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High Consumers: A literature review

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Contents

1 Introduction

High consuming households have rarely been the focus of academic studies or policy initiatives, although hypothetically many of them have a remarkable potential to reduce significantly their environmental impact without suffering much damage in terms of physical and mental well-being.

This literature review starts by looking at the framework provided by the Sustainable Development Goals (SDGs) of the UN, and how some of the targets of Goal 12 may relate to high consumption. It then moves to briefly analyse the concept of overconsumption in critical social theory. After that, it focuses on overconsumption from an ecological economy perspective, also offering a definition of overconsumer. It then provides a brief overlook of the debate around consumption, development and growth in economics. It also looks at consumption inequality and continues with a section about the drivers of high consumption. After that, it focuses on the literature related to high consumers of energy, transport and food individually, and offers a brief analysis of Sustainable Consumption policies in the UK, Sweden and USA. Finally, the conclusion summarises the findings of the review and provides some insights related to high consumption.

2 Responsible Consumption and Production

In September 2015 UN member states set the SDGs, which are intended to be achieved by the year 2030. Goal 12 of the SDGs, Responsible Consumption and Production, requires a shift to sustainable consumption and production in developed and developing countries. The UNEP (2020) affirms that Sustainable Consumption and Production (known as SCP) is a holistic approach and is about systemic change. This approach is divided into three more specific objectives: (1) Decoupling environmental degradation from economic growth, (2) applying life cycle thinking, and (3) identifying opportunities for developing countries for a transition to more resource efficient, environmentally friendly and competitive technologies, which could bypass the more inefficient and polluting phases of technological progress followed by developed countries. This systemic approach is further developed on the targets which countries use to measure their progress towards Goal 12 of the SDGs. Although all these targets (and many of the SDGs) are arguably interrelated, the ones which are more directly related to high consumption on a household level are:

a) Target 12.1: Implement the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead, taking into account the development and capabilities of developing countries. This 10-Year framework was adopted in 2012, and followed the reaffirmation by the world's governments that changing unsustainable patterns of production and consumption is an essential requirement for sustainable development (UN, 2003). It involves resource efficiency initiatives, at national and regional levels, which aim at decoupling environmental degradation from economic growth.

b) Target 12.3: By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses. To meet this target, many changes are required in food production and distribution, but food waste at different stages is arguably linked to the problem of high consumption (especially if we understand disposal as a form of consumption and we look at the full process of food production, distribution and consumption). Looking at the problem of waste disposal as a consumption issue highlights the importance of waste distancing in the context of economic globalisation (Clapp, 2002).

c) Target 12.5: By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse. This target is focused on waste reduction too, but it is not limited to food products and makes explicit use of prevention and reduction as strategies to reduce waste generation, although it does not mention high consumption specifically.

d) Target 12.8: By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature. This target assumes that environmental education campaigns are an efficient way to promote some of the systemic changes needed to make progress towards SCP.

Using this framework, the UNEP (2015) calls for a policy approach which includes tools that aim at phasing out undesirable products and behaviours, and tools that focus on expanding the market for more sustainable products while incentivising more sustainable behaviour. However, as we will see later, this might be a very limited framework because of the dominant cultural values in capitalist economies, and because of contradictions between different SDGs. For example, in the case of consumption, Goal 8 (which involves sustained per capita economic growth) seems to be incompatible with sustainable consumption.

3 Overconsumption in critical social theory

Drawing from critical social theory, Anantharaman (2018) argues that questions of power, legitimacy, authority and justice have not been addressed enough in the field of sustainable consumption. According to her, the focus of research should be in the relational and structural power within sustainable consumption examples, in order to analyse how they challenge or reinforce existing patterns of oppression and marginalisation. According to Di Muzio (2015) the wealthiest people have a desire for social status and demonstrate their superiority through unequal intraclass consumption. He argues that the consumptive practices of the rich are contributing to put global society into an unsustainable quest for perpetual economic growth. This growth project complicates social changes based on ideas of fairness between humans and threatens vulnerable populations with the worst effects of environmental collapse. De Graaf *et al*. (2014) agree with this view of materialism, but they focus on wider social dynamics and explore cultural changes and technological progress as causes of increasing demands and rapid obsolescence.

Dutta (2017) stated that there is a tendency in climate change mitigation policy to target production and producers. But one could also look at high consumption, and gear policy towards changing consumption patterns. This is still a relatively new approach, but a promising strategy for policy-makers who aim to target high consumers might be focusing on target 12.5 of the SDGs and aim for robust prevention and reduction regulations, perhaps combining a fairer taxation on overconsumers, information campaigns as suggested by target 12.8, and legislation that restricts advertising of certain products. This type of strategy is not as popular due to the potential effect these measures would have in continuous economic growth, which is also a SDG. Although by looking at historical data and modelled projections, decoupling GDP growth from negative environmental impact seems impossible (Ward *et al.,* 2016; Parrique *et al*., 2019). Also, the SDGs targets acknowledge the difference in consumption rates between developed and developing countries, but do not take into account the different levels of consumption by individuals or companies within those countries. But understanding how consumption varies within countries, and not just between them, might be a necessary step towards reducing different dimensions of inequality. Tackling the problem of overconsumption requires a complex understanding of the economic and social issues that make it possible, which in turn calls for comparing consumption patterns between and within communities.

There are conflicting views of how living standards should be evaluated. Some see welfare as highly correlated with GDP per capita, but there are often significant deviations (Jones & Klenow, 2016). Other authors favour evaluating living standards by focusing on different personal perceptions and widely accepted values in a society

(Sen, 1988) or improved health (Nordhaus, 2005). Some have argued that sufficiency rather than development should inform policy-making (McMichael, 2016). However, most people do not want to embrace voluntary simplicity, or scale down their access to goods and services which enrich their lives, as Bookchin (1989) noted. For example, Hirsch (2019) shows how people in the UK see buying birthday presents, alcohol and eating out as minimum necessities. Bookchin (1989) also explained that looking at consumerism can only provide limited explanations if one ignores the role played by producers in shaping public taste and guiding purchases. Another critique of the sustainable development approach recognises the need to resist ideas of economic development and politics dependent on Western modernity and historicity (Escobar, 1992). This approach calls for alternatives to development, as opposed to alternative forms of development. From the post-development perspective, the global framework for development represents an extension of imperialist systems, which perpetuates unsustainable expectations of growth and consumption.

4

Overconsumption from an ecological economy perspective

Brown and Cameron (2000) looked at definitions of overconsumption and found that most of the literature providing these definitions was in the field of social theory and the starting point was a critique of consumerism. The main focus of this approach is on questioning the idea that consumption is the best way to achieve happiness. From this perspective, overconsumption is the excessive use of goods and services which departs from a false belief that owning and using an increasing quantity of a range of goods and services is a normal motivation and an acceptable cultural desire, as well as the more likely way to achieve personal happiness, status, and national success. If one accepts this kind of definition, a certain consumption level is only excessive if the quest for material goods and services does not lead to happiness. According to Dupor and Liu (2003) the happiness of an individual is also related to the consumption of others. They think overconsumption exists because individuals do not anticipate the negative effect of their own consumption on jealous others. Moving away from definitions which are linked to happiness, Brown and Cameron (2000) favour an approach which focuses on our relationship with the environment. Here, the focus shifts from overconsumption of goods and services to the overuse of natural resources. They recognise this standpoint is related to the one developed in social critique, but a focus on the environment allows a distinction: On one hand, there are those who aspire to achieve happiness through the use of goods produced from abundant resources or goods which use very few natural resources. They may overconsume goods and services but not natural resources. On the other hand, people might not consume a good above what is needed for subsistence or because of a false belief that they would achieve happiness, but they would still cause a depletion of the resource if it is a scarce one and the rate of extraction exceeds the rate of regeneration.

Trying to incorporate in their analysis a variety of technical issues, which must be addressed in order to progress towards sustainable consumption, they defined overconsumption as “a large, unique form of common pool resource dilemma in which: (a) the size of the pool of resources is often unknown; (b) people differ in their access to resources and their preferences for resources; and (c) people must make their decisions about the use of goods and services without a clear understanding of the types and quantities of the resources used in their production” (Brown and Cameron, 2000, p.30).

Following that definition, to identify someone as an overconsumer, we need to be able to quantify the maximum amount of a resource a specific population should consume, within a given time, without continually degrading the reserves of that particular resource; the share of those resources each individual should be allocated, as well as identifying all the types of resources used in the production of goods and services and the required quantities of each of them. An overconsumer would be someone who uses more than their fair share of a resource.

5

A brief overlook of the debate around consumption, development and growth in economics

Recognising some of the unwanted effects of markets, economists such as Stern (2007) or Arvidsson (2009) argued that there is space in current economies for the inclusion of more ethical, collaborative and sustainable practices. They believed that by improving technologies and collaboration practices, as well as by implementing carbon taxes (in the case of Stern), a transition towards a more ethical, low-carbon economy was possible. They held that continuous capital accumulation and GDP growth was compatible with positive environmental and social impacts. This is arguably the most influential narrative for the UN, as goal 8 of the SDGs shows (countries should aim to sustain per capita economic growth). This would explain the objective of decoupling environmental degradation from economic growth in order to shift towards responsible consumption and production, although there is no empirical evidence of the existence of a decoupling of economic growth from environmental degradation, and such decoupling seems unlikely to happen in the future (Ward *et al.,* 2016; Parrique *et al*., 2019). Stern (2007) does not address the differences in consumption rates by different individuals, countries and businesses and the implications of higher consumption for environmental degradation. But ecological footprints vary across nations, and in terms of social classes, the wealthy generate more negative environmental impact than other income groups due to excessive consumption (Lynch *et al.*, 2019). This perspective also seems to overlook the rate at which commons (public assets as well as community management systems) are being privatised and commercialised (Bollier, 2013). This private control of ecosystems, public spaces in cities, social institutions, communications, etc. endangers the ability of communities to choose the way they relate with their environment through a democratic process.

Some political economists and ecological economists (Princen *et al.* 2002; Daly and Farley, 2011) do make those links between consumption and environmental issues. They argue that the concepts of ‘sustainable development’ and ‘green growth’ focus too much on adapting technologies and educating the public, while preserving some problematic theoretical assumptions. They explain that if they address environmental and social issues in a way that takes for granted an unrealistic idea of perpetual quantitative growth (measured in GNP or GDP), economists and policy-makers are acting before engaging in necessary debates. According to them, those debates should be framed around what constitutes development, what are the most just ways to satisfy needs and desires, and how consumption could be a way to enhance human welfare instead of an end in itself. All of those topics should be addressed bearing in mind we live in a finite planet. Also, as environmental and social issues are often connected, there are opportunities to improve our relationship with the environment at the same time we improve other aspects of society.

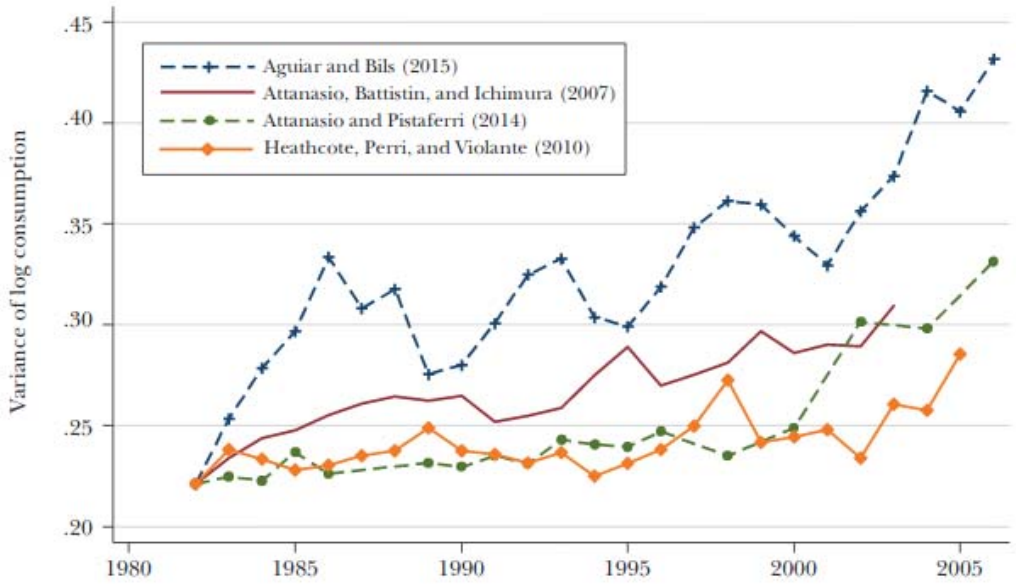
Along this line of thinking, degrowth proponents focus on decreasing material and energy consumption, which will most likely result in a GDP decline (Kallis, 2011). Their main objective is to meet basic human needs and ensure a 'good life' (Rosa and Henning, 2017), while reducing the environmental impact of the economy to a sustainable level, looking at building a fair system for all. This would represent a shift from capitalist economies and a transition towards more ecologically viable economic models (Fournier, 2008; Jackson, 2009; Kallis, 2011; Foster, 2011), which involves valuing well-being, sustainability and equity indicators over GDP when assessing progress.

6

Consumption inequality

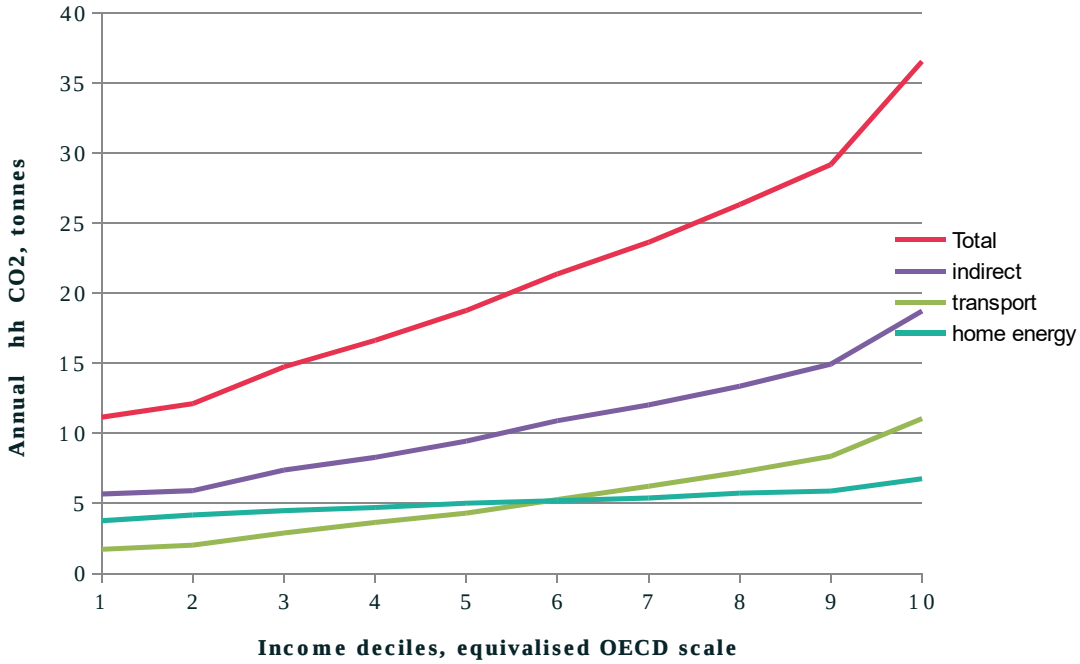
According to Attanasio and Pistaferri (2016), using consumption as well as income to phrase the debates around inequality offers some advantages. Especially in cases in which the distribution of income is wider than that of consumption, or when changes in consumption over time are smoother than changes in income levels. As a way to measure wellbeing at a household level, a welfare analysis should look at factors such as the value people assign to leisure time and the quality of goods they consume, as well as the quantities. Going beyond looking at components of income, they show how inequality in the consumption of products and services in the US has increased considerably over the last few decades (see Figure 1), as measured by different authors (Aguiar and Bils, 2015; Attanasio, Battistin and Ichimura, 2007; Attanasio and Pistaferri, 2014 and Heathcote, Perri and Viuolante, 2010) using a variety of empirical strategies. This reflects an increase in inequality in welfare and well-being, which parallels income inequalities but can be analysed separately. This might be an exceptional case, as the US is becoming more economically unequal in different economic dimensions (Fisher *et al*. 2018). Also, the increase in consumption inequalities does not track income inequalities so closely in every country. Looking at the case of Canada, where the increase in consumption inequalities has increased less than income inequalities in the last two decades, Boyer (2020) argues that the rich were already consuming a great deal at the beginning of the period. As there is a limit to what an individual can consume, the gains in wellbeing must have been more important for the lowest incomes.

Figure 1: The evolution of consumption inequality over time as measured by different papers (Attanasio and Pistaferri, 2016)



There is no widely accepted, clear definition of 'high consumer' in the reviewed literature. The definition can be associated to overconsumption and be case dependent, linked to psychological traits, or it can be based on quantitative brackets used on particular studies, which look at specific resources. This complicates the agreement on what a high consuming household is, and how to prioritise which households have got more potential in terms of responding favourably to interventions aimed at reducing consumption. However, income is a major predictor of household consumption-based environmental impact (Büchs and Schnepf, 2013; Zhang *et al.* 2015; Wiedenhofer *et al.* 2017; Hubacek *et al*. 2017). For example, CO_2 emissions per household in the UK increase with income (see Figure 2). Both direct emissions (mostly from domestic fuel and electricity use), and indirect emissions (embodied in food, consumer goods and services, including imports) are mostly driven by income, but household composition, and employment status are also significant variables (Gough *et al*., 2011). At a global scale, Hubacek *et al*. (2017) estimate that the top 10% affluent households emitted 34% of global CO_2 in 2010, while the 50% of global population with the lower income were only responsible of 15% of emissions. Geographically, due to increased population in urban areas, consumption and carbon footprints are spatially concentrated in high-income cities and suburbs (Moran *et al.*, 2017). Consumption of energy, transport, food and other goods and services varies greatly between different households, but high consumption at a household level often appears at the same time across different domains (Shackleton & Shackleton, 2006; Chatterton *et al.*, 2016; Wiedenhofer *et al.* 2017). Therefore, although there might be difficulties in terms of definition and identification, the higher consumers, should be able to make a bigger contribution towards reducing emissions as well as decreasing resources extraction.

Figure 2: Annual Household CO_2 emissions (tonnes) and income deciles (Chatterton *et al.* 2019)



Kenner (2015) explored the links between inequality and overconsumption within countries. He recognises the need to reduce overconsumption across society, but looking at the current levels of inequality he focused on the ecological footprints of high-net-worth individuals (HNWIs). He found four challenges in trying to get HNWIs to reduce their ecological footprint: (1) some of them may be disconnected from the

reality of the ecological crisis; (2) they have more resources to adapt to climate change; (3) environmental taxes may have less effect on these individuals because they can afford to continue polluting; and (4) they may not engage with sustainable consumption information initiatives.

7 Drivers of high consumption

Håkansson (2014) found that papers looking at 'over-consuming agents' often discussed them in terms of psychological aspects or personality traits. Overconsumption is described as something certain minorities or psychologically weak individuals carry out. This is in line with the findings of Humphery (2009) that problematic consumption is often described as a behaviour of weak individuals rather than being an effect of deeper, underlying structures of society and economic systems.

Giddens (1984) views consumption as a set of social practices, influenced by social norms and lifestyle choices, and also by the institutions and structures of society. Giddens' model makes a distinction between 'practical' and 'discursive' consciousness. Every day, routine actions are mostly performed in practical consciousness. But intentional or more goal-oriented behaviours need previous elaboration in discursive consciousness. This insight is important in developing strategies to change habitual behaviours, such as sustained high consumption. There is a great diversity in human motivation for high consumption. Behaviours are driven by habit, emotion, coercion, and calculated expected utility, as well as interpretation of internalized rules and principles (March and Olsen, 2004). Davies *et al.* (2014) recognise the complexity of the individual, social and structural factors that influence and support current patterns of high consumption. They see potential in using a social practice framework to identify effective interventions in order to improve the sustainability of everyday consumption. They also look at a Multi Level Perspective as a useful framework for the analysis of strategies for system transitions, which has had some impact in policy arenas. However, they accept that this framework is limited in terms of its vertical conceptualisation of processes (which overlooks certain horizontal interactions in micro, meso or macro levels), and it does not engage with the normative dimension of sustainability. Jackson (2005) explains that since many environmentally significant behaviours are routine in nature, sustainable consumption policy must find ways of addressing and re-negotiating habitual behaviour. Drawing on Giddens' theory, he observes that habit formation has its own rules and dynamics, an approach for changing habits is to 'unfreeze' existing behaviour to raise the behaviour from the level of practical to discursive consciousness. This process is more effective in a supportive social environment.

Kasser and Kanner (2004) state that consumerism and the culture that surrounds it (advertising, consumption, materialism, and the capitalistic economic system) promote a set of values that encourages an unsustainable relationship with the rest of nature, and negatively impact personal, social, and ecological well-being. Schwartz (2007) lends support to their view, by showing how more market driven, competitive societies have a cultural preference for self-assertive, mastery of human and natural resources rather than relating harmoniously to them.

Several researchers have suggested that moral values are key for understanding how people behave in situations related to the environment (Nilsson and Biel, 2008; Nordlund and Garvill, 2002; Pepper *et al.*, 2009; Schultz *et al.*, 2005; Stern and Dietz, 1994; Stern *et al*., 1999). According to Schwartz (1994, 2006), values are beliefs tied to emotions that refer to desirable goals in life, form a hierarchical system, and serve as guiding principles in the life of a person or other social entity. They are abstract constructs that transcend specific situations. Environmental values in particular, refer to beliefs about how humans should view and treat the environment, which serve as moral reference points for how individuals and societies interact with their surroundings (Resera and Bentrupperbaümer, 2005). The concept of welfare, especially the well-being of others (either future beings or those living in the present) is an issue of moral concern. Thus, adapting our consumption practices to sustainable standards is a decision guided by certain moral judgements, which are influenced by how we experience the world and by how we want the world to be in the future. As Stern (2011) noted, psychological factors are important determinants of individual pro-environmental behaviour and also influence the implementation and acceptance of certain public policies. Bedford *et al*. (2010) showed the importance of self-identity, social identity, social norms, guilt and agency in motivating pro-environmental behaviour.

Inequality in terms of consumption exists within and among countries. From a geopolitical perspective, high-consuming countries have the military strength and the economic power to build their prosperity by unequal exchanges. These states (and their businesses) extract raw materials at low cost and use low-paid human resources from peripheral countries, then export waste, pollution and outdated goods in exchange (Bonneuil and Fressoz, 2017). The behaviour of these countries and corporations, which is normal and acceptable in capitalism, clearly comes from a standpoint which values power and achievement, self-enhancement values in Schwartz's theory of basic values (Schwartz *et al.,* 2012); over self-transcendence values, such as benevolence and universalism.

A variety of studies show the existence of measurable pro-social and pro-environmental values that transcend individual self-interest (Schultz and Zelezny, 1999; Schwartz, 1977; Stern and Dietz, 1994). The relationship between pro-environmental values and behaviours is complex, and influenced by many other factors, such as attitudes (Ajzen and Fishbein 1980; Ajzen, 1991, Hurst *et al*. 2013), norms (Nilsson and Biel, 2008; Nordlund and Garvill, 2002; Schwartz, 1977; Stern *et al*., 1999), self-identity (Whitmarsh and O'Neill, 2010), perceived behavioural control (Schultz *et al*. 2007), people's everyday lifestyles (Barr & Gilg, 2007) and perceived social consequences (Stern *et al*., 1999). The relationship between values and behaviours is not a simple, linear one, but studies show that self-transcendence values often show a positive relation to pro-environmental attitudes and behaviours; by contrast, self-enhancement values are negatively related to pro-environmental attitudes and behaviours (Karp, 1996; Nordlund and Garvill, 2002; Pepper *et al*., 2009; Schultz *et al*., 2005; Stern and Dietz, 1994; Stern *et al*., 1999). The tension between self-transcendence and self-enhancement sets of values shows in the use of 'citizens' as people willing to serve the common good, 'consumers' who are supposed to seek pleasure, or 'consumer-citizens' who engage with political issues through 'tasteful' consumption (Mol, 2009). This complex interactions between different sets of values within individuals also shows in the fact that doing good deeds can increase people's willingness to transgress their morality (Merritt *et al*., 2010).

Kasser (2011a) states that countries whose citizens place relatively higher priority on self-enhancement in their values also had higher levels of CO_2 emissions, providing empirical support for the claims of Speth (2008) and Jackson (2009) that the pursuit of economic success at a national level may contribute to environmental damage. This challenges the idea of those who claim that a state is able of having a strong, growing

capitalist economy and simultaneously protect the environment. Materialism is negatively associated with both pro-environmental attitudes and behaviours (Hurst *et al*. 2013). Some studies (e.g. Kasser *et al*., 2007; Kasser, 2011b; Schwartz, 2007) show that the extent to which nations pursue less regulated, free-market forms of capitalism, directly correlates with the extent to which their citizens are more likely to endorse values that concern wealth and competition between individuals. Therefore, it is likely that economic practices (advertisement, commodification, planned obsolescence) stem from and also perpetuate cultural values, which in free-market capitalist countries seem to promote high consumption. This might explain why the 'most successful' (e.g. the ones with higher incomes) are often the ones which consume more and produce more pollution. According to the OECD (2013), everything else being equal, a person with a higher level of consumption has a higher level of economic well-being than someone with a lower level of consumption, although high consumption lifestyles affect negatively other people and the environment (Middlemiss, 2018). If one looks at different types of consumption, domestic energy use, private transport and food are the main sources of individuals' environmental impact in developed countries (Peattie and Peattie, 2009).

8

High consumers of energy

Energy consumption varies greatly across households of similar demographic types, as energy use is influenced by physical aspects of the home in conjunction with the knowledge, routines and values of the occupants (Gram-Hanssen, 2010). Therefore, a transition towards sustainable energy use requires profound, wide-reaching changes in relevant behaviours, as well as social and technological transformations. Steg *et al.* (2018) explain how this transition can be promoted by changing the context for actions so that the costs and barriers for sustainable practices are lowered. At the same time, targeting individual factors, such as knowledge and motivations, can also be a way to engage people in more sustainable energy behaviour. Although it is only one of the various factors that influence energy use, income inequality parallels inequality in energy footprints: when looking at income levels, the energy consumption share of the bottom half of the population is less than 20% of final energy footprints. This is less than what the top 5% consume (Oswald *et al.* 2020). Multivariate analysis shows that various factors, such as household size and composition, home ownership, education level and rural location also play important roles in energy consumption (Büchs and Schnepf, 2013; Frederiks *et al*, 2015). However, the effects of those factors are mixed and it is often unclear how some of them affect high consumption of energy at a household level. Bounen *et al*. (2012) analysed a sample of more than 300,000 Dutch homes. They found that gas consumption is determined principally by structural dwelling characteristics, such as the age of the building, its type and materials used, while electricity consumption varied more directly with household characteristics, in particular income and family composition. They estimated that the aging of the population and their increasing wealth was likely to offset energy-efficient improvements of the building stock (resulting from policy interventions and regular refurbishments) in the future.

Sovacool (2011) explains how energy services differ according to sector, urban and rural areas, as well as due to direct and indirect uses. In their analysis of urban households' energy use throughout the world, they found that the low-income households use a greater number of fuels and carriers, from dung and fuelwood to gas and charcoal, but less services. Middle-income households tend to rely on electricity and natural gas, followed by coal, gas, and kerosene, and they use energy in order to get a broader variety of services. The households with higher incomes have access to the same energy fuels, carriers, and technologies as middle-income households, but consume more energy (as they have more luxury items, as well as multiple sets of the same appliance). Because of the low energy efficiency of the housing stock, energy consumption in the domestic sector could be reduced in many countries, as people inhabiting inefficient buildings must use more energy to heat their homes (Healy, 2017). There is a connection between low levels of energy consumption and poor indoor environmental conditions for low income households in Europe (Kolokotsa and Santamouris, 2015), which shows a difficulty in reducing the energy use in those households, as this would increase the negative effects of inadequate housing on their health and wellbeing.

Yang and Timmermans (2020) looked at how green energy policy instruments in the EU are used to overcome different barriers for technology adaptation and household energy consumption behaviour. Regulations and tax instruments are the two most widely applied instruments in the household sector. This shows the popularity of a market-based approach, reflected in the use of tax, incentives, subsidies, fees and charges as tools for adaptation. Some studies show that as income rises, households are less sensitive to energy price increases (Brons *et al.*, 2002; Labandeira *et al.,* 2017; Schulte & Heindl, 2017), which means that price mechanisms might not be the most effective way to promote efficiency among high-income segments of the population. High-income households are also less vulnerable to energy-price hikes than their poorer counterparts (Anker-Nilssen, 2003) and often unwilling to reduce their energy usage (Frederiks *et al*, 2015). Lutzenhiser (1993) showed how when faced with increases in price, low-income households often cut back consumption and make lifestyle changes, whereas middle and higher income households are able to maintain consumption or purchase more efficient equipment such as newer appliances that use less energy. This raises the question of whether different energy policy instruments are needed for different households depending on their income.

A fuel transition from biomass to fossil fuels and electricity has accompanied economic growth and increasing urbanisation in developing countries (Démurger and Fournier, 2011). Alam *et al*. (1998) analysed this transition in Hyderabad, India, and looked at how these technologies might be less polluting and more efficient, but government policy favoured the highest incomes, as they had access to more fuel and better equipment. Mundaca *et al*. (2019) analysed more than 10,000 national and city-level policies in order to quantify the nature and evolution of policies promoting the adoption of low-carbon energy technologies. They found a widespread use of economic incentives (mainly subsidies) internationally. At a local level, cities focused on technology and infrastructure policies, but policy efforts do not address behavioural factors (i.e., cognitive, motivational and contextual aspects) in a direct manner, and no policies addressed high income households explicitly.

According to a smart meter customer experience study by the Department for Business, Energy & Industrial Strategy (2017) in the UK, the most likely to look at how much energy they were consuming at least weekly were social renters (55%, compared to 43% among owner occupiers) and those with a total household income of less than £16,000 a year (53%, compared to 40% among those in households with an income upwards of £50,000). More cost-conscious households used more their in-house display (IHD) to track how much they were spending on energy. Using their IHD to check that every appliance was off when they went out or went to sleep was also more common among respondents on low incomes. A quarter of those on lower incomes wanted further information about how their smart meter worked (25%) and how their IHD worked (22%). This was significantly more than those in the highest income category (for whom the corresponding values were 12% and 11%, respectively). Although it provides some important insights about smart meter adoption, this study did not analyse data from high consuming households as a separate entity.

Albert and Maasoumy (2016) explain that energy providers aim to increase their customer satisfaction and engagement, as well as promoting certain environmentally-friendly initiatives, and as customer data has recently become more detailed and readily available, research on demand-side management has used consumption readings and demographic information to focus on three main areas: (1) Modelling building performance and consumption patterns of populations in order to improve programs such as time-of-use tariffs and personalised energy-saving advice (e.g. Kwac *et al.*, 2014), (2) collecting data from households and individual appliances to reconstruct end-use signals from an aggregate signal (e.g. Armel *et al*., 2013), and (3) studying the effect of occupancy, weather and building characteristics on household energy consumption (e.g. Houde *et al.*, 2013). This kind of research might provide

evidence to identify high-consuming households, but it seems none of these approaches have been used yet to target high consumers as a group in order to try to identify any common characteristics and improve their individual performance if possible. White and Sintov (2020) warn that time-of-use electricity billing might produce some economic and conservation benefits, but these rates could affect vulnerable households in a negative way, which should be considered separately in rate design, in order to avoid exacerbating energy injustices. Price support and price relief have traditionally been the most common measures to address energy poverty (European Commission, 2013). These price regulations do not target low income households and also seem to weaken price incentives for producers and consumers alike. Retail electricity companies are starting to use new technologies to make prices more flexible and responsive to the market, but this is aimed mostly at reducing energy bills, not at changing the behaviour of any consumers.

According to Aune (2007), energy cultures involve everyday practices, but also interpretations of energy, energy-related artifacts, and energy policies. Therefore, private energy consumption is a result of a combination of activities, preferences, values, technologies and material structures, with domestication (understood as the conglomeration of the house, its artifacts and activities) at its core. Any behavioural change initiatives and new technologies have to address different images and practical constructions of what home is, as information and the use of energy-efficient technologies do not spread in a simple, linear manner. Drawing on culture-based approaches to behaviour, and soft systems thinking, Stephenson *et al.* (2010) developed the Energy Cultures framework, which states that consumer energy behaviour can be understood by looking at the interactions between cognitive norms, material culture and energy practices. A transformation towards a sustainable society will require significant cultural changes along with material and behavioural changes at different levels (in households, businesses, etc.) (Stephenson, 2018). Energy policy still relies heavily on a top-to-bottom approach and often understands implementation of technology in a linear way. Perhaps a different understanding of the interactions which shape consumer behaviour would facilitate a move towards more sustainable practices. Eksin *et al*. (2014) developed a simulation which shows that communication about consumption between neighbouring energy users improves welfare and that power providers could lower consumption by adjusting their target profits.

9 High consumers of transport

In the UK, households with high incomes, high education and with children are more likely to have high emissions, which are mainly driven by high indirect and high transport emissions (Büchs and Schnepf, 2013). According to Chatterton *et al.* (2016), the geographical areas in the UK which used more gas and electricity, used the most energy from private transport as well. In general, the households who owned cars in urban areas spent less on road fuel than the households who owned cars in rural areas. There are disparities in car ownership and use by different social groups. As with other energy uses, the most pronounced is the relationship between income and travel, but there are also differences depending on gender, age, household structure, rural location and settlement patterns (Lucas *et al.* 2020).

Accordind to Sager (2019) the 10% of households in the United States with the highest incomes, emit around 12 metric tons of CO_2 per year from using gasoline, whereas the 10% of households with the lowest incomes produce 3.6 metric tons of CO_2 per year from private transport and emit around 18 metric tons for everything they buy all year. He concludes that income redistribution in the United States might increase total household CO_2 emissions, as the propensity to generate emissions from an additional unit of income is higher at lower incomes. Andersson (2015) looked at the impact of the introduction of a carbon tax and a value added tax on transport fuel in the years 1990-1991 in Sweden. He estimates a reduction in emissions of 10.9% during the period of 1990-2005.

Promoting electric vehicles (EVs) might not improve substantially many issues related to high consumption, considering the unclear CO_2 gain and higher costs from a life-cycle point of view (Holtsmark and Skonhoft, 2014; Prud'homme and Koning, 2012). Any improvement in terms of CO_2 emissions is difficult to quantify, since it depends on the way of generating electricity, and the importance of EVs on replacing fossil fuels is unclear (Langbroek *et al*., 2017; Halvorsen and Frøyen, 2009). According to Yang & Timmermans (2020), a large-scale use of EVs might increase overall car use and traffic in cities, and reduce the use of public transport and bicycles. They also explain that policies which involve subsidising EVs might lead to inequality of tax benefits across income levels, since richer households are more likely to purchase an EV.

Shove *et al.* (2015) analysed car dependence, and concluded that different forms of energy consumption, including those associated with private transport, are outcomes of interconnected patterns of social practices, including working, shopping, educational activities, leisure, etc. They acknowledge that social practices are always embedded in material arrangements, and suggest that forms of car dependence emerge through the intersection of arrangements that are integral to different types of infrastructure and their connections to social practices. There are also differences in the disposition to reduce private car use between segments of the population. Andersson (2020) looked at moral factors that influence motivation to reduce private car use in Sweden, and he found that males, the middle-aged, people with low educational attainment, and rural residents are less favourable to decreasing private car use. A higher income is likely to increase the number of trips and their average length, and income also plays

a key role in car ownership, which reduces the demand for public transport (Paulley *et al.*, 2006). The association between income and alternative ways to travel, such as cycling, is not clear in the literature (Heinen *et al*., 2009), but car ownership is negatively associated with the likelihood of an individual being a cyclist (Heinen *et al*., 2009; Heesch *et al.,* 2014), and some income inequalities, which favour higher incomes, have been identified in the availability and quality of cycling infrastructure in cities (Fuller and Winters, 2017).

In the case of flying, Cohen *et al*. (2011) looked at binge flying as a behavioural addiction, although they did not focus on income as a predictor. They looked at the tensions between tourism's short-term gratifications and the environmental impact of air travel, as well as between the discourses against excessive flying and the increase in air travel. Westlake (2017) explored the influence of high-profile individuals on the intentions and attitudes of others regarding aviation. He concluded that leading by example, these individuals could contribute to a shift away from excessive flying. According to Banister (2018), in the UK air travel has become more affordable in the last decades, but this has not resulted in a highest proportion of the population flying. Instead, the low-cost airlines have allowed those who were already flying to fly more frequently while saving money (see Fig. 3).

Figure 3: Trips made by air per person per year 2002–2012 by income ventile (Department for Transport, 2012, as cited in Banister, 2018)

10 High consumers of food

According to FAO and WHO (2019) “Sustainable Healthy Diets are dietary patterns that promote all dimensions of individuals’ health and wellbeing; have low environmental pressure and impact; are accessible, affordable, safe and equitable; and are culturally acceptable” (p.9). Regarding cultural aspects, the focus is on avoiding adverse impacts on women’s time allocation, but also on the accessibility and desirability of diets. This definition recognises the difficulty of promoting diets which have less impact but are not culturally desirable. For example, looking at meat consumption in Scotland and the cultural, social and personal values around it, Macdiarmid *et al.* (2016) recommend integrating cultural issues into the development of dietary recommendations. This focus on cultural values creates a conundrum when facing high consumption in free-market capitalist countries, as their typical values are opposed to sustainable consumption.

National dietary recommendations and guidelines are developed to give indications of what people should be eating, often to address public health concerns, such as obesity, cardiovascular disease and diabetes (Montagnese *et al.* 2015). These guidelines can also be a policy tool aimed at reducing the environmental impacts associated with the food system. For example, the latest Swedish dietary recommendations emphasise the importance of making food choices that have beneficial impacts on both human health and the environment. The report explains that a plant-based diet has a lower environmental impact compared to a diet with large quantities of red and processed meats (Swedish National Food Agency, 2015). The most recent UK set of dietary guidelines is also presented as an attempt at helping the population choose healthier and more sustainable food, but it does not make an explicit distinction between animal and vegetal sources of protein (Public Health England, 2016). The United States guidelines are focused on healthy eating and do not mention sustainability (U.S. Department of Agriculture, 2016). None of these guidelines direct specific recommendations to high consumers of food, beyond looking at a recommended caloric intake and balancing food groups.

The health consequences of persistent overconsumption of food, such as the worldwide increase in obesity have been attributed to excess energy intake (Uauy and Díaz, 2005). The problems of high consumption of food are related to this excess energy intake by human populations, but the consequences also depend on the types and quantities of foods people eat (Blake, 2014). Arguably, avoiding a caloric surplus would also reduce the environmental impact of excessive consumption. However, Tukker *et al*. (2011) found that a shift towards healthier diets would only result in minor reductions of environmental impacts in Europe, unless those healthier diets included a reduction of meat and dairy intake. For instance, moderate changes which involve significant less red meat can lead to a reduction of impacts of food consumption by about 8%. Vieux *et al*. (2012) looked at the effects of reducing energy intake on diet-associated carbon emissions. When the energy intake did not exceed individual energy needs, the diet-associated emissions decreased by either 10.7% for low physical activity, or 2.4% for moderate activity. This supports other studies which state

that reducing total caloric intake to meet energy needs and meet dietary guidelines would lead to a decrease in emissions and would require less land use for food production (Blake, 2014).

However, choosing healthy and sustainable food choices does not depend exclusively on personal preferences. For example, Barosh *et al.* (2014) found that households in the lowest income quintile in Greater Western Sydney, would have to spend up to 48% of their weekly income to buy a hypothetical healthy and sustainable basket of food, while households in the highest income quintile would have to spend only 9% of their weekly income. Bonaccio *et al.* (2016) looked at the influence of the economic crisis on diet choices in the Italian region of Molise. They concluded that socioeconomic determinants play a major role in explaining the adherence to healthy dietary patterns. Maguire and Monsivais (2015) also observed that socio-economic differences in diet choices may contribute to health inequalities. In the UK, Mireku & Rodriguez (2020) found that the risk of adolescent obesity increased with decreasing household income quintiles. After stratifying by geographic-level deprivation quintiles, this risk associated to family income persisted both in the most deprived and in the most affluent neighbourhoods, but was not significant in middle-class neighbourhoods. This study did not investigate if there were any differences regarding the composition (in terms of food types, origin, etc.) of the caloric intake of different neighbourhoods, but as socioeconomic and environmental factors play a powerful role in determining dietary intake (Adams *et al.,* 2015; Levitsky and Youn, 2004), it would be likely to vary.

The focus on personal high intake of food as the cause of obesity overlooks factors such as the complexity of psychological determinants of eating behaviours, low physical activity leading to a negative energy balance, a dense built environment, pervasive food marketing, and the increased availability of energy-dense, nutrient-poor food (Mullan *et al.*, 2017). In the UK, the individual has been the focus for obesity prevention and intervention, despite strong evidence suggesting the importance of socio-economic factors, which would require collective action and multiple sites of intervention, beyond personal responsibility (Ulijaszek and McLennan, 2016).

11 Analysis of Sustainable Consumption policies in the UK, Sweden and USA

The strategy currently in place to move towards sustainable consumption in the UK involves investment, technological development, and collaboration between government, industry and consumers. However, no policy interventions are being directed towards high consumers specifically. Policy documents place an emphasis on the concept of offering advice and guidance to 'consumers' (Department for International Development, 2019), but there is no differentiation of types of consumers depending on their impact, and their distinct opportunities for reducing consumption without negatively affecting their well-being. Any campaigns directed at changing consumer behaviours seem to be based in measures that nudge people to 'do the right thing', influenced by the Behavioural Insights Team (BIT) of the UK government, also known as the Nudge Unit, which started as a team of seven people in the UK government and is now a company working in 31 countries (BIT, 2020). This focus on 'nudging' acknowledges that context plays a large role in determining the outcome of a decision, as often choices are taken with little or no conscious processing preceding it (Ölander and Thøgersen, 2014), which contrasts with the discourse of individual responsibility and rational decision-making. Although the UK government stresses the importance of democratic processes, as well as the need of collaboration between different organisations and individuals, decisions regarding what 'the right thing' is and how to best manage contextual variables are often taken by unelected groups of people (such as the BIT), which might not regard tackling high consumption as a priority. As well as targeting consumer behaviours, the UK seeks to expand ecodesign requirements to increase material efficiency, which includes gradually removing from the market the least resource-efficient products and establishing a minimum level of resource efficiency (Department for International Development, 2019). This focus on design does not recognise the benefits of questioning the need for a new product, or the limited access low-income people might have to more efficient products.

Sweden has also adopted national-level sustainable consumption strategies (Ministry of Finance, 2016). The Swedish Environmental Protection Agency (SEPA) identifies different types of policy instruments which can be used to move towards more sustainable consumption: economic, administrative, informative, and research and development (SEPA, 2012). Greenhouse gas emissions within Sweden's borders decreased by 14% between 2008 and 2014, but the CO_2 emissions associated with Sweden's imports from other countries are higher than its own emissions, and are not following the domestic downward trend (Government Offices of Sweden, 2016). At the level of discourse, there is more transparency in terms of private consumption being linked to environmental problems. But there is no emphasis on high consumers and there are also some similarities with the UK approach, such as working towards GDP

growth at the same time as towards sustainable consumption, or relying on ‘nudging’ as one of the main strategies for improving consumption practices (although in this case the Swedish Consumer Agency is in charge of the task).

In the case of the US, the government has not generated any reports about their progress towards sustainable consumption. The United States Environmental Protection Agency only makes some basic recommendations to reduce the environmental footprint of consumers: i.e. choosing greener products and reduce, reuse, recycle (EPA 2020). This is particularly relevant, given that the US is the global leader in consumption per capita, but it is also consistent with its capitalistic, free-market economic outlook.

12 Conclusion

In conclusion, while they might be difficult to identify in some cases, high consumers have the potential to make a big difference in human environmental impact by reducing their use of resources, high consuming households remain largely unstudied, and consumption reduction policy initiatives are not targeting them specifically. Without a better understanding of the psychological, social and structural drivers of high consumption, the actual environmental impact of high consumers, and the barriers for engaging them in sustainable consumption initiatives, it is difficult to determine what would make policy interventions effective, and what roles high consumers can and should play in facilitating a transition to better consumption practices. However, as well as acknowledging a gap in the literature in the field of high consumers at a household level (in terms of definition, classification and characteristics) from the studies available, this review collected some findings related to high consumption: (1) consumption inequalities increase with income inequalities, and consumption varies greatly between different households, as high consumers are responsible of more emissions and use more resources, households with a higher income are potentially capable of having a more positive impact by making changes in their lifestyles; (2) different dimensions of consumption are interrelated, which creates specific barriers for changing the behaviour of high consumers in free-market, capitalist economies; (3) policy interventions to reduce the impacts of overconsumption have not explicitly targeted high consumers as a group yet. Although their behaviour as a group has the biggest impact in terms of environmental damage, there needs to be a distinction in terms of high consumption due to physical needs and high consumption due to unnecessary desires (which might be partly motivated by culture).

13

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