

# Transforming Business Models: Towards a Sufficiency-based Circular Economy

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## Abstract

Business model innovation for a circular economy has become core to contemporary sustainability research and practice, but does it go far enough? While circular economy initiatives have closed and narrowed resource loops to some extent, overall consumption continues to rise offsetting much of the benefits. A further paradigm shift is necessary, going beyond existing solutions, towards a broader societal-wide approach to deliver a *sufficiency-based circular economy*. That is, a society where excessive levels of consumption (and production) are curtailed at their root cause to better satisfy the health and wellbeing needs of the individual consumer, broader society and global environment. We present sufficiency examples in the food and clothing sector and explore how such approaches can augment existing circular economy solutions. We present a framework to better understand how industry, society and policymakers might collaborate more effectively in designing and implementing long-term initiatives for moving towards a sufficiency-based circular economy.

Keywords: *sufficiency; circular business model; sustainable business model; circular business; sustainable development; sufficiency economy.*

## <a> Introduction

We live in a world that champions consumerism, innovation and novelty to drive endless economic growth. Life-spans of consumer goods lessen (Bakker et al., 2014; Ellen MacArthur Foundation, 2018) because of, and despite, rapid advances in technologies and capabilities. While companies might contribute to societal benefits few companies question the spur for consumption. At the same time, governments and society encourage growth to create wealth, employment, and generate tax revenues to support public services and infrastructure investments. This focus on economic growth has led to a short-

term perspective with scant regard to the environment and long-term human wellbeing. While there are promising exceptions—for example, Unilever stopping quarterly reporting as part of its long-term sustainability goals (Bhattacharya & Polman, 2017) and Patagonia experimenting with ‘zero growth’ (Chouinard & Stanley, 2013)—more work needs to be done to challenge short-termism.

The ‘circular economy’ has been heralded as a driver for environmental gains through encouraging the slowing, closing and narrowing of resource loops (Bocken et al., 2016; Geissdorfer et al., 2017). The question is whether the circular economy can mitigate resource use and climate change to the extent that is needed (Zink & Geyer, 2017). Scientists highlight the serious consequences of the path modern society has followed: climate change, wildlife and biodiversity losses (IPCC, 2018; Mace et al., 2018), increasing waste streams and extensive plastic waste pollution (Ellen MacArthur Foundation, 2016), inequalities and rising economic migration (Royal Society, 2012), and an obesity epidemic while others remain malnourished (Caballero, 2005). This suggests a need to move from a consumption-orientated society towards a society based, not only on circular economy, but on ‘sufficiency’, or in other words, a transition to a society where we manage with (in some cases much) less. In a sufficiency-based society, everyone has enough for a good life, but without the unnecessary excesses of the modern developed world<sup>1</sup>. Such a transition represents a global mind-set shift towards a focus on health and well-being rather than monetary outcomes; equality and fairness across society and environment; an intergenerational perspective rather than short-termism; and perhaps most importantly, a collective sense of commitment and responsibility. Awareness of the need for change is increasing, but while global challenges are becoming increasingly pressing (IPCC, 2018; Mace et al., 2018), shifting direction is far from easy, and requires change at all levels in society (Kemp et al., 1998). While more conventional approaches to sustainability, such as efficiency and productivity improvements may be largely firm-centric innovations, circular economy and sufficiency initiatives by their nature demand a broader system-level approach, and the participation and cooperation of actors across government, industry and civil society.

This chapter explores the topic of sufficiency and discusses how a multi-actor perspective focusing on the interactions between actors (Fischer & Newig, 2016) might assist in developing and implementing sufficiency-orientated business models. A review of the literature and analysis of positive examples of sufficiency practices already undertaken in the food and clothing sectors is presented, and this is then used to develop and discuss a framework to gain a better understanding of sufficiency transitions. The chapter concludes with discussion of some limitations with the framework at present, and recommendations for future research to progress this field of research.

### **<a> What is sufficiency?**

Sufficiency, in this chapter’s context, refers to the idea of having enough for a healthy meaningful life, but without excess (Alexander, 2012). This is perhaps most easily articulated with respect to food. A ‘sufficient’ diet or food intake is one that provides adequate nutrition for a healthy and active life and minimises the potential for illness and

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<sup>1</sup>Thailand has made ‘sufficiency’ part of its national development plans, See <https://sustainabledevelopment.un.org/memberstates/thailand> and <https://www.bangkokpost.com/news/general/1557462/20-year-national-strategy-comes-into-effect>

diseases. Evidence of exceeding a sufficient diet (i.e., consuming too much) can be seen in the growing percentage of adults who are now overweight or obese (Caballero, 2005), and in the numerous articles now making the link between environmental impact and diet (e.g., Tilman & Clark, 2014). Equally, the effects of under-consumption and malnutrition are clear.

Excessive consumerism is seen across the developed world from food, fast fashion clothing (Ellen MacArthur Foundation, 2018), to overly large cars and homes, and extensive travelling (e.g. IATA, 2017). At the same time, in developing nations, the problems of sufficiency are often reversed where populations suffer from under-consumption and lack of access to basic needs. Despite awareness of the problems, defining, agreeing and achieving sufficiency targets for major impact consumer categories such as food, housing, clothing, transportation, and vacations (Druckman & Jackson, 2010) is far from straightforward. Nonetheless, despite the challenges, a sufficiency approach seems essential in moving towards a sustainable society, and therefore a better understanding of how sufficiency can be integrated and implemented is urgently required.

### **<a> Sufficiency and the Circular Economy**

The circular economy (CE) seeks to enhance resource efficiency and reduce waste through closed loop industrial systems that make use of recycling and reuse to keep resources in play for as long as possible (Bocken et al., 2016; Geissdoerfer et al., 2017). Manufacturers have sought to enhance efficiency and productivity since the earliest days of industrial activity, but CE extended this focus beyond the individual firm or supply-chain to bring a through-life perspective encompassing resource use, manufacturing, consumption and disposal (Tukker, 2015). However, the CE does not automatically lead to a complete solution to the problems of unsustainable consumption. Allwood (2014) observes that closed-loop models cannot always be applied, e.g. some materials such as cement cannot be recycled; while others degrade with recycling, and the economic costs and energy demand of collection and recycling may outweigh the benefits. Moreover, in a world of growing populations, rising living standards and increasing consumer expectations, the demand for virgin materials outstrips availability of recyclable materials (Allwood, 2014).

The CE literature has expanded exponentially over the past decade to now embrace a wide range of sustainability initiatives (Geissdoerfer et al., 2017). Closed-loop recycling-based business models are increasingly augmented with design for longevity, repair and reuse, product service systems, and shared economy initiatives that seek to optimise use of existing resources and assets (Tukker, 2015). Some of these CE initiatives, depending on application, can already be considered good sufficiency initiatives - enabling consumers and society to make do with less.

The literature suggests a series of paradigm shifts in industrial sustainability from initial lean manufacturing, efficiency and productivity in the 1980s, through clean and green production in the late 1990s, to today's closed-loop circular economy initiatives (see e.g. Blomsma & Brennan, 2017). Beyond CE, we propose the new paradigm of *sufficiency* is now emerging and gaining relevance as shown in Figure 1. Each paradigm builds on its predecessors to deliver more comprehensive and stronger sustainability outcomes, driven

in part by economic considerations, and increasingly by environmental and social considerations.

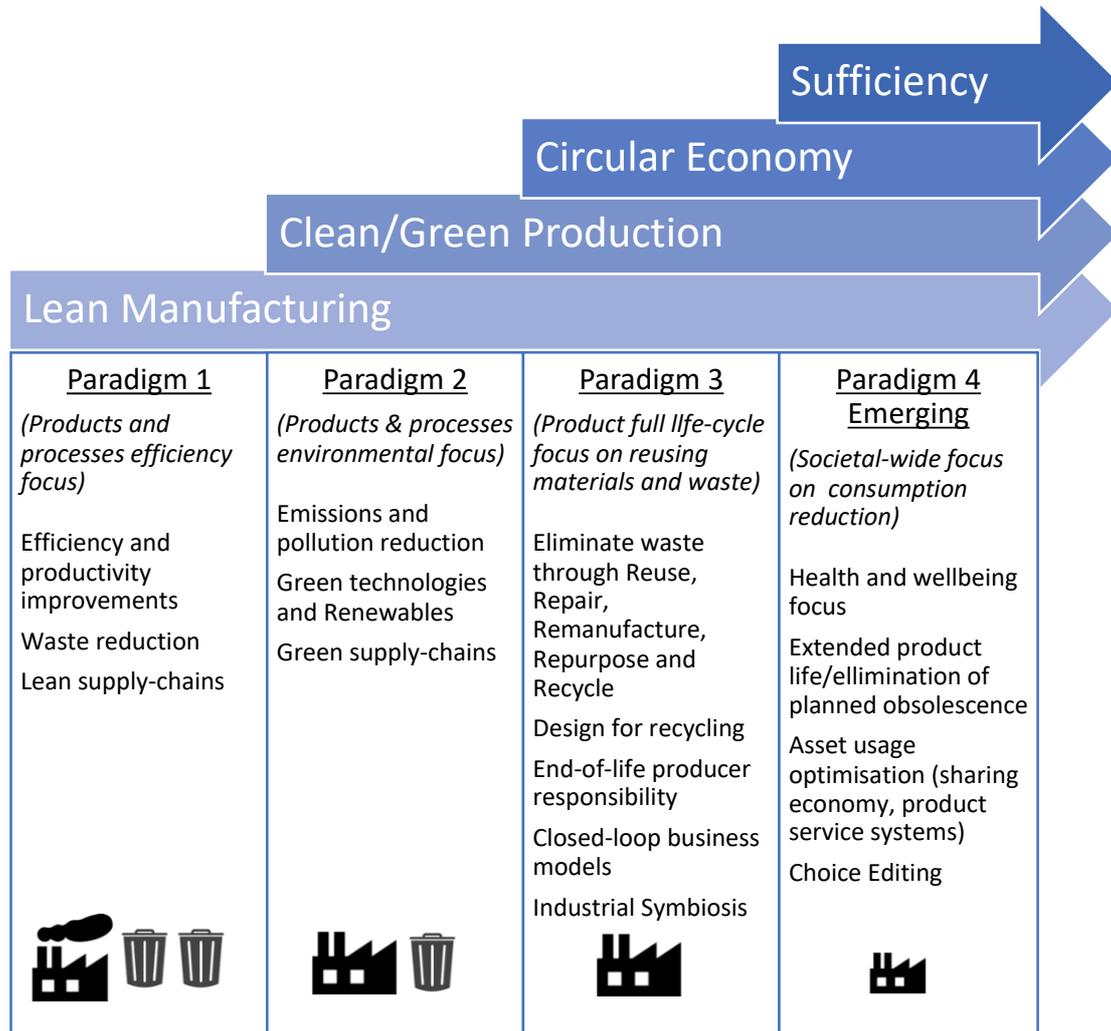


Figure 1. Paradigm Progression in Industrial Sustainability

All four paradigms involve some degree of sufficiency, such as using less materials and less labour and reusing waste materials. However, while the earlier paradigms could be characterized as “*Making and doing more with less*”, the sufficiency paradigm offers a very different approach seeking to “*Make do with less*”. Using disposable plastic packaging as an example to illustrate the difference in approach, a CE approach might ask: “*How can the waste stream of plastic packaging be recycled or reused to reduce demand for new material and reduce waste to landfill and plastic environmental pollution?*”. In contrast, the sufficiency-orientated approach would ask: “*How can we reduce (and ultimately eliminate) the need and demand for disposable plastic packaging altogether?*”.

This distinction is important because, although the earlier paradigms have delivered important benefits, they often lead to rebound effects that negate the sustainability benefits they offer (Zink & Geyer, 2017). For example, efficiency improvements have enabled increasingly cheaper production and products, which has vastly increased supply, accessibility and demand. Moreover, the focus on recycling may move attention away from more impactful issues, such as reducing the total number of products bought, living

car free and not flying, limiting meat intake, and even having fewer children (Wynes & Nicholas, 2017; Stern & Wolske, 2017).

The sufficiency paradigm goes further, seeking to offer a much broader societal-wide approach to reduce absolute consumption per person and by society. This approach builds on the earlier paradigms, but focuses on how to reduce consumption (and production) and encourage societal behavioural changes to deliver the needed transition. Rather than relying primarily on technology, product and process innovations, the sufficiency paradigm will require greater policy interventions, education, civil society actions, and new business models to reshape industry and society to tackle the root causes of unsustainability.

### **<a> A broader perspective on Sufficiency**

Business model innovation has received significant attention as a possible pathway to enhanced sustainability outcomes. Sustainable Business Models (SBMs) are prevalent in sustainability literature, and tools such as the business model canvas (Osterwalder & Pigneur, 2010) are widely used by practitioners in designing new business models. Some firms have designed and implemented business models (BMs) to drive a sufficiency initiative (Wells, 2018). However, importantly, the BM concept lacks a broader systems and transitions perspective: while transitions researchers may gain from understanding BMs as inertia or enablers in sustainability transitions, business model researchers may benefit from understanding the different actors and levels of change needed to scale up (Sarasini & Linder, 2018). BMs are largely the remit of firms and their investors, but transitions research suggests that societal transitions involve a much broader range of stakeholders such as governments, academia, civil society, and consumers, and the interactions between these groups to assist in designing and implementing the needed innovations to deliver a paradigm shift (e.g., Kemp et al., 1998). Industry may play a key part in formulating a transition plan (e.g. shaping Agenda 2030 and the Sustainable Development Goals; Scheyvens et al., 2016). However, the transition may equally be initiated elsewhere by other stakeholders. The interaction between business and other actors may become a catalyst for industrial change, new technologies and innovative new BMs. The transitions literature is conceptually diverse, but has discussed the role of different actors (e.g. Fischer & Newig, 2016) in a CE context (Kirchherr et al., 2017; Ghisselini et al., 2016).

### **<a> Method**

To build a comprehensive view of sufficiency initiatives a series of examples are assessed to understand the types of relationships and interactions between actors, and the conditions enabling transitions towards sufficiency. In this chapter we use a categorization of three simple clusters of actors for our analysis of the implementation and scaling of these sufficiency initiatives: (i) government – policymakers; (ii) market – firms and entrepreneurs; and (iii) civil society – the public, activists, etc (as described in Fischer & Newig, 2016).

The food and clothing industry are analysed from a range of resources including press articles and personal experience. The food industry was selected for this initial work as sufficiency is conceptually easy to grasp, because the negative effects of under and over-consumption are readily apparent. Moreover, food supply is arguably the most pressing area of concern for humanity, and consequently sufficiency interventions are already

reasonably prevalent. Pressures for sufficiency in other sectors are different and hence drivers for change and mechanisms for achieving a transition may also be different. The addition of the clothing industry seeks to offer balance to the analysis, and is selected because it is seen as one of the most polluting industries with often exploitive supply-chains, and, it has experienced unprecedented growth in sales coupled with significantly reduced wears per item before being disposed (Ellen MacArthur Foundation, 2016). This has led to various industry and individual initiatives that could contribute to greater levels of sufficiency. These examples are used to develop a conceptual framework. Through brainstorming and consideration of other industry sectors the language for the framework is generalised to ensure broader relevance to all sectors rather than being food and clothing industry specific.

## <a> Results

Table 1 presents a range of sufficiency initiatives identified in the food sector, and Table 2 presents initiatives in the clothing sector. The examples have been selected to illustrate the range and scope of approaches to sufficiency. The tables identify the primary actors involved in initiating the innovation, categorized by Government, Market, and Civil Society. Interactions between actors are identified, along with the sufficiency outcomes, and BM implications. Examples where the business model builds upon a CE approach to deliver sufficiency are highlighted with (CE).

### <b> Sufficiency in the food industry

**Table 1. Examples of sufficiency initiatives in the food sector.**

(Note. BM refers to the business model, CE indicates a Circular Economy approach)

Example	Actors	Interactions	Sufficiency Outcomes	BM and Implication for Industry
'Loop' initiative by Terracycle <sup>2</sup> aimed at large scale change towards reusable packaging	<b>Market</b> – Terracycle engaging other actors	Reusable food container initiative – Terracycle involving manufacturers and retailers and engaging consumers	Reducing the packaging footprint by reusing and reducing the need for single use packaging	New business opportunities and engagement with sustainability issues (CE)
Reusable containers for buying loose food products and 'plastic free aisles' <sup>3</sup>	<b>Civil Society and Market</b> - Grassroots movement and small retail entrepreneurs	Engaging consumers and changing their behaviours towards single-use food packaging	An alternative to the packaged products offered by most of the food industry and grocery chains	Alternative value proposition, based on environmental benefits and reduced waste (CE)
War on waste	<b>Market</b> - Media	Citizens and value chains	Reducing waste in value chains <sup>3</sup>	Overall sufficiency in value chains (CE)

<sup>2</sup> Company Terracycle launching reuse initiative for packaging. See: <https://www.terracycle.com/en-US/pages/closed-loop-solutions>

<sup>3</sup> Australian example on War on Waste episode on disposable cups: Sales of reusable coffee cups are up 78% - cafes are offering discounted coffee if you bring your own "keep cup". <https://www.theguardian.com/tv-and-radio/2017/dec/03/war-on-waste-new-episode-peels-away-at-food-extravagance>

<b>Example</b>	<b>Actors</b>	<b>Interactions</b>	<b>Sufficiency Outcomes</b>	<b>BM and Implication for Industry</b>
Supermarkets selling or using up 'ugly' vegetables for soups or discounting	<b>Market</b> - Supermarket in France <sup>4</sup> , followed by other examples globally	Supermarkets, citizens and media	Reducing waste in retail and consumer phases	Generating value from former 'waste' (CE)
Donation of unsold food to foodbanks	<b>Civil society</b> groups targeting social inequalities	Pressure on retailers and hospitality in collaboration with charities	Addressing excessive food waste, while also helping the poor	Image benefits for retailers. Reduced disposal costs. (CE)
Revised food labelling guidelines	<b>Civil society</b> - consumer action groups targeting health and waste	Pressure on Industry and policymakers to implement new standards	Consumers make more informed decisions about food purchase and disposal	Opportunities for new product differentiation based on nutrition, waste reduction (CE)
"5 fruit and veg per day" campaign	<b>Government</b> - intervention based on WHO report	Promotion through media, education, and healthcare	Positive and long-lasting impact on eating habits	New business opportunities created by shift in demand
Sugar tax on soft drinks	<b>Government</b> - health chief, government intervention over obesity costs	Taxation strongly resisted by industry and consumers	Reformulated drinks, not clear if consumption of sugar reduced yet	New opportunity for lower sugar content drinks
Advertising restrictions targeting children	<b>Government</b> - policy, Healthcare profession	Restrictions on media and industry on advertising to children	Advertising is a powerful tool driving over-consumption	Pressure to change product offerings or diversify
Altering the corporate business model for society <sup>5</sup> like Ben & Jerry's climate justice campaigns <sup>6</sup>	<b>Market</b> - Business community offering alternative approach	Regions + countries adopting benefit corporation; companies following example	Companies repurposing for the society and environment	Organisational model change (e.g. benefit corporation)
Slow food	<b>Civil society</b>	Promoting better quality, local food and quality over quantity	Reduced food consumption and better, more local consumption	Local value chains; organic food boxes, slow food branded produce
Specialty, premium foods	<b>Market</b> - Business, like Union coffee, moving away from commodities	Direct, close, long-term connection with suppliers, offering quality	Better quality, moving away from commoditising food	Premium pricing model, which trickles down to value chain <sup>7</sup>
Health foods	<b>Market</b> - Industry response to changing societal attitudes to health/fitness	Promoted to consumers through ads and celebrity endorsements	Encouraging and providing healthier product offerings	Enhanced value through new and premium offerings

<sup>4</sup> See e.g.: [https://www.huffingtonpost.ca/2014/07/18/inglorious-fruits-and-veg\\_n\\_5598994.html](https://www.huffingtonpost.ca/2014/07/18/inglorious-fruits-and-veg_n_5598994.html)

<sup>5</sup> Benefit corporations; companies like Patagonia and Ben & Jerry's restructuring as benefit corporations

<sup>6</sup> See: <https://bcorporation.net/directory/ben-and-jerrys>

<sup>7</sup> Union coffee example: [https://www.unionroasted.com/union\\_direct\\_trade.html](https://www.unionroasted.com/union_direct_trade.html)

'The farmer receives a fair, sustainable price. Always above minimum Fairtrade price, in 2017 on average over 50 per cent above'

<b>Example</b>	<b>Actors</b>	<b>Interactions</b>	<b>Sufficiency Outcomes</b>	<b>BM and Implication for Industry</b>
Fairtrade to tackle supply-chain exploitation	<b>Civil society</b> entrepreneurs	Fairtrade organisation works with industry and consumers	Consumer premium to enhance supply-chain sufficiency	Supply-chain innovation. Product differentiation. Social enterprise
Reduced chocolate bar sizes	<b>Market</b> - Industry driven by economic pressures	Changes introduced by stealth to consumers	Consumer health benefits and resources go further	Innovation in the product offering to remain competitive
Choice Editing	<b>Market</b> - Retailers shifting attitudes to corporate responsibility	Eliminating products that are particularly poor quality or inherently unsustainable from stores	Consumers forced to forego poor products, and suppliers forced to improve	BM changes to the product mix and suppliers
School Meals and Nutrition Education	<b>Market</b> - Celebrity chef campaign against child obesity	Interaction with policymakers to influence education policy	Encourage youth to understand healthy living and sufficiency	New business opportunities in education and catering sectors
Master-chef TV	<b>Market</b> -Media content providers	Media influence on society promoting cooking	Encourages population to think about nutrition	New business opportunities for media creators and retailers
Organic Foods	<b>Civil Society</b> - Grassroots movement against industrial farming	Evolving from local farmers markets to grocery chains organic labelling	Consumer health benefits. Local economy and transport benefits	New market segment opportunity, maybe offering premium pricing
Changes to in-store product placement (e.g. healthy products, vegetarian options)	<b>Civil Society</b> - Consumer action groups	Government nudge policies. Voluntarily undertaken by supermarkets	Reducing impulse purchases of unhealthy products	Changes in promotional strategies

**<b> Sufficiency in the clothing industry**

**Table 2. Examples of sufficiency initiatives in the clothing sector**

(Note. BM refers to the business model, CE indicates a Circular Economy approach)

<b>Example</b>	<b>Actors</b>	<b>Interactions</b>	<b>Sufficiency Outcomes</b>	<b>BM and Implication for Industry</b>
Clothing collection schemes initiated by business	<b>Market</b> - Businesses like M&S with Oxfam and H&M (own scheme) collecting clothes for reuse and recycling	Pressure on other business to start similar initiatives, and customer awareness	Consumers make more informed decisions about clothing disposal, can buy niche collections from recycled material or buy second hand	Take back, support charity, collections based on collected garments (CE)
Second hand in branded stores (e.g. Patagonia, Fillipa K)	<b>Market</b> - Branded clothing (often premium)	Pressure on other business, generating consumer awareness	Recognizing the value of clothes, appreciating second hand	Multiple value streams from same garment (CE)

Example	Actors	Interactions	Sufficiency Outcomes	BM and Implication for Industry
	in collaboration with consumers			
Clothing collection schemes	<b>Civil society</b> - NGOs and municipalities concerned about waste	Municipal pressure to reduce waste to landfill	Consumers make more informed decisions about clothing disposal	Recognizing residual value of used clothes ( <b>CE</b> )
Make, Not Buy	<b>Civil society</b> - Greenpeace with business around Black Friday	Climate NGOs interacting with business and other NGOs	Encouraging consumers not to buy	Business models gaining revenue in different ways <sup>8</sup> ( <b>CE</b> )
Business promoting product longevity and 'Buy better, buy less' <sup>9</sup>	<b>Market</b> - business targeting waste reduction, counteracting fast fashion <sup>10</sup>	Pressure on other businesses, generating consumer awareness	Encouraging consumers to purchase more responsibly	Value proposition focused on quality over quantity, often with premium pricing ( <b>CE</b> )
Business offering long-life warranties, on products like socks, backpacks and outdoor gear <sup>11</sup>	<b>Market</b> - Business promoting quality over quantity	Unique proposition that may be followed by others	Encouraging and supporting consumers to make products last	Value proposition focused on quality over quantity, offer of repair services ( <b>CE</b> )
Second hand markets (flea markets, eBay, vintage)	<b>Market</b> - Market makers seeing value in second (3 <sup>rd</sup> , 4 <sup>th</sup> etc) life goods	Alternative to fast fashion model; value of vintage	Encouraging and supporting consumers to make products last	Market-makers like eBay, Thred-up and Rentez-Vous <sup>12</sup> ( <b>CE</b> )
Individual initiatives to boycott, or not buy	<b>Civil society</b> - Individuals with environmental concern <sup>13</sup>	Supported by NGOs, wider society	Individuals influencing others to forego consumption and choose products for longevity and timelessness	Selling classic 'capsule wardrobe' - a collection of only a few items of essential clothing items that don't go out of fashion <sup>14</sup> ( <b>CE</b> )
Warm Sweater Day <sup>15</sup> - Global initiative to campaign for action against climate change <sup>16</sup>	<b>Civil society</b> – engaging individuals and the market	Companies and universities engaging with the initiative	Saving energy and promoting climate change awareness	Companies linking up with the sweater initiative

<sup>8</sup> e.g. MUD Jeans 'lease a jeans', and take-back and discount system; companies charging premium

<sup>9</sup> Birkenstock proud to show 2003 Birkenstock slippers in advert, MUD Jeans Slow living campaign, Ecoalf boycotting Black Friday to promote recycling and repairs

<sup>10</sup> See E.g. Wrangler's messaging on Buy better, buy less: [https://www.theguardian.com/fashion/2019/jun/05/wranglers-new-denim-process-eliminates-water-waste-dye?CMP=share\\_btn\\_link](https://www.theguardian.com/fashion/2019/jun/05/wranglers-new-denim-process-eliminates-water-waste-dye?CMP=share_btn_link)

<sup>11</sup> See e.g.: <https://www.thepennyhoarder.com/deals/companies-with-lifetime-warranties/>

<sup>12</sup> Latter two being clothing specific

<sup>13</sup> Example of an individual blog: <https://www.greenpeace.org/international/story/6918/could-you-go-a-year-without-buying-new-clothes/>

<sup>14</sup> See e.g.: <http://lifeofavegetariangirl.blogspot.com/2012/02/capsule-wardrobe.html>

<sup>15</sup> See e.g. <https://nltimes.nl/2018/02/02/turn-heat-netherlands-warm-sweater-day>

<sup>16</sup> See e.g. <http://www.erikaknight.co.uk/warm-sweater-day-warme-truien-dag/>

<b>Example</b>	<b>Actors</b>	<b>Interactions</b>	<b>Sufficiency Outcomes</b>	<b>BM and Implication for Industry</b>
Reframing the corporate vision, priorities and business model for environment and society <sup>17</sup>	<b>Market</b> - Business community led offering alternative approach	Regions and countries adopting B-Corp model; Companies following example	Societal and environmental benefits. (e.g. Patagonia's B-corp status allowing donation of time, services and at least 1% of clothing sales revenues to environmental groups <sup>18</sup> ).	Organisational model change (e.g. benefit corporation)
Honesty and transparency, Puma Environmental P&L	<b>Market</b> - Business seeking to identify the true impact of business	Creating industry, government and consumer awareness, driving best practice and new standards	Creating awareness of true impact of consumerism	Transparency-driven business models
Personal Carbon Trading initiatives <sup>19</sup> . While mainly applied to household energy use and travel, it could work for purchasing goods like clothing too.	<b>Civil society</b> – Communities and individuals with environmental concern <sup>20</sup>	Citizens, business and local government	Environmental awareness and overall, mitigated impact	Local solutions e.g. for mobility and enabling local carbon trading

## <a> Discussion

### <b> Proposed framework

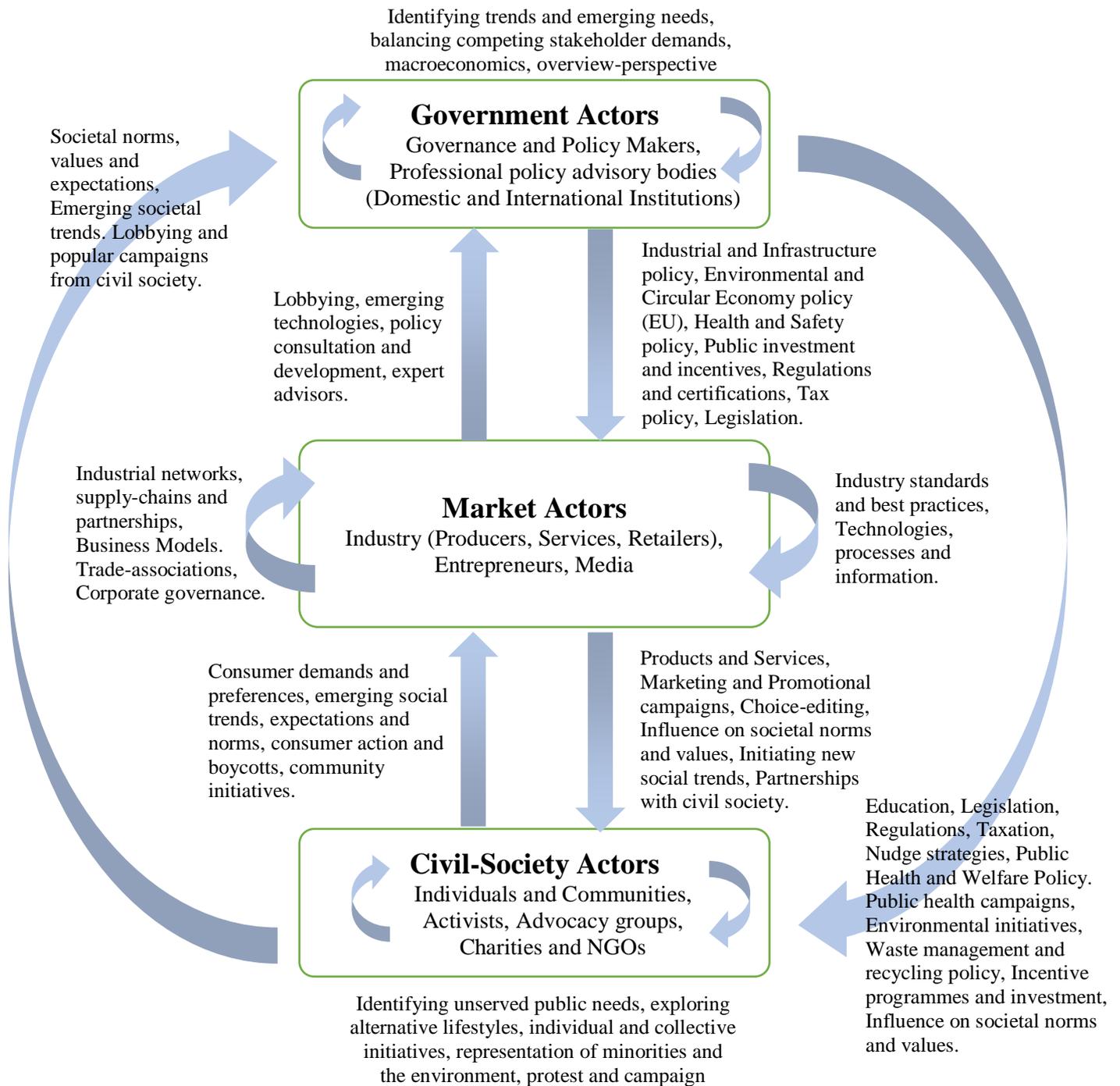
Based on the examples in the food and clothing sectors, and applying the three clusters of actors, Figure 3 presents a comprehensive framework for understanding sufficiency governance and interventions. The framework illustrates the interactions between the three groups of actors – Government, Market, and Civil-society, using arrows to represents the direction of flow of influence or intervention. From the sufficiency examples examined, there are also interactions between the actors within each cluster of the framework, and these are represented by loops at each level.

<sup>17</sup> Companies like Ninety-percent donating most profits to good causes

<sup>18</sup> See: <https://bcorporation.net/directory/patagonia-inc>

<sup>19</sup> See: Fawcett, T., and Y. Parag. 'An Introduction to Personal Carbon Trading'. *Climate Policy* 10, no. 4 (2010): 329–338. <http://www.tandfonline.com/doi/pdf/10.3763/cpol.2010.0649>

<sup>20</sup> For example, Finnish towns adopting Personal Carbon Trading initiatives, see: <https://www.smartlahti.fi/citicap/>  
<https://www.uia-initiative.eu/en/uia-cities/lahti>



External factors influence all levels and all actors to varying degrees, e.g.:

- Environmental pressure (e.g. Climate, biodiversity loss, pollution, waste, resource constraint).
- Economic constraints (access to investment funds, supply-chain costs, profitability, etc.)
- Multilateral global governance policies (e.g. WHO, EU, UN, IMF, WTO, Climate accords)

**Figure 2. Framework for sufficiency governance and interventions**

The framework offers a structure for better understanding how to go beyond the business model concept and influence and change the landscape within which businesses operate to facilitate sufficiency-orientated BMs. The framework is envisaged to serve two main purposes:

1. Mapping, analysing and understanding existing or historical sufficiency initiatives in any industry sector. Users of the framework would identify the initiation point(s) and then use the framework as a template for exploring the evolution of sufficiency initiatives.
2. Design and implementation of new sufficiency initiatives. The framework provides a structure to consider and experiment with alternative sufficiency options. It is recommended to undertake a structured approach, exploring opportunities with each actor at each level, in an iterative process of exploration.

### **<b> Designing the BM and creating the business case**

As the examples presented in this chapter show, there are numerous opportunities for sufficiency initiatives, albeit mostly niche applications at present and generally rather small incremental steps to-date. Expanding on previous work by Bocken & Short (2016) and Bocken (2018), a number of dominant and viable business models for sufficiency emerge from these examples. These include: Promoting quality over quantity (e.g. using premium pricing to cover durability, life extension, repair); Focusing on service delivery, not product sales (e.g. pay per use); Giving products a 2nd (and 3rd, 4th etc..) life; Lower cost frugal innovations (simple solutions focused on low tech, low resource use); and, Offering alternative forms of consumption (and making the sustainable alternative more appealing).

Sufficiency initiatives can sometimes be successfully initiated and driven directly by industry (by market actors). This is perhaps not entirely intuitive as sufficiency seems to imply selling less and de-growth (Wells, 2018); however, as illustrated, success is possible where firms and entrepreneurs are able to identify new and profitable business opportunities that capitalise on emerging societal trends, innovations, or changes in the regulatory environment (e.g. Bocken & Short, 2016). Where a sufficiency initiative creates a competitive advantage, it will displace existing firms and products which is where the de-growth will occur.

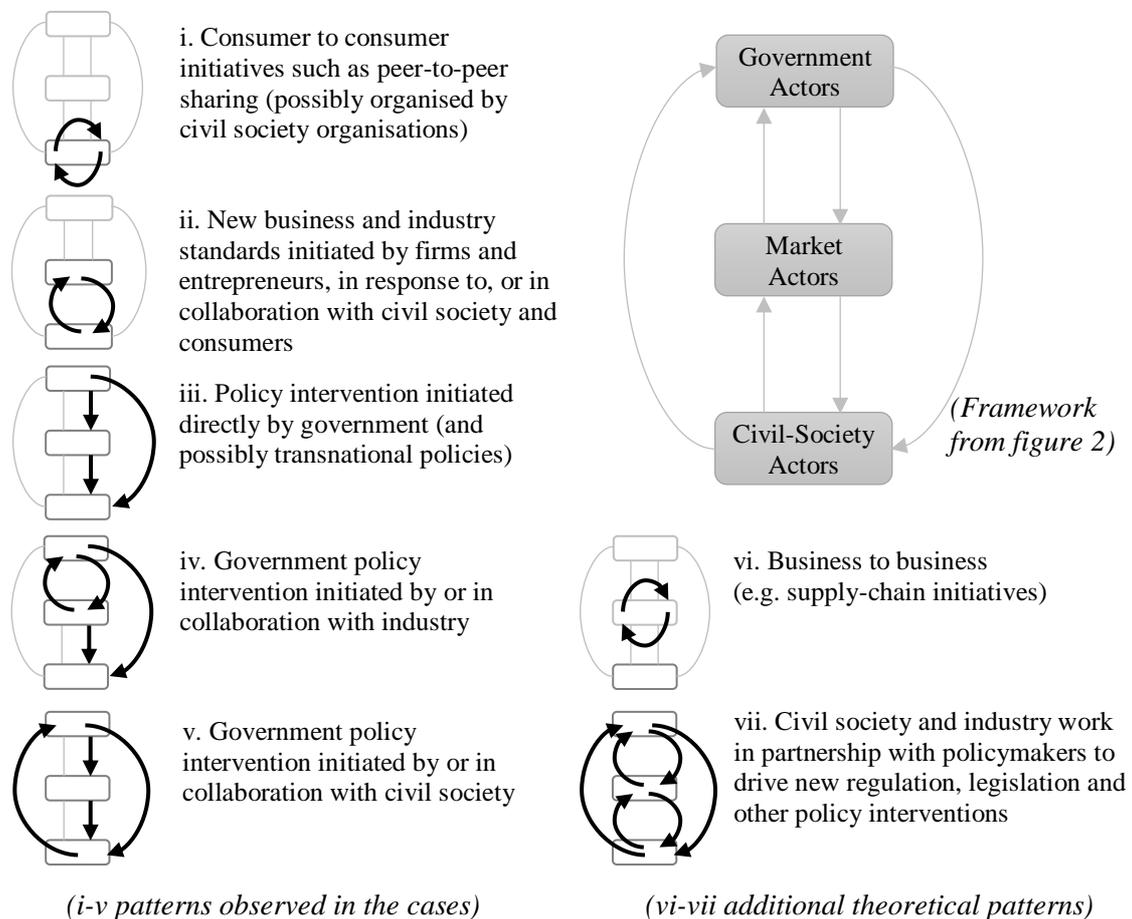
Where the immediate business case is weak or negative, industry and investors may be unwilling or unable to lead. In these instances, sufficiency requires going beyond the business model, to enabling (or forcing) industry and consumers to adopt a different path, for instance through incentives and regulation which make it attractive to do so. Such initiatives may be driven bottom-up by grass-roots activists, or philanthropic investors, or top-down by government policy interventions. Media providers can also be powerful initiators of social change and social media now enables trends and societal norms to evolve from all parts of society and spread at unprecedented rates.

Many of the sufficiency examples analysed in this chapter, particularly in the clothing sector, build upon current CE related business models, and so, some may argue that these are simply part of the CE paradigm. However, analysis suggests that sufficiency-orientated initiatives are distinct, characterised by a difference in the underpinning philosophy and objectives. Although some CE initiatives may deliver sufficiency outcomes, most initiatives need to be specifically conceived and designed to do so, and even seemingly compelling CE examples may ultimately undermine sufficiency through failing to tackle the root causes of the problems, through rebound, or other unintended or unforeseen system-level effects (Zink & Geyer, 2017). Equally, as demonstrated in the food sector examples, a CE approach is not always necessary at all to deliver sufficiency

outcomes. As such, sufficiency offers an important augmentation to CE but it is also observed to be a distinct paradigm in itself.

**<b> Implementation patterns**

In the presented cases five implementation patterns recur (Figure 3). The examples in the clothing sector are predominantly represented by (i) grass-roots or civil-society initiatives that involve neither the market nor government policymakers, such as peer-to-peer clothing sharing; and (ii) market initiatives driving or responding directly to consumer needs (e.g. where a business case can be made without policy intervention). Although pattern (i) is not so evident in our food sector examples, initiatives such as organic and local produce started out as peer-to-peer relationships until market actors recognised the scale up opportunity. Pattern (ii) is also seen in the food sector. However, in contrast to the clothing sector, the food sector initiatives are predominantly represented by Figure 3 (iii) illustrating policy interventions driven by government, or more frequently (v) where policy is formed in response to pressure from, or in collaboration with civil society actors.



**Figure 3. Interaction loops observed in the sufficiency examples**

The difference between the approaches in the food and clothing sectors is quite pronounced within the presented examples. In part this may be an artefact of the selection of cases, but it seems reasonable to suppose that there is a real difference reflecting different dynamics in each of the sectors. In the food sector health and wellbeing are the primary considerations and the rapidly rising state costs associated with healthcare

provision have shone a spotlight on the effects of dysfunctional consumption. Consequently, regulation and other policy interventions are more pressing and more readily accepted. In contrast, the clothing sector does not create the same health and wellbeing issues in the developed world (albeit there are significant issues in overseas supply-chains), and this may explain why policy intervention has to-date been limited.

Based on these observations we can hypothesize that there is a timeframe dimension to be considered along with the maturity and urgency of sufficiency initiatives in the sector that determine the appropriate approach. To give a couple of examples:

1. A transition from (i) grass-roots initiative, to (ii), entrepreneurial activity, and then perhaps to (iv) as industry works with policymakers to redefine regulations to give preferential treatment for their emerging business models, and from there back to (ii) where industry takes the lead in broader scale-up.
2. Or, local-level community initiative (i), until a critical mass is reached and pushes policymakers to act to expand the initiative to a national level through policy intervention to create a functioning marketplace (v), and from there industry can then engage with consumers directly (ii).

Reviewing the interaction patterns, it is apparent that additional patterns are possible. The most feasible of these are added as (vi), representing a business to business loop purely within the market actors – such as a supply-chain sufficiency initiative. Option (vii) represents all three levels, civil society and market actors working collaboratively in partnership with government policymakers to drive system change.

## **<a> Conclusions**

In this chapter we have introduced the subject of ‘sufficiency’ in the circular economy and argue that sufficiency needs to become front and centre in future sustainability initiatives. Climate change, resource constraints, and social pressure are anticipated to push society, industry and governments progressively in this direction, and we propose that sufficiency potentially represents the next major paradigm in industrial sustainability. There are significant challenges in implementing sufficiency-orientated solutions at scale, not least push-back from industrial and other vested interests, policy resistance of consumers, and the fiscal and political ramifications of slowing or shifting current consumption-based economies. However, there are positive examples, and we have presented an analysis of successful sufficiency initiatives in the food and clothing sectors to explore the dynamics, the actors and the interactions to understand how such initiatives are instigated and propagated. A multi-actor perspective from transitions literature is used and based on this a framework was proposed. The framework provides insights into the complexities of implementing the sufficiency paradigm, and the need for a more comprehensive system-level perspective than earlier industrial paradigms required.

This work is preliminary, based on just two sectors. Future work is needed to expand this research to explore and refine the applicability to a broader range of sectors. In addition, practical application of the framework for developing new sufficiency initiatives will be aided through the building of a comprehensive catalogue of BMs, actions and mechanisms for change based on historical cases. A potential barrier to sufficiency is the difficulty in definition and agreement of sufficiency targets. Future research is

recommended to explore the needed sufficiency levels in greater depth. The framework and the suggested catalogue of examples can support practitioners, policy makers, and civil society organisations in designing and implementing future sufficiency initiatives.

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