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Sufficiency and consumer behaviour: from theory to policy

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Highlights

- Reducing energy consumption to limit climate change is a policy imperative.
- Different bodies of theory make different suggestions how to achieve that.
- Comparing them, we suggest not merging but combining complementary results.
- The Prism of Sustainable Consumption offers a heuristic tool for doing so.
- It allows defining four kinds of affordability as conditions for change.

Abstract

It is increasingly obvious that for safeguarding environmental sustainability, eco-efficiency measures will need to be complemented by sufficiency, in particular by strong sustainable consumption. The Theory of Planned Behaviour TPB and Social Practice Theory SPT offer different views on consumer behaviour, and on ways to change it. This paper briefly describes the challenges, discusses the applicability of both theories and their meaningfulness for policy recommendations.

We suggest an approach combining results of both bodies of theory, complemented by ideas from political economy, to substantiate the Prism of Sustainable Consumption we introduce as a heuristic sufficiency policy tool. It is useful to identify affordability criteria for change in each dimension, as the basis for deriving suggestions for effective policy interventions. We conclude that (i) effective interventions are possible, (ii) they have to address several dimensions of affordability simultaneously, and (iii) the sufficiency policy space prism can be a useful tool in structuring planned interventions.

Key words

Sufficiency, Theory of Planned Behaviour TPB, Social Practice Theory SPT, Prism of Sustainable Consumption, sufficiency policy options, dimensions of affordability

1 Introduction

The Paris Accord requires an almost carbon-free economic system by 2050 (80-95% less carbon emissions) in the affluent countries, and a complete global phase out of fossil fuel use by the end of the century. As the target is a complete, not a partial phase out, efficiency gains can obviously not deliver the required reductions (Alfredsson et al., 2018; for the pitfalls of efficiency see Princen, 2005) and the hopes that substitutes like solar energy or biofuels could be developed to levels replacing the current final energy use while offering a comparable volume of use options are futile (Giampietro and Ulgiati, 2005). Substitute energy sources have a much lower energy density and they require material, land, etc. for their production (Schmidt-Bleek, 2008). Biomass cannot be scaled up from currently 14% of global energy supply to anywhere near 100% (Spangenberg and Settele 2009), and converting even more fertile land to non-agricultural use is not sustainable in intensively used landscapes such as those throughout the EU. Last but not least for material flows, reduction targets of 80 to 90% have longs been established as a necessity, for reasons of both environmental protection and global justice (Schmidt-Bleek, 2008; Spangenberg et al. 1999). So while efficiency and substitution, the two prominent market effects, are indispensable, they are not enough. Nonetheless efficiency is the dominating approach in energy policy discussions so far, with concerns about rebound effects coming to the forefront in the last couple of years (IGRC, 2013; Hediger, 2018). To avoid these, it is necessary to eliminate the potentially consumption stimulating effects of monetary gains, and that is where sufficiency comes in, addressing consumption levels instead of consumption patterns: it takes sufficiency to make efficiency effective.

That consumption has to change is no new insight, however, but an old and inconvenient one. Making consumption sustainable is already an explicit demand in Agenda 21 (United Nations, 1993). 18 years later, in the run-up for the UNCSD Rio+20 Summit, the United Nations came to similar conclusions. Taking a closer look at technology potentials including renewable energies and organic agriculture the UN concluded that technology is not enough and must be accompanied by behavioural and consumption change (United Nations, 2011). Thus essentially it is long known that sustainable consumption must accompany production efficiency if sustainable development goals are to be met (United Nations General Assembly, 2015). More recently the normative concept of sufficiency, also referred to as enoughness or strong sustainable consumption, has become centre stage, as it has been recognised that the levels rather than the patterns of consumption are decisive for environmental degradation (Mihić and Čulina 2006; Lorek 2010; Lorek and Spangenberg 2014).

2 Sufficiency – an emerging concept

Although the number of publications referring to sufficiency is swelling remarkably, no generally accepted definition has emerged so far (Daoud, 2018). One key reason for that is that the flood of research arises from different disciplinary and thematic springs, from climate science and ecology (Rijnhout and Mastini, 2018), sustainable consumption research (Lorek 2010; Speck and Hasselkuss, 2015; Di Giulio and Fuchs, 2014), energy economics (Samadietal., 2017), ecological and

behavioural economics (Steinberger and Roberts, 2010; Andor and Fels, 2018), happiness research (Helliwell et al. 2017; Veenhoven, 2010), philosophy (Whiting et al., 2018), and more. It comprises notions of a good life (Schneidewind and Zahrnt, 2014) with a sufficient level of welfare (Huseby, 2010) and of good work (Samuel, 2017). It combines them with concepts such as the Earth's carrying capacity measured as planetary boundaries (Steffen et al., 2015; Chapron et al., 2017), the safe operating space (Häyhä et al., 2016), the energy-emissions trap (Sers and Victor, 2018), environmental space with upper and lower boundaries (Spangenberg, 2002; Dearing et al., 2014), overshoot/overconsumption (Lorek and Fuchs, 2013), a social protection floor (ILO, 2011) and degrowth (Joutsenvirta, 2016; LeBlanc, 2017). Not least due to the diversity of sources, so far no shared theory of change has emerged in the sufficiency discourse. While the synthesis process is still ongoing, the usefulness of the concept depends on the possibility to link it to and combine it with insights on behavioural determinants and the mechanisms from which they emerge. This paper is a contribution to that process. The authors come from the sustainable consumption and the environmental space traditions and are not affiliated to a specific behavioural theory, but hope to enrich the current state of the debate and its applicability to (energy) consumption change issues.

Starting from the insight that the current trends of energy and resource consumption are unsustainable as they would drive the global economy and society beyond the planetary boundaries, sufficiency in the broadest sense is the antithesis to the "faster, further, more" orientation of the consumer society. While Figge at al. (2014) define the concept of sufficiency as primarily concerned with the reduction of consumption and 'living well on less', our definition is broader and stricter. It comprises the need to restrict resource consumption in line with the planetary boundaries, for instance through a legal cap on the absolute amounts used. In the social dimension it calls for a social protection floor which allows every inhabitant of each country to live a decent and good life, actively participating in the respective society. For this end, distributional, environmental and gender justice are important; according to Steinberger and Roberts (2010), current energy and carbon levels would be more than sufficient to satisfy global human needs at high levels of human development if resources were equally distributed. The good life also includes a good and healthy working life, including opportunities for self-realisation, communication and participation, and a decent salary. This in turn leads to the demand for reducing working hours and work intensity where the obsession with labour productivity increases has led to an erosion of both good work and good working results (if for instance teachers had more time for pupils, professors for students, doctors and nurses for their patients, it would be good for both). This is also relevant to consumption in two respects: first, the most important predictor for consumption levels is the household income (Mihić and Čulina 2006; Jappelli and Pistaferri, 2010), so shorter working hours and/or reduced intensity, if resulting in declining income, would affect consumption levels. Secondly, Scherhorn (1996) has shown that a working environment characterised by a lack of self-determination, frequent interruption and low predictability stimulates compensatory consumption. Also beyond labour, recognising available time as a limited resource, deceleration is considered an important element of sufficiency. It offers a different and thrilling way of enjoying things, providing a contribution to a good life.

Sufficiency thus implies a restructuring of household consumption: being satisfied with less new material goods than usually consumed today, while enjoying the existing ones, plus immaterial social and collective goods. Examples are durable household goods, plus personal relations, or leisure spent in a healthy environment. Being satisfied means that no loss of quality of life is implied: needs are to be satisfied in a different, more sustainable way, while conspicuous consumption is to be avoided (Figge et al., 2014). For instance, if squandering scarce resources became as socially stigmatised as it happened to cigarette smoking, less resource intensive ways of signalling status would emerge.

Conceptually, the distinction of needs and satisfiers is one basis of sufficiency strategies. Max-Neef et al. (1989) found that human needs are an anthropogenic constant and limited in number, whereas the number of potential satisfiers for the needs is indeed unlimited; the standard assumption in economics that human needs are infinite thus refers to satisfiers, but not to the needs themselves. Furthermore, many needs can be more effectively satisfied by social processes and human interactions instead of the consumption of material goods. Thus sufficiency calls for needs satisfaction by different means, with material consumption limited to the environmental space / planetary boundaries (Spangenberg, 2014). However, such behavioural changes are difficult to establish as long as the social environment is the one of a consumer society with daily decision-making processes widely focused on the consumption of products (Speck and Hasselkuss, 2015). Thus a changed social and institutional environment is a condition for sufficiency behaviour to become mainstream.

Consequently, sufficiency protagonists support established movements like urban gardening, repair cafes, or slow food, and promote new ones, e.g. a slow travel movement. This includes the re-discovery or re-establishment of public places and public urban spaces as sources for recreation and communication supported by an urban planning that prioritises pedestrians and bikers (Schneidewind, 2013; Schneidewind and Zahrnt, 2014). Demands for commerce-free zones without consumption obligations and without advertising are part of an effort to de-commodify public spaces and goods.

The above examples have illustrated that sufficiency requires the readiness for non-incremental behavioural change, which in turn presupposes social and institutional change of basic valuation systems, organising principles and infrastructures of the consumer society. Deliberately choosing a behaviour requiring substantial changes of consumption patterns and reductions in the level of material consumption can be disruptive, for own routines and habits as well as for the acceptance of peer groups. The latter is particularly the case when certain consumption patterns are linked to real or claimed group memberships, due to their distinction function. Thus practicing sufficiency – as a mind-set of enoughness rather than voluntary simplicity – is an uphill struggle including social disputes or even conflicts in a society of consumption-driven individuals taught to equate materialistic accomplishments with status and identity. Others, a minority so far, experience it as a new level of consumer freedom: not having to buy what is fashionable, not to have to keep up with the Jones' (or the Wangs or the Müllers) can be a relief as it allows focussing on own preferences. To experience this, those groups which have almost no discretionary spending as all their resources are consumed covering daily necessities require support: sufficiency tries to overcome

poverty, not to glorify it.

However, stimulating changes of consumption levels and patterns requires seriously discussing and understanding what drives consumption and how a shift towards a resource-light household consumption of goods including energy can be supported by dedicated sufficiency policies (Røpke, 1999). Plausibly, for behavioural change to happen, opportunity and desirability of doing so must coincide. Opportunity has different dimensions – legal as well as technical, economic and organisational. However, what makes such social change desirable, and which kind of opportunity must be given for change to materialise is still disputed; different theories emergent from different disciplinary backgrounds provide different answers. Though the theories are often considered mutually exclusive, we regard their results as complementary when the application circumstances are taken into account. Thus section 3 introduces the two currently most discussed theories of consumption behaviour, the Theory of Planned Behaviour (Ajzen and Fishbein, 1980) and Social Practice Theory (Shove, 2010), briefly discussing their respective approaches, and the corresponding ranges of applicability. Based on this, section 4 contributes to the development of an approach combining complementary results of both concepts and using them in designing a heuristic tool. Section 5 introduces the concept of multi-dimensional affordability as a pragmatic way of bringing together questions problem framings and conceptual tools derived from different theories, and structure them to support application in policy making. Section 6 discusses key results and suggests further discussion of the approached introduced.

3 Understanding Consumer Behaviour

Two approaches dominate the current consumer theory debate: the Theory of Planned Behaviour TPB and its derivates with modified rationality definitions, and Social Practice Theory SPT (Keller et al., 2016). They both deal with the determinants of behaviour, far beyond the transition to sustainable consumption behaviour, which is in a sense just the tip of the iceberg but has been the starting point and motivation behind our work. We thus briefly describe the theories more broadly before zooming in on sustainable consumer behaviour and sufficiency. A necessarily simplifying brief analysis of their domains of explanatory power shows that that in their dominant forms, none in isolation is providing a suitable basis for sufficiency policy.

3.1 Individuals and the Theory of Planned Behaviour

Prominently, pro-environmental behaviour has been defined as “behavior that consciously seeks to minimize the negative impact of one’s actions on the natural and built world” (Kollmuss and Agyeman, 2002: 240). Based upon this understanding, empirical studies on the transformation of practices involving household consumption have often concentrated on the home and domestic everyday life, including eating, cleaning, heating, cooling, washing, showering, lighting, and cooking. Regarding the underlying drivers, analyses of consumption routines have mostly focused on individual determinants, such as environmental attitudes, beliefs, motivation, income, sociodemographic characteristics and environmental awareness. The contexts in which people act

are viewed as external to them such as prices and infrastructures, but even cultural norms, and can be both favourable and impeding. The latter are conceptualized as barriers, and intervention programmes often focus on removing such obstacles (Keller et al., 2016). Sustainable consumption policies have then focussed on approaches seeking to effect social change through inducing individuals to make 'better choices', considering rational individuals and their (mostly isolated) behaviours to be the basic units to be targeted. The conceptual basis this approach refers to is the Theory of Planned Behaviour (Ajzen and Fishbein, 1980; Fishbein and Cappella, 2006), for short TPB, and its diverse derivates like the 'value-belief-norm', 'knowledge-attitudes-intention-behaviour' or 'social marketing' approach (Lefebvre, 2013). It describes an individual's intention to perform a pre-established behaviour (Ceglia et al., 2015) which is influenced by the attitude towards the behaviour, subjective norms and perceived behavioural control defined as the ability to perform an intention, if the individual has resources and opportunities to perform the action (Ajzen and Fishbein, 1980). Manifest behavioural change can then be expected if the perceived ability to reduce a threat (i.e. the perceived behavioural control) makes the behavioural change appear as an effective means to this end, directly or by motivating other (consumers) to join (Hanss et al., 2016).

Even after social science gave up explaining consumer behaviour as a linear relation of value-belief-norms or knowledge-attitudes-intention-behaviour (Kollmuss and Agyeman, 2002), the mainstream consumer policy paradigm interpreted TPB and its underlying rationality of human action this way, assuming a linear chain from consumer information leading to knowledge and increased awareness stimulating pro-environmental attitudes resulting in changed consumer behaviour. In this view, the more or less reflective and rational individuals can be won over to adopting desired behaviours by communicating rational arguments and emotional persuasion. Assuming rational behaviour, an information deficit is the only possible explanation for the observed unsustainable consumption patterns violating the enlightened self-interest. Consequently, providing adequate or correct knowledge does not only inform the direction of change but must be sufficient to enhance the willingness to undertake it. That such a simplified version could become hegemonic in policy circles is no pure coincidence. Politicians and public administrators are familiar with public awareness raising campaigns as a widely used and handy way of attempting to effect behavioural change, for instance regarding voting choices, an experience they extrapolated to sustainable consumption, including energy saving (Girod et al., 2017).

A second source of what Shove (2010) terms the linear deterministic "ABC paradigm" in politics – attitude, behaviour, choice – is the Value-Belief-Norm VBN model, focussing on values and moral norms, and trying to identify their influence on human behaviour. Like TPB it (often implicitly) assumes that new information or changing preferences directly lead to altered behaviour. Although the value-behaviour gap is well documented in the literature (see e.g. Hards, 2011), the VBN approach is still politically relevant. It offers some insights when values are not considered as positive motivations, but as personalised social norms, i.e. internalised perceptions of external social or legal constraints leading to the obligation to act in a certain way. Such norms motivate behaviour when an individual believes that violating them would have adverse effects on things

they value (Ceglia, et al., 2015). In this interpretation, however, the VBN-model is rather similar to the TPB again, analysing values as external constraints.

The perceived policy relevance of TPB is based on claims like the one by Ajzen (2011, p. 1119) stating that "we should be able to predict performance of a behaviour from intentions to perform the behaviour and from perceived behavioural control. Intentions, in turn, should be predictable from attitude towards the behaviour, subjective norm and perceived behavioural control." Thus TPB describes situations of planned behaviour, and the double mentioning of "perceived behavioural control" indicates that the intention of the planned behaviour would be to bring about change, as for reproducing the status quo control is hardly a requirement. However, we have some doubt if the projection of the factors for change-seeking behaviour onto unreflected routines, as postulated by Ajzen in the same paper, can offer an adequate understanding of those processes.

A relatively new derivate of planned behaviour theory, the so-called 'nudging' or 'choice architecture' approach, builds upon cognitive science (decision psychology) and behavioural economics (Thaler, Sunstein, 2008). Unlike in TPB, individuals are characterised as led by 'bounded rationality', oriented towards finding at 'satisficing' rather than optimal results (Gsottbauer and van den Bergh, 2011). This is guiding them in most habitual situations, where they do not engage in lengthy reflections but resort to shortcuts (Kumar and Kumar, 2008; Ajzen, 2011). Choice architecture strategies are derived from experimental research showing that pre-set default options can in some cases have a strong influence on consumers' propensity to make desirable choices, such as choosing green electricity, and promotes institutional frameworks in which the desirable options are given as defaults (Keller et al., 2016).

An approach dominant in sociological research in the last decades but not as influential in the policy domain has been the cultural approach. Heavily influenced by notions of 'the consumer' and tenets of 'the cultural turn' the explanations it offered have relied upon models of voluntary action contextualised by webs of cultural meanings which constitute symbolic resources for individual choice. According to Warde (2014, p. 279), "the cultural turn has run its course and is beginning to unwind". He also identified three areas of productive recent research, namely cultural consumption and its intersection with inequality and stratification, sustainable consumption and the organisation of everyday life, and the politics of consumption. The latter two issues are the core themes of the following sections.

3.2 Society, Infrastructures and the Social Practice Theory

According to sociological studies, environmentally relevant behaviour is part of numerous basic daily routines, such as preparing and having meals, showering, cleaning, gardening, taking care of oneself or of others, or combining the way to work with shopping or organising a home office (Schäfer et al., 2012; Warde, 2005). These routines are deeply embedded in social relations, institutional and infrastructural contexts and reflected upon usually only if they begin to fail due to changes in the (socio-technical) environment – which makes them very resistant to change (Cogoy, 1999; Kumar and Kumar, 2008). Social Practice Theory SPT was developed to analyse this wider frame of performances of practices constituting and reproducing habitualised everyday

behaviour and all that underpins them (Shove, 2004; Warde, 2005; Røpke, 2009). Concentrating on the habitualised practices of inconspicuous or ordinary consumption (Spurling et al., 2013) SPT focusses on exploring social practices ordered across space and time (Keller et al., 2016). An everyday practice consists of a multitude of single and often unique actions reproducing the practice, such as getting a hot water boiler or using an energy consumption signalling app (Reckwitz, 2002). Such practices exist as performance: it is through performance, through the immediacy of doing, that the pattern provided by the practice-as-entity is continuously reproduced (Shove et al., 2012). From the SPT perspective, individuals are the 'carriers' of everyday practices of which consumption can be an important element.

At a closer look, every practice comprises three interconnected elements (Shove et al., 2012); supportive conditions in each are required to prepare the floor for greening consumer practices:

- materials: objects, infrastructure, tools, hardware and the body itself;
- practical knowledge: shared understandings of good and appropriate performance (e.g. rules, norms) as well as skills required to perform; and
- meaning: mental activities, emotion and motivational knowledge.

Taking practices consisting of these three elements as the central unit of analysis makes consumption a by-product of practice, of what people do every day and what is meaningful to them; it is not an end in itself. As knowledge is exchanged between agents (and changes with experience), and meaning is a social construct emerging in discourses, individual households cannot be analysed in isolation. It is crucial to understand how people coordinate themselves to jointly develop and perform particular practices as part of the whole system of practices they populate. For example, providing the possibility of using home offices might encourage people to work more at home and travel less (Spurling and McMeekin, 2015), with impacts on both transport and home heating energy consumption.

Although practices appear to be stable entities in themselves, they can change when their elements become disconnected from each other. According to Shove et al. (2012) this can happen under various circumstances:

- when the 'population of carriers' changes, through recruitment to or deflection and migration from the practice as well as through variation and redistribution of commitment across participants (Southerton et al., 2012). Recruitment to practices can occur through social networks but also through law, material networks and cultural norms (such as daily showering).
- when some of their elements disappear or interconnections between elements are broken. People create combinations between new and existing elements, such as with newly acquired competences or new technology or equipment, e.g. the appearance of the mobile phone. In these processes, elements shape each other, e.g. using a cell phone requires different competences than landline. Interestingly, many studies reveal that new practices tend to emerge whenever people connect old behaviours to new meanings (Schäfer et al., 2012; Shove and Pantzar, 2005).
- when relationships between them – so-called practice bundles, defined as loose-knit

patterns based on the co-location and co- existence of practices – begin to shift. Changing unsustainable practices can be fostered through creating conditions under which desirable bundles of practices can be developed and disseminated (Gram-Hanssen, 2010; 2011).

This results in "emergent and uncontrollable trajectories" (Shove and Walker, 2010, p. 474) making it impossible to precisely steer (consumption) practices in specific directions. However, it does not rule out that policy measures could support change by providing enabling conditions.

3.3 Some key differences and gaps

TPB and SPT have different domains of meaningful application; they explore different social phenomena and answer different questions. TPB highlights the role of attitudes, intentions, subjective norms and perceived behavioural control, and the role of communication processes for sharing information, knowledge and experience (Ajzen, 1991). Individuals are perceived as driven by personal, but not necessarily egoistic motivations as intrinsic factors; desired group membership, for instance, is also a personal motivation influencing consumption behaviour.[1] However, the embedding of subjective factors in social context is conceptualised in a one-way fashion: individual motivations and behaviour are influenced and action is restricted by external societal factors, but neither actions nor motivations are analysed as constitutive elements shaping the societal context (Ajzen, 2011). TPB suitably describes situations of intentional and reflected behaviour, in particular with the planned behaviour intended to bring about change. However, the agents doing so may be misguided about the rationality of their reflected behaviour as the information they actually use may be much less than they perceive (Klein and O'Brian 2018).

SPT, analysing the context of constituting and reproducing habitualised everyday behaviour, shows how habits, everyday routines, and social practices are deeply interwoven with societal norms and shared ideas about what are 'normal practices' which citizens repeat routinely without specific reflection (Kumar and Kumar, 2008). Practices are influenced in particular by social (group) dynamics, institutions and accessible grey and green infrastructures.

However, SPT is no catch-all theory: the i.e. psychological factors determining the adoption of new technologies and thus the disturbance of practices, the motivations for carriers to leave or join a population, and how collectives come to develop certain practices are no questions of central concern in SPT. Although materiality (material objects such as infrastructures, and less so, the environment) play a major role in SPT, Galvin and Sunikka-Blank (2018) argue that practice theory so far has not sufficiently addressed how financial matters influence materiality, especially for under-privileged people. Money, power and macroeconomic factors need to be brought into the picture to fully analyse energy consumption and the role of the material stuff which tends to make social structures obdurate and hard to change.

Additional insights may be derived from systems dynamics. While SPT focusses on the 'normal' state of affairs, on routinized social phenomena, their reproduction and evolution, shock events –

[1] That the very existence of categories such as 'egoistic' and 'altruistic motivations' is in itself as result of the cultural and philosophical framing (Whiting et al. 2018) chosen is usually not reflected in any consumption theory.

singular events causing or triggering a reorientation of the development trajectory– are usually not part of the analytical frame. Such shocks result in a sudden change of intended and routinized behaviour alike, caused by contextual changes beyond the mechanisms explored by either TPB or SPT theories.

As SPT and TPB have different views on what determines human behaviour, their conclusions for what might make effective policies for sustainable consumption and sufficiency diverge widely. Spurling et al. (2013, p. 8) summarise the change of perspective "As such 'behaviour' is just the tip of the iceberg, the effects of intervening in behaviour are limited accordingly. It is the practice entity—the socially embedded underpinning of behaviour—which we argue forms a better target for sustainability policy". Empirically, both collective contextual factors (e.g. infrastructures, prices, social and cultural norms) and subjective individual factors (e.g. motivation, pro-environmental knowledge, values, attitudes, gender, emotion, locus of control, responsibilities) have been found to influence consumer behaviour to some degree (Kollmuss and Agyeman, 2002). The limited effectiveness of most current consumer policies is partly explainable by the narrow view on human behaviour determinants they take, focussing on rational arguments (e.g. gains) and subjective feelings (e.g. pleasure). Mobilising the policy potential of SPT would require a different framing as practices change when the interaction either of their elements or of a practice with other practices is disturbed, or if the population of carriers changes (context factors are important insofar as they cause such disturbances). Broadening the perspective this way requires a different form of policy-making, a necessary but not sufficient condition for any societal transformation process.

4 Towards an integrated description: the Prism of Sustainable Consumption

4.1 Different questions, different approaches

Obviously both TPB and its derivates, and SPT are focussed on distinct perspectives on the determinants of human behaviours. Thus the different theories – SPT, TPB and more – are responses to different interests in different (social) phenomena, based on different world views and resulting in radically different environmental policy approaches. Integrating TPB and SPT theories is impossible due to their distinct world views, including different ontologies and anthropologies, and even more so when adding the potential complements from other disciplines mentioned – their world views tend to be incommensurable (Spangenberg, 2016). Elisabeth Shove emphasises that, stating "On all the counts that matter, social theories of practice on the one hand, and of behaviour on the other, are like chalk and cheese. […P]eople figure in the first case as carriers of practice and in the second as autonomous agents of choice and change. It is useful to be clear about the incommensurability of these contrasting paradigms, and hence about the impossibility of merger and incorporation" (Shove, 2010, p. 1279).

However, the distinct ontologies do not rule out combining the questions, problem framings and conceptual tools provided by both theories in an additive mode to address the different phenomena (discussing the resulting epistemological challenges goes beyond the scope of this paper). For instance, a focus on individuals as taken by TPB is not futile: psychologists view values as independent variables that have some causal effect on people's preferences and on individual

valuation processes, mediated by beliefs and norms (Schulz et al., 2017), an aspect not fully covered by SPT which does not address motivations and preferences of individuals, but perceives them as carriers of specific practices. On the other hand, a focus on individuals and their values is insufficient for deliberately changing the complex interaction of practice elements – which is why SPT is needed to inform social transformation processes. Such processes have to go beyond the given kind of policy processes and priorities as "to persist with the project of moulding practice theory into some policy-amenable form, is to miss the point, and to misunderstand what makes practice theories distinctive" (Shove 2014, p. 43). But while SPT does not lend itself to direct application in business-as-usual policy making, it has been used to shape more comprehensive social experiments and policy strategies (Shove, 2004; Shove and Walker, 2010; Keller et al., 2016; Heiskanen et al., 2018).

Given the different explanatory capabilities and applicability spaces, we suggest a complementary but selective use of insights: from the TPB varieties we use the view on individuals in their roles as (rational) agents with intrinsic motivation, but constrained by the social, material, and institutional context. From SPT, the core element of our suggested approach, we use the understanding of the overall situation and its larger context. To this we add the economic dimension, comprising capabilities and restrictions, and the natural environment as one crucial element of the material context. These four elements we combine to the *Prism of Sustainable Consumption* as a tool to better visualise and handle the sustainability challenge.

4.2 The sufficiency challenge

Sufficiency based consumption is a multi-dimensional challenge. It comprises changes in values, attitudes, decisions and behavioural routines and is in many respects a matter of changing social norms and leitbilder (the practical knowledge and meaning constituting practices mostly fall into this category). However, it can only manifest itself in action if the societal processes of decision making permit it and the executive organisations providing infrastructure, i.e. the material basis of practices, and the natural environment support it.

Empirical evidence has identified a broad variety of (interacting) factors as more or less influential regarding a sufficiency orientation of consumption in everyday practices with no factor emerging as predominant or decisive. Thus, a comprehensive approach must take diverse dimensions of decision conditions and processes into account (for 'green consumption' see e.g. Vihalemm et al., 2015). It can be described as a network of interactions of (mostly unreflected) routines and habits constituting and reproducing practices, with subjective motivations shaped by a diversity of factors. They include intrinsic and extrinsic drivers, and social and economic situations (opportunities, constrains, stratification), and the anthropogenic and natural conditions of the respective environment, including 'grey' and 'green' material infrastructures. Conditions for change include the formal institutional framing, from strict obligations and restraints to gentle nudging, and informal institutional framings of values held, ideas, norms, attitudes and convictions, beliefs and dedications. Add to this the (perceived) economic situation, factual knowledge, and the intentions for conscious action, and the network is indeed complex.

4.3 The Prism of Sustainable Consumption: adapting a heuristic tool

To simplify dealing with this complexity in decision making (less so in scientific analysis), we suggest structuring these multiple relations in four dimensions, graphically illustrated by an adaptation of the 3D-Prism of Sustainability (Spangenberg, 2002) to (energy) consumption by defining the dimensions as

- the perceived economic situation (in the back of the figure),
- the individual subjective attitudes, values, habits and routines (agency, bottom right corner),
- the material-functional structure (formal institutional setting with its legal norms and the material environment (e.g. grey and green infrastructures), bottom left corner of the figure),
- the social-cultural structure (informal one comprising norms, peer acceptance and other social necessities, top of the figure).

This *Prism of Sustainable Consumption* is a heuristic device designed to support decision making against the background of the complexity described. In the Prism, the dimensions provide the structure, but corresponding spheres, illustrated by the linkages, go beyond each dimension and interact.

As such the Prism is neither an analytical tool, nor does it replace existing insights – it is intended to structure them in a way making it easier to handle them. The material environment (including nature, raw materials and the human-made environment), and meaning and practical knowledge, the constituents of practices, are found in different spheres. This is a result of the broad approach of SPT, its ontology comprising three of the dimensions, to which we add the economic one so far neglected in the SPT discourse (Galvin and Sunikka-Blank, 2018). Insights from TPB are based in the individual/household sphere, where conscious decisions for change are taken under restrictions set within the dimension and between them. In this context as well, economic aspects find increasing attention.

In the Prism concept, any effective sufficiency strategy must address the inhibiting factors and promote the favourable ones in all four spheres. We describe them as different aspects of the affordability of changing consumption towards sufficiency.

Social change for sufficiency is then an intentional, targeted reconfiguration or new combination of social practices, motivated by and in the confines set by formal institutions, economic situations and personal values which are in return influenced by the social practices and the changes they undergo.

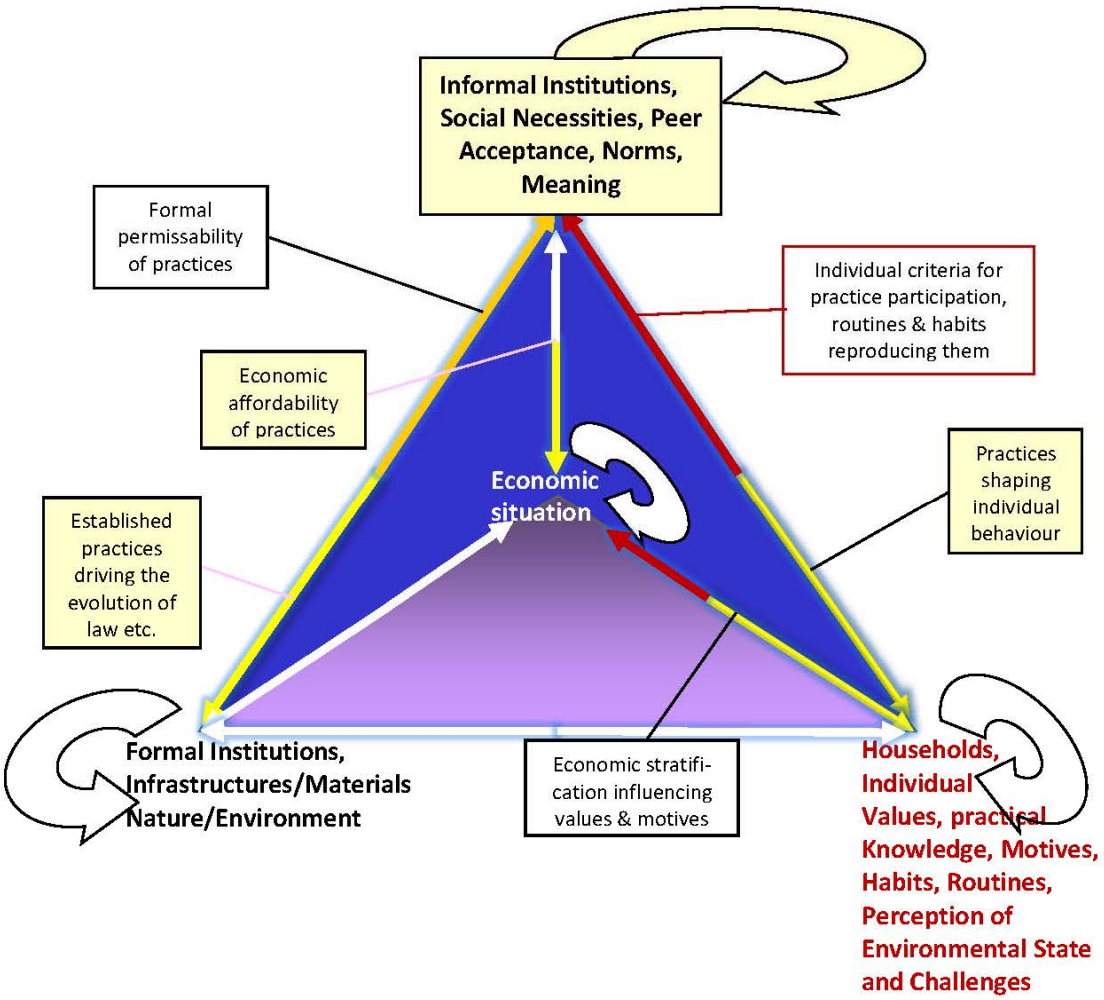

Figure: The Prism of Sustainable (Energy) Consumption indicating the sufficiency policy space. The four dimensions roughly correspond to the spheres of economy, the individuals/households, the external factors of state and nature, and the society. They overlap without clear demarcation lines, and interact as the arrows indicate. This structuring including the separation of state and society/formal and informal institutions and of households/individuals and society while keeping them in focus as relevant dimensions is new to the strong sustainable consumption and sufficiency debate, as is the inclusion of the economic sphere (which also implies power relations). Concretely they refer to laws, regulations, taxes and subsides of energy policy and include the environment as the source of renewable energy which knowledge and motivations campaigns have been targeting (mostly while neglecting the other dimensions), and social norms like thrift in energy consumption.

5 The affordability approach to describing drivers and determinants

5.1 Dimensions of affordability

In terms of terminology, we suggest describing the states enabling change in the dimensions as four kinds of affordability:

Social affordability is determined by the informal institutions of society as far as they include the households under analysis, and for this paper, their energy-related consumption behaviour. It

comprises a set of meso-level phenomena, in particular social learning, but also the supportive or sceptical reaction of relevant peer groups, conflicts of interest between changed and unchanged elements of the same broader practice, the fit with the overall orientations of society including the ideas of good life, progress, citizen behaviour norms, etc. In particular perceived norms (e.g., beliefs about the consensus views of others) and visible peer behaviour predict a broad range of pro-environmental behaviours (Babutsidze and Chai 2018), but stereotypes about others' (environmental) attitudes may also pose a barrier to own engagement (Pearson et al. 2018). Thus any impactful change of environmental and consumption behaviour cannot but be a collective one.

Economic affordability seems to be the elephant in the living room. In times of polarising income structures different motivations for consumption emerge, from fulfilling basic needs via catching up to conformist, positional, defensive and no-choice consumption (Beckenbach et al., 2012). The "hundreds of ways poorer households are disadvantaged and wealthier households are advantaged, by the way material things are distributed throughout society" affect their opportunities to change practices (Galvin and Sunikka-Blank, 2018: 85). Agents may be involuntary carriers of similar practices due to their economic situation, e.g. enforced by a restricted access to grey or green infrastructures. In particular, as long as environmentally benign consumption decisions are perceived by consumers as being more expensive (which is not necessarily the reality today), the subjective assessment of the individual or household will have to balance potential pull-factors (status, group membership, accepted routines), legal permissibility, infrastructural opportunities and personal or household motivations with economic affordability. Economic and social affordability overlap in that values and expectations are not evenly distributed across social strata. "Embracing sufficiency [is about] giving away some surplus. […][S]tudies find that more impoverished people tend to show a higher prosocial behaviour than richer people" (Daoud 2018: 215). As low income will decrease the power to change legal and infrastructural settings and the inclination of trying to do so (due to the lack of perceived behavioural control as explained by TPB) sufficiency is a highly political issue but also calling for an empowerment of those holding values of social responsibility.

Subjective and household motivational affordability, dependent on values held, is the penguin in the wardrobe, not unfamiliar but still offering surprises. Rather neglected in SPT and reduced to intentional action in TPB, it comprises the subjective perception of the efforts of changing behaviour and whether they are justified – the transaction cost are non-negligible, as the example of "quitting smoking" illustrates. Justification criteria, often applied unconsciously, include the perceived fit of the suggested new behaviour with self-perception, self-esteem, self-centred and other-centred values, existing habits and ambitions, and the efforts required to establish and maintain a change until it has become a routine and is no longer questioned (the perceived behavioural control in TPB). The criteria are influenced by what is legally permissible, possible based on the existing infrastructures, economically affordable, and conforming to the demands of informal institutions (there may be trade-offs requiring prioritising).

Formal institutional and environmental affordability are at first glance very different categories. While the formal institutions of society are the rules of decision making, from laws and administrative decisions to the constitutions and bylaws of relevant organisations, the environment comprises the

material (natural and built) environment. They are discussed here together as not only the human-made part of the material environment, but also the state of the (formerly) natural one is by now the result of such rules and the resulting decisions, codified in the formal institutions (today no part of nature exists that is not anthropogenically transformed, hence the notion of the "anthropocene").

Formal institutions are rather the ogre in the attic, the object decision makers shy away from when emphasising consumer sovereignty, thus delegating (environmental) responsibility to households and consumers. Behavioural change deviating from the past trajectories can be an environmental necessity but violate existing rules, resulting in more or less serious punishment, but also in rewards, or both. On the other hand, institutions are social structures in which social learning takes place, also on issues like sufficiency and sustainable consumption, and they change in the process, albeit usually with a time lag. Like the state of nature, they can be contextual subjective motivators for behavioural changes by modifying what is permissible (to avoid free riding and motivate laggards), or by offering economic benefits (to stimulate pioneers playing an important role in practice change).

Environmental affordability can be defined on the macro scale of national and global limitations, e.g. based on the planetary boundaries (Steffen et al., 2015). Such boundaries emerge from a combination of scientific facts and social norms regarding what is acceptable; they usually result in new or modified formal institutions on the respective scale when the existing ones fail to address the problems adequately. If they were adequate, for instance the recent "revelations of a catastrophic collapse in insect populations, jeopardising all terrestrial life, would prompt the equivalent of an emergency meeting of the UN security council. The escalating disasters of climate breakdown and soil loss would trigger spending at least as great as the quantitative easing after the financial crisis" (Monbiot 2019).

Alternatively (or complimentary), environmental affordability can be defined on the micro level of households and consumers. As the environmental impact is dominated not by the pattern but by the level of consumption, downsizing one's household consumption is a plausible response to the perception to consume beyond the subjectively felt environmental affordability. In a sustainability context (i.e. combining the environmental imperative with the goal of a stable or improving quality of life) this translates into the sufficiency orientation of "consuming less but better" (Lorek and Spangenberg 2014). In a sufficiently flexible economy this would lead to adjustments on the supply side, and contribute to degrowth of the macro economy (if the economy is not flexible enough, an overproduction/underconsumption crisis would result). Far from being an economic threat, a much stronger emphasis on the so far underestimated contributions from consumers, i.e. sufficiency, is an environmental necessity: Wachsmuth and Duscha (2019) have shown that demand side mitigation is necessary to meet the UNFCCC Paris Agreement target of limiting global warming to 1.5°C. Political science may be able to clarify how formal institutional conditions can be shaped to make them supportive to experimentation and stabilisation as the conditions for the evolution of social practices towards incorporating environmental affordability.

As a result of these four affordabilities, behavioural change in general and effective sufficiency and sustainable consumption policy in particular can neither primarily rely on technologies (technical

arrangements are not *eo ipso* socially relevant but only through their interaction with social practices (Howaldt and Schwarz, 2017)), nor on the external manipulation of attitudes, e.g. by information campaigns and incentives, but must focus on social practice innovations as the result of complex emergent processes. Such processes can be triggered and supported but not be steered or micro-managed by any single agent. Policy is not external to these processes but part and parcel of the social arrangements configuring social practices and their changes (Howaldt and Schwarz, 2017).

5.2 Application and implications for sufficiency and sustainable consumption policies

To enhance the (perceived) affordability of participation in sufficiency practices such as energy saving, and to encourage phasing-out unsustainable ones like frequent flying, external interventions are indispensable; as mentioned, emphasising consumer sovereignty by policy makers implies refusing to accept (environmental) responsibility, instead delegating it to households and consumers.

The core elements of the decision makers' tool box on the macro level are legal regulation (obligations, bans, standards, etc.), fiscal instruments (subsidies and taxes or fees), planning, and public investment; planning and infrastructure investment are amongst the most discussed ones, in particular electricity grids and oil/gas pipelines. All these tools necessary to initiate and stimulate a transition towards sustainable (energy) consumption in a sufficiency-oriented society belong to the 'formal institutions & material environment' dimension (Lorek and Spangenberg 2018).

The element most familiar to decision makers in politics, business and civil society is probably rule setting, i.e. modifications of the formal institutional affordability. For instance, policies interfere with household consumption by setting rules and standards, like requiring mandatory energy passes for flats which are obligations to house owners, and nudges to households intending to move. Products and behaviours which pose an acute risk to human and environmental health have long been addressed through the choice editing by formal institutions, regulating production sites e.g. by bans or restricted licencing. Products which are not dangerous one by one, but in sum pose such a risk (like plastic with waste impinging on nature) could be eliminated the same way (plastic-packaging could be banned, legislatively, so that it would not be the 'consumers' problem to avoid it). If risks are minor, such products could be pushed back by other mechanisms like nudging including pricing (economic and individual dimensions), communication for image change, and by creating opportunities for experimentation and social learning like testing substitutes, to break up social lock-ins (informal institutions dimension). For instance, working place experience with energy saving can spill over into domestic behaviour, in particular if the possibility is a matter of communication amongst colleagues (Klade et al., 2013).

Economic instruments are environmental fees, levies and taxes making the sustainable choice the economically superior option, and subsidies making sustainable consumption and sufficiency measures affordable (e.g. cheap credit for low energy durable consumer goods). Opportunities can also be enhanced by offering a kind of basic income to everyone so that decent zero energy

housing is available to all citizens (combining standards like the EU Housing Directives with national housing policies increasing the number of available flats or condominiums can help, as can legal caps of housing prices to restrict speculation). Taking social aspects into account, a free basic supply of energy as physical component of a basic income would contribute to decent living conditions for all consumers. Combined with progressive cost structures it would be nudging all consumers to thrifty energy use addressing the economic and the individual/household dimension while contributing to a more equitable distribution of income (and to some degree, of power), reducing the inclination to increase consumption.

However, such policy measures can only be one element in stimulating a process of behavioural change: beyond legal rules and economic incentives, social norms and cultural meanings have to evolve to change the way 'things are normally done'. While personal values are hardly accessible to political interventions, subjective motivation campaigns can still make sense if not conducted as knowledge transfer exercises but mobilising the values held and norms perceived, and raising awareness on the real, often overestimated cost of behavioural change.

If change is recognised as easy and beneficial, improving the quality of life beyond the environmental motivations and being a legitimate source of enhanced self-esteem, the chance of it being adopted increases. However, while gain frames' effects have been shown to be limited, hedonic/emotional frames proved effective when they were socially significant, like issues of status and image, and norm frames have been shown to be most relevant (Lindenberg, Steg, 2013). For instance, better managing domestic equipment use to minimise energy consumption and thus enhance the opportunity substituting self-produced renewable energy for electricity bought from the grid can not only save cost, but also enhance the personal independence and conform to perceived social norms (Brosig, 2015).

Campaigns can stimulate change to some degree if the perceived state of the environment is in conflict with individual values and internalised norms, if offering alternative, conform options (the VBN theory may be useful here). Campaigns can also be image changers, breaking up the links of different elements in habitualised behaviours and social practices. However, breaking connections between elements of practices and thus initiating practice change is more effective if supported by new elements emerging which are integrated into a practice while changing it – from technical artefacts to societal norms and new meanings. Such effects require communication, albeit not the traditional kind of government advertising. The same holds true for labelling if not based on the information deficit hypothesis but combined e.g. with extended, formally guaranteed repair and take-back rules to make the purchase of long living equipment the new normal.

As the informal institutions shaping social practices are hard to address directly, the significance of social exchange for the emergence and diffusion of sufficiency practices cannot be overestimated. Policy interventions (single measures or campaigns) cannot direct changes of daily routines and the way "things are normally done", but they can be part of this process by offering room for experimenting with newly introduced practices (e.g. airing patterns) or for re-examining existing practices (e.g. hot water generation) within the household, providing enabling settings for household sufficiency. Measures taken must not be one-off events: they should be long lasting and regular (or only vary within a small range), providing for regular exchange and communication

about experiences, attitudes and cultural meanings between different groups of agents like pioneers, community leaders, households, peers (Heiskanen et al., 2018). Only then a stabilisation of practices can be expected, as it requires "ongoing accomplishments in which similar elements are repeatedly linked together in similar ways" (Shove et al., 2012, p. 24); extended periods of stabilisation are needed to make behavioural innovations a new normal. In some cases, revitalising old solutions, the cultural heritage, and mobilising still-present values to support them, may provide enlightening ideas, although the past usually provides no blueprints to be copied (Zarghami et al., 2017). Such conditions are rarely given *per se* but can be improved by sufficiency policies.

The three central elements of such enabling settings (opportunity, experimentation and stabilisation) can only to a limited degree be initiated from outside the social groups and communication networks of the household members: practices only change while being performed by their carriers. Changes in the composition of these groups are a normal process, but mostly slow ("old habits die hard" is a public wisdom, except in the case of shock events); policy intervention cannot enforce but potentially accelerate it.

6 Discussion and conclusions

As the affordability approach presented here entails a pragmatic combination of lessons learnt from a number of rather incommensurable theories, it is considered an interdisciplinary approach rather than claiming to be solidly rooted in any specific social theory. In this spirit we consider both TPB and its derivates, and the different variants of SPT legitimate approaches providing relevant insights regarding our object of interest, a sufficiency transition for consumption. We consider their results complementary because of their different disciplinary backgrounds, different foci (decisions for change vs. reproducing practices), different framings (individuals vs. social and material context) and different blind spots which have to be addressed by other bodies of theory. The mechanisms they analyse interact dynamically: as carriers of practice, humans and households are not captives but agents modifying their behaviour (a social evolution on the micro level which can be driven by insights, incentives and ideologies) which in turn changes the practice in the process of reproducing it.

As sufficiency requires radical change redefining the rules of the game, incremental steps will not be enough. Shove calls for a radical societal change "in which contemporary rules of the game are eroded; in which the status quo is called into question; and in which more sustainable regimes of technologies, routines, forms of know-how, conventions, markets, and expectations take hold across all domains of daily life" (Shove, 2010, p. 1278). This will render previously important forms of competence outdated, and require reconfiguring interpretations of value and significance (Abernathy and Clark, 1985). However, even if this is agreed as the compass set for sufficiency policies, the route is far from unambiguously defined: the variations in material conditions, institutional structures, and social norms across and within countries, between urban and rural dwellers, wealthy or poor households render the transferability of interventions questionable (Heiskanen et al., 2018) and make all attempts to design one-size-fits-all solutions futile. In

particular, as the effectiveness of prices (gain frames) is limited, so is the effect of environmental cost internalisation, undermining all hopes that eco-taxes and similar incremental change could bring about the change needed.

However, this does not imply that policy interventions are unnecessary and per se fruitless – they need to be undertaken as part of a coherent approach in a broader context (Crivits and Paredis, 2013) taking all four kinds of affordability into account, alongside with the local and supra-local context. Hence, interventions that target changes in consumption patterns, such as reducing household energy use require adapting not only the processes of political decision making to new orientations, but also reconstructing infrastructures and updating the legal basis following a new policy-orienting imperative. They need to take account of individual (skills, habits, values, attitudes), social (cultural conventions, social norms), and material/formal institutional factors (infrastructure, technologies, legislative and administrative settings) and their dynamics (Shove and Walker, 2010; Strengers et al., 2015) while not neglecting the affordability of the behavioural changes pursued (Heiskanen et al., 2018; Galvin and Sunikka-Blank, 2018).

This is a challenge for political leadership. Co-evolution does not eliminate responsibility, nor does it rule out leadership and frame setting. Instead it requires a change of shared beliefs and world views for it to be politically feasible and legitimate. We hope that the Prism and the four dimensions of affordability provide a framework within which to make use of insights from different bodies of theory while simplifying them enough to be supportive for decision making.

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