current UK and Scottish government strategies for behaviour change, which place reliance on gradual change at individual level.

1. The societal influence on climate science

The sociology of scientific knowledge has examined the ways in which science is shaped by society and social understandings (Knorr-Cetina 1981; Shapin 1982, 1995; Jasanoff 2004). Cultural perspectives and political values mediate the priorities of science, the interpretation of findings and responses to it. Much of the public attention on climate science has focused on political controversy about the reality of human-induced climate change. This has shaped scientific priorities and evidence in ways that understate, rather than overstate, the risks (Wynne 2010). Societal influences over scientific knowledge, represented for example in the IPCC's use of general circulation models (GCMs), have resulted in a dominant representation of climate change as 'reassuringly gradual' and predictable in rate and scale, implying that there is little or no need for radical policy measures or significant changes to contemporary habits of consumption. Positive climate feedbacks and possible abrupt climate system changes, Wynne (2010) argues, are downplayed, as scientists make assumptions about what scientific conclusions can be assimilated by politicians and policy-makers, and what is palatable for the public. Thus science responds to a pre-given set of assumptions about society as limited in capacity and willingness to deal with challenging findings. The public meanings of climate science, and 'the climate problem', and the type of society which is supposedly informed by the science, are already anticipated by the science and built into its framing and reported findings. There is an element of the self-fulfilling prophecy at work, such that the cautious framing of the science acts to confirm assumptions that the public and our elected politicians are unwilling or unable to take informed democratic responsibility for acting on the human risks entailed in the range of possible futures.

2. Can liberal-democratic, consumer societies manage the transition to a low carbon future?

Our understanding of society influences how we regard climate change, and how solutions to it are envisaged. Affluent liberal democracies, such as those in Europe, have considerable financial, educational, technical and operational resources to bring to bear on mitigating, and adapting to, climate change, but these do not inevitably translate into effective action. The UK, for example, has made mixed progress so far in relation to purposive interventions to reduce emissions, despite policy dating back at least to the 1997 Kyoto Protocol. The UK Environmental Accounts (2011) show territorial emissions between 1990 and 2009 declining by around 22%, despite transport emissions increasing by 32% over the period. Reductions prior to 2002 are attributable to industry closures and off-shoring of energy-intensive manufacturing (Helm *et al.* 2007, p. 7). Emissions increased after 2002, and decreased only with the onset of recession. The Third Progress Report of the UK Committee on Climate Change (UKCCC 2011) shows emissions increasing again by around 3% between 2009 and 2010, largely due to a very cold winter, and concludes that a step change in the pace of reductions is still required. Measures of the 'carbon footprint' of UK consumption also show emissions increasing by around 19% since 1990 (Helm *et al.* 2007, p. 23), suggesting that *per capita* emissions are around twice the level reported in the territorial account. The same holds true in relation to adaptation: in principle, current technical and scientific knowledge and capacity is sufficient to enable adaptation to experiences such as heat waves and droughts, yet these continue to result in famine, raised mortality and destruction of infrastructure. Severe drought in poor countries in the Horn of Africa in 2011 caused massive suffering and loss of life. In the UK, where awareness of flood risks and adaptation requirements

are reasonably well-known, recent floods, causing disruption in areas such as Aberystwyth, Hull, Liverpool and Glasgow, have prompted recognition of vulnerability associated with outdated drainage and sewage infrastructures, and in Glasgow the Metropolitan Strategic Drainage Plan is recognised as an exemplar of best practice. However, adequate financial investment for dealing with potential higher frequency of extreme rainfall and flooding remains uncertain.

Part of the explanation for limited action lies not in the absence of available knowledge, technology or finance, but in the social, political and cultural values, beliefs and practices, which reflect diverse views about the state of the world, and frame interpretations of the importance of climate change mitigation, relative to other public issues and priorities (Hulme 2009; Beck 2010). This paper explains this argument by comparing two different understandings of how society works, emphasising contrasting models of social values and associated practices, and their implications for enabling transition to a low carbon future. A common understanding of society is that it is comprised of individual rational actors, each of whom seek to maximise personal benefit at least cost. This individualist account of society informs neo-liberal political economy, which in its current manifestation has dominated Anglo-American capitalism since the 1980s (Stiglitz 2010; Crouch 2012; Sandel 2012). It shapes those aspects of government climate change policy that focus on individual behaviour change as a means of cutting carbon emissions. From this perspective, barriers to reducing domestic energy demand reside with individual consumer attitudes and behaviours. Each individual is regarded as having a natural and unlimited desire to consume more, whether represented by out-of-season foods, faster cars, international travel, electronic artefacts, or clothes and accessories.

The alternative understanding treats society as more than the sum of individual actors, and as structured by complex institutions embodying historically-located norms, beliefs and values, including those of consumerism. Such institutions are the result of human susceptibility to each other, shared interests and cooperation, as well as competition in pursuing diverse goals. They govern important characteristics of society such as the distribution of income and wealth between different social strata. Social structures, such as those of consumer markets, are both the conditions and consequences of social interaction. They are not external to actors, but are embodied in social practices. Actors' self-understandings, interests, purposes and motivations are historically located and constrained by circumstances; we make history, but not in circumstances of our own choosing. Social practices, such as tourism, car driving, fashions in clothing, diet, housing interiors and the production of waste, result from the particular combinations of material culture, equipment, markets and conventions which characterise the period (Shove 2003; Hand *et al.* 2005; Russell & Lux 2009). Cultural traditions, for example, influence how energy is used, the relative energy intensity of households, what is considered comfortable in heating and cooling, and even the preferred temperatures of food and drink. We cannot account for activities entailing the use of energy, food, or other resources, or 'taken-for-granted' interactions relating to these, unless we situate those activities in their social context. How people act depends on what is socially valued as desirable, or prestigious, or comfortable, given the constraints of established commitments, debts and responsibilities.

From this perspective, modern industrialised liberal democracies such as Scotland and England are distinctive social formations that are instrumental in constituting the identity of the self-interested consumer. The 'individualised consumer' is, in other words, a product of society, rather than the inevitable expression of human nature. Through the production of particular kinds of scientific and technical knowledge, wealth,

and specialised divisions of labour, modern societies have enabled many forms of individual freedom and choice. Contemporary urban life, and its socio-technical infrastructures for transport, telecommunications, energy, food, water and waste, is designed to incentivise high levels of conspicuous consumption, which are critical to the economic performance of the affluent economies. Barriers to change reside with the institutions of society, dominant values and shared understandings of what is 'normal', valued or expected. Human-kind and self identities in this sense are malleable; we adapt to circumstances.

3. Evidence about social attitudes and behaviour relating to climate change

It follows that contemporary attitudes, understandings and behaviour in relation to environmental issues and climate change need to be interpreted in the context of dominant social values. Such attitudes have been surveyed systematically in the UK since 2006, and the evidence consistently highlights a number of challenges to transition towards a low carbon future.

One of the most basic problems remains the relatively limited, and weakly established, public understanding about the causes of climate change, its impacts and possible remedies. Although public awareness about climate change is increasing, this is typically accompanied by confusion about its causes and consequences, and uncertainty about the status of the science and the intentions of government (Lorenzoni *et al.* 2007; Upham *et al.* 2009). Levels of knowledge claimed vary between Scotland and England, and even between surveys in the same year in England: the Defra (2009) tracker survey of attitudes and behaviours in England shows that 61% claim to know a lot or a fair amount about climate change, in comparison with 53% of respondents to the English 2009 Office for National Statistics (ONS) Opinions (Omnibus) survey (UK Government 2009) and 48% of respondents to the Scottish Environmental Attitudes and Behaviours Survey (Scottish Government 2009b). All surveys were structured to provide representative samples of the English and Scottish adult populations (aged 16+) respectively.

General expressions of concern about climate change tend to be higher than claims to knowledge: the UK Opinions (Omnibus) survey (UK Government 2009) found that 76% of the public were very or fairly concerned, although this had decreased slightly since 2006. In Scotland in 2008, 85% disagreed that 'climate change will only have an impact on other countries, there is no need for me to worry', although fewer (57%) agreed that climate change is an immediate and urgent problem (Scottish Government 2009b). The design of survey instruments itself reflects assumptions about urban living as relatively disconnected from the natural resources of land, forests, rivers and oceans, resulting in a lack of statistically reliable information about public attitudes to low-carbon approaches to farming, agriculture, fisheries and land use.

General claims to knowledge and concern are not reflected in consistent understanding of causes and impacts of climate change, with limited awareness of the contribution of different activities to carbon emissions (Upham *et al.* 2009). A synthesis of evidence, commissioned by the UK Government, on public understanding in the UK shows the uneven understanding of the relationship between routine consumption and greenhouse gas emissions: all participants in five independent projects on public understanding of sustainable behaviours were found to have little understanding of the relative impact of different behaviours on the environment (Dresner *et al.* 2007). Various forms of superstitious behaviour were evident, with assumptions for example that a 'pro-environment' daily routine such

as recycling household waste was a legitimate way to offset occasional high-impact behaviours such as international air travel. Domestic energy use itself is a common matter of concern because of its rising price, but survey findings assessing the understanding of the relationship between energy use and climate change are somewhat ambiguous. Scottish respondents to SEABS08 were asked an open-ended question about perceived causes of climate change:

Q. From what you know or have heard about climate change, what would you say are the main causes of it?
(Scottish Government 2009b, p. 23)

The highest proportions (35%) refer to general emissions, including those from cars and road transport, carbon dioxide emissions (34%) or emissions from power stations/factories/industry (30%). Few referred spontaneously to household contributions, with 5% mentioning domestic use of gas and electricity, suggesting that most people do not spontaneously connect climate change with domestic energy consumption. In addition, of the 21% of respondents who estimated that they were using less energy than the previous year, relatively few cited environmental concerns as the reason (16% of those stating that they had cut consumption of electricity, and 13% of those stating that they had cut consumption of gas). In a similar English attitudinal survey (Defra 2009), a structured question was used to focus attention on a direct link between personal energy use and climate change. Statements ranged from "I don't believe there are climate change problems caused by energy use and I'm not willing or able to change my behaviour with regards to energy use" to "Climate change is caused by energy use and I'm doing lots of things to help reduce my energy use and emissions". When presented with a strong statement of causality, the majority (85%) agreed that climate change is caused by energy use. Around a third (36%) of respondents made this connection *and* opted for the statement that they were doing either "quite a number of things" (27%) or "a lot of things" (9%) to reduce their own energy use. In combination, these findings suggest that there is general awareness of the link between energy use and climate change, but the majority do not necessarily associate this with their own energy consumption patterns, or go on to take significant action to reduce their energy use. Relatively low awareness of energy efficiency is also common: less than half of SEABS08 respondents, for example, knew the efficiency rating of recently bought electrical appliances such as fridges, freezers and washing machines.

Routine reliance on car travel even for short distances is very common in Scotland, such that 44% of car users living within a mile of their workplace drove to work. Neither does concern about the environment translate into reduced car use, as shown by the statistical regression analysis carried out by Davidson *et al.* (2009, p. 50). Indeed unrestricted car use is widely accepted: even among those SEABS08 respondents who regarded the environment as a salient issue, 45–48% agreed that 'people should be allowed to use their cars as much as they like', and this was even higher (57%) among those for whom environmental issues were not salient.

Overall, uncertainty about climate change, its connection to carbon emissions and how to reduce them, plus the fact that over half (52%) of the Scottish sample (in comparison with 40% of the English sample) claimed to know 'not very much' or nothing at all about climate change, including one quarter of those educated to degree level and 59% of women, highlights the continuing need for accessible public education about climate change, its relationships to everyday habits and its implications for ways of life. In addition, the findings suggest that associated energy, transport and housing policies for low-carbon transition need to be carefully and consistently explained, and discussed, in ways adapted to different groups

Table 1 Salience of Environment as an Important Issue

Mention the environment as the single most important issue facing Scotland	4%
Mention the environment as one of the most important issues facing Scotland	8%
Mention the environment as the single most important issue facing the world	14%
Mention the environment as one of the most important issues facing the world	13%
Do not mention the environment at all	61%
<i>base</i>	3,054

and sectors of society, and using the full range of available media.

Knowledge and understanding are not sufficient in themselves to prompt change. The interpretation of knowledge is mediated by personal, and societal, values and priorities and experiences. Perceptions of the urgency of risks from climate change, and of the need to take action, differ, for example, depending on the source of information, and the degree of trust in its veracity. Popular media are frequently regarded as ‘scaremongering’ and sensationalist, and therefore as untrustworthy (Lorenzoni *et al.* 2007). Low levels of trust in government also mean that information from government sources may be viewed suspiciously or ignored. Annual UK Omnibus Opinion surveys (UK Government 2009) of adults in Britain show that around 15% of the population trust the government as a key source of information. In addition, the proportion of respondents not trusting any sources has increased significantly from 6% in 2006 to 12% in 2009 (Eleini 2010).

Media publicity about the practice of climate science, surrounding the 2009 release of emails from the University of East Anglia Climate Research Unit, may have damaged general levels of trust in scientists, but independent scientists generally command higher levels of trust than government, business or media. In SEABS08, independent scientists were the group most likely to be trusted to provide correct information, (cited by 45% of respondents). People also distinguish between groups of scientists, with *government* scientists cited by far fewer (9%) as most trusted. Overall, low trust in all sources of information may be variously associated with scepticism about the reality of climate change, its causes, consequences or its seriousness, and the likely effectiveness of mitigation.

Even when information about the significance and risks of climate change is trusted, there is no necessary link to changes in behaviour. This may be for a variety of reasons, including those which stem from the prioritising of risks according to personal significance. Hence, although general concern about climate change is relatively high, it is not an immediate priority for most people. Among the population of Scotland, neither is it typically perceived as of immediate societal or political importance. In SEABS08, when asked about the important issues facing Scotland or the world, 12% of respondents mention environmental issues spontaneously as important for Scotland, and 27% mention them as important for the world (Table 1). Issues relating to the economy, crime, and the Scottish constitution ranked higher, and in the context of the world, international conflict and economy were regarded as most important (Davidson *et al.* 2009). Climate change is more likely to be a back-of-the-mind issue.

Responsibility for climate change and its mitigation may, in addition, be attributed elsewhere, perhaps to governments, industries or other countries. In Scotland, around two thirds

indicated that in principle *they* were willing to act, even if others did not (68% disagreed with the statement that “it’s not worth me doing things to help with the environment if others don’t do the same”). When this is translated more directly into *personal* responsibility for action, however, slightly less than half (48%) relate climate change to their own lifestyle, while around one third distance themselves from responsibility: 35% agree with the statement “I don’t believe my behaviour and everyday lifestyle contribute to climate change”, and a further 17% adopt a neutral position. The belief that personal behaviour does not contribute is somewhat higher in Scotland than England, where 28% of respondents to the Defra 2009 survey did not regard their own behaviour as a contributor. The same question wording is used in both surveys, so this finding cannot be attributed to differences in phrasing.

Overall, attitudinal evidence shows that awareness, knowledge and a sense of urgency are necessary, but not sufficient conditions for change. Short-term considerations of practicality, convenience and cost, in combining work, domestic life, travel and transport, food shopping and social life, typically dominate over concerns about environmental degradation and climate change, which are simultaneously regarded as more remote, and as matters of such scale that they are not amenable to solution by families and households. Without thorough-going public engagement, therefore, capacity for transition to a low carbon society will be extremely limited.

Policies aimed at changing attitudes and behaviour relating to climate change are, however, shaped by the underlying model of society. Where government considers society to consist of rationally self-interested consumers, policy will be designed to influence individual behaviour by means of adjustments to the short-term framework of incentives and disincentives operating on consumer choice. If, however, society is regarded as the complex and dynamic sum of its traditions, culture, institutions and values, then it is through addressing social structures that the attitudes and behaviour of all those within that society will be changed. These two models and approaches are considered in more detail below.

3.1. Model 1. Behaviour change in a society of rationally self-interested individuals

In the context of a model of society comprised of rationally self-interested individuals, interacting in a self-regulating market, the main policy response is to rely on influencing individual choice through micro-economic and social marketing techniques to promote pro-environmental consumption.

Defra’s (2008) *Framework Pro-Environmental Behaviours* is the most systematic guide to current government models for influencing behaviour, and also informs Scottish policy making. The objectives are to identify ‘behaviours which will have an impact on carbon savings’ (Defra 2008, p. 3), and to uncover ‘mechanisms for stimulating, facilitating and supporting behavioural change at individual and household level’ (Scottish Government 2010, p. 1). The development of the *Framework* reflects the belief that socially and politically neutral facts about behaviour can be revealed by behavioural science, and used to specify ‘behaviour goals’ and ‘propositions’ (linking population segmentation, to behaviours, to a range of possible interventions)’ (Defra 2006, p. 3) through social marketing techniques.

Behavioural economics theory (Thaler & Sunstein 2008) is a recent influence on such interventions to ‘nudge’ individual choice, in the absence of political will to regulate markets through structural means. Techniques such as identifying ‘behavioural entry points’ or ‘wedge behaviours’ from focus group and survey data, are used to promote initial changes.

Survey evidence of willingness to reduce household energy use has, for example, been translated into a programme for persuading people to turn down central heating thermostats by one degree centigrade. Further interventions might include new product labelling, with, for example, information about the ‘carbon footprint’ of products or their energy efficiency, and incentives such as reduced road tax for smaller car engines. Desired changes are positively promoted, through ‘behavioural levers’ to encourage choices designated as pro-environment, whilst alternatives are discouraged through penalties or ‘choice editing’. In environmental governance, the latter aims to make the ‘default choice’ (of holiday, car, electrical products etc) the least environmentally-damaging.

The resulting *Framework* uses government survey evidence of environmental attitudes and behaviour to delineate 12 ‘headline behaviour goals’ categorised under three areas of consumption:

1. personal transport (use more efficient vehicles; use car less for short trips; avoid unnecessary flights);
2. homes (energy – install insulation; better energy management; install microgeneration), (waste – increase recycling; waste less food) and (water – more responsible water usage); and
3. eco-products (buy energy efficient products; eat more food that is locally in season; adopt lower impact diet).

Population segmentation and profiling are then used to devise interventions likely to be effective for different groups. ‘Positive greens’, ‘concerned consumers’ and ‘side line supporters’, for example, are seen as likely to respond to “interventions that enable and engage, . . . by tackling external barriers (such as information, facilities and infrastructure. . .) and engaging through communications, community action, targeting individual opinion leaders” (Defra 2008, p. 10). ‘Stalled starters’ and the ‘honestly disengaged’ are seen as least susceptible to influence, and as requiring “interventions that enable and encourage, for example choice editing in product availability or, where necessary, regulation” (Defra 2008, p. 11).

The results of the behaviour change technology, with its complexity, detail, data and refinements, are, however, conservative. Attitudinal data, not surprisingly, provide no evidence of “appetite for radical lifestyle change” (Defra 2008, p. 74), resulting in cautious interventions which “fit within people’s current lifestyle, even if one might aim for more fundamental shifts over the longer term” (Defra 2008, p. 18). The resulting small steps approach has focused predominantly on reducing waste within the parameters of current consumption, whilst removing barriers to ‘pro-environmental choices’. Current social marketing messages, for example, promote the use of low-energy light bulbs, or driving less, or wasting less food, as well as offering incentives for loft and cavity wall insulation. People do respond to individual incentives to save energy, or to buy a smaller car, but such measures offer only slow and limited gains, rather than a step change in reducing emissions and transition to a low carbon society.

3.1.1. How successful is this model of behaviour change?

A model of society as little more than a series of autonomous, rationally self-interested, individuals, limits the scope for political leadership and decisive action to reshape social structures. This is exemplified by the current behaviour change measures which are not only small scale, but frequently self-evident, and may work counter-rationally to embed existing practices more strongly, rather than disrupting them. The result would be to undermine the transition to a low-carbon, energy-efficient, zero-waste society. The small steps model may suggest to a sceptical public that, if minor changes are all that is needed,

then there is little point in paying attention. Advocating a minor change in driving habits, such as that advocated under the Act on CO₂ campaign to persuade drivers to drive five miles (8 km) less a week, for example, might work to confirm the perceived long-term viability of the combustion engine and increased, rather than decreased, private car dependence.

The model assumes that there is limited need for shared public understanding of the reasons for change. Wasting less water is, for example, a behaviour change goal, which has been further broken down into elements such as turning off the tap when brushing teeth, shaving or washing hands, or taking a shower rather than a bath. Owen *et al.*’s (2009) survey of awareness of these behaviour goals showed that people did not associate the ‘behaviours’ with concern about environmental damage and water use, or with increased commitment to changing established habits. Simply communicating the behaviour-change targets without explaining why change is needed may have an effect on discrete elements of conduct, but is unlikely to prompt the wholesale, sustained change that is needed.

The behavioural model, moreover, excludes questions about the sustainability of consumerism as a way of life, configured around high levels of energy and resource use and the production of waste. It defines government responsibility narrowly, relating it to the application of individualised behavioural levers. This implies that structural change in, for example, the processes of production of obsolescence and rapid replacement of consumer goods, or global supply chains which disguise the ecological costs of consumerism, is either unnecessary or beyond reach. The pro-environment adjustment to consumer incentives is, instead, expected to equip each individual to choose low-carbon alternatives, but leaves untouched the infrastructure of commercial markets designed to associate personal satisfaction with increasing consumption. Attributing to people a main identity and purpose as consumers, whose well-being depends on acquisition of an infinitely growing and diverse array of products and services, is not commensurable with messages informing them that ‘normal consumption’ is damaging well-being and future prosperity.

Rather than encouraging a sense of shared responsibility for reducing carbon emissions, a behaviour change model allows us to compartmentalise responsibility. Only 8% of survey respondents for example regard households as responsible for change (Pidgeon *et al.* 2008), and there is a common belief that little can be achieved by personal change in habits. The incremental model may also lead people to infer that climate change is a distant concern which can be dealt with at an unspecified point in the future. The perceived gap between government behaviour-change campaigns and government economic policies, such as airport expansion, road building and measures to boost consumer spending, is itself interpreted as evidence that the problem is not serious, at least for the present. As an example from a different area of public policy, the individual behaviour-change model applied as a means to solve increasing rates of obesity, through ‘healthy choices’ and calorie-counting campaigns, has proved singularly ineffective. The Scottish Health Survey found that 27% of people between the ages of 16 and 64 were obese in 2010, increasing from 17% in 1995 (Scottish Government 2011). Costs of obesity to the NHS are rising, but the policy focus continues to be on ‘healthy choices’ rather than legislation of the food and drinks industry. The achievements of an individual behaviour-change model for significantly reducing household carbon emissions are thus likely to be highly circumscribed. Reliance on its techniques means that public understanding of the significance of climate change for current ways of life is likely to remain shallow.

3.2. Model 2. Society as complex institutions, cultural traditions and practices embedded in social relations

Emphasising individualised self-interest as the basis for human life and social organisation obscures the complexity and dynamism of modern social systems and cultures. These systems have considerable capacity, both practical and material, for problems to be faced through collective recognition of vulnerability, and articulation of mutual responsibility for social change. From this perspective, society can implement step changes in behaviour through collaborative action in the interests of the longer-term common good. Where there is political will and leadership, momentum can be gathered for bolder legislative and/or taxation measures, as in past examples of the strong programme for tobacco control through taxation and no smoking legislation in Scotland.

This view of human life as more than the sum of individual self-interest is by no means absent from government policy papers, government-funded research and policy consultations, in the UK and Scotland, but it seems to be beyond the scope of what can be openly acknowledged in formal policy commitments. Background papers informing policy convey a complex analysis of the social relations of consumption and its political-economic determinants, recognising the significance of current socio-technical infrastructures, work/life patterns, social norms and values, as well as people's desire to be sufficiently informed to act knowledgeably, and to be part of a bigger social change with a meaningful impact. The *Citizen's Summit on Climate Change* (Defra 2007) highlighted the perceived lack of integrity in government, public scepticism and a sense of disempowerment, and stressed the importance of building a shared (rather than individual) responsibility for change.

In policy-oriented events designed to draw in practitioner knowledge and experience, understanding of the structured complexity of human behaviour and its social determinants, is also evident. The Scottish Government's (2010) *Climate Change Behaviours* programme, for example, has reported on the 'Ten Key Messages' emerging from the conference on 'what works in behaviour change'. Although 'behaviour' is referred to extensively, the word 'individual' is absent. Moreover, the reference to levers of change is to integrated structural changes, including provision of infrastructure and use of regulation, as central to engagement. Government leadership, recognition of social norms, shared identities and shared responsibility are all listed as requirements. The Scottish research programme is not yet completed. Alongside the Public Engagement Strategy, it is a significant opportunity to build trust between government, business and civil society, through responsible community-level and collective engagement. Given committed political leadership that demonstrates consistency between government policies, budget priorities and actions, there is an opportunity to take imaginative and bolder action.

4. Conclusions and recommendations

The apparent 'gap' between increasing public concern about climate change on the one hand, and a degree of social inertia on the other, can be understood in the context of the individualised concept of society embedded in current policy on behaviour change. This risks reinforcing inaction rather than catalysing change. Dominant consumer values, which are underpinned by economic policies, result in the debate about climate change mitigation, and the need to reduce energy use, being framed in terms of 'self sacrifice', or 'giving up' domestic comforts. The debate could, instead, be framed in terms of the potential for more sustainable resource use to enhance human-well being, freedom from anxiety, social justice and shared

responsibility to act. The current framing of debate limits the scope for a more humanitarian perspective on mitigation and adaptation, and for an account of the mutual benefits of more equitable sharing of financial and natural resources.

A collaborative, rather than an individualised, approach to changing public attitudes and behaviour is more likely to be effective in engendering change. It creates momentum, and capacity, for transition through informed, substantive, public engagement in shared articulation of the meanings of climate change, and associated environmental risks, for social life, cultures, economic relationships and values. Moreover it opens the way to actions to create the step changes that the UK Committee on Climate Change regard as necessary to achieve agreed legislative goals.

By focusing on infrastructures, the built environment, and local services, rather than individual attitudes, government can have far greater impact on the transition to a low-carbon society. The government could make greater use of its powers in relation to energy efficiency, transport and travel, spatial planning and building standards, to introduce policies and regulations that work in an integrated and cohesive way to reinforce desired changes. These need to be as clearly and succinctly stated, and demonstrably fair in their application.

The 2010–12 Scottish programme for changing behaviour provides a key moment to set in place a new societal framing of the opportunities for sustainable ways of living and improved quality of life. Change in public attitudes and behaviour will become more pronounced as a result of prominent changes in the behaviour of government and public bodies, through publicly-demonstrated priorities and values.

Policy statements need a distinctively Scottish narrative for a post-carbon society, which provides a basis for concerted public engagement. This needs to acknowledge Scotland's history, resources and identities, and explain the social and health benefits of low-carbon transition, as well as the costs of business as usual. A narrative is part and parcel of a consistent policy and regulatory framework for sustainable economic activity in relation to energy efficiency, decentralised energy, renewables, planning, land use, agriculture, transport and tourism, as well as education, social justice and welfare.

5. References

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