



ENERGY & THE ACTIVE CONSUMER

a social sciences and humanities
cross-cutting theme report



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Executive summary

The active participation of energy consumers is regarded as essential for the effective roll-out and development of a wide range of smart energy technologies, micro-generation and energy demand policies. As such, the 'active consumer' has become a focus of European Union energy policy in recent years. Accordingly, and as an output of the SHAPE ENERGY project, this report has two aims:

- to present and offer guidance for interested parties on different Social Sciences and Humanities (SSH) options for examining active consumers, including suggesting how particular SSH approaches might shape the direction of energy research and findings; and
- to examine options for the integration of different SSH disciplinary approaches to the active consumer, as well as considering the implications of such integrations for future energy research.

While recognising multiple understandings of active consumers and their energy consumption, we adopt a broad definition. Specifically, active (energy) consumption encompasses a level of participation by consumers in the purchase or use of products and services, which thereby reflects some agency on the consumers' part and/or is itself influential in how products and services are used and designed. This can include consumer feedback, and the use and appropriation of goods and services which go beyond that intended by providers/manufactures and can affect future design considerations.

Drawing on an extensive review of the literature, we establish some of the key characteristics of how active consumers and their energy demand are conceptualised in SSH, both implicitly and explicitly. Specifically, we divide SSH approaches by their most common features into:

- Individualised approaches, which focus on answering what shapes individual decisions/actions towards energy consumption; and
- Relational Societal approaches, which focus on energy consumption as part of an evolving and interdependent relationship with society.

The application of either approach will carry different implications for research on the active consumer in relation to potential energy research problems (such as smart technology participation). In particular, there are questions over whether research can be restricted or improved by either greater interdependency and inclusion of societal elements, as per the Relational Societal approaches; or by direct (often linear) modelling of active consumers, as per the Individualised approaches.

We argue that Relational Societal, while more complex, offer a deeper understanding of dynamic and widespread change. In contrast, Individualised offer greater conceptual simplicity, but appear vulnerable on explanations of how consumption is shaped and changed. Recognising these fundamental differences is essential for researchers and project funders when considering which SSH approaches might best serve the development of energy interventions - this is especially important as the dominant STEM (Science, Technology, Engineering, Mathematics) agenda would typically favour Individualised approaches.

With interdisciplinarity being a key aspiration of SHAPE ENERGY and indeed of Horizon 2020 energy work programmes, we also consider options for integrating the two approaches. We recognise that integration attempts need to be cautious of paradigmatic differences that can make certain forms of integration unworkable.

On the basis of all this, we present recommendations, including to the Commission concerning future EU research funding, to those interested in or working on interdisciplinary energy research projects and platforms, and to fellow SHAPE ENERGY partners on the organisation of our Platform's activities.

Across all of these recommendations, we have prioritised: the importance of including SSH approaches in research on energy consumption; the need to acknowledge the relevance to energy consumption research of previously neglected Relational Societal approaches; and the need to be critical when considering interdisciplinary approaches to studying the active consumer.



1. Introduction

Addressing energy consumption is a major part of the sustainable energy transition, and it can thereby help address the problems of climate change, energy security and socioeconomic inequality (Hammond, 2013; Chilvers and Longhurst, 2016; Powell et al., 2016). As such, demand-side initiatives are an increasingly relevant part of low carbon energy policies, especially because of the challenges related to the unpredictability and intermittency of renewable generation and the possibility of increased peak demand due to low carbon technologies such as electric cars and heat pumps (FESF, 2012). These challenges have contributed to significant interest from researchers, technology developers, and policy-makers in the active role of energy consumers, whose participation is regarded as essential for the roll-out and development of the Smart Grid and a wide range of 'energy-saving' technologies (Ellabban and Abu-Rub, 2016; Saad et al., 2016).

In this context then, the concept of the 'active consumer' has become a central focus of European Union (EU) energy policy in recent years. Its role in the energy system is prioritised by the EU's Strategic Energy Technology Plan (EC, 2015), which has subsequently led to it featuring heavily in the Horizon 2020 'secure, clean and efficient energy' work programmes (EC, 2016), through its emphasis on positioning consumers at the 'centre' of the energy system (Foulds and Christensen, 2016).

As an output of the SHAPE ENERGY project, the main goals of this report are firstly to present and potentially even guide interested parties on SSH options for examining active consumption, as well as some of the ensuing implications for the direction of research which uses particular approaches. This should also demonstrate the importance for energy researchers of explicitly outlining their ontological and epistemological underpinnings concerning human nature and social change and how they connect to their methodological choices (which is something often overlooked by researchers (Rau and Fahy, 2013)). Secondly, as interdisciplinarity is explicitly encouraged in the Horizon 2020 energy work programmes, we critique here the potential for integration of SSH approaches across disciplines and again consider the implications of integration for the direction of research. As a minimum, both these goals will also illustrate the fact that 'energy-SSH' is not one homogenous mass of literature that is in (even approximate) agreement of how society is ordered; differences are everywhere and these need to be acknowledged when seeking the input of SSH scholars to energy-related projects.

For the purposes of this report, we define active (energy) consumption as encompassing a level of participation by consumers in the purchase or use of products and services, which thereby reflects some agency on the consumers' part and/or is itself influential in how products and services are used and designed. This can include (among other things) consumer feedback, and the use and appropriation of goods and services which go beyond that intended by providers/manufactures and can affect future design/planning considerations. In terms of energy research, this definition is broad enough to include EC concerns about consumer engagement with smart technologies, and even with the category of 'prosumer' which is a variant of active consumption in that energy prosumers are expected to simultaneously produce and consume electricity (Büscher and Sumpf, 2015).

However, the category of the 'active consumer' is not unproblematic and its relatively recent emergence in the SSH literature should caution energy researchers against taking it for granted. As Trentmann (2006a) notes, it was in the early 1980s that the social sciences increasingly began to directly conceptualise 'active' and 'citizen consumers' and shake off the 'passive consumers' of the formerly dominant discourse of mass consumption. One strand of its emergence that links with current ideas about the smart grid consumer is von Hippel's (1976) recognition of the potential input of users into innovative design, through how some users continue to develop, innovate and improve products after they are 'designed'. As part of innovation management research, these innovative or 'lead users' were recommended as an informative means of recognising user needs during the design and development process (e.g. Gardiner and Rothwell, 1985; Urban and von Hippel, 1988). With the development of more user interactive Web 2.0 technologies, smart technologies, and smart city and grid aspirations, contemporary considerations of participatory user-centred design echo the suggestions of the consumer as an active innovator and co-producer (Spinuzzi, 2005; Schaffers et al., 2011).



Strengers (2013) alludes to the narrow aspirational character of this active 'smart' consumer which she describes as a masculine, educated, technology-interested, rational and resource-managing entity that is not in any way grounded in the reality of lived experiences. Her misgivings tie into historical analyses which show how the development of this active consumer as a "*shared reference point*" was not an automatic emergence from capitalist markets, or from ICT developments, but was "*made*" through "*mobilisation*" (Trentmann, 2006a, p. 5–6) in civil society, the state, and commerce by social actors and agencies in a dynamic relationship with emerging consumers (Everson, 2006; Trentmann and Taylor, 2006). This should alert researchers to the constructed nature of the 'active consumer' – how its meaning and significance is supported by a process of defining and legitimating. There are multiple possibilities for how the concept is viewed and used, such as limiting it to individual self-interest or broadening it to social justice and ethics (Trentmann, 2006b), as well as several alternative but related categories – e.g. 'energy citizens' (Vihalemm and Keller, 2016; Foulds and Robison, 2017). Indeed, overemphasising public energy system engagement in terms of the consumer risks giving "*primacy to direct engagements with the market over broader social practices or more political forms of engagement with energy*" (Pallett et al., 2017, p. 68).

This report hopes to go some way towards presenting a broader depiction across a wide range of SSH disciplines of how the active consumer potentially relates to the energy system. Using existing typologies (mappings of different approaches) that aim to show how SSH defines the consumer and his/her behaviour, supplemented with broader literature, this report gives a general account of how diverse conceptualisations might be of use to interested parties. In that sense, this report is a review of reviews and aims to give insight into how disagreement is not solely based on observed deficiencies but on how disciplinary, institutional, and methodological backgrounds can focus research concerns and shape perspectives.

Through locating SSH approaches under two main umbrella approaches, we emphasise their most distinguishing and arguably impactful features for research design and outcome, which include problem definitions and fundamental points of departure. The first are Individualised approaches, where the focus of attention centres on individual behaviours and attributes. The second are Relational Societal approaches which treat the active side of human behaviour as bound up with societal relations and practices.

Section 2 of this report firstly provides a brief description of some of the main features of Individualised SSH approaches, followed by Relational Societal SSH approaches, including some basic descriptions of representative approaches of each. Following that, the deeper energy research implications of the different approaches are discussed in section 3 and considered in relation to suggestions for reconciling differences and claims of incommensurability. The report concludes, in section 4, with some summary recommendations for energy researchers and policy-makers.



2. A synopsis of common features of SSH approaches for studying the active consumer

In examining how SSH conceptualises the active consumer, we have firstly drawn on our own knowledge of the energy-SSH literatures. But, to identify further literature outside our own expertise and to broaden the spectrum of disciplinary perspectives on the active consumer as it relates to energy, we also conducted a search for the years 1990–2016 in the Web of Science SSH category. The search involved a complex Boolean search-string¹ made up of combinations of synonymous or associated keywords and phrases related to the object of study². The combined effect of the search-string and our expertise mostly led us to the social sciences of energy use, Social Psychology of decision-making and action, Behavioural Economics, Human Geography, and the Sociology of consumption, practices and the agency-structure relationship. It should be noted that such approaches do not always refer explicitly to 'active consumers', with some even problematising the consumer focus by favouring different units of analysis such as consumption practices and cultures (Wilk, 2002; Spurling et al., 2013; Shove and Walker, 2014; Royston, 2015). Therefore, throughout this report we try to reflect this by referring to individuals, agents and practitioners as well as consumers.

Several reviews exist that provide simplified introductions and multiple typologies for SSH approaches to studying human action and the decision-making believed to be involved (Jackson, 2005; Shove, 2010; Chatterton, 2011; Shwom and Lorenzen, 2012; Lertzman, 2013; Chilvers et al., 2015; Batel et al., 2016; Sarrica et al., 2016). Despite the diversity of typologies, two common characteristics that feature prominently, in many ways, reflect this report's Individualised and Relational Societal distinction. These, as will become clearer, are not entirely binary distinctions because Relational Societal approaches can and often do account for the individual but in a way that is socially embedded. At the same time, Individualised approaches sometimes make reference to 'social factors' but this is more narrowly defined and may quite often still be subordinate to ideas about human agency (i.e. decision-making and intention to act). Briefly, the next two subsections describe the two approaches.

2.1. Individualised approaches

Some typologies distinguish between Individualised research which focuses on: (1) behaviour as rational-calculated where 'homo economicus' (Shwom and Lorenzen, 2012; Strengers and Maller, 2015) cognitively weighs up decisions before acting; as opposed to (2) "*the predictably irrational*" (Shwom and Lorenzen, 2012, p. 380) components of behaviour which may involve more intuitive forms of reasoning and heuristic-based or rule-of-thumb judgements (Tversky and Kahneman, 1986; Sarrica et al., 2016), and which are not necessarily known consciously. An added distinction is sometimes drawn between the latter and (3) ABC models, which concentrate on the linkage between (A)ttitudes, (B)ehaviour and (C)hoice (Shove, 2010), but may incorporate several other variables based on "*norms, habits and context*" (Kuijjer and Bakker, 2015, p. 7). Indeed, the C can also stand for (C)ontext (Shove, 2010). A disciplinary typology has also been suggested – for example Chatterton (2011) suggests 'economic' for the approaches 1 and 2 and 'psychological' for 3 – however, this infers a rather misleading disciplinary division because of considerable disciplinary overlap.

1 ("energy citizen*") OR ("end user*") OR ("consumer citizen*") OR (consumer* AND engagement) OR ("practice* theory") OR ("decision-making" AND models AND review AND consum*) OR ("behavior* models") OR ("behavio* models" AND energy) OR ("active consumer*" AND energy)) OR ("active consumer*" AND models) OR (individual AND practices AND energy) OR (individual AND practices AND "climate change") OR (climate AND change AND social AND different AND individual) OR (climate AND change AND social AND different AND theory) OR (climate AND change AND social AND different AND practices) OR (TS=(climate AND change AND social AND different AND perspectives) OR ("active consumer*") OR ("citizen consumer*") OR (energy AND method* AND consum*) OR ("energy transition") OR ("social change" and consum*) OR ("social change" AND energy) OR (consum* and "social science") OR (Models AND behavio* AND consum*) OR (consum* AND model* AND concept* AND energy)

2 The search was also limited to reviews in order to shortcut the vast number of articles that refer directly and indirectly to the topic and to provide a useful base for a comparative critique. The results are not comprehensive, but do broaden the SSH foci and boundaries of this report.



In addition, since typologies may select more mainstream approaches for comparison, they may overlook how they are contested by alternatives within disciplines (Batel et al., 2016)³.

We locate all these research approaches under the Individualised umbrella, which (although vague on more in-depth descriptive details) serves as a useful heuristic for their commonality. Despite the differences listed, these approaches follow pathways that are all largely focused on individuals and how they arrive at action and/or choice. The rational choice approach has been strongly challenged by the concept of a 'bounded rationality' that is limited by the information available, time to reach decisions, and the evaluative capacity of the mind (Simon, 1985). Arguably the focus on identifying the involvement of (mis)perceptions, semi-conscious heuristic biases (Tversky and Kahneman, 1986), norms, habits, and emotions (Shwom and Lorenzen, 2012) tie into this concept. Whilst the individualised nature of rational choice is clear, it may be less so for the other two approaches outlined, especially where options exist for recognising some social and structural influences (Shwom and Lorenzen, 2012; Dunlap and Brulle, 2015). For example, Nudging theory, drawing on theories of bounded rationality and the idea that humans respond through their habits and intuitions to cues in their environment, also examines options for policy-makers and firms to improve "choice architecture" (Thaler and Sunstein, 2008, p. 10). The latter incorporates minor adjustments to infrastructural design, default settings, feedback on action outcomes and targeted incentives, which are all meant to act as environmental cues ('nudges') towards changing behaviours. However, even with regard for structural influences, much of the emphasis still remains on how and why individuals make choices and take specific actions, with no focus on the complex configuration of society and the dynamic implications of being embedded within it (see Relational Societal approaches).

In this way, consideration of the 'active consumer' in Individualised SSH approaches to energy research tends to focus on the moment of choice (e.g. in making a purchase or adopting a particular behaviour), which varies from wholly voluntary to partially driven. This focus on the pathway to choice often ensures a certain linearity to all these approaches, which is a key distinguishing feature of the Individualised umbrella, and best exemplified by the variable-centred Social Psychology models of the ABC approach. For example, in the Theory of Planned Behaviour (Ajzen, 1985), *normative beliefs*⁴ and the perceived difficulty of undertaking a behaviour interact with the *attitudes* that emerge from the expectations and values held concerning that behaviour's outcome. These factors are then assumed to influence *intention* to act: viewed as "*the immediate antecedent*" to carrying out the actual behaviour (Jackson, 2005, p. 45). Although the Theory of Planned Behaviour provides the basic linear template for many Social Psychology models to move beyond simplistic notions of purely rational individuals, many have included a multitude of further personal and social variables, in order to improve or sustain the linearity.

The Theory of Interpersonal Behaviour (Triandis, 1977) is one such example of the more profuse inclusion of variables for to sustain linearity. Along with attitudes, this theory considers emotions and the three 'social factors' of norms, roles (sets of behaviour deemed appropriate for a person's position) and self-concept (e.g. as someone who saves energy for the environment or for the pocket). Within this theoretical model, the successful movement of intention into behaviour is further dependent on habits and facilitating conditions (Chatterton, 2011). These facilitating conditions are external contextual factors and, in terms of energy efficiency, can include renting or owning a home or hard-to-fill wall cavities (ibid). Facilitating conditions have become an important addition to what Lertzman (2013) describes as the growing "*barrier discourse*" (p. 14) in behavioural studies: that is, the notion that there are a number of barriers for people in moving towards more sustainable energy use, which can be individually identified and therefore potentially addressed, somewhat independently of the rest of the system.

Other, related, research does not explicitly refer to the particular SSH approaches here listed, but share some of their implicit assumptions. For example, research on stated preferences and choice modelling has been quite prevalent in research on energy consumption (Alriksson and Oberg, 2008) but often does not mention the rational "*Consumer Preference Theory*" model (Jackson, 2005, p. 30) that informs their research logic. Studies which seek to identify attitudes to energy efficiency implicitly concur with some attitudinal

³ It should be noted that these three approaches can all be applied both quantitatively and qualitatively.

⁴ Beliefs about what others think concerning how you should act.



model of behaviour, and the idea that attitudes are somewhat stable, behaviour-guiding entities that can be measured directly (e.g. through interviews). Many of these studies are also qualitative and seek to establish a more detailed account of how a particular variable might influence consumer choice⁵. In addition, many segmentation approaches, where consumers are grouped according to particular profiles also correspond to individual behavioural models, where again attributes of particular persons are deemed to lead to particular choice options.

The implication of all these approaches for active consumers and energy transitions is that social behaviour, and therefore social change from these perspectives, involves the rational and/or intuitive choice-making of large numbers of individuals. This inclines research to consider change possibilities that include improved information, (dis)incentives, persuasion techniques which align to certain values and perceptions (e.g. through segmentation and targeted social marketing), and identifying and removing or circumventing barriers (through better design or more persuasion) (Chatterton, 2011; Chilvers et al., 2015). Research based on the more automated and habitual aspects of behaviour often suggest intervention possibilities that involve prompts and defaults through changing 'choice architecture' (Thaler and Sunstein, 2008), managing and engaging social norms, or disrupting and re-freezing habitual behaviours through tackling key moments of change (e.g. parenthood, moving house) (Verplanken and Wood, 2006; Chilvers et al., 2015).

2.2. Relational Societal approaches

Although there is some contestation as to the meaning of 'relational' in sociology (Powell and Dépelteau, 2013), in this report it refers to how every research object (e.g. the 'active consumer') - through systems of material, social and historical relations - shares an emergent and constructed relationship with society (Emirbayer, 1997; Chilvers et al., 2015). Relational Societal approaches share a recognition of the artificiality of dichotomies (black and white divisions) such as individual/society (Elias, 1978). This is a recognition of how the minds and bodies of individuals are continuously shaped by their experience of the social and cultural hierarchies, institutions, and practices that constitute society (Bourdieu, 1984; Giddens, 1984; Bourdieu and Collier, 1988) and, which manifest as "systems of factors" rather than isolated variables (Brubaker, 1985, p. 767). Furthermore, Relational Societal approaches recognise how the collective effects of ongoing individual reactions to these experiences are also a constituent part of society - in that sense individual and society co-evolve. Logically this leads to the questioning of other related dichotomies that also represent standard ideas about causality - e.g. agency/structure, freedom/determination, and consciousness/unconsciousness (Vandenbergh, 1999).

In contrast, therefore, to Individualised approaches, Relational Societal approaches can focus research on the active consumer in terms of being a constituent and co-evolving part of society. This approach differs from societal approaches that conceptualise consumption on the basis of social structures alone, thereby completely overlooking active consumers and reducing the agent's role to "supporter or bearer of the structure" (Bourdieu, 1996, p. 179). In contrast to this, Relational Societal approaches recognise individuals (consumers) represent an active component of social order. Examples include: Bourdieu's work on practical strategising through one's experience and sense (i.e. feel for the game) of how a situation can play out (Bourdieu, 1977); through the action organising intersections of Giddens' (1984) discursive and practical consciousness, which can include unintended consequences; or through Schatzki's (2002, p. 74-75) idea of an individual's "practical intelligibility" which, formed from their experiences of practices, relates to what makes sense for them to 'do' and guides their engagement with practices in general. The active individual, as per Relational Societal approaches, is therefore never treated in isolation but as always actively shaping and operating within social structures. However, it should be noted that the research foci pertain more to the co-producing effects of collective individual efforts operating within broader societal influences.

In further illustrating some of the inherent assumptions of Relational Societal approaches (and, later, issues associated with integrating them with more Individualised approaches), this report now specifically focuses on Theories of Practice (ToP) as an example of a particular Relational Societal approach where there is also

⁵ Some even include interpersonal aspects among the household or peers but are without a broader societal exploration.



room to examine active consumers - in this case as “*carriers*” of practices (Reckwitz, 2002, p. 252). This increasingly popular approach is now very much state-of-the-art and has been used in a wide range of energy research (see e.g. DEMAND, 2017). In this context, it is the *practices* of indirect energy consumption which “*constitute the unit of enquiry*” (Shove, 2010, p. 1279), rather than individuals and their choices. Crucially for ToP, society itself is regarded as “*emergent from, and defined by, social practice*” (Shove and Walker, 2014, p. 46), which means this way of thinking leads to the conclusion that successful societal change toward a sustainable energy transition requires the transformation of energy-consuming practices, discussed next.

Practices are routinised activities, such as washing or shopping, which are repeated by individuals, and have shared conventions across society. Importantly they pre-exist an individual's initial engagement in them. That is to say, they already have a societal presence and are not willed into existence by behavioural choices. Shove et al.'s (2012) three-elements heuristic develops this Relational Societal presence further by defining practices as composed of (1) materials (technologies and infrastructures), (2) competences (know-how and tacit skills) and (3) meanings (symbolic meanings, aspirations and ideas). Unlike Individualised approaches, these elements are part of the practice and do not behave as distinct linearly operating variables - a further indication of ToP's relationality. The elements are what constitute the ‘practice-as-entity’, while the collective participation by practitioners (or ‘active consumers’, in the words of the EC) creates the ‘practice-as-performance’ dimension of practices (Schatzki, 1996). That practices exist through their collective performance, but by their very existence they shape that performance, is a key relational feature that is absent from Individualised approaches (Shove et al., 2012) - the relevance of this relational feature will be made clearer when we discuss its implications in section 3.

The active consumer of this approach can be thought of in terms of how practices are negotiated and performed, often, through everyday innovation, in ways that go beyond the design or “*script*” (Akrich, 1992, p. 207) embedded within products (Shove, 2003; Royston, 2015). ToP-led research, however, may be more concerned with the collective efforts of active consumers in shaping and being shaped by the materials, competences and meanings of the practice. Therefore STEM-related technological and infrastructural (materials) interventions into energy use would critically need to also account for the practitioners' emotional attachments, beliefs and expectations (meanings) of the energy-using practices, along with their competences in performing them. How each specific practice is being performed by practitioners through these three elements can mean the take-up, upkeep and development, or decline and abandonment of those technologies and infrastructures. Consequently, practices are not simply steered by technological and infrastructural developments, and institutionalised ‘ways of doing’ (such as building regulations), but also co-shape them through a recursive relationship where practices also impose their presence upon the world and shape the space and time of their own existence (Shove et al., 2009; Shove et al., 2015; Greene and Rau, 2016; Fox et al., 2017).

Much of ToP's research agenda views energy as “*an ingredient of*” social practices and “*situates energy demand as part of, and as in no way separate from, the dynamics of social practices*” (Shove and Walker, 2014, p. 51). The research questions it continuously pursues are thus very different to questions about how individuals reach a choice. Instead, ToP-inspired energy studies ask “*what is energy for?*” (ibid, p. 46) or, more specifically, what is the energy-consuming practice for? - e.g. “*what [is] car travel ... for[?]*”, whether it is simply going from A to B or transporting other people and objects, facilitating shopping and other considerations (Mattioli et al., 2016, p. 59).

The options for intervention that this work can suggest include: (1) “*recrafting practices*” through reconfiguring materials, competences and meanings of the practice; (2) substituting a lower energy practice for a higher one; and (3) “*changing how practices interlock*” (Spurling et al., 2013, p. 5). Mattioli et al. (2016) recommend a wide range of interventions tailored to particular practices and not a “*generic one-size-fits-all approach*” (p. 69). Their discussion on intervention particularly emphasises the interlocking aspect: identifying how a high energy-consuming practice (e.g. car travel) is linked to other practices (e.g. transporting cargo, shopping) can lead to consideration of material arrangements such as “*cargo bikes*”, how shopping trolleys are to be used, space-saving options on public transport, car-sharing, etc. (ibid, p. 69). ToP can go deeper still by recommending that practices are located at the centre of energy politics and that the role of the practices of policy makers, researchers, programme deliverers and professionals is identified and also made subject to interventions as part of energy transitioning options (Shove, 2014; Strengers and Maller, 2015).



3. Comparing research implications of different approaches and options for cross-conceptualisation and integration

Despite offering very different ways of studying the active consumer, Relational Societal approaches are largely absent from EC energy policy documents, which favour Individualised conceptualisations instead (EC, 2016; Foulds and Christensen, 2016). Such an emphasis has deeper implications concerning how energy research studies the active consumer, which this section examines in greater detail through a comparative critique that also considers possibilities for cross-conceptualisation. Although this section does highlight some of the criticisms made of Relational Societal approaches, since the Relational Societal literature has largely established itself explicitly in opposition to and as a critique of Individualised approaches, there is a need to be cautious about the imbalanced nature of the literature that can be drawn upon for this critique. However, this has an added effect of bringing a critical perspective to a dominant and, within EC research circles, largely overlooked approach for energy policy and research. This section also deals with the second goal of this report, which is to look at the potential research implications for integration of SSH approaches across disciplines.

In terms of energy research on the active consumer, the difference between applying either an Individualised approach or a Relational Societal approach has several important implications for research, some of which we outline now. Firstly, Individualised approaches externalise the broader and dynamic societal presence of the behaviours – which are arguably constituted by practices – as if behaviours come into existence only when instigated by individuals. In contrast, the societal presence, such as is manifested in the co-produced meanings, competences and materials of practices, is an essential focus of e.g. ToP research, and because it pre-exists the supposed behavioural choices (involving the adoption/adaptation of practices) it already has a shape which individual actions largely take on. Therefore the practices of the behaviour in question potentially influence, both through their general societal presence and through performing them, the supposed norms, perceptions, and attitudes etc., involved in deciding to take-on the behaviour. This raises serious questions about the decision-making linearity – or active consumption – of Individualised approaches.

Secondly, despite some approaches including 'social' and environmental factors such as "social norms", "contextual factors" (Jackson, 2005, p. 26–27) and 'normative beliefs' (Ajzen and Fishnein, 1980), society arguably remains outside of these Individualised models because they do not consider the dynamic and systemic interconnections of what actually constitutes society. Consequently, without an in-depth grasp of social origins, the picture these approaches paint of personal qualities or variables (e.g. beliefs and attitudes) can be quite static with research findings tending to ignore how these originate, develop and how differences and changes are accounted for (Bourdieu, 1984; Guy, 2006). Not considering the changeable nature of apparent causal relationships exposes Individualised approaches to overgeneralising findings – a pattern which has been evident in the low success rates for replicating Social Psychology findings and their claims of statistical significance (Open Science Collaboration, 2015), which has been attributed to how prone findings are to being affected by societal components (e.g. cultural, racial, location differences) or even by the occurrence of the last recession (Van Bavel et al., 2016).

Thirdly, without identifying the Relational Societal patterns which are particular to the emergence of a practice, arguably, the selection of potential drivers or influences on individual behaviours appears quite random – to the extent that 'context' can be described as a "catch-all variable" which can focus on anything from advertising to facilitative aspects of the built environment (e.g. bicycle paths) (Shove, 2010, p. 1275). Shove (2010) further argues that ABC approaches actually artificially construct the 'value action gap'⁶ because barriers are sought out that prohibit individuals from acting on their values and attitudes, as if they must assuredly translate into action in the first place.

⁶ That is how attitudes and/or values seemingly favouring a behavioural change – such as how pro-environmental values should favour pro-environmental behaviours – fail to lead to the actual behavioural change (Blake, 1999).



Other considerations which are linked to how inclusive approaches are of society relate to parsimony and resource requirements of energy research projects. Arguably, Individualised approaches can provide researchers greater parsimony – that is a leaner analytical and methodological approach. In identifying patterns where certain attitudes, values, beliefs, needs and/or motivations can be linked to energy behaviours, researchers can strive towards simple linear explanations that root out the messiness of the societal complexity (Hargreaves, 2011). In the past at least, the “*lack of parsimony*” appears to have influenced why some more complex models were rejected in favour of others (Jackson, 2005, p. 95). The question, though, that needs to be asked is whether greater understanding is being lost due to this. Furthermore, Relational Societal approaches may be seen as requiring higher resources to implement interventions, since they can potentially extend to amending social and (infra)structural arrangements (Lertzman, 2013). However, Chatterton (2011) claims that minor interventions can have knock-on effects throughout the interdependent relationships that make up the practice. It is probably helpful to consider that Relational Societal approaches can produce an array of potential interventions of which a resource-saving partial implementation would likely be possible. One should, however, consider the consequences and degree of effectiveness that might be lost to partial implementation.

There are also potential wider ethical implications as to how active consumer research is conducted. Disregarding decision-making might be anti-democratic by excluding individual participation in enacting change (Whitmarsh et al., 2011). Apart from a possible counter-criticism of how the focus on decision-making ignores how individuals are often compelled to be practitioners (Hargreaves et al., 2013), Relational Societal approaches provide room for considering how individuals adapt or negotiate practices through a practical competence (e.g. skill and know-how). Also there is potential for considering decision-making itself within the realms of Relational Societal approaches, for example in terms of discursive practices and practices of informedness through which decisions are reasoned (Reckwitz, 2002; e.g. Foulds et al., 2017).

A related ethical implication is how Individualised approaches may be favoured politically because their concentration on decision-making shares affinities with, and reaffirms, dominant neoliberal ideologies that locate citizens as consumers and reduce change to a matter of market choice (Shove, 2010; Hargreaves, 2011; Davies et al., 2014; Chilvers et al., 2015; Batel et al., 2016). This concern also feeds into Guy's (2006) view of technological research and policy approaches towards energy forecasting and outcomes as having been dominated by a techno-economic paradigm. At its purist form, the paradigm dictates that technological innovation combined with information dissemination and competitive market choice create the conditions where consumers select the more efficient and innovative options (Guy, 2006).

Moreover under this paradigm, the greater dominance of Individualised approaches in energy research perhaps reinforces how overall funding arrangements typically favour STEM while excluding or subordinating SSH inputs (Foulds and Christensen, 2016) by locating them at the end of the technocratic problem solving process as advisors on how best to manage consumer decision-making towards accepting the STEM solutions (Shove, 2010; Chilvers et al., 2015). The unidirectional character of Individualised approaches serves as a neat “*extension*” to the end of techno-solving processes (Chilvers et al., 2015, p. 14). In contrast, a Relational Societal SSH approach can recognise its part early on in the problem- and solution-identifying stage of the process through establishing the co-evolving aspects of the problem/solution (Strengers and Maller, 2015). Indeed, Relational Societal approaches can help understand what defines problems and solutions in the first place, for example in recognising how planners, policy makers, transition managers and even energy researchers are themselves implicated in Relational Societal processes as “*practices recruit carriers [of practices] in board rooms ... and government offices as much as they do on streets and in homes*” (Watson, 2012, p. 496).

Despite the differences and criticisms, integration and cross-conceptualisation have been suggested⁷. For example: ToP might be used to study the habitual (e.g. habits and routine) elements of some Individualised approaches (Chatterton, 2011; Whitmarsh et al., 2011) and thereby the sharing of related behavioural habits across much of the population might be explored (Chatterton, 2011). There is also the option of examining and then targeting information-based interventions on the basis of practice research – for example, ensuring

7 Interestingly, calls for integration do not seem forthcoming from ToP theorists.



smart-city approaches to congestion provide information that accounts for how car-use is bound up with other practices (e.g. shopping) and so incorporating the 'cargo-function' of carrying objects and other people (Mattioli et al., 2016). Furthermore, Individualised approaches can move beyond basic linearity by adopting a level of interdependency that recognises how the supposed influences on behavioural choice are themselves influenced by ongoing engagement in the behaviour. These suggestions will not, however, overcome all of the criticisms and tensions between the two approaches and even this partial integration is itself quite arbitrary - reflecting a criticism of Individualised approaches by Shove above.

Interestingly, Baborska-Narozny et al. (2016), in examining occupant learning about and engagement with solar photovoltaic systems, attempt to integrate ToP with the Theory of Planned Behaviour - i.e. two approaches that contain ideas about structure and behaviour underpinning Relational Societal and Individualised approaches which others have claimed are irreconcilable (Shove, 2011; Rau and Fahy, 2013). While including ToP draws detailed attention to how occupants engage with their PV systems, and their consideration of how systems of provision shape instalment provides insight into the material affordances of the practice, the centrality of the Individualised approach still defines the problem, query, and solution from the outset (e.g. as one of correct information). To approach with the idea of beliefs and expectations driving choice means better information - in this case, the use and better positioning of meters that inform of PV vs Grid electricity use - is the pre-designated solution to how occupants can manage the considerable overlap of their electricity load with peak grid demand. In contrast, a pure ToP approach from the outset could inform a case-study of how bundles of practices are temporally ordered by standardised work hours and opening times or other daily routines, which are often subject to institutional arrangements rooted in public policies (Strengers, 2013; Shove, 2015). Responsiveness to the provision of smart technology feedback therefore can be severely restricted by what are currently non-negotiable or necessary practices (Strengers, 2013).

Quite possibly, as Shove (2011) claims and this section appears to support, successful integration is precluded by incommensurable paradigmatic differences pertaining to "*methods of enquiry*", "*meanings of evidence*", and "*research agendas*" (p. 262). As these paradigmatic differences suggest, it is important to be wary of claims of an interdisciplinary panacea that offers the "*more complete view of the object of study*" (Whitmarsh et al., 2011, p. 259). Our exploration of the possibilities for integrating the umbrella approaches in this report suggests that quite often they cannot be brought together or that only certain forms of interdisciplinarity are possible (e.g. where one of the two umbrella approaches dominates). In any case, the report has highlighted considerable differences in SSH research approaches to researching the active consumer, which raises many questions, for energy researchers, about interdisciplinary options and how best to approach energy research. The following, and final, section draws together recommendations from this highly reflexive exploration.



4. Recommendations

For the funding of EU energy research

- Whilst it is encouraging to see the explicit inclusion of the active consumer as an energy research priority moving forward, more needs to be done to expand the role played by SSH disciplines.
- The wording of future funding calls should be careful to avoid narrowly defining the active consumer problem and thereby inadvertently making it easier for consortia to propose projects with Individualised only conceptions, as has traditionally been the case.
- Reviewers of Horizon 2020 (energy) project proposals need to be careful to not overlook current state-of-the-art SSH approaches and must remain open to considering alternative SSH approaches, such as what we have defined in this report as Relational Societal approaches.
- Funding opportunities need to recognise that interdisciplinarity is not a magic bullet solution and that insurmountable disagreement often exists between SSH approaches across disciplines; only certain ways of combining SSH approaches add value and are feasible.
- Future funding should be considered for exploring the interdisciplinary tensions of studying active consumers, thereby focusing on the 'means' of interdisciplinary research (how disciplines and approaches are practically integrated) rather than the 'ends' (what could/should be achieved, for example in terms of EU policy impact).

For interdisciplinary energy projects and platforms

- Energy project researchers should make explicit the ideas and assumptions about social change that underpin their approach to researching transformations in energy use - such as whether it is a Relational Societal occurrence or through the actions of aggregate individuals - to thereby provide greater critical understanding of their SSH selections.
- Energy project researchers should reflect on how institutional research practices (such as streamlining research approaches to enable best estimates, statistical significance, computer modelling, use of market-based definitions of individual-society relationships) determine their preconceptions about consumers and therefore the use of particular SSH approaches over others.
- STEM-led energy projects and platforms need to remain mindful of the dangers of misconstruing problems and solutions relating to energy use: in particular, the social elements that co-constitute how energy technologies are appropriated, and how everyday life relates to energy demand, cannot be ignored.
- Energy researchers should consider how specific SSH approaches to studying active consumers potentially set limits to what can constitute the research question, evidence and forms of intervention from the outset.

For SHAPE ENERGY activities

- In advocating disciplinary integration, it is important to consider whether the benefits of particular SSH approaches might be contradicted by other SSH approaches and whether paradigmatic differences exist which make certain forms of integration unworkable.
- It is important to recognise the somewhat artificial nature of 'disciplines' in, for example, the SHAPE ENERGY *Think Pieces* each covering at least three disciplines and the *Research Design Challenge* papers collectively covering 15 disciplines. Indeed, what really matters is the choice of approaches selected from within each discipline, rather than the actual disciplines per se; disciplines are contested areas encompassing multiple research approaches.
- A point of reflection for the SHAPE ENERGY *partners' participant observation diaries* is to observe the readiness of participants from different disciplinary backgrounds to consider contrary SSH approaches to, for example, studying the active consumer.



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