

# POLICY ANALYSIS BRIEF

THE STANLEY FOUNDATION | OCTOBER 2018

## Transitions for Sustainable Consumption After the Paris Agreement

### Executive Summary

- Radical shifts in the societal organization of production and consumption are urgently required in order to meet the goals of the Paris Agreement to limit global average temperature increases to within 2°C above preindustrial levels, with the ambition of a 1.5°C limit. Policy for sustainable consumption should be understood in the context of the critical need for demand-side emissions reductions in order to meet medium-term targets.
- Consumption should be understood as instituted and embedded in wider systems—social, cultural, economic, and material. Policy must address the social organization of consumption. Central to the challenge of sustainable consumption are the escalating levels of resource and energy use tied up in the bundle of goods and services taken for granted as necessities of everyday life. Escalating environmental impacts of consumption are the outcome of the coevolution of technical systems and infrastructures on the one hand and social practices, conventions, and norms on the other. The international policy community is not engaged with processes of consumption and has remained focused on technological innovation.
- Where consumption is recognized, policy approaches have been dominated by behavior-change initiatives, which frame the challenge as informing, enabling, or nudging individual consumers toward more-sustainable choices, almost always in the context of markets. This framing is limited by a focus on individuals' autonomy, though it is constrained by norms, institutions, and infrastructures and access to resources (economic, social, and cultural). Models of consumption frame the kinds of problems that policy addresses and the types of plausible solutions that are sought. Measures based on the individualized model of consumption cannot alone address the scale of the global challenge.
- Policy interventions take place within the processes they seek to change rather than intervening from the outside. Patterns of consumption are dynamic and change in complex relations to society, culture, economy, and technology. These dynamics and relations must be harnessed for transitions toward more-sustainable production-consumption systems.



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Major societal trends—such as automation, digital platforms, and dietary shifts—represent opportunities for such systemic approaches.

- Integration of sustainable consumption goals into wider policy (policy integration) is critical. Policies for sustainable consumption must embrace multiscale and reflexive governance approaches that are open to radical experimentation and engage with emerging societal trends.
- Sustainable consumption is fundamentally an issue of inequality. More-equitable distribution of consumption-based emissions within and between societies is critical. Only steep reductions in the consumption emissions of the wealthier nations can allow for equitable near-term economic development of poorer nations while meeting the ambitions of the Paris Agreement.

## 1. Introduction

The 2015 Paris Agreement pledged to accelerate efforts to hold global average temperatures to below 2°C above preindustrial levels, with the ambition of a 1.5°C limit, and recognized that “sustainable lifestyles and sustainable patterns of consumption and production...play an important role in addressing climate change.”<sup>1</sup> However, the United Nations Environment Programme (UNEP) has called the gap between the greenhouse gas (GHG) emission reductions needed and the national pledges made in Paris “alarmingly high” and urged “accelerated short-term action” and enhanced longer-term ambitions. Moreover, according to UNEP, if the emissions gap is not closed by 2030, it is extremely unlikely that holding global temperature increases to well below 2°C can be achieved.<sup>2</sup> It is within this context that the urgent need for policy focus on sustainable consumption should be understood.

Given the long lead times necessary for large-scale changes toward both low-carbon energy-supply technologies and wider technological changes to reduce material use in economic activity, supply-side changes alone cannot deliver the near-term, deep cuts in emissions necessary for even a low probability of meeting the ambitions of Paris. Consequently, immediate reductions in energy demand and material consumption are essential.<sup>3</sup> Furthermore, transition to a low-carbon economy entails substantial upfront investments—for example, in energy systems and transport systems—that will themselves require large amounts of energy to produce in the near term and that will, therefore, depend largely on fossil-fuel sources.<sup>4</sup> These necessary investments further constrain the remaining “carbon budget” of cumulative emissions available for consumption. Allowing for equitable near-term economic development of poorer nations, where there is widespread lack of access to basic necessities, puts yet further constraints on the proportion

of the carbon budget available for consumption within the wealthier nations.<sup>5</sup>

The conventional methods used to account for GHG emissions are production based, estimating the emissions involved in the production of goods and services within territories.<sup>6</sup> Consumption-based emissions accounting, by contrast, measures the GHG emitted in the production of the goods consumed within a territory. This paints a somewhat different picture. Increases in production-based GHG emissions in much of the developed world have leveled off or decreased. However, this hides the “outsourcing” of emissions, where consumption has come to increasingly depend on imported goods and services.<sup>7</sup> A recent analysis of the 79 major cities worldwide revealed a 60 percent increase of those cities’ carbon footprints when using consumption as opposed to production-based accounting.<sup>8</sup> Consumption-based emissions draw attention to the systemic connections between consumption and production.

When applied to clusters of goods and services in different locations, consumption-based emissions also demonstrate major variations in the sources of per capita GHG emissions. For example, in Latin America, GHG emissions per capita from meat consumption are twice that of meat consumption in Europe.<sup>9</sup> This draws our attention to socioeconomic and cultural variation. Different countries can have quite distinct GHG “signatures.” Brazil, for example, displays a remarkably distinctive GHG footprint, with a combined total of emissions from energy, industry, and transport below 30 percent of its total emissions, compared to over 80 percent for energy-industry-transport for the European Union, United States, Japan, and China. This reflects not industrial underdevelopment in the case of Brazil but rather a distinctive trajectory of development—including widespread use of biofuels for transport, pushing up agricultural emissions—as well as far larger proportions of GHG emissions from deforestation and peat destruction. It is in this sense that climate change is better understood not as anthropogenic but sociogenic; that is to say, climate change is caused by specific societies interacting with specific resources and environments.<sup>10</sup> Policies for sustainable consumption must have regard for such social, cultural, and economic variation.

Global inequalities map directly onto global disparities in consumption-related emissions.<sup>11</sup> Approximately 50 percent of the world’s GHG emissions can be attributed to consumption by the world’s richest 10 percent. The poorest 50 percent, by contrast, are responsible for approximately 10 percent of global emissions and yet at the same time live largely in those countries most vulnerable to climate change.<sup>12</sup> If those responsible for the top 10 percent of GHG emissions, who have average carbon footprints 11

times higher than the poorest half of the global population, reduced their carbon footprints to that of the average European, this would bring about a 33 percent reduction in global emissions.<sup>13</sup> There is also significant inequality within high-consumption societies: the average annual carbon footprints of the highest-earning 10 percent of US households are 59.4 metric tonnes of CO<sub>2</sub> compared with an average of 18.1 metric tonnes for the lowest 10 percent.<sup>14</sup> Sustainable consumption is therefore fundamentally an issue of inequality.

It is also clear that the required reductions in consumption-related emissions cannot be achieved through marginal lifestyle changes and technical efficiencies. While the environmental impact of every dollar of economic output has been reduced in the advanced economies—known as the relative decoupling of economic growth and environmental impact—the relationship between growth in per capita income and growth in per capita GHG emissions continues.<sup>15</sup> Technical improvements and increases in efficiency have only partially offset the global growth of high-consumption lifestyles,<sup>16</sup> and the global consumer class is currently expanding by 140 million annually.<sup>17</sup> Absolute decoupling—in which economic growth continues but environmental impact decreases—is nowhere in sight.<sup>18</sup> It is therefore imperative that the urgent transformation of whole systems of consumption and production is placed on the global climate change policy agenda.

Consumption is often understood as being in the private domain and therefore beyond the interference of the state, limiting the purview of policy to address issues of sustainable consumption. This is far from the case, however. Consumption is intensely political, with states intervening in consumption through regulation, prohibition, taxation, and the provisioning of infrastructures (such as transport infrastructures enabling particular types of retailing). Consumption is better understood as being instituted at a variety of scales. Policy for sustainable consumption should be understood in this context.

This policy analysis brief outlines the case for systemic change in production and consumption, arguing that the two domains cannot be separated. It takes the position that in order to reduce absolute levels of GHG emissions caused by global patterns of consumption, the politically palatable option of focusing predominantly on marginal lifestyle change is not a viable option. Behavior change initiatives have a role to play as part of a policy mix but cannot be the solution in themselves.

The brief proceeds by first providing a short summary of the policy framing of sustainable production and consumption (Section 2). This is followed by a brief illustrative review of policy measures that have sought to achieve more-sustainable forms of consumption (Section 3). A key lesson from this review is that policy measures that (1) seek to align multiple actors toward sustainability objectives and (2) take account of the trajectories and dynamics of sociocultural change offer greater opportunities than interventions focused on individuals' behavior. Section 4 develops the social scientific insights into understanding consumption, introduced briefly in Box 1 (at right). Central to these insights is an understanding of consumption as embedded in wider systems—social, cultural, economic, and material. Section 5 explores illustrative cases of societal trends and trajectories that demand systemic sustainability interventions. Finally, in Section 6, we suggest some of the implications of our analysis for policy.

## BOX 1

### Understanding Consumption: The Coevolution of Technologies and Social Practices

If we want to understand why more resource-intensive patterns of consumption have become taken for granted as part of everyday life, then we need to ask questions about the coevolution of technologies and infrastructures on the one hand and social practices, conventions, and norms on the other. For example, how have commonplace domestic technologies, like the freezer—with significant resource and energy implications—become taken for granted as necessities?

In the United Kingdom in 1970, only 3 percent of households owned a freezer. Twenty-five years later, 97 percent of households owned a freezer. The normalization of the domestic freezer is one part of the story of the escalating energy intensity of the food system, but a significant one nonetheless. It is critical to the development of the energy-intensive “cold chain” that enables food to remain frozen from the factory to the domestic cooker. What is the process behind the freezer becoming a domestic technology? It involves mutually influencing changes on a societal level, on the level of domestic practices and conventions, and developments in technology. With women entering the labor market in large numbers, working mothers increasingly came to use the freezer as a time machine to cope with the scheduling of family meals. Technical developments saw the chest freezer, often located in the garage, replaced with smaller kitchen versions. Cooking and shopping practices coevolved with changes in retail and supply chains with the development of the frozen food market. And the primary benefits of freezing were gradually redefined from dealing with seasonal gluts of produce to the convenience of frozen foods.<sup>19</sup>

## 2. Sustainable Consumption and Production: Development of the Policy Agenda

The 1992 Rio Earth Summit (United Nations Conference on Environment and Development) called for “a better understanding of the role of consumption and how to bring about more sustainable consumption patterns.”<sup>20</sup> Ever since, the conventional attribution of responsibility for environmental impacts to producers has increasingly been supplemented by a focus on the role of consumers.

This growing emphasis on consumption can be seen in the context of the growth of consumer society and an increasing cultural emphasis on consumption activities. At the same time, a growing proportion of environmental impacts could be directly or indirectly related to the consumption activities of private households.<sup>21</sup>

Following the 2002 World Summit on Sustainable Development in Johannesburg, the environmental unsustainability of the economic system and the systems of production and consumption that underpin everyday life came ever more strongly to be framed as sustainable consumption. While the focus on the consumption of the Global North as the central cause of the ecological crisis was welcomed by many, this shift in emphasis has been far from unproblematic. Sustainable consumption, defined as minimizing the environmental impacts of goods and services, militated toward a view of consumption as a purely economic activity that can be modified through top-down approaches.

This framing of sustainable consumption has often led to policy responses in which consumers were seen as the principal agents: primarily focused on information provision, such as ecolabeling, and on price and incentives. Consequently, mainstream policy initiatives, such as the 2008 European Union Sustainable Consumption and Production Action Plan,<sup>23</sup> have been framed in terms of improving the environmental impacts of products and increasing the demand for more-efficient goods.

The resultant dominant policy framing of sustainable consumption has come to present demand—“consumer choice” sending market signals for sustainable goods and services upstream to producers—as the motor of change. Debate has therefore tended to become unhelpfully polarized, between, on the one hand, critical social scientists and social movements calling for radical change to the economy and society and, on the other hand, mainstream public and business policy approaches advocating incremental reforms to the status quo.<sup>24</sup>

In 2017, almost 30 years after the first report from the Intergovernmental Panel on Climate Change, global GHG emissions were 60 percent higher than in 1990. GHG emissions continue to grow in lockstep with global economic growth. The ambition of the Paris Agreement will require unprecedented, deep cuts in emissions. For a roughly 50 percent chance of remaining within the 1.5°C limit, global emissions reductions would need to be around 3 percent annually from 2020–2050.<sup>25</sup> The economist Nicolas Stern has noted that thus far annual reductions of greater than 1 percent have “been associated only with economic recession or upheaval.”<sup>26</sup> According to scientists at the Tyndall Centre for Climate Change Research, if we are to allow equitable near-term economic development of poorer nations, even a 50 percent chance of 2°C implies annual emissions cuts

### Box 2

The **Oslo Roundtable on Sustainable Production and Consumption** in 1994 proposed a “working definition” of sustainable consumption as:

“The use of services and related products which respond to basic needs and bring a better quality of life while minimizing the use of natural resources and toxic materials as well as emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardize the needs of future generations.”<sup>22</sup>

of 8–10 percent for the wealthy nations.<sup>27</sup> Clearly, nothing short of fundamental transformations of the consumption-production systems that drive emissions, and profound change in the socioeconomic system that underpins them, will be sufficient if we are to achieve anything near such targets.

### 3. Policy Measures for Sustainable Consumption

There has been no shortage of endeavors to translate and apply insights from research into policy measures. These measures can broadly be divided between those with a principal focus on individual behavior and those concerned with systemic change. As indicated above, it is the former that has received greatest attention, framed as enabling consumers to make proenvironmental choices.

This section summarizes policy measures for sustainable consumption, providing some examples that seek to illustrate and capture the range of initiatives that have been deployed.

#### 3.1 Policy Focused on Individual Behaviors

The mainstream approach to policy on sustainable consumption and behavior is usually understood in terms of addressing individual behavioral choices. This is presented largely as a matter of encouraging, facilitating, and incentivizing good environmental consumer choices and restricting opportunities for making bad ones. Table 1 identifies and provides examples of four typical policy measures, which are often implemented in some combination: pricing, information, values and attitudes, and breaking habits, commonly referred to as nudging.

**Table 1. Policy Approaches Focused on Individual Behavior Change**

Policy measure	Examples
<p><b>Pricing</b></p> <p>Financial incentives or penalties directed at consumers</p>	<p><b>Deposit return systems:</b> Norway’s bottle return plan incentivizes consumers to bring plastic and glass bottles back to the retailer for a refund of a small deposit, leading to a 96% return of all bottles purchased.<sup>28</sup></p> <p><b>Plastic bags:</b> Introduction of a 5-pence charge for all single-use carrier bags in the United Kingdom retail sector led to an 83% drop in single-use bags reported by large United Kingdom retailers from 2014 to 2016.<sup>29</sup></p>
<p><b>Information</b></p> <p>Education on consumer choices, e.g., through product labeling</p>	<p><b>The Casino Carbon Index:</b> Carbon labeling of 200-plus products in France is estimated to have saved a marginal 20 metric tonnes of CO<sub>2</sub> in its first two years.<sup>30</sup></p> <p><b>TravelSmart:</b> Individualized transportation planning across public and private modes of transport in Australian urban areas led to as much as an 18% reduction in private car use.<sup>31</sup></p>
<p><b>Values and attitudes</b></p> <p>Use of social marketing campaigns</p>	<p><b>Durham water:</b> A community-based social marketing campaign to reduce residential water use that included neighborhood “pledges” and adoption of water-restriction technologies saw a 17% reduction in peak water use.<sup>32</sup></p> <p><b>Quorn:</b> A 2016 branding campaign to emphasize “meat free” food and health, with a focus on products for different eating occasions. Follows success in Australia, where food products were marketed as a new style of eating rather than as a meat substitute. Global growth of 16% was reported in 2017.<sup>33</sup></p>
<p><b>Breaking habits</b></p> <p>“Nudge”—steering individuals toward more-sustainable ones</p>	<p><b>Kenya water-borne diseases:</b> Take-up and usage of water-purification solutions achieved by locating chlorine solutions at water sources rather than within households, changing the context of daily water collection habits. Over 50% of households utilize the system.<sup>34</sup></p> <p><b>Increasing fruit and vegetable consumption:</b> The US National School Lunch Program implemented “choice architecture” in cafeterias that resulted in an average daily increase of 15% in consumption of fruit and vegetables.<sup>35</sup></p>

Whether through providing economic incentives, correcting information deficits, seeking to reframe attitudes, or removing barriers, the initiatives outlined in Table 1 are designed to change the behavior of the individual consumer.<sup>36</sup> All of the examples listed report some success. However, micro-level behavior-change initiatives alone cannot deliver the large shifts needed. These initiatives would also need to offset the increasing level of GHG emissions associated with major trends of the 21st century, such as ubiquitous information and communications technology use or escalating levels of personal mobility. Unfortunately, demand for Western-style consumption far outstrips the modest scale of behavioral changes oriented by sustainable consumption among those joining the global consumer class.<sup>37</sup>

### 3.2 Policy Measures to Foster Systemic Change

Societies and the everyday practices that underpin them are constantly in flux. Policy measures that recognize this and seek to address the systemic connections between production and consumption present a different approach to policies focused on individual behavioral choices. They often take greater account of production-side measures that interact and connect those agents involved in the production and delivery of goods and services with those who consume or seek to influence the consumption of those products. Table 2 shows a range of policy measures that seek to disrupt or reconfigure systems of production and consumption.

**Table 2. Policy Approaches Fostering Systemic Change**

Policy measure	Examples
<b>Distributed responsibility and actor coalitions</b>	If <b>food waste</b> was a country it would rank as the third top GHG emitter after China and the United States. <sup>38</sup> Large-scale interventions to reduce food waste across the production-consumption system in the United Kingdom have contributed to 960,000 tonnes of less household food waste in 2015 compared to 2007. Avoidable household food waste was 17% lower over this period. <sup>39</sup> Research suggests this was achieved through a multistakeholder coalition involving retailers, trade associations, civil society organizations, policymakers, specialist consultancies, and academics (see Box 4). <sup>40</sup>
<b>Infrastructures for sustainable mobility</b>	Large-scale <b>bicycle sharing</b> systems have taken off in many urban areas worldwide. They involve systemic interventions in public infrastructure, digital platforms to facilitate flexible bicycle use, and cultural shifts in modes of mobility. International bike-sharing provider Mobike reports that in China, cycling has become twice as popular in the first year of the program's introduction, and those who participate report a 50% reduction in car usage. <sup>41</sup>
<b>Regulation and standards</b>	Following unsuccessful social-marketing campaigns, the city of Berkeley, California, launched legal standards for <b>residential energy and water</b> efficiency, facilitated by finance arrangements to encourage compliance. Homeowners are required to meet the standards in order to sell property. The Residential Energy Conservation Ordinance program is estimated to have reduced residential energy consumption by 13% annually. <sup>42</sup>
<b>Changing cultural conventions and meanings</b>	The Japanese Ministry of Environment initiated the Cool Biz campaign in 2005 to reduce <b>electricity consumption</b> by limiting use of air conditioning in office buildings. Interventions to informalize dress codes changed the social norms surrounding workplace attire, which in turn enabled regulations that banned air conditioning below 28°C. In 2006, a 1.14-million-ton reduction of CO <sub>2</sub> emissions was reported. <sup>43</sup>
<b>Community equity</b>	Middelgrunden Wind Cooperative in Denmark, established in 2000, consists of 20 turbines with combined capacity of 40MW, providing renewable energy to 40,000 homes. Ownership is split between the utility company and 8,552 members, which increased public acceptance of the investment and public support for renewable energy consumption; 81,000 tons of CO <sub>2</sub> is saved annually. <sup>44</sup>

The key feature of the examples showcased in Table 2 is that they recognize consumption is embedded in wider systems—social, cultural, economic, and material. They feature multiscalar and reflexive governance approaches. *Multiscalar* means that the policy initiatives seek to align interaction of agents delivering policy measures at different scales of intervention, such as the household, the city, or the production-consumption system. Reflexive governance approaches recognize ongoing sequences of intervention, monitoring, and adjustment, rather than focus on a single moment of intervention. Rebounds, reactions, and ripples of effect are always at work, meaning that monitoring positive and negative feedbacks and responding to them is always necessary to handle the interdependencies and unpredictabilities of systemic change.<sup>45</sup> Finally, some of the examples in Table 2 represent policy initiatives that work with sociocultural changes that were already in motion—such as informalization in Japan or the normalization of recycling in the United Kingdom—rendering ambitious and radical policy experimentation more likely to succeed. Because of their ambitious scale and the vested interests that can undermine the capacity for consensus among actors, such policy measures remain relatively limited in number when compared to those that target individual behaviors.

### 3.3. Summary

Despite the rhetoric of simultaneously tackling production and consumption, sustainability policy has largely reduced the relationship to a matter of purchasing choices and consumer demand as market signals. One set of policy measures directed at affecting consumption is behavioral and seeks to direct individuals into making different consumer choices. This places the responsibility for dealing with global and societal problems like climate change on the shoulders of individual consumers. Alternative policy approaches seek to look beyond consumer choices to address the ways our patterns of consumption are shaped. These approaches recognize that consumption is always politically contested and therefore requires the alignment of multiple actors within production-consumption systems in order to build coalitions, present pathways for coordinating action, and redirect existing trajectories or dynamics of societal change.

## 4. Social Scientific Approaches to Sustainable Consumption

Policy measures focused on systemic change are more consistent with evidence from social scientific research that understands consumption and production as embedded within, and changing in relation to, sociotechnical transitions. The story of the freezer in Box 1 provides an example of how changes in social practices (in this case related to household food practices) coevolve through their relationship with technological innovations (the freezer and its wider frozen food infrastructure). It demonstrates that to understand how a resource-intensive technology becomes taken for granted as part of everyday life, and thus understood to be normal, requires attention to the interactions between multiple societal and technological processes of change. Thus we should think of such transitions as sociotechnical. So it follows that if our objective is to affect patterns of production and consumption in ways that limit GHG emissions, we must focus on these processes of normalization and sociotechnical transition.<sup>48</sup>

Critical here for sustainability is the rebound effect, whereby wider societal changes undermine the gains of technological and energy efficiency. The

### BOX 3

Research into household food waste suggests it is best understood as a product of household dynamics and routines, cultural expectations around cooking and eating, and the social organization of food consumption. And the latter involves factors as diverse as retailer practices, changes in working patterns, technological development, global food prices, and the historical shift from a producer to a consumer society. Crucially, from a more systemic perspective, where the problem is visible is often not where the causes and drivers lie—and thus where the solution is best sought—an insight valid for all production-consumption systems.<sup>46</sup> In the case of household food waste, for example, retailers' promotional practices, or the quantities in which the food industry makes ingredients available to consumers, may indirectly drive waste in the home. Responsibility for food-waste reduction is therefore distributed throughout the food production-consumption system.<sup>47</sup>

most straightforward form of direct rebound effect is when efficiency increases consumption of the same service (for example, the fuel cost savings of more-efficient cars may encourage greater levels of car use). More complex are indirect rebound effects that occur when monetary savings from, for example, increased vehicle fuel efficiency are recycled into spending on other consumer goods.

Most policy consideration in this area is directed to the marginal losses to otherwise overall efficiency gains. However, this is to miss the bigger issue of macro-level rebound effects across the entire economy, with societally significant effects. Efficiencies spur innovations in products and services and the creation of whole new markets that themselves increase demand and thus drive increased environmental impact. Macro effects are sometimes referred to as the Jevons paradox. In 1865, in his book *The Coal Question*, William Stanley Jevons argued that more-efficient steam engines stimulated increased and novel uses for steam power and so increased rather than decreased coal consumption. The centrality of steam power to the Industrial Revolution demonstrates how such effects are key drivers of economic growth. The expansion of information and communication technology, and the rapidly escalating energy demands of its use, is perhaps the most pertinent contemporary example.<sup>49</sup>

The significance for sustainable consumption of the coevolution of technologies and social practices, however, exceeds self-reinforcing cycles of cost reduction and market expansion. Changes in sociotechnical systems, driven by a range of factors, can normalize conventions, norms, expectations, and in turn needs that drive increases in the resource-intensity of everyday life, such as the need for Internet access to participate fully in modern life. Concomitant to the ready availability of cheap fossil fuels in the modern era, expectations of comfort, convenience, connectivity, and mobility have been continually ratcheted up.<sup>50</sup> Environmentally significant impacts occur through consuming resources as part of the practices that make up everyday life—like driving, cooking, or doing the laundry. Modern consumer societies have fostered, normalized, and institutionalized energy- and resource-intensive routines, habits, and practices that are deeply rooted in societal norms and expectations of consumer society.<sup>51</sup> These profound societal changes in expectations and conventions are intimately tied up with the political economy of consumer society and with marketing, advertising, and media.<sup>52</sup>

As Section 3 suggests, policy approaches to sustainable consumption have increasingly recognized these impacts, and it is in this context that behavior change has gained prominence in public and policy debate. Mainstream behavior-change approaches draw on an implicit model of human action that shares much with the economic model of consumption in its emphasis on autonomous individuals exercising freedom of choice through voluntary decisions. From a social scientific perspective, this implicit model fundamentally overestimates the role of deliberation and choice in routine behavior and underestimates the extent to which individuals' autonomy is constrained by norms, infrastructures, institutions, and access to resources (economic, social, and cultural).<sup>53</sup> Furthermore, such constraints operate not just at the level of the individual but at the level of different production-consumption systems. For example, high levels of mobility have become normal in the everyday lives of affluent consumers—expectations and norms of everyday life make it hard for individuals, even those who express ecological values, to significantly

#### BOX 4

**Social scientific insights** reveal that:

- Framing the complex issues of sustainability in terms of individuals' choices limits policymakers' understanding of the nature of social behavior and obscures systemic issues.
- The key issue for sustainable consumption is the interdependence of technical systems and social practices. To date, these interdependencies have underpinned the rising GHG emissions that are highlighted by consumption-based accounting data.
- Different production-consumption systems—such as transport, food, water, housing, and energy-using products—involve different infrastructures, institutions, conventions, and norms. Thus, change in these systems involves different dynamics.
- Consumption needs to be understood as embedded in wider systems—social, cultural, economic, and material.

reduce their travel emissions. In the domain of food consumption, however, various forms of green consumption—whether eating organic, vegan, or local produce—have garnered social acceptability, and even distinction, among affluent consumers. The differences between these consumption domains demonstrate why values and attitudes cannot be simplistically understood as the primary drivers of individuals' proenvironmental behavior.

Consumption needs to be understood as embedded in wider systems—social, cultural, economic, and material. The dynamics underlying the consumption of food, for example, clearly cannot be understood outside the context of family life, cultural conventions, global value chains, and ecosystems. Social scientific understandings of consumption draw attention to the institutional contexts through which the goods and services consumed are produced, distributed and exchanged; the social practices in which consumption takes place; and the symbolic and communicative dimensions of consumption. A social scientific approach to sustainable consumption reframes the issue from one of individual consumer choices to the social organization of consumption (see Box 4).

## 5. Societal Change and the Dynamics of Demand

The overriding message from experiences of past policy measures for tackling sustainable consumption and from the insights of social scientific research is that if we want to shift societies toward less resource-intensive patterns of consumption, then we need to understand and target the coevolution of technologies and infrastructures with social practices, conventions, and norms. This means understanding and addressing the sociotechnical trajectories in which societies are developing and locate the possibilities for intervention within these trajectories. Critically, we also need to appreciate that those domains that exhibit less change are not static—rather they are systems in which components (for example, markets, infrastructures, institutions, and practices) interact in such a way as to actively produce relative stability.

Systems of production and consumption (like housing, food, and mobility) are moving targets, not statically awaiting intervention. Interventions for purposeful change take place within the processes they seek to change rather than intervening from the outside. This basic insight suggests that we should look to societal-scale trends for the novel dynamics and points of intervention they offer. Such large-scale trends are critical for their potential to normalize more-resource-intensive ways of life and for the latent opportunities they hold for more-sustainable forms of consumption. Outlined below are three widely acknowledged major trends—automation, digital platforms, and dietary shifts—that should be understood from this perspective. They are presented as illustrative cases only; other examples of major societal trends could equally be the focus of attention.

Recognizing that societies are always on the move makes visions for societal-level transitions particularly important vehicles for change.

This means that, first, the visions and models of the future of consumption frame the kinds of problems that policy addresses and the kinds of plausible solutions that are sought. For example, the European Commission's Circular Economy Action Plan (2015) begins its section on consumption: "The choices made by millions of consumers can support or hamper the circular economy.

### BOX 5

#### Automation and Unemployment

A 2016 report for the US government estimated that the average US worker earning less than \$20 an hour had an 83 percent chance of losing his or her job to automation.<sup>58</sup> Automation is not new, of course. John Maynard Keynes recognized the problem of "technological unemployment" in 1928. What is novel about the current concerns of automation, however, is the capacity of machine learning and expert systems to replace a raft of nonmanual jobs and the speed with which this transition could take place.

The current automation debate brings to the fore radical work-time-reduction and basic-income policies as possible ways to address mass unemployment. As productivity grows, social choices have to be made between how much productivity gains will be translated into higher consumption levels versus fewer work hours. Advocates claim "time affluence" as an alternative to material affluence has significant possibilities for sustainability and well-being. A much shorter working week would reshape habits and conventions and change the relation between wage labor and unpaid labor. Releasing significantly more time may reduce consumption-intensive activities in favor of more-time-consuming, but less-resource-intensive, activities, including care, education, and culture.<sup>59</sup>

Radical policy options could include reducing the working week for all new jobs in the public sector or requiring companies over a certain size to offer employees reduced working weeks. Automation demonstrates how societal trends that are not self-evidently related to sustainability may open up space for radical policy experiments with significant implications for reducing consumption-related impacts.

**BOX 6****Digital Platforms and the Future of Ownership**

Digital platforms are radically reshaping the provision of goods and services—whether venture-capital-driven giants such as Airbnb and Uber, starts-ups and grass-roots initiatives enabling car sharing, or sharing goods at a neighborhood level. Digitally enabled enterprises such as these are often problematically lumped together under the rubric of the sharing economy while pulling in quite different directions. They offer possibilities for increases in the resource intensity of consumption (for example, through increased mobility) and innovations for sustainability. But what they do have in common is changes in the relation between ownership and the provision of goods and services. They share this characteristic with circular economy business models that aim to realize sustainability benefits through leasing arrangements that turn the economics of planned obsolescence on its head.

Another kind of digitally enabled platform is bundling of goods into service packages offering everything from media or grocery deliveries, by the likes of Amazon. Here the reconfiguration is not around ownership but around how traditional consumption domains (for example, media and groceries) are divided up and provisioned. Digital platforms portend huge changes in the provision of goods and services, and require the articulation of the sustainable future of consumption, including how our understanding of behavior, consumption, and social change inform those visions. The business models of profit-driven platforms such as Uber and Airbnb often involve evading and ignoring existing regulations, such as on working conditions or health and safety, with public authorities scrambling to catch up. Public policy must engage more ambitiously with these developments and with societal debate about the kind of future we want from platform technologies. Beyond regulating developments, radical policies could include public investment in nonprofit platforms that respond to socially determined needs.

These choices are shaped by the information to which consumers have access, the range and prices of existing products, and the regulatory framework.<sup>54</sup> Here consumption is framed as the aggregate of consumer choices and rational behavior, reducing the vision of consumption in a future circular economy to purchase and recycling. It thus does not offer the full potential policy interventions and business models that can be envisioned (ruling out the types of opportunities presented in Box 6). How understandings of the future are framed today helps shape the future of tomorrow. It is critical, therefore, that policymakers look beyond restrictive understandings of consumption.

Second, there is a need for bold and radical experiments that embrace an understanding of social change as complex coevolution between technologies and infrastructures, cultural understandings, and conventions, social relations, markets, and governance.

Third, engaging with the novel dynamics and challenges that arise from major societal trends offers opportunities for such experimentation.

**6. Global and Local Opportunities**

Urgent and fundamental action on consumption is critical if the ambitious targets of the Paris Agreement are to have any chance of being realized. While sustainable production and consumption have long been recognized in the rubric of international policy debates, attention has been concentrated on production-side processes, with consumption (and demand reduction) largely presented as a matter of consumer adaptation to efficiency measures and new technologies. This policy analysis brief has demonstrated that a more expansive understanding of consumption is necessary, one that recognizes that consumption is always integrated within production-consumption systems. These systems are always instituted—shaped, reproduced, and shifting in relation to infrastructures, governance structures, economy, and culture—and this means that patterns of consumption vary significantly across nations, urban-rural spaces, and with respect to socioeconomic groups. Consequently, when it comes to sustainable consumption, the complexities of societal change demand reflexive, distributed, and multiscale governance approaches to policy. The trends identified in Boxes 5, 6, and 7 are just a few examples of processes of societal change that are already in motion and that offer major opportunities for such an approach (a number of other examples could have been offered).

The challenge for policy communities, businesses, and civil society is to open dialogue and identify visions for sustainability transitions in production-consumption systems in order to align the interests of multiple agents for consistent and coherent sustainability objectives. As we cannot know outcomes in advance, there is a need for open-policy experimentation, including embracing radical options. It is beyond the scope of this brief to recommend specific policy proposals, but examples of such radical options might include experiments in universal basic income and working-time reduction, personal carbon accounts, the harnessing of public procurement, promoting alternative forms of economic organization and business models (such as B-corporations and product-service systems), and innovative forms of provisioning

institutions such as multistakeholder cooperatives and digital platforms.<sup>55</sup> Recognizing that consumption is instituted at a variety of scales draws attention to institutional possibilities afforded by agencies focused on innovation for sustainable consumption—whether national-level innovation agencies integrating the sustainable-consumption agenda or specifically sustainability-focused agencies that produce evidence and expert guidance and facilitate action from multiple stakeholders.<sup>56</sup> An experimental approach to policy also suggests experimental enterprise zones and clusters and living labs. Where such policy strategies exist they are usually oriented toward sector-specific production and rarely focus on the broader relationships between consumption and production.

The concept of policy integration is an important starting point for transitioning production and consumption systems.<sup>57</sup> Reflexive, distributed, and multiscale approaches demand a degree of direction and consistency across organizational, sectoral, and institutional boundaries. There are two key dimensions. First, when developing policy initiatives, then policy objects, goals, actors, structures, and procedures are all oriented toward, or at least take account of, the implications for wider issues of sustainable consumption in production-consumption systems. Second, integration must operate both horizontally (across sectors) and vertically (for example, from local to national to international governance). The overriding point, however, is that understanding of consumption and production systems needs to be embedded in the policy process so that consumption encompasses more than individual behavior change and adaptation to technology.

Key international analytical reports—such as those of the Intergovernmental Panel on Climate Change (IPCC) or UNEP—have a critical role to play in recognizing the role of sustainable consumption in emission reductions. They need, however, to look beyond an understanding of consumption as patterns of aggregate demand and a matter of individual behavior. This is necessary so the future of consumption is not represented in a restrictive sense as little more than efficient versions of today's patterns of consumption. History shows that patterns of consumption change. Section 5 of this report identifies some of the major societal changes that are in process. The positive message of this policy analysis brief is that these changes also represent opportunities for radical experimentation to reinstitute systems of production and consumption at a scale capable of achieving emissions reductions consistent with the ambitions of the Paris Agreement. This will require organizations such as the IPCC to embrace new approaches.

Openness to radical policy experimentation in turn demands a new evidence base in order to assess such interventions. Currently, we keep asking the same questions about sustainable consumption—in terms of individual behavior change, incentives, and barriers—rather than asking different questions about future systems of production and consumption and identifying and systematically examining the possibilities that arise from them.

Core to these issues is to open debate and dialogue at local, regional, national, and international levels that directly tackle consumption and visions of future ways of life. This is critical because it is inconceivable

## BOX 7

### Dietary Shift

The food trilemma (climate change, food security, and land use) renders the imperatives for dietary change urgent. Food production and consumption are responsible for 20 to 30 percent of GHGs, and elevated levels of CO<sub>2</sub> reduce the nutritional content of grains, tubers, and legumes.<sup>60</sup> Food security—the provision of safe and nutritious foods for all to live a healthy life—represents a further major global challenge, confounded by the paradox that almost three billion people face hunger and malnutrition while affluent societies experience obesity epidemics. This is compounded by population growth.

The availability of land use for agriculture is under severe pressure from urbanization and nonfood biomass products of the bioeconomy (especially bioenergy).<sup>61</sup> Diets need to change, with an increased proportion of plant-based protein or alternative sources (such as insects or lab-based meats) widely regarded as essential.

While such changes appear a radical departure from the format of contemporary diets, it is important to recognize the existing dynamics of the ways in which and what we eat. The content of breakfast and lunchtime meals in the United Kingdom has changed significantly during the past 50 years,<sup>62</sup> while eating out has witnessed considerable growth, whether in the form of fast food, restaurant meals, or the purchasing of takeout food.<sup>63</sup> Food tastes are also dynamic, with cuisines once considered unpalatable such as pink meat and raw foods (sushi) quickly being accepted as good taste. And the rise of culinary culture represents an opportunity for experimentation in the kinds of diets that are not only deemed acceptable but also desirable. Such dynamics open a wide range of opportunities for intervention that range from the promotion of alternative culinary styles such as the New Nordic Diet<sup>64</sup> to national-level sustainable diet agencies to coordinate multistakeholder coalitions to development of kitchenless homes to the reinstitutionalization of lunchtimes to lab-created protein alternatives.

that achieving emissions reductions compatible with the ambitions of the Paris Agreement are possible without explicit and considered recognition of future patterns of consumption. Few would disagree with this statement, but it is restricted to a language of individual behavior and consumer choice policy for fear of infringing on personal liberties. Reframing the debate to recognize the social organization of consumption and production opens up space for constructive dialogue that considers options for future ways of consuming. Recognizing that patterns of consumption are always on the move opens up the opportunity to align key institutional actors so current trajectories of societal change can be harnessed to realize sustainability transitions.

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## Acknowledgments

We would like to thank Maurie Cohen, Syliva Lorek, Gert Spaargaren, Mark Conway, and Rei Tang for comments on drafts of this policy analysis brief and especially thank Walter Fraanje for his assistance in researching policy initiatives and data.

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