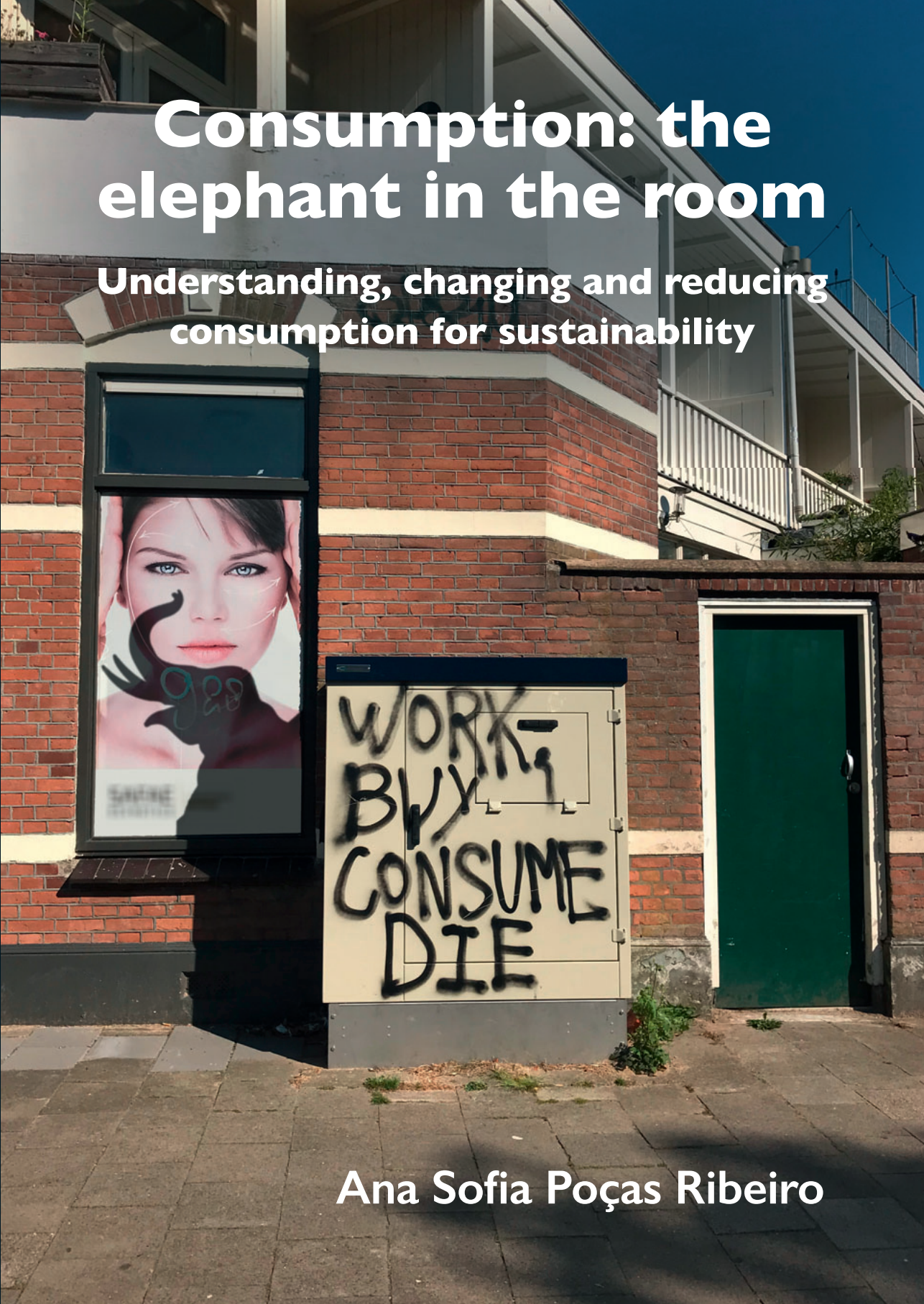
Consumption: the elephant in the room

Understanding, changing and reducing consumption for sustainability



Ana Sofia Poças Ribeiro

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Consumption: the elephant in the room

Understanding, changing, and reducing consumption for sustainability

Consumptie: de olifant in de kamer
Het begrijpen, veranderen en verminderen van consumptie ten behoeve van verduurzaming
(met een samenvatting in het Nederlands)

Proefschrift

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To my sweet grandmother Ritinha and my dear grandfather Gervásio

“People are dying. Ecosystems are collapsing. We are in the beginning of a mass extinction. And all you can talk about is money and fairy-tales of eternal economic growth. How dare you!”

Greta Thunberg, climate activist (cited by Zraick, 2019 in the New York Times)

“Climate activists are sometimes depicted as dangerous radicals. But the true dangerous radicals are the countries that are increasing the production of fossil fuels.”

António Guterres, United Nations Secretary-General on the 2022 IPPC report

“People don't need enormous cars; they need admiration and respect. They don't need a constant stream of new clothes; they need to feel that others consider them to be attractive, and they need excitement and variety and beauty. People don't need electronic entertainment; they need something interesting to occupy their minds and emotions. And so forth. Trying to fill real but non-material needs for identity, community, self-esteem, challenge, love, joy-with material things is to set up an unquenchable appetite for false solutions to never-satisfied longings. A society that allows itself to admit and articulate its non-material human needs, and to find non-material ways to satisfy them, would require much lower material and energy throughputs and would provide much higher levels of human fulfilment.”

Donella Meadows, The Limits to Growth, The 30-Year Update

Contents

Summary

In 2022, the effects of the climate crisis were felt all around the world. Despite long-standing scientists' warnings about the effect of rising GHG emissions, emissions have more than doubled since 1990, the year of the first IPCC report. In the past, strategies for mitigation of emissions have mostly focused on technological solutions for changing supply sources, or improving energy efficiency. There was and still is limited attention among researchers and policy-makers for demand-side approaches recognizing the relations between the environmental crises, energy and resource use, production-consumption systems, and dependency on economic-growth. In this thesis we address the following main research question: **"How to change and reduce consumption for sustainability?"** Each chapter focused on a different sub-research question.

As a first step we asked ourselves **"What influences consumption?"**. Discourses around consumption tend to focus on "consumers" and on personal motives such as "greed" and "status". We take the stance that consumption is a complex phenomenon that cannot be fully explained by individual disciplines. Hence, we conducted a literature review drawing on 10 different disciplines. Explanations for consumption differ according to the themes explored by each discipline: e.g., the purposes fulfilled by consumption, consumer behaviour and decision-making, agents and contexts influencing consumption, and the historical growth in consumption. Considering all the disciplinary perspectives and these different themes, we propose a conceptual framework for what influences consumption, composed by three levels. At the micro-level consumption is influenced by consumer characteristics (e.g. age, income, personality, values, etc.), contexts (social, cultural), products' characteristics (its price, the place where it is sold, and the way it is promoted), and the purposes of consumption that are at play. Consumption fulfills a wide diversity of purposes: individual preservation and survival, individual aspirations and satisfaction (e.g., searching for novelty), social purposes of care, maintaining relationships, expressing identity and status, practical purposes, as engaging in specific practices (e.g., cooking, writing, camping), and political purposes (e.g., boycotting a certain brand or country of origin). At a meso level we consider the direct context of consumption, e.g. supermarket, online shop. Lastly, at a macro level, consumption is influenced by societal contexts (demographic, cultural, spatial/infrastructural/geographic, technological, political, economic) and agents (e.g. governments, businesses, citizens, trade organisations, etc.). Historical perspectives on the evolution of consumption show the interrelations between the various levels and elements of the framework, particularly between agents and contexts.

Exploring the complexity of what influences consumption is a precondition for addressing the next question we addressed: **"How to reduce consumption?"**. It has become common to read in opinion pieces and media articles that we need to "consume less", or to "stop buying".

Indeed, the need for a reduction in the levels of consumption is acknowledged in literature on sustainable consumption and degrowth. But little is known about the actual ways through which people reduce their consumption. By interviewing and surveying people who try to consume less, and more sustainably, we propose a new framework for reducing consumption. A reduction of consumption is achieved by abstaining from consumption (e.g., refusing, reusing), by consuming differently (e.g., second-hand, good quality/durable, replacing disposables, etc.), by engaging in what we termed "low-consumption practices" (e.g., being organised, sharing, extending lifetime, repairing, self-provision), and by facilitating or hindering contexts (social, cultural, geographic, infrastructure/institutional, economic). Results also showed that reducing consumption is highly limited by the pervasiveness of unsustainable provisioning systems. To reduce consumption it is necessary to go beyond the discourse of individual consumer responsibility, and investigate what kind of collective efforts, by diverse actors, could contribute to transform the structures supporting high-consumption and how to spread low-consumption practices. Understanding how production-consumption systems are altered by the influence of diverse actors and contexts is a key step towards expanding our view of how that change can come about.

So, the next question we looked at was "**How to change production-consumption systems for sustainability?"** We explored this question by looking at the theme of food, where a lot of attempts are being made to create alternative food systems. We focused on Alternative Food Networks (AFNs). These are initiatives that connect producers and consumers for access to healthier, more sustainable food, often including also fairer incomes for farmers. Plenty of research has studied AFNs, but few have focused on organisers, investigated the facilitating and constraining factors AFNs experience, categorised different types of AFNs , as well as the role of different cultures/countries. In this chapter, we draw on the expertise of organisers of seventeen AFNs, to investigate the conditions and actors that hinder and promote the development of different types of AFNs in Poland, Portugal, and the Netherlands. We categorise AFNs into six types along the criteria public/private, for-profit/non-profit, informal/formal, (business-led, consumer-led, third sector-led, public-led, Community Supported Agriculture, and farmer-led), which shows a diversity of models for short food chains. Facilitating conditions were aspects such as a base of established relationships (particularly for non-profit AFNs), crowdfunding, and some subsidies. Challenges differed per AFN type, with several of the for-profit initiatives missing more consumer demand, while for third-sector (non-profit) AFNs it was more about managing relationships and exercising democratic processes for collective decision-making. This paper showed the challenges faced by people using their agency to organise alternative food systems. But many AFNs' organisers argue that other actors (e.g., governments, media, universities, NGOs) could play an important role in supporting the emergence of AFNs. For example, stopping subsidies for industrial unsustainable agriculture, through local government's public food procurement, greater media scrutiny of the environmental impacts and social inequalities of the mainstream food system, and by public, educational and NGO work disseminating AFNs' models of operation among farmers and agricultural students.

Still within the theme of Alternative Food Networks, one remaining question was **"What are the environmental impacts of changed systems of production and consumption?"**. Assessing the sustainability of alternative forms of production and consumption is important to track the extent to which these initiatives represent actual improvements. To address this, we conducted a case-study of food waste in an AFN food co-op shop. We assessed their food waste levels and food waste management strategies and compared it with literature on conventional food retail. The AFN had very low food losses in comparison to most studies on conventional food retail. The qualitative research on food waste management strategies suggested that looking beyond profit at the AFN allowed for a serious concern with food waste. The autonomy of the organisation gave its members flexibility to develop ways to prevent and handle food waste, which contrasts with more top down management and profit maximization strategies in conventional retail. These results suggest that it is possible to organize production-consumption systems in ways that minimize environmental impacts (food waste, in this case), and that non-profit arrangements might have more motivation and leeway in applying strategies for effectively reducing food waste.

How to change and reduce consumption for sustainability?

This research started with the premise that the scale and composition of current production-consumption systems are unsustainable, and that there is little acknowledgement of this fact in environmental policy. When consumption is addressed, it is often through the lenses of individual consumer behaviour, which individualizes responsibility for something that is systemic - the reliance of modern economies on (growing) production and consumption. We argue that to change and reduce consumption for sustainability, the first step must be to change the framing around consumption. From seeing consumption as something that is caused by consumer behaviour, to something that is caused and stimulated by multiple agents acting within and influencing multiple contexts. Taking a broad interdisciplinary view, including disciplines focused on the micro as well as those interested in the macro dynamics of society, helps in avoiding too narrow perspectives, and in conceptualizing the relations between actors and contexts.

In this way, the challenges of reducing and changing consumption are not seen from an individual consumer perspective. Our research shows people who are organisers of alternative systems of production and consumption, or even producers and repairers engaging in self-provision practices as a way of reducing consumption. We show that people have agency beyond choosing which products to consume, and that many other actors have a role to play in changing the contexts and systems of production and consumption. Changing and reducing consumption, more than an individual challenge, is a societal endeavor, which requires taking a hard look at the ways current practices, systems and structures stimulate unsustainable (over)consumption. It means recognizing how distinct actors play different roles in maintaining and stimulating the current system, and exploring what can be done, and by whom, to transform contexts, structures, practices and systems for reducing and changing consumption.

Chapter 1

Introduction

1.1 Background

The climate and ecological emergencies

It is 2022. The reality of climate change is felt all around the world. Record-breaking heat in India, Pakistan, Europe, and the United States occurred before the summer solstice (France24, 2022; Freedman, 2022), unprecedented floods in Pakistan and Bangladesh displaced millions of people (Mahmud, 2022; Hussain, 2022), and unprecedented droughts in Ethiopia, Somalia, Kenya (JRC, 2022) and Chile (Bartlett, 2022). After decades of warnings about the consequences of growing greenhouse gas (GHG) emissions, climate change is here. We are living amidst human-made climate and environmental emergencies - is the message communicated again and again by the Intergovernmental Panel on Climate Change (IPCC, 2022) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES, 2019).

The latest IPCC report from February 2022, released amidst the beginning of the invasion of Ukraine, had three key messages: 1) climate change is here, 2) it will get much worse, but 3) if we rapidly reduce emissions this decade, we can avoid the worst scenarios. The impact of human activity on GHG emissions and its consequences have already been studied since the late 1950's and a consensus started to form in the late 1970's (Oreskes & Conway, 2010a). Already in 1965, Lyndon Johnson, then President of the United States, said to the US Congress: *"this generation has altered the composition of the atmosphere on a global scale through... a steady increase in carbon dioxide from the burning of fossil fuels"* (Oreskes & Conway 2010b). The Brundtland report in 1987 acknowledged the environmental impact of existing forms of development and introduced the term and aspiration of "Sustainable Development" (Brundtland, 1987). Yet, more than half of the GHG emissions in human history have been emitted since 1990, the year of the first IPCC report (Stoddard et al., 2021). This is evident when looking at the evolution of sources of primary energy consumption in the last two centuries (see Fig. 1.1). The use of fossil fuels, responsible for around 80% of global GHG emissions (Haberl et al., 2020), just kept increasing.

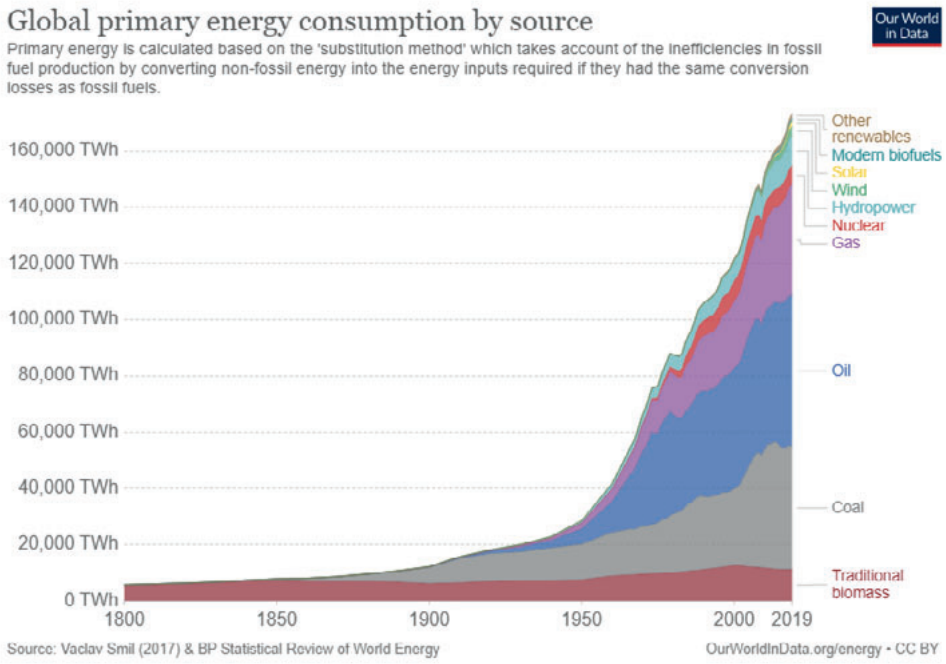

Figure 1.1 – Global primary energy consumption by source – from Our World in Data (2019a).

The 2019 IPBES Global assessment report states that indicators for the health of ecosystems and biodiversity are rapidly declining (IPBES, 2019). The changes have accelerated in the last 50 years and are risking ecosystems and global food security. These trends are caused by drivers that are direct (e.g., land-use change, overexploitation of animals and plants, climate change), and indirect (e.g., production and consumption patterns, human population, trade) (IPBES, 2019, p.12).

In the 2015 Paris Climate Conference, 1.5-2°C was the limit of the level of warming agreed upon by the 196 participating countries. To ensure that global temperature does not exceed 1,5-2 °C, there is a limited carbon budget that can still be emitted (Napp et al., 2019). But despite all the warnings, we are still overshooting planetary boundaries (Persson et al., 2022), such as rapidly exploiting the remaining carbon budget (MCC, 2021). The global pandemic of Covid-19 in has briefly paused these trends (UNEP, 2021). The quickness with which daily life and the economy were brought to a halt showed that governments can take drastic measures in case of emergency. However, this has since been followed by a rapid return to pre-pandemic emissions levels (IEA, 2022).

Who is responsible?

The term “Anthropocene” was coined to reflect the end of the stable Helocene, and the start of a new geological epoch where human (“anthropos”) activity started to impact global earth systems such as the atmosphere (Steffen et al., 2011). This term implies that the responsibility for this impact is on all human species, as if everyone were to blame for the current climate and ecological crisis. Several authors are critical of this framing. Moore (2016, 2017) coined the term *Capitalocene* to highlight the structures of power, capital and imperialism which are, according to him, at the root of the ecological crisis, but seem to be disregarded in the Anthropocene discourse. Stefania Barca, in “Forces of Reproduction”, also challenges the Anthropocene narrative (Barca, 2020). For her, the narrative of the Anthropocene sees capitalism and industrial modernity as the main drivers of human progress and well-being. It makes invisible all those humans that resist against the "systematic killing of nature" (Barca, 2020, p.2). For example, throughout the world, there are people fighting against nature exploitation and degradation. These “environmental defenders” are often paying their resistance with their lives (Ghazoul & Kleinschroth, 2018; Zeng et al., 2022), showing that it is just as human to defend nature. The term Anthropocene can hide that not all humans have equal impacts on the planet. Studies on historical and present responsibility for emissions show that emissions are very unevenly distributed. Our World in Data (2019b) calculated that Europe and the US were responsible for 58% of cumulative emissions since 1750, while for China, the value is 12.7%. These numbers reflect only direct emissions, i.e., excluding emissions for the production of goods abroad that end up being imported and consumed nationally. Looking at a shorter time frame, a report by the Climate Accountability Institute has estimated that 71% of industrial GHG emissions since 1988 can be traced to a hundred fossil fuel companies, with 59% of these companies being state-owned (CAI, 2017).

Research conducted by Oxfam and the Stockholm Environment Institute has estimated that the world’s richest 10% contribute for 52% of CO_2 emissions, while the poorest half of the population contributed to 7% of emissions (Oxfam, 2020). The same report calculated that the wealthiest 1% were responsible for 15% of cumulative CO_2 emissions- twice as much as the poorest 50% of the world population. Inequality occurs within and between countries. Oswald et al. (2020), in a study encompassing 86 countries, calculated that in terms of energy consumption, the richest 10% consume a share of 39% of total final energy, just as much as the poorest 80%, while the poorest 10% consume only 2%. In some sectors, inequality is even more extreme: for air travel, the wealthiest 10% are responsible for 75% of the energy used. In 2020, Wiedmann et al. published a “Scientists’ warning on affluence” highlighting the urgency of reducing consumption to make it compatible with planetary boundaries while ensuring the fulfilment of human needs.

1.2 Challenges

Why is it so hard to reduce emissions?

Stoddard et al.'s review (2021) focused on the question: why haven't we managed to reduce emissions? They identified a series of motives, from the lack of political action, the influence of the fossil fuels lobby, the role of global power structures and militarism, and the fact that the countries suffering the most from climate change are the ones least contributing to it. They refer as well to the dominance of economic thought that does not account for the biophysical reality, is close to neoliberalism and supports deregulation with the unquestioned ultimate goal of economic growth. They conclude that deep transformations are needed: *"Transformations toward more sustainable and just futures require a radical reconfiguration of long-run sociocultural and political-economic norms and institutions currently reproducing the very problems driving climate change."* (Stoddard et al., 2021, p.680).

Related to this question, is the lack of focus on demand-side strategies to reduce emissions. Only in recent years more studies have taken this demand approach (e.g., Allwood et al., 2017; Creutzig et al., 2018; Mundaca et al., 2019). Demand-side solutions would generally mean looking at consumption and production-consumption systems which contrasts with the long-standing prevalence of supply-side solutions and techno-economic approaches in climate mitigation research and IPCC reports (Creutzig et al., 2018). The dominant focus on supply-side (technical) solutions might explain the fact that while renewable energy has been increasing in capacity, it has mostly added to the whole energy sources which remain predominantly fossil-fuel based (Stoddard et al., 2021). Presently there appears to be a recognition of the need to address demand and consumption, that has long been neglected[1]. One could say that consumption and the related focus on economic growth have been “elephants in the room” in discussions on climate change mitigation and sustainability. But this is starting to change.

In the latest IPCC report (2022), authors distinguish between two transformation narratives: eco-modernism and degrowth. Eco-modernism defends that it is possible to decouple economic growth from GHG emissions and environmental impacts, through technological innovations, efficiency and intensification of land-use. The concept of Green Growth, which has been widely adopted by governments worldwide, has eco-modernist roots (Lorek & Spangenberg, 2014). Green growth started as a way of emphasizing the economic opportunities in the green transition (e.g., environmental technologies) (Capasso et al., 2019). Lately, it has become a vision for the whole economy, based on the assumption of decoupling environmental impacts from economic growth (Jänicke, 2012). There is evidence of decoupling from GHG emissions in some countries (e.g., Aden (2016)), but in some cases this is only applicable to territorial emissions and not when including emissions embedded in imports

1 However, Miller (1995) recounted a story from the UN’s Rio 1992 conference, where apparently countries from the global South wanted consumption of the global North to be a point in the agenda of the meeting. But, that had resulted in a compromise where the global North would not mention population growth and the global South would not mention consumption.

(Evans & Yeo, 2016). For the countries that appear to have achieved absolute decoupling of emissions, even accounting for imports, this is often due to an increase in the share of renewable energy (Parrique et al., 2019). When considering other dimensions of decoupling, recent research (e.g., Hickel & Kallis, 2020; Parrique et al., 2019) puts into question the feasibility of decoupling occurring fast enough to mitigate the current climate and ecological crises. In a review of more than 800 decoupling studies, Haberl et al. (2020) concluded that absolute reduction targets and sufficiency strategies are necessary to achieve an absolute reduction in GHG emissions. Alfredsson et al. (2018) argue that reducing production and consumption is needed for meeting the Paris Climate Agreement, as the global consumption of goods and services is a key contributor to GHG emissions.

Degrowth proponents are sceptical of the promises of "green growth" (Hickel & Kallis, 2020) and defend that the fixation on the pursuit of economic growth, which is relatively recent (since the 1950's), is at the core of the increase in GHG emissions and environmental degradation (Kallis, 2018). Degrowth is not simply about shrinking the economy. Their advocates recognize that no-growth within growth-addicted societies is a disaster (Latouche, 2010), as shown by the social impacts of economic recessions (e.g., unemployment, worsening mental health, see Guerra et al., 2022). Instead, degrowth defends major systemic transformations, including institutions and lifestyles to devise fair ways of living with less, tackling the roots of the environmental crisis, and improving wellbeing (Latouche, 2010; Kallis, 2018). In fact, after a certain level, the growth in GDP (Gross Domestic Product) does not necessarily contribute to an increase in subjective wellbeing (Helliwell et al., 2017; Hoekstra, 2019). These are aspects also emphasized by researchers such as Tim Jackson in *Prosperity Without Growth* which defends reconsidering what is meant with prosperity, to align it with actually improving people's wellbeing (Jackson, 2009). Others have proposed *a-growth*, a sort of growth-indifferent approach, in which sound environmental, social and economic policies should be pursued independently of its effect on GDP (Van den Bergh, 2011b).

The 50-years old report Limits to Growth already warned that growth in resource use, pollution and population would likely cause the human environmental footprint to exceed the carrying capacity of our planet (Meadows et al., 1972). However, material extraction and flows kept increasing since the 1970s and accelerating since 2000 despite a slowing down of population growth, driven by wealth, consumption and trade (Shandl et al., 2017). Furthermore, the pursuit of economic growth and its associated increase in production and consumption is still the primary goal of most economies around the world. "Decent work and economic growth" and "Responsible consumption and production" are two of the 17 Sustainable Development Goals set by the UN as recently as 2015. The logic seemed to rely mainly on resource efficiency to achieve the goal of decoupling economic growth from environmental degradation. Only a slight shift seems to be taking place in the last years, with the governments of Iceland, Scotland and New Zealand pledging to make wellbeing a priority, rather than only focusing on GDP growth (Meredith, 2021). In the European Union, more than two hundred academics defended the same in 2018, calling for a Stability and Wellbeing Pact (O'Neill et al., 2018a).

1.3 Knowledge gap

Degrowth and sustainable consumption

The past two decades have seen growing academic research on these topics, with flourishing fields such as degrowth and sustainable consumption as prime examples. Degrowth (see section 1.2) is intrinsically related to the idea of reducing and changing consumption and production, as illustrated by Kallis (2018): "*If humanity is not to destroy the planet's life support systems, the global economy should slow down. We should extract, produce and consume less, and we should do it all differently.*"

Sustainable consumption (SC) research is multidisciplinary (Liu et al., 2017; Middlemiss, 2018) and has different strands. Geels et al. (2015) classify them into the reformist, the revolutionary and the reconfiguration approach. The reformist is aligned with what Lorek and Fuchs (2013) call "weak" SC, for focusing mainly on technological improvements for greater efficiency and individual consumer behaviour as the main points for change. This approach is illustrated by Quoquab and Mohammad (2020), stating: "*It is therefore incumbent on individuals to adopt "sustainable consumption behaviour (SCB)" and to make a conscious effort to avoid overconsumption and care-free consumption, which can exert harmful effects on the environment."* This line of research is familiar to the fields of marketing, environmental psychology, and consumer behaviour and a large part of it aims to understand what can support environmentally friendly behaviour, and the impact of consumers choices on the environment (Liu et al., 2017). What Geels et al. (2015) call the "revolutionary" approach is close to what Lorek and Fuchs (2013) define as "strong" sustainable consumption, which focuses not on individuals or technology, but *"on affluence, the level and patterns of resource consumption or the physical size of the economy"* and is similar to the degrowth discourse. Recently, authors in this strand have developed the concept of "Consumption Corridors" (Fuchs et al., 2021), which is close to the "Doughnut" concept from Raworth (2017), where minimum and maximum limits are defined for a good life for all. Minimum levels of consumption are important to secure a "decent life" (Pirgmaier, 2020), and maximum levels are set, to limit resource use and its environmental impact, ensuring fair redistribution (Fuchs et al., 2021).

Geels et al. (2015) criticize the reformist and revolutionary approaches and propose a third one: reconfiguration. According to Geels, the reformist approach is limited for its narrow focus on products and individuals, disregarding wider social and political-economic structures that shape systems of production and consumption. As for the revolutionary approach, Geels et al. (2015:5) see it as lacking clear pathways for achieving the deep transformations desired. In their words: "*this view argues for wholesale changes in the organisation of societies, but offers little insights into the governance of processes that could feasibly facilitate such a revolution."* The reconfiguration approach they propose focuses on changing systems and social practices, by addressing specific domains such as food and mobility.

While changing and reducing consumption is a key proposition in degrowth and sustainable consumption literature, little is known about how to change consumption systems and reduce

consumption levels. Calls for more interdisciplinary research on consumption are longstanding (e.g., Reisch et al., 2016; Wilk, 2002; Heiskanen & Pantzar, 1997), but the need of demand-side solutions to curb GHG emissions and environmental impacts is only recently becoming widely acknowledged (e.g., Allwood et al., 2017; Creutzig et al., 2018). Appeals to reduce consumption are becoming common in mainstream media, but there is limited research on how consumption is reduced, the practices and contexts that enable or hamper it.

When looking at how to change consumption, the focus has been disproportionately on consumers and changing consumer behaviour in what Akenji (2014) called "consumer scapegoatism". The need for looking at the broader scope of actors and systems that shape production-consumption systems has been reiterated (e.g., Akenji,2014; Reisch et al., 2016; Alfredsson et al., 2018).

1.4 Research Aim and Research Questions

This research contributes to degrowth and the strands of revolutionary (or "strong") Sustainable Consumption and is aligned with the reconfiguration approach since it focuses on specific themes and aims to understand further the "how" of transformations for reduced and changed consumption.

This thesis investigated the main research question:

How to change and reduce consumption for sustainability?

To answer it, the thesis aimed to understand and explore the following sub-research questions:

RQ 1) What influences consumption?

Understanding what influences consumption is an important pre-condition for devising ways to reduce and change consumption. The identification of the sources of the problem will frame the scope of solutions and processes to tackle the problem. That is the reason we start by addressing this question.

RQ 2) How to reduce consumption?

More and more voices agree that the levels of consumption must be reduced among high-income countries and people. However, we know too little about how people success or struggle in reducing their consumption, the materials they use for that, and the contexts that support them or hinder them in that endeavour.

RQ 3) How to change systems of production and consumption?

Changing consumption has been framed mostly as changing consumer behaviour, disregarding the reality of production-consumption systems. AFNs are examples of alternative forms of production-consumption systems in the domain of food. Understanding how AFNs organisers manage to create and maintain their initiatives and the help and constraints they experience due to other actors and broader contexts gives us insights into challenges to tackle for changing production-consumption systems.

RQ 4) What are the environmental impacts of changing models of production and consumption?

Only by assessing the environmental impacts of alternative models of production and consumption, and comparing with conventional systems, can we ascertain if new models are more sustainable and why.

In this introduction we use a broad definition of consumption, as the acquisition and use of goods, services and resources. On Table 1.1 we distinguish between the types of consumption considered in the different chapters.

1.5 Thesis outline

Table 1.1 shows the structure of this thesis. It indicates in which chapters the research questions were addressed, how they were tackled and the goods that were under scrutiny. In this introduction the reasons behind undertaking this research have been described. In the following paragraphs, a detailed description of each chapter is given.

Table 1.1 - Overview of the chapters, research questions and methods.

Research Question	Chapter	Methods	Content	Type of consumption
RQ 1	Chapter 2	Interdisciplinary review.	Multiple contexts and actors that influence consumption.	Goods and services
RQ 2	Chapter 3	Qualitative research.	Contexts and practices that support/hinder reducing consumption.	Food, Clothing, Personal Hygiene and Cleaning, and resources (e.g., water, energy)
RQ 3	Chapter 4	Qualitative research.	Contexts and actors that support/hinder the organising of Alternative Food Networks (AFNs).	Food
RQ 4	Chapter 5	Quantitative and qualitative research. Case-study.	Food waste levels, causes and management in a food co-op shop (AFN) and comparison with conventional retail	Food (retail)

Chapter 2 consists of a cross-disciplinary review to explore the question of what influences consumption. Often too individualistic views persist on the issue of addressing consumption. This comes from a narrative that sees consumption as something separate from systems, and within the sole domain of the individual, which is more typical in disciplines that focus on individuals (e.g., psychology), or whose theories build on individual decision-making (e.g., neoclassical economics). While research on consumption has been conducted for decades in many disciplines (see Miller, 1995), there have been few cross-disciplinary studies on what influences consumption. This chapter summarizes the main explanations for what influences consumption found across ten disciplines.

In **Chapter 3**, we investigate how to reduce consumption. In degrowth and strong sustainable consumption literature, reducing consumption among high-consumers is often proposed as a necessary measure to address the climate and environmental crises. Despite increasing attention to lifestyles of reduced consumption, little is known about how people reduce their consumption, both in absolute terms, and of perceived "unsustainable" products. Inspired by social practices theory, we investigate the practices and materials that people use when trying to reduce consumption. We also identify the contexts that appear to foster or impede engagement in reduced consumption practices. We conduct six interviews and a qualitative survey with 47 responses from people in communities sympathetic to the notion of reducing consumption.

In the chapters 4 and 5 we focus specifically on one important part of our consumption, i.e., food. Current food production systems are associated with large negative impacts on the environment, such as 19-29% of global GHG emissions (Vermeulen et al., 2012), soil degradation (Amundson et al., 2015) and eutrophication of water sources due to the high use of fertilizers (Withers et al., 2014). At the same time, hunger has not been solved, with about 2 billion people around the world suffering from micronutrient deficiencies and another 2 billion adults obese or overweight (GNR, 2018). In response to these trends, a growing number of initiatives have emerged in the last decades.

Chapter 4 explores how to change current food systems, by looking at Alternative Food Networks (AFNs) in three European countries. While there is often a perception that changes for sustainability have been too slow, the food domain is rich in examples of initiatives that aim to operate with non-conventional models, support closer relations between food producers and consumers and value local food networks. Plenty of research has studied AFNs, but few have focused on organisers, investigated the facilitating and constraining factors they experience, how different types of AFNs are affected, as well as in different cultures/countries. In this paper, we draw on the expertise of organisers of seventeen AFNs, to investigate the conditions and actors that hinder and promote the development of different types of AFNs in Poland, Portugal, and the Netherlands.

Chapter 5 investigates food waste dynamics in a retail alternative food network (AFN). This case study is a way to address the gap in research on the environmental impacts of AFNs, and to

understand how different arrangements and operation models of a food network can impact its environmental footprint. In this case, we focus on food waste in retail with an exploratory case study of a Polish food co-op shop. We provide a first contribution to assess food waste in an AFN in terms of 1) food waste levels, 2) food waste causes, and 3) food waste management practices (i.e., food waste reduction and handling). We compare our findings to the literature on conventional food retail.

Chapter 6 summarizes findings, discusses limitations, and avenues for future research.

Chapter 2

What influences consumption? Consumers and beyond: purposes, contexts, agents and history

This chapter is based on the publication:

Ribeiro, A. P., Harmsen, R., Carreón, J. R., & Worrell, E. (2019). What influences consumption? Consumers and beyond: purposes, contexts, agents and history. *Journal of Cleaner Production*, 209, 200-215. https://doi.org/10.1016/j.jclepro.2018.10.103

Abstract

Consumption of goods and services is a complex phenomenon at the root of environmental problems, but it is still often framed in terms of individual behaviour, and suffers from a lack of wide cross-disciplinary explanations for consumption. To contribute to filling this gap, we conducted a literature review across ten disciplines. We provide a cross-disciplinary overview of what influences consumption, juxtaposing dominant with less-heard explanations for consumption and adding cross-disciplinary evidence to counter the view of consumption as a chiefly individual phenomenon. The resulting conceptual framework depicts consumption as influenced by three levels that undergo historical transformations: the micro level of consumers, purposes and products; the meso level of the direct context in which consumption take place; and the macro level of societal contexts and agents. Future research should investigate which kinds of interactions between levels, agents and contexts can lead to minimising social and environmental impacts of consumption.

Keywords: consumption; sustainable consumption; interdisciplinary; multidisciplinary; cross-disciplinary; sustainable production and consumption

2.1 Introduction

Consumption of goods and services, hereon referred to as consumption, is a key driver of global warming, climate change and environmental degradation, as energy and resources are needed for the phases of production, distribution, sale, use and disposal (Satterthwaite, 2009; Heiskanen and Pantzar, 1997; Liu et al., 2017). Producing more efficiently is a way of alleviating resource use, but it does not necessarily lead to an absolute reduction of resources, due to the rebound effect[2] (see Sorrell (2010) and Binswanger (2000)).

For these reasons, consumption is increasingly considered, both in academic literature and in the public discourse, as something that must be addressed and made "sustainable". Sustainable consumption is a multidisciplinary research field (Middlemiss, 2018; Liu et al., 2017), but it is also a prescription for making (unsustainable) consumption sustainable. As a prescription, it implies a change in what is consumed (e.g. less environmentally harmful products, produced under better working conditions) and a reduction of consumption (Fuchs and Lorek, 2005).

As a research field, sustainable consumption is quite recent (since the 1990s) and already diverse. One distinction made by Lorek and Vergragt (2015, p.20) is between "research on existing (often unsustainable) consumption patterns and practices, and studies reflecting the

[2] Some authors would argue that reducing consumption might also have rebound effects (e.g. Alcott 2008) as reduced consumption can lower prices and consequently lead to consumption elsewhere. This effect highlights the need to consider unintended consequences and the complex interrelations in consumer behaviour as well as in global socio-economic systems.

aspiration of sustainable consumption". According to Middlemiss (2018, p.4-5), sustainable consumption, besides researching social and environmental impacts of consumption, and how to consume less and differently, involves "understanding the way in which high-consumption lifestyles are embedded in the material, social, cultural and political world", and asking questions such as "why do people consume the way they do?"

This last goal and question have been studied for decades by many disciplines, from economics and psychology to history and anthropology. However, cross-disciplinary reviews on consumption are rare. For Wilk (2002), "consumption is still a poorly understood phenomenon and the social, cultural, economic, and psychological variables that determine consumption have not been clearly identified". Calls for cross-disciplinary research on consumption have already existed for a long time (Storkey, 1993; Heiskanen and Pantzar, 1997; Wilk 2002), but they have been largely unheeded.

In this paper, we try to understand what influences consumption by taking the interdisciplinary stance that consumption is a complex phenomenon that cannot be fully explained by individual disciplines, as each discipline provides only partial accounts of reality (Szostak, 2007; Wilk, 2002). As Wilk (2002 p.8,9,12) emphasises, each theory on consumption "has something important to offer, and none can be rejected logically or empirically", so it is better to take a broad, or "pragmatic pluralistic approach", that does "not assume, a priori, what kinds of variables and what kinds of knowledge or data or analyses are going to be fruitful". To understand what influences consumption in a more comprehensive way, we need to consider the multiple perspectives of a wide scope of disciplines. Doing so, can also help to tackle the dominance of narrow understandings of consumption, e.g. that consumption occurs mainly due to individual [consumer] actions, driven by selfishness and competition (see Chapter 5, "People are selfish" in Middlemiss, 2018).

Previous cross-disciplinary[3] works on consumption serve as a reference and inspiration for this paper (Miller, 1995; Jackson, 2005; Ilmonen et al., 2010; Preston et al., 2014). But, as represented in Table 2.1, they tend to focus on limited groups of disciplines (Preston et al. 2014; Ilmonen, 2010), or on a certain theme (consumer behaviour in Jackson (2005)). Also, these works do not specifically focus on explanations for what influences consumption, but they describe all kinds of consumption research within each discipline (apart from Jackson (2005)). Generally, the knowledge from each discipline or field is presented in separate chapters, and all works lack an integrative section, i.e. an attempt at condensing the knowledge from all disciplines into one framework or narrative.

Other authors have drawn from different disciplines to provide an overview of what influences consumption (Thøgersen, 2014; Røpke 1999; Wilk, 2002; Sanne, 2002; Middlemiss 2018), but they did not explicitly conduct a cross-disciplinary review.

[3] With "cross-disciplinary", we mean research that is conducted across different fields and that can be multi-disciplinary or interdisciplinary.

Table 2.1 – Previous cross-disciplinary works on consumption

Disciplines or Fields	This Paper	Miller et al. 1995 "Acknowledging Consumption – a Review of New Studies"	Jackson 2005, "Motivating Sustainable Consumption, a review of evidence on consumer behaviour and behavioural change", reviewing models	Ilmonen 2010, "A Social and Economic Theory of Consumption"	Preston et al. 2014, "The Interdisciplinary Science of Consumption"
Neurosciences	X				X
Animal Behaviour					X
Evolution					X
Psychology	X	X	X		X
Marketing/ Consumer Behaviour	X	X	X	X	
Economics	X			X	
Behaviour Economics	X		X	X	
Sociology	X	X	X	X	
Political Economy	X	X		X	
Anthropology	X	X	X	X	
Geography	X	X			
History	X	X			
Media Studies		X			
Behaviour Change			X		

This paper reviewed theories and explanations for what influences consumption in the disciplines and fields indicated in Table 2.1. We found that there are four main themes that are addressed when explaining consumption:

1. *Purposes fulfilled by consumption*
2. *Influences on consumer behaviour*
3. *Societal contexts and agents that influence consumption*
4. *Historical growth of consumption*

These themes are addressed by many disciplines, although some disciplines focus more on one topic than others, e.g. marketing focuses predominantly on consumer behaviour, while history deals more with the evolution of consumption over time.

Our review serves different purposes: 1) providing an overview of the different disciplinary explanations on consumption to academics from different disciplines working on sustainable consumption; 2) juxtaposing dominant with less-heard explanations for consumption; and 3) contributing with cross-disciplinary evidence to counter the perspective of consumption as a mainly (selfish) individual phenomenon.

The set-up of the paper is as follows. Section 2.2 presents the review method. The results, structured around the four topics are presented in Section 2.3. This is followed by a

presentation of a conceptual framework of what influences consumption (Section 2.4). Afterwards, we discuss and provide recommendations for future research (Section 2.5) and offer some conclusions (Section 2.6).

2.2 Research methods

An interdisciplinary literature review on theories and explanations for what influences consumption was conducted across disciplines to integrate different perspectives into a more nuanced understanding of consumption (Uiterkamp and Vlek, 2007). The steps of the review were inspired in grounded theory's (GT) constant comparison method as proposed by Wolfswinkel et al. (2013) for conducting rigorous literature reviews. The review followed the steps of 1) identification of disciplines and fields that address consumption, 2) search and collection of literature, and 3) analysis and synthesis of the literature. All steps were iterative, guided by the principle of theoretical sampling, i.e. the data collection was guided by the ideas arising from the data collected (Boeije, 2002). The three steps are represented in Figure 2.1.

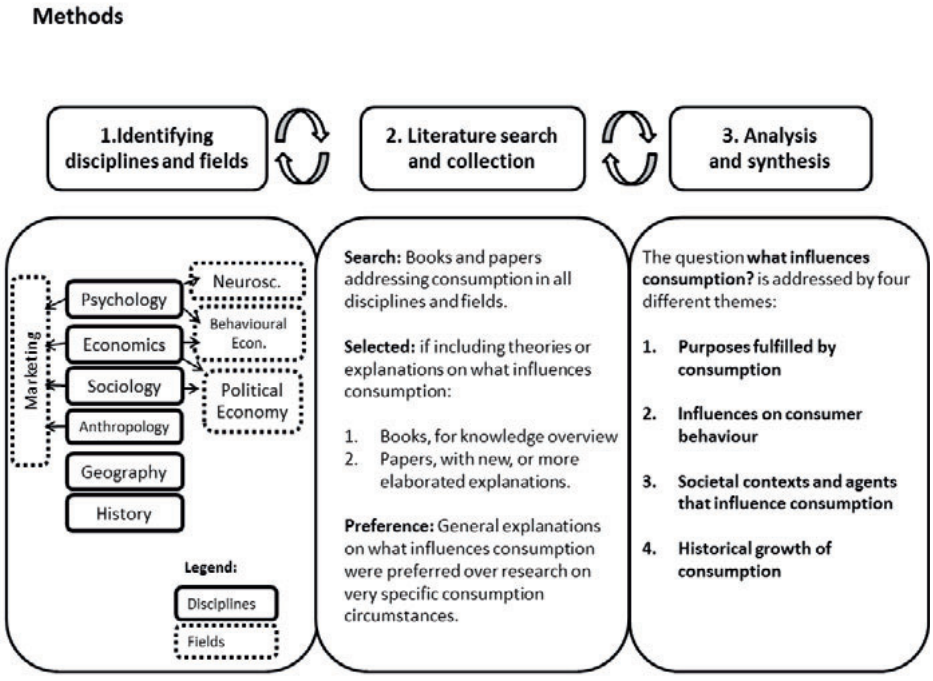

Figure 2.1 – Iterative steps of the research methods.

Step 1: Defining scope and identifying disciplines and fields

"Consumption" was seldom defined in the work that we reviewed, but we found that consumption seemed to imply the acts and processes of acquisition and (or) use of goods and services. Some of the reviewed authors focus more on the phase of acquisition, and others on the phase of use.

Disciplines and fields were selected if they presented theories or explanations for what influences consumption. Something was considered "an explanation" when it provided a reason and arguments for why people consume, or for what drives consumption. The disciplines first considered were the ones mentioned as social sciences in the Social Science Encyclopedia (Calhoun, 2004, p.957). Disciplines which did not appear to have theories or explanations for consumption were left out of the review. Other fields (interdisciplinary or sub disciplines) which came up in the search phase as having theories, or explanations for consumption, were added to the review. Ten disciplines were reviewed: economics, psychology, anthropology, sociology, geography, history, behavioural economics, neurosciences, marketing and political economy (Figure 2.1). The field of management, or business, was left out because it focuses more on the aspect of production. Also, management literature addressing consumption is to some extent already represented in marketing literature.

Step 2: Literature search and selection

The method had to be sufficiently open to encompass different theories and explanations. This meant casting a wide net within each discipline, both in terms of literature sources and period of publication. Limiting the search to certain journals or periods of time would bias the research to certain dominant theories or explanations within a journal, or within a period of time. We began the search using academic books or book chapters which provided an overview of the consumption knowledge in a discipline, as recommended for interdisciplinary research (Repko and Szostak, 2017). For each discipline and field, the knowledge acquired from books was complemented by academic papers on consumption, when adding new explanations, or when further elaborating on some explanations. Research that presented general explanations for consumption was preferred to research focusing on very specific circumstances of consumption (e.g. consumption motives in a certain village, or the reactions of consumers to failed service encounters (Bougie et al., 2003)).

The literature, i.e. papers and books, was searched via academic databases (Scopus www.scopus.com, Google Scholar http://scholar.google.com), and through the library catalogue of Utrecht University Library (Catalogus, http://aleph.library.uu.nl). The search terms used started from simple and broad ("consumption") to more discipline specific ("consumer behaviour", "consumer psychology", etc.). Additionally, the snowball method was used by consulting the references of papers.

In total, we selected 93 literature materials: 39 books, 41 papers and 13 book chapters. In Figure 2.2, the selected literature per discipline is represented in a graph that indicates the year of publication on the x-axis and the total number of literature sources selected per discipline on the y-axis. The disciplines which got the lowest amount of literature sources are behavioural economics and neurosciences. This can be explained by different reasons: first, they share similarities with marketing and psychology, which would result in a redundancy of sources; second, neurosciences is a relatively recent science in which only few studies actually focus on consumption. In this case, and in other disciplines, books were used, which provided an overview of the research in the topic of consumption within the discipline, with chapters written by different authors. Apart from those two disciplines, the review was based on 7-14 different sources per discipline. The figure shows that the literature selected within a discipline covered, in most cases, more than two decades. Considering all the literature, the oldest source is from 1968 and the most recent from 2016.

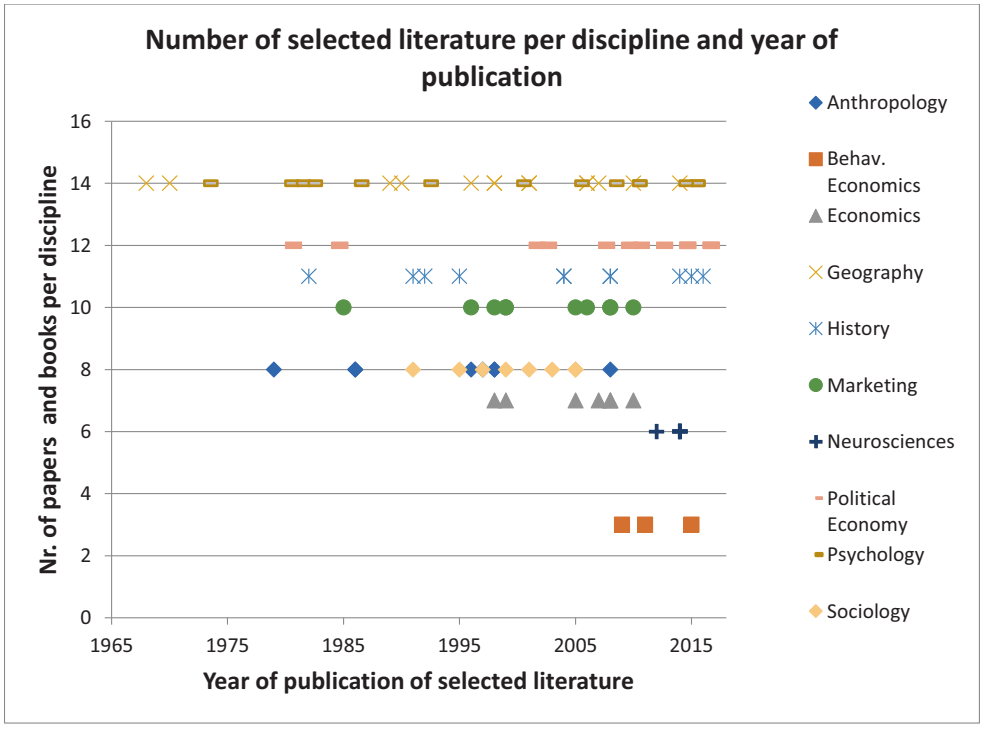

Figure 2.2 – Number of papers and books selected per year and per discipline. (References from the same year are plotted on top of each other).

Step 3: Analysis and synthesis

The selected literature was fully read, aggregated and summarised per discipline and field. The summaries were then analysed using comparison for "categorizing, coding, delineating categories and connecting them" (Boeije 2002, p.393). The summaries of the literature were

coded in the iterative steps of open, axial and selective coding (Wolfswinkel et al. 2013), using the coding software NVivo 11.

While reading, different categories emerged inductively (open coding step of GT) as explanations for consumption, e.g. advertising's emergence as something that influences consumption. By re-reading and comparing, other categories emerged as meta- or subcategories (axial coding), e.g. the meta- category of purposes of consumption emerged, including subcategories like expressing identity and relationships.

Finally, relations between the main categories were established (selective coding), as it was observed that the explanations for consumption differ because they address different themes. These themes, already mentioned in the introduction, are *the purposes fulfilled by consumption, the influences on consumer behaviour*, *the societal contexts that influence consumption*, and *the historical growth of consumption*.

The synthesis has two steps. First, cross-disciplinary knowledge is integrated within each theme, including visual representations in Sections 2.3.1 and 2.3.2. Second, the conceptual framework (Section 2.4) visually represents the integration across the four themes.

Limitations

The trade-off between width of scope and depth of detail is particularly present in cross-disciplinary reviews. The wide scope of the research implied that we were limited in the extent to which we could detail the knowledge in each discipline. Still, this review provides a more comprehensive understanding of what influences consumption than what would be offered by a smaller sample of disciplines.

We considered only material published in the English language, as English is the main language used in academic research and facilitates the consultation of references. The majority of writers reviewed are from Western countries, and the study or reflection on consumption is often in a Western context. Some of the excluded material, typically in other languages and reflective of more non-Western contexts and perspectives, could have presented alternative explanations for consumption.

2.3 Results

The answers to "*What influences consumption?"* are structured along the four themes, and the discipline or field of each explanation is indicated.

2.3.1 Purposes fulfilled by consumption

Explanations for consumption often focus on the functions that it serves, or, in our words, the purposes it fulfils, e.g. expressing status. The purpose of status, while dominant in common discourse on consumption, is only one of many consumption purposes found in literature.

While some purposes seem to have always existed, other purposes may have first appeared in modern history. We aggregated all the purposes mentioned across disciplines in the categories of *individual survival, individual aspirations and satisfaction, social, practical* and *political* (see Fig. 2.3).

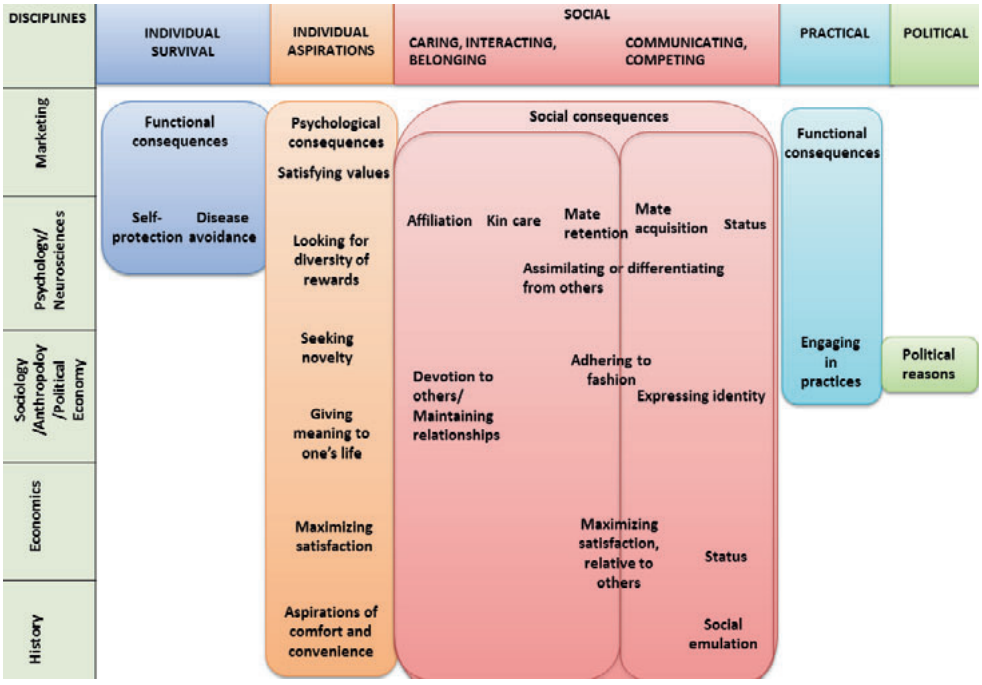

Figure 2.3 – Purposes fulfilled by consumption

In Figure 2.3, the left column indicates the broad group of disciplines mentioning each purpose. The top line represents our aggregation of the different purposes into general categories.

Individual survival

Neurosciences and evolutionary psychology see consumer behaviour as shaped by evolutionary reasons due to millions of years of evolution (Saad, 2014). Humans share evolutionary instincts with other mammals, birds and rodents, and these instincts are rooted in a long tradition of looking for food, shelter and safety (Sherry, 2014).

According to Griskevicius et al. (2014), the main evolutionary motives driving behaviour are self-protection, disease avoidance, affiliation, status, mate acquisition, mate retention and kin care. Depending on the motive prevalent on a certain moment, consumers show different behaviours. In this paper, we interpret these motives as purposes, as they can be seen as goals driving behaviour. The purposes of self-protection and disease avoidance refer to basic survival and self-preservation at an implicit individual scale, so we called them *individual survival* purposes. The other evolutionary purposes refer to relationships or communication to others, which are part of *social* purposes.

Purposes of individual survival can be met through food, water or safety instruments that allow self-preservation. These individual survival purposes relate to what is mentioned in marketing by Peter et al. (1999) as functional consequences of consumption, which we include under *individual survival* and *practical* purposes. Peter et al. (1999) also mention psychosocial consequences, which we separate into psychological and social and relate respectively to *individual aspirations* and *social* purposes.

Individual aspirations

Besides survival, consumption also fulfils other purposes: aspirations, satisfaction, seeking novelty and giving meaning. History reminds us that consumers' aspirations are one of the main reasons for increases in consumption (e.g. de Vries, 2008). Satisfaction is also a common explanation for consumption. In marketing, Peter et al. (1999) speak of psychological consequences, i.e. how the consumer feels when using a product, e.g. stylish, attractive, happy. Besides activating positive emotions, products also act as "value satisfiers", i.e. a means through which personal values are satisfied.

Neoclassical economics sees consumption, and ultimately human behaviour, as having the purpose of maximising satisfaction (Lipsey et al., 1999). From a neuroscientist's perspective (Sterling 2012), humans are hardwired to seek satisfaction, but satisfaction has a short-term effect to keep humans searching for a diversity of rewards in the long-term (e.g. eating, drinking, warmth, social affiliation, etc.). Also, satisfaction is partly dependent on the effort required. Sterling argues that social organisation under capitalism limits the diversity of rewards to material consumption and reduces the effort, which makes rewards predictable, inducing less satisfaction, and resulting in intensified consumption. This argument is similar to the sociologist Campbell's (1995) explanation of seeking novelty. For Campbell (1995), consumers project an idea of imagined pleasure onto new products, which is often not achieved by the actual consumption, and becomes then projected onto expectations about other new products.

For anthropologist Miller (2008), the purpose of consumption is not seeking novelty, but giving meaning to one's life. Miller opposes the idea that more stuff leads to more superficial and materialistic lives, instead showing how people's material possessions matter to them in a meaningful way and reflect their personal histories and identities. In a similar strand of research, consumers are seen as appropriating and giving their own meanings to possessions (e.g. Hebdige's (1979) counterculture youth and the "subversive meanings" of their dressing styles).

Social

Some economists theorise that it is not consumption *per se* that is a mediating factor between income and happiness or satisfaction. Rather, it is relative income – relative to others in one's environment, or oneself in time – that plays a critical role in mediating between income and

happiness (Clark et al., 2008; Luttmer, 2005). This highlights the role of one's social environment.

Among *social* purposes of consumption, status is perhaps the most famous. In economics, the notion of "conspicuous consumption" was introduced separately by John Rae and Thorstein Veblen in the late nineteenth century, which refers to consumption that is driven by social status and prestige (Mason, 1998; Lipsey et al., 1999).

Sociology has looked at the relation between fashion, luxury goods, social classes and status in works by Simmel and Veblen (Ilmonen, 2001). Anthropologists also mention the role of taste and fashion in consumption. According to Appadurai (1986) the demand for goods in every society is socially regulated through "taste-making" mechanisms. For him, the main difference in demand between Western and smaller societies that are based on simpler technologies is the high turnover of fashion present in Western societies. Tastes, as shown by Bourdieu (1986), reflect and reinforce social distinctions between classes, gender and types of prestige (Miller, 1995, p.275).

Following fashion trends can be seen as part of the evolutionary motive of affiliation. Psychologists Csikszentmihalyi and Rochberg-Halton (1981) distinguish two social purposes for which things can be used: differentiation - in order to stand out from the others; and similarity – to express integration with one's social context. Fashion can be used in both cases, adhering to a certain mainstream fashion in order to assimilate, or adhering to an unconventional fashion taste, as a way of differentiating from others.

Differentiating from others through consumption can be a motive, but can also be the result of expressing one's identity, one of the main uses of consumer goods (Dittmar, 2008). Advertising often uses this purpose by associating products with visions of identity and well-being, and suggesting that consumers can achieve those visions by consuming those products. Baudrillard (1998 [1970]), a sociologist, argues that products are not consumed for their own use, but for their signs, symbols or meanings. Other sociologists also see consumption as a "meaningful social activity" (Ilmonen, 2001, p.2688) "which conveys information about the consumer's identity to those who witness it" (Campbell, 1995, p.111).

Anthropologists see material possessions as carriers of social meanings and as communicators in the making and maintaining of social relationships (Douglas and Isherwood, 1996 [1979]). Miller (1998) gives the example of the stereotypical housewife whose daily shopping for the household can be seen as a way of manifesting love and devotion to her family. The purpose of showing devotion is in line with Appadurai's (1986, p.31) view of consumption as "eminently social, relational, and active rather than private, atomic, or passive", and it relates to the evolutionary motives of mate retention, kin care and affiliation. This social purpose is related to the social consequences in marketing, e.g. what other people will think of one's consumption of a product (Peter et al., 1999).

Practical

A recent trend in sociology points to a different purpose of consumption that we call *practical* purpose. Consumption allows people to engage in practices. As Warde (2005, p.137) says "practices, rather than individual desires…. create wants". This strand of research shows that there is a material side to most, if not all, human practices, and that a relation exists between products, social practices and infrastructure. Shove (2005) argues that new practices often involve and create new ways of consumption, exemplifying it with the dissemination of the practice of "Nordic walking", which required the product of walking sticks. This is similar to the "functional consequences" of consumption mentioned in marketing (Peter et al., 1999, p.66), i.e. "tangible outcomes of using a product that consumers experience rather directly". Physiological outcomes (eating, drinking) fit more in the individual survival purposes, but "performance outcomes" are related to practices, e.g. a hair drier allows and speeds up the process of drying one's hair.

Political

Closer to political science, Micheletti (2002) and Michelleti and Stolle (2007) show that consumption can be seen as an act of political participation, i.e. *political* purposes. Throughout history, products have been avoided or promoted for political reasons, e.g. boycotts of Jewish shops in the inter-war period in Europe, appeals for buying national cloth in the fight for India's independence, or more recently, boycotts of products made in questionable working conditions, like sweatshops.

2.3.2 What influences consumer behaviour?

Many explanations of consumption focus on consumer behaviour. Understanding consumer behaviour is at the core of marketing research, which draws from many disciplines: psychology, behavioural economics, anthropology and sociology. In this section, we summarise the key aspects that influence consumer behaviour, using insights from marketing and other disciplines.

First of all, it should be noted that "marketing", in this paper, refers sometimes to the academic discipline, and sometimes to the managerial practice, related to advertising. The discipline of marketing researches and teaches how to conduct the practice of marketing, but academic literature on marketing is rarely explicit in this distinction, perhaps because marketers have always had a mediating role between producers and consumers and between economics [theory] and managerial practices (Cochoy 1998, p.195).

For marketing (discipline and practice), understanding consumer behaviour makes it possible "to respond to the customer's needs and wants", and "to influence and predict reasons for purchase" (Wright, 2006, p.7). We analysed different models of consumer behaviour (e.g. Macinnis and Folkes, 2010; Peter et al. 1999; Kotler et al. 2008) to identify the key influences. As shown in Figure 2.4, consumer behaviour is influenced by consumer characteristics and

contexts, decision-making, the purposes of consumption, the characteristics and marketing of products and by the direct context of consumption and societal contexts.

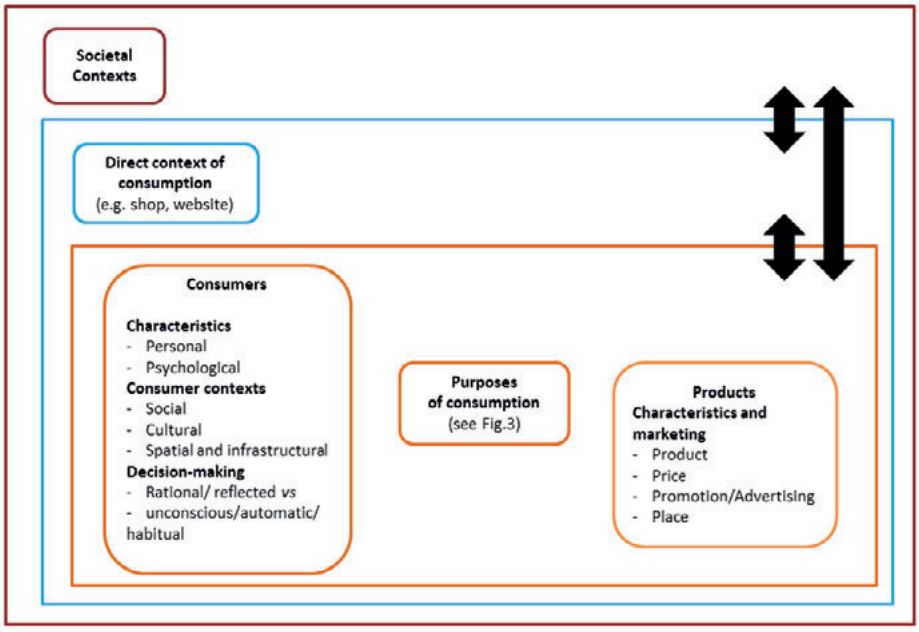

Figure 2.4 – Influences on consumer behaviour

Characteristics and contexts of consumers influence what they consume. Drawing on the factors described by Kotler et al. (2008), we define personal and psychological characteristics as well as social and cultural contexts.

Characteristics of consumers

Personal characteristics, i.e. age, job, income, lifestyle and personality, are often related to people's tastes and spending patterns. Lifestyles are "a person's pattern of living as expressed in his or her activities, interests and opinions" (Kotler et al., 2008, p.252). Personalities refer to psychological traits such as self-confidence, dominance, sociability, autonomy, defensiveness, adaptability and aggressiveness (Kotler et al., 2008, p.253). People with certain personalities are more inclined to consume certain products, as products can act as an extension of the self (Szmigin and Piacentini, 2015, p.235), stimulated by advertising that targets certain personality types (Haugtvedt et al., 1992). Marketing typically categorises people into different lifestyles and personalities in order to better target subgroups of consumers. Income, or one's economic situation, also plays an important role in what one can buy. From an economics perspective, income is the most relevant characteristic, and many studies describe changes in consumption due to changes in income, i.e. income elasticity of demand (see Lipsey et al., 1999).

The psychological characteristics of consumers described by Kotler et al. (2008, p.255) relate to aspects mentioned by other authors as part of the process of decision-making (Bettman, 1986; Jannson-Boyd, 2010; Szmigin and Piacentini, 2015; Norton et al., 2015): motivation, perception, emotions, knowledge, learning and memory, attention, persuasion, attitudes and beliefs. Peter et al. (1999) also highlight the cognitive and affective systems, i.e. the thinking and emotional responses of consumers. In marketing, several characteristics are studied in the setting of consumption: what motivates consumers to consume, how they perceive information on products (and which emotions drive consumers to consume), how they learn and know what brand to choose, what captures their attention, how they can be persuaded to opt for a certain brand and how they develop beliefs and positive attitudes towards certain products or brands.

Kotler et al. (2008, p.257) relate motivation to needs, as "a need becomes a motive when it is aroused to a sufficient level of intensity". Emotions such as stress and anxiety trigger some people to go shopping, which can provide a sense of security, control and distraction (Yarrow, 2014, p.4; Preston and Vickers, 2014). But how do consumers go from feeling a need to a specific act of consumption? This depends on the type of consumption, but is usually related to the ways through which consumers perceive, interpret and process information, their product or brand knowledge (product attributes, positive consequences of using products, the values the products help to satisfy, etc.), and to their attitudes and beliefs (Peter et al. 1999, Kotler et al. 2008).

Beliefs are thoughts that people have about something, either based on real knowledge, opinion or faith, and attitudes are someone's "relatively consistent evaluations, feelings, and tendencies towards an object or an idea" (Kotler et al., 2008, p.260). Attitudes and beliefs are learned over time and can be influenced by peers, family, television and advertising (Jansson-Boyd, 2010). However, research has shown attitudes failing as proxies for behaviour, in what is sometimes called the intention- or attitude-behaviour gap (e.g. Carrington et al., 2010; Ajzen and Fishbein, 2005).

Contexts of consumers

Social contexts of consumers are the groups to which consumers belong, or would like to belong, e.g. friends, family, reference groups (Kotler et al., 2008). It is in these groups that consumers seek information about products, although nowadays online consumer reviews also play that role (Chen and Xie, 2008). Consumers are also influenced by their groups, e.g. dress codes (Peter et al., 1999). Through socialisation processes, families pass on knowledge and beliefs about culture, subcultures and social class to their children, influencing their ways of thinking and feeling as well as their behaviour (Moschis, 1985).

The cultural context of consumers refers to shared aspects among most people in a society: values, goals, attitudes and beliefs, the meanings of certain behaviours, rituals, and norms of social institutions and of physical objects (Peter et al., 1999). Consumer culture theory (CCT), associated with anthropology and sociology, sees consumption as a sociocultural practice that

is historically shaped (Arnould and Thompson, 2005, p.875). People can be part of a culture, but also of subcultures (e.g. an immigrant group), and of a social class, within which attitudes and behaviours are somewhat shared. Also in psychology, culture is increasingly acknowledged as an explanatory factor for different consumption patterns and a key factor in the success or failure of international expansions of consumer products (Maheswaran and Shavitt, 2000; Ng and Lee, 2015). Anthropologists working in marketing firms research how consumers relate to products in their daily lives, in order to better inform companies on which kind of products are needed, or better suited to different [e.g. cultural] contexts (Salvador et al., 1999). Marketers are also attentive to the potential market opportunities created by changes in culture, e.g. a health and fitness boom (Kotler et al. 2008).

To the social and cultural contexts, we add the spatial and infrastructural context, as consumer choices depend also on where one lives and on their infrastructure, e.g. one does not buy CDs if one does not have a CD player. Consumers' decisions of where to buy will depend on their means of transportation and on the available spaces of consumption within their reach.

Consumer choices of and access to consumption spaces are studied in geography literature. Williams et al. (2001) show that ninety percent of UK consumers use their car for their main grocery shopping, But access to retail by carless, less affluent people has deteriorated. This is visible in food deserts, or areas of cities which lack shops selling (affordable) fresh fruits and vegetables. Shaw (2014), however, reinforces that alongside spatial accessibility, lack of culinary skills and personal preferences can also be strong barriers to consumption of fruits and vegetables. Consumers choose their shopping locations based on the goods they want to buy, and on notions of convenience, access, the value of goods and the shop ambience (Williams et al., 2001). Notions of convenience, value and habit vary from household to household, and depend also on the context of their daily routine (Jackson et al. 2006, p.47). While consumer choices between stores seem to be influenced by accessibility and convenience, choices of products within stores were mediated by value, price and quality.

Decision-making

Consumer behaviour is seen as the result of decision-making, and many theories have been proposed to describe how consumers make decisions (for a detailed review, see Jackson (2005)). In neoclassical economics, individual consumers process information and decide rationally what to consume, to maximise their satisfaction (i.e. utility in economics vocabulary). The assumption of consumer rationality is contested by all other disciplines. The field of behavioural economics uses insights from psychology to explain behaviour when the assumption of rationality does not hold (Dellavigna, 2009; Cartwright, 2011).

Still, some theories in psychology are close to the rationality model and explain decision-making as resulting from an evaluation of how the value of products characteristics measure up against expectations about the products (e.g. expectancy-value theory, see Jackson (2005, p.43)). The theory of reasoned action, developed by Ajzen and Fishbein (1980), integrates individual and social aspects. This theory sees behaviour as resulting from individual beliefs

and attitudes about a certain behaviour, but also from individual beliefs about what others think of the same behaviour (Jackson, 2005).

In marketing, Kotler et al. (2008, p.265) describe the decision process as going through the phases of need recognition, information search, evaluation of alternatives, purchase decision and post purchase behaviour. However, Kotler et al. also acknowledge that buying behaviour depends on the product (e.g. if it is expensive, or there is a lot of diversity between the brands of a certain product). If it is an expensive product with high degree of brand differences, it is more likely that a consumer conducts a reflective mode of thinking, i.e. follows the different phases of the decision process, and consciously ponder a decision.

In cases of cheaper and more routine shopping, consumers act on automatic or default modes of thinking (Szimigin and Piacentini, 2015), i.e. consumers rely on habits instead of following the phases of decision-making. The social practices theory in sociology conveys that much of what is consumed is not done in conscious intentional ways, but is actually part of routines and habitual behaviour (Shove, 2003). Even in complex situations that require consumer involvement, it has been observed that instead of rational optimising, people use heuristics, i.e. mental shortcuts that simplify reasoning in order to arrive more easily at a decision (Kahneman and Tversky, 1982; Tversky and Kahneman, 1973).

Purposes of consumption

Some neuroscientists explain differences in consumer behaviour by the evolutionary purpose activated, e.g. if the self-protection motive is activated, people will seek safety and take consumption decisions that emphasise adherence to the usual, so as not to draw attention (Griskevicius et al., 2014). But if the purpose of mate acquisition is activated, people are more willing to take risks and to stand out.

Characteristics of products and marketing

Consumer behaviour depends also on the characteristics of what is consumed and on how products and services are marketed. These two influences are illustrated by the notion of income elasticity of demand in economics and by the concept of “marketing mix” in the marketing discipline.

The law of demand in economics states that demand is inversely proportional to the price of a product (Lipsey et al., 1999), which indicates product prices as the main factor influencing demand. However, when studying the change in consumption due to a change in income or price, i.e. income or price elasticity of demand, economists found that demand depends not only on prices but also on the type of product. For some goods, demand increases when income increases (”normal goods”), for other goods demand decreases when income increases (“inferior goods” e.g. whole milk, starchy roots, in the US), and for another type of goods demand does not seem change with higher incomes (“inelastic goods”, e.g. basic items of consumption, like food). In the case of “status goods”, demand is positively related to their price, as prices confer status appeal.

The price of products is also mentioned in marketing literature as one of four elements, next to product characteristics, promotion/advertising and the place where products are accessible (Kotler et al., 2008). These elements are collectively called "marketing mix" because they can be directly influenced by marketing (practice), unlike the characteristics and contexts of consumers.

Authors in other social sciences are often critical of how marketing (practice) and advertising are used to influence consumers. Baudrillard, in *Consumer Society* (1998 [1970], p.74), states that the "*system of [consumer] needs* is *the product of the system of production*", pointing out that needs are created by advertising and marketing. Also, political economists see advertising as a key instrument in the creation of new "needs" and in "manipulating consumer preferences" (Schnaiberg, 1980 p.175; Skidelski et al., 2001; Galbraith, 1984 [1958]). Marketing (practice) appeals to consumers in many ways—the product design, the packaging design promotion for the product, via advertising on TV, outdoor, the internet—but also in the context where consumption takes place, i.e. the direct context of consumption.

Direct context of consumption

The environment or context where the choice takes place (e.g. the shop, the website) can also influence decision-making, either by choice architecture which can be changed to promote certain behaviours, or by priming (Szimigin and Piacentini, 2015). Colours, sounds and smells are all aspects used to influence consumers in the physical places where they make consumption decisions.

2.3.3 Societal contexts and agents that influence consumption

Based on Kotler et al. (2008), the societal contexts are demographic, economic, political/institutional, technological and cultural. To these five contexts, we add a geographic/spatial/infrastructural context, referring to the natural and physical environment of the city, region or country in which the consumer lives. We describe also the role of agents in some societal contexts.

Demographic context

The demographic context refers to the age distribution of a population and to migration patterns. An ageing population causes concerns with social security and implies larger governmental spending on health and senior care, as well as a higher demand for products favoured by the elderly (Kotler et al., 2008). International immigration can result in higher diversity of products being offered and demanded. Urbanisation, a development highly related to consumption increases, results from migration to cities.

Cultural context

The cultural context can be the same, or different, from a consumer's own cultural context, e.g. immigrants are used to a certain cultural context in their home country, and they deal with a different cultural context in the society where they live. Research in different disciplines

shows how patterns of consumption differ, e.g. economists observed that the kinds of goods that qualify as inferior, normal, inelastic and status vary across countries and cultures (Lipsey et al., 1999). The societal cultural context exists at many levels, e.g. eating culture, work culture, socialising culture. All these different cultures reflect certain ways of living, with an associated consumption.

Economic context

The economic context of a country determines very much how things are produced, or imported, and consumed. For example, for Kotler et al. (2008, p.197), subsistence economies "offer few market opportunities" because they produce most of what they consume. Many authors emphasise that in market economies and in capitalist systems, consumption is not only important, but actually essential. Neuroscientist Whybrow (2014) speaks of the dependence of the economy on mass consumption. The ecological economist Tim Jackson (2009, p.97) argues that the "throw-away society" is less due to consumer greed than a structural element of the economic system which needs novelty to keep expanding. The drive for economic growth fuels the need for innovating, selling more goods and stimulating higher levels of consumer demand (Jackson, 2009). Environmental sociologists, whose objectives are kindred to political economy (Foster et al. (2010, p.382)), warn against consuming less and saving more, as savings in a capitalist economy are used for investing and expanding the scale of the economy, and "such expansion is the chief enemy of the environment".

Skidelski et al. (2001,p.40) describe the factors through which "capitalism has inflamed [what they call] our innate tendency to insatiability": competition-driven creation of new wants through advertising; inequality of wages driving people to work more, in order to increase their wages; the free-market ideology hostility to the idea of having "enough"; and the ongoing monetisation of the economy, thus increasing the "sphere of relational competition" and promoting the love of money for its own sake.

A discussion on the relations between working, leisure time and consumption is present in sociology and political economy. This discussion can be traced back to Keynes, who predicted that productivity increases would lead to great reductions in working time, resulting potentially in a more leisure-oriented society (Skidelsky and Skidelsky, 2001). There is an ongoing debate on whether these predictions have come to fruition and to what degree (Trentmann, 2016). Schor (1991; 1999) sees the origins of post-war consumerism at the level of labour markets, as companies facing productivity growth preferred increasing wages to lowering working time. For Schor, consumerism is a learned behaviour, a specific product of capitalism, promoted by businesses, new ways of advertising and increased possibilities to pay through credit or instalments (Schor, 1991). The availability of credit is often mentioned by political economists (e.g. Galbraith (1984), Santos et al. (2014)), as it extends the potential for consumption. Many of the aspects here discussed, e.g. credit availability, worktime hours, advertising, wages, novel products, are defined and controlled by agents other than consumers, e.g. banks, governments, businesses.

Foster et al. (2010) criticise environmentalism's increasing focus on consumption, for emphasising the role of the consumers and disregarding the role of investors, production and profits. Similarly, Schnaiberg (1980) is wary of putting the responsibility solely on consumers, reminding us that while most production activities result in consumer goods and services, the decisions on production belong to producers, not consumers. Conceptualising consumption as inseparable from production, Fine (2016) developed the concept of systems of provision. He emphasises that an "analysis of consumption cannot be divorced from the systems of production to which it is attached, not just because they set prices for goods but because they are driven by the imperative of profitability that leads to changes in the nature of what is provided and corresponding attitudes to this by consumers" (Fine, 2016, p.42).

Political/Institutional context

Kotler et al. (2008, p.211) describe the political environment as the "laws, government agencies and pressure groups that influence and limit various organisations and individuals". Governments and other institutions influence consumers through incomes, taxes, credit availability, but they also influence what can be consumed, i.e. what is produced, how and where through regulations and trade agreements (Kotler et al., 2008). Economists study the effects of government expenditure on consumption (e.g. Galí et al., 2007; Cogan et al., 2010). Public procurement also contributes to consumption and plays a role in what is consumed (e.g. food) in public institutions like schools and hospitals.

Authors in political economy emphasise the role of states in consumption (e.g. Galbraith, 1984 [1958]; Schnaiberg, 1980). States can influence either by regulations (e.g. suburbanisation and the use of cars), or by the supply of public goods, which can both replace consumption or stimulate it, and consumption can be contingent to previous decisions of producers, consumers and governments (Schnaiberg, 1980).

Technological context

Technological innovation affects not only products and how products are made—the industrial revolution, for example, spurred by the steam engine, made it possible to mass-produce an increasing variety of low-priced products (Peter et al., 1999), but also how they are advertised. As consumers spend more time online due to the widespread use of smartphones, tablets and free Wi-Fi; also, companies spend more money on online publicity, and advertising is the main business model of the most popular technological companies. But technologies affect also infrastructures, such as through means of transport, which can in turn influence how products move, how people move and where they shop.

Geographic/Spatial/Infrastructural contexts

Consumption used to be much more restricted to what was available in one's geographical location. Nowadays, spaces of consumption are more and more accessible everywhere in the world, as well as online, but they are still the defining feature of contemporary cities (Zukin, 1998; Miles, 2010). Zukin describes modern urban lifestyles as increasingly involving cultural

consumption, (e.g. in the form of art and food). But she also denounces increasing competition between cities "for the international distribution of the same standardized, mass-produced, consumer goods […] as well as the same generalized 'aesthetic' products, such as art works and 'historic' buildings" (Zukin, 1998, p.826). This is visible in Spierings's (2006) account of inter-city competition in the Netherlands, where local authorities, driven by the competition of out-of-town retail spaces, upgrade their historical city centres by making them more accessible and walkable and by bringing in popular retailers.

While consumption in cities draws more and more of the world's resources, there is little attention to the global impacts of consumption. As Harvey (1990, p.422) says, "we can in practice consume our meal without the slightest knowledge of the intricate geography of production and the myriad social relationships embedded in the system that puts it upon our table". Research on "commodity chains" aims to focus on the geography of production chains and is influenced by Fine's systems of provision (e.g. Hartwick, 1998; Jackson et al., 2006).

The influences of all these contexts, and of the actors acting in them, becomes most visible when studying the evolution of consumption throughout history, which is dealt with in the next section.

2.3.4 Historical growth of consumption

The growth of consumption is explained by historical transformations of many contexts and by the actions of many agents. Here, for different historical periods, the views of historians are interspersed with explanations from other disciplines.

Societies where consumption had a prominent role have developed in different times and places, e.g. fifteenth-century Renaissance Italy, China in the late Ming dynasty, seventeenth-century Dutch Republic, eighteenth-century England, and the inter-war and post-war period in Europe and the US (Glennie, 1995; Trentmann, 2016; Cohen, 2004; Blondé and Ryckbosch, 2015). The history of increasing consumption is diverse throughout the world. It is time and country specific, but there are also common patterns, namely "rise in middle-class, culture of domestic comfort, urbanisation, boost in discretionary spending and increasing home ownership" (Trentmann 2016, p.356).

The long eighteenth century (1650 – 1850)

Throughout the long eighteenth century (defined as 1650-1850), in the Netherlands and afterwards in England there was a significant increase in consumption and production (de Vries, 2008; Bonneuil et al., 2016; McKendrick, 1982). Evidence shows that cultures of consumption preceded industrialisation's factory-style mass production (Trentmann, 2016; Glennie, 1995; de Vries, 2008), and demand was met by "artisan and protoindustrial production" (Glennie and Thrift, 1992, p.427).

De Vries (2008, p.52) states that in the seventeenth-century Dutch Republic, a society emerges for the first time in which "the potential to purchase luxuries and novelties extended well

beyond a small, traditional elite." In this period, fashion started to play a greater role than durability regarding material possessions (McKendrick, 1982). Similarly to fifteenth-century Italy, the value of goods became less linked to the intrinsic value of its raw materials and more to the taste and the artistic design of the crafted products, leading to a growth of the use of cheaper materials (Blondé and Ryckbosch, 2015).

The increase in consumption and production is related to an increase in working hours per household, as holidays were cut back across Europe, and women and children joined the workforce (Bonneuil et al., 2016; de Vries, 2008). There is no general consensus on what led to the related increase in working time and consumption, but possible explanations abound, e.g. social emulation, changing consumer aspirations, urbanisation and colonial expansion. McKendrick (1982) proposes social emulation in explaining the consumption increase in eighteenth-century England, alongside rising incomes and the fervent spread of commercialisation and advertising by mean of merchants, shopkeepers and peddlers. Through social emulation, lower classes imitate and copy the living style of higher classes. Trentmann (2016, p.109), on the other hand, argues that what is considered tasteful differs across classes. In other words, merchants and the middle class in 1750s Britain, instead of copying the old elite, "used new goods and tastes to establish new distinctions and create their own, more private culture of comfort".

Changing consumer aspirations are emphasised by de Vries (2008, p.52) as the driver behind "the industrious revolution", the pre-industrial revolution period in which households allocated more of their time to work. Increasingly exposed to a greater diversity of goods and shopping places, people grew accustomed to exercising their individual choices. In this period, fashion and taste instead of being solely related to higher classes became linked to a sense of modernity. There was also a growing appreciation of novelty as a source of pleasure in itself (Glennie and Thrift, 1992).

Exposure to new products in shops and markets was more common in cities. London, the capital of the colonial empire, hosted a significant share of England's population, serving as shop window for the country, particularly in the yearly "London season" (McKendrick, 1982). Trentmann (2016, p.93) describes four impacts of urban living on consumption: population density and mix allowed for product differentiation and services specialisation; new products and tastes were easily promoted and showcased in shops; self-provision of clothes and food was limited in cities; lastly, "reputation and identity were more fluid", which led to dressing being used as a sign of identity. Glennie and Thrift (1992, p.427) relate modern consumption in England to an unprecedented "confluence of capitalism, colonialism, and widespread urbanisation".

The increase in consumption is also inseparable from colonial expansion, technological progress and a changing notion of consumption as "an integral part of personal and social improvement" (Trentmann, 2016, p.106). Geopolitics, states and empires have shaped consumption using war, taxes and displacing people and goods throughout the world

(Trentmann, 2016). Global colonial trade allowed for and promoted the widespread dissemination of new commodities (e.g. tea, coffee, sugar and tobacco). The adoption of these new products in Europe and by colonisers in the Americas involved material and social changes. It might have even caused physiological changes, as coffee and tea acted as stimulating beverages, allowing for longer work and substituting a warm meal (Hunt, 2014; Smail, 2008; Trentmann, 2016). Drinking tea became a new social habit and a sign of civilisation and refinement, and the spread in coffee houses stimulated a public sphere for discussion of public and political life (Hunt, 2014).

From 1850 to 1960

Authors in geography and sociology mention the appearance of new spaces of consumption in cities. Benjamin (1968) analysed the spaces of consumption that emerged in the nineteenth century: world exhibitions and shopping arcades. World exhibitions were places where goods from all over the world, often from imperial colonies, were displayed. Benjamin (1968, p.81) described them as "places of pilgrimage to the fetish Commodity", where people "yielded to the [market] manipulations while savouring their alienation from themselves and from others". Shopping arcades were grandiose symbols of booming textile trade and of emerging new patterns of leisure and consumption shared across classes (Shields, 1989).

Department stores came after shopping arcades, followed by supermarkets and malls. Sennett (in Corrigan, 1997) explains the emergence of the department store as a response to the factory. Changes in production made it easier to produce a greater quantity and diversity of goods in very short times. The outflow of these goods required new spaces, as small shops could not handle the increase in supply. Department stores were endowed with persuasive tactics: an awe-inspiring architecture, fixed prices, free entrance for everyone, a luxury atmosphere (in contrast with the cheap products), the possibility of 'just looking', window displays and a pleasant, inviting staff (Corrigan, 1997).

Consumption has seen another surge throughout the twentieth century. Demand was stimulated through Fordism (Miller 1991; Short 1996), advertising and the promotion of consumption as a civic duty. Fordism involved increasing workers' wages to reduce absenteeism and worker turnover and to make workers potential customers (Bonneil et al., 2016). This process, alongside the provision of consumer credit by major companies, is described by Bonneil et al. (2016) as "disciplinary hedonism", an approach that intends to discipline labour and to stabilise markets by stimulating demand. This process involved also a shift in values, as habits of "repairing, economizing and saving were presented as outdated and harmful to the national economy" (Bonneil et al., 2016, p.156). This led, alongside technological innovations, to abandoning recycling practices, widespread in the nineteenth century (e.g. rags for paper, excrement for manure, etc.). The concept of convenience also emerged, and there was a shift in the perception of waste, which started to be more associated with time than with materials. Advertising shifted perceptions of cleanness and health in households when promoting new appliances such as fridges and vacuum cleaners (Miller,

1991). Already in the early twentieth century city suburbs in the U.S. dealt with increasing costs with servants' labour and longer distances from fresh food markets and shops, paving the way for the adoption of new household appliances.

After the Second World War, during years of economic boom, consumption became truly widespread in Western countries. According to the geographer Short (1996, p.112), factors that contributed to mass consumption were relatively high salaries, availability of credit and "an ideology that sanctions and fosters continued consumption". Short also highlights two icons of high consumption: the car and the suburbs. Cars permitted living in the suburbs and carrying more products, as shopping started to be done less frequently (Alonso, 1970; Shaw, 2014). At the core of these developments, Alonso (1970) describes higher and more equal wages that drew women into the workforce, which reduced the time available for home production and daily shopping and led to a greater use of time-saving household appliances and manufactured products. Other authors, such as economist Cardia (2008), suggest that it was technology, e.g. running water, that liberated women from household chores. Technology was also important for spaces of consumption, as inventions like escalators and air conditioning allowed for the development of indoor retail spaces of significant size like shopping malls (Weiss and Leong, 2001; Leong and Weiss, 2001).

The historian Cohen (2004) says that despite the need for goods created by a decade of depression and war, consumers in the United States were at first careful with spending their savings and war bonds. But an assembly of multiple actors (governments, labour unions, business, mass media, advertisers) propagated the notion that consuming, rather than indulgence, was a question of "civic responsibility" through which living standards of all Americans would be raised, by creating more jobs and consequently more consumers (Cohen, 2004, p.236).

In this period in Europe, Trentmann (2016) highlights the role of states in the consumer boom, as they decreased social inequalities by expanding social services in housing, health and education. He also reports throughout history and in different countries the emergence of consumer organisations and of cooperatives of consumers, showing the agency of consumers in lobbying for their rights and in actively shaping the consumption that is available to them.

From 1960 to present

The 1960s and 1970s saw problems with demand, as markets were saturated with standardised goods, the norm in post-war production. Streeck (2012), political economist, describes how advancing technology allowed producers to re-engineer products and processes, in order to diversify and differentiate previously standardised products, cars for example. This contributed to accelerated obsolescence and to the idea that only markets can satisfy consumers' specific and individual demands (Streeck, 2012).

Since the 1970s, and more significantly since the 1990s, consumption has been shaped by economic policies termed neoliberal, espoused by countries such as the US and the UK and by

international organisations, such as the World Trade Organisation (Klein, 2015). Neoliberal policies champion free trade and promote globalisation in the form of extending global trade networks, with the goals of economic efficiency. They have allowed for lower costs in manufacturing and subsequently, lower prices and higher demand for mass goods. These policies are criticised for benefitting mainly multinational corporations and threatening the development of local economies in less industrialised countries. But they are also promoted for stimulating the emergence of a consumer middle class in developing countries, through which wealth would trickle down (Kutting, 2004). Consumer aspirations have also increased and changed throughout the world, due to "the spread of global mass media, tourism, immigration, the export of popular culture and the marketing activities of transnational firms" (Ger and Belk, 1996, p.271). Currently, widespread access to social media only increases this phenomenon.

2.4 Conceptual Framework

The cross-disciplinary review shows that there is a diversity of answers to the question of "what influences consumption?". The conceptual framework represented in Figure 2.5 is an attempt at integrating cross-disciplinary views. In this framework, consumption is seen as influenced by three levels: micro, meso and macro. These levels interact with each other (visible by the black arrows), and they undergo historical transformations through time (depicted by the wide arrow in the background).

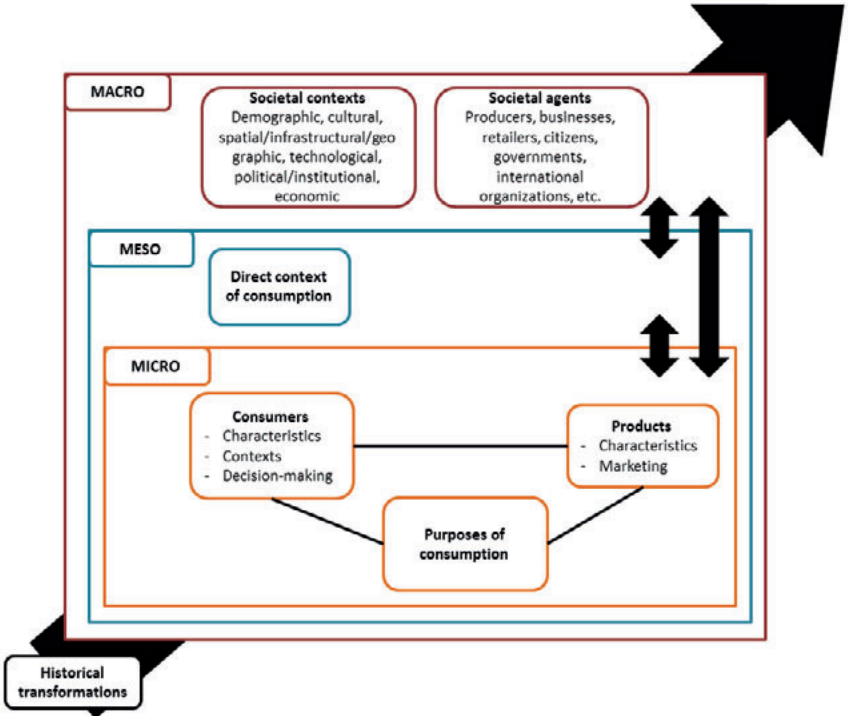

Figure 2.5 – What influences consumption? a conceptual framework

At the micro level, consumption is influenced by the following: i) consumers (characteristics, contexts and decision-making); ii) purposes of consumption; and iii) products (characteristics and marketing). However, consumption decisions often take place at a meso level. This level refers to the direct context in which consumption occurs (e.g. supermarket, online shop, etc.). Ultimately, consumption is also influenced by the macro level, i.e. societal contexts and agents (e.g. governments, businesses, citizens, trade organisations, etc.). Societal agents shape and are shaped by societal contexts (e.g. economics, institutions, politics, infrastructure). Elements at the micro and meso levels are also influenced by societal contexts and agents.

In Figure 2.6, we show how the framework can be applied to show how historical changes in the different elements contributed to the growth of consumption. Consumption growth in history results from the interconnected changes in societal contexts, consumers and products, purposes of consumption and the actions of agents other than consumers.

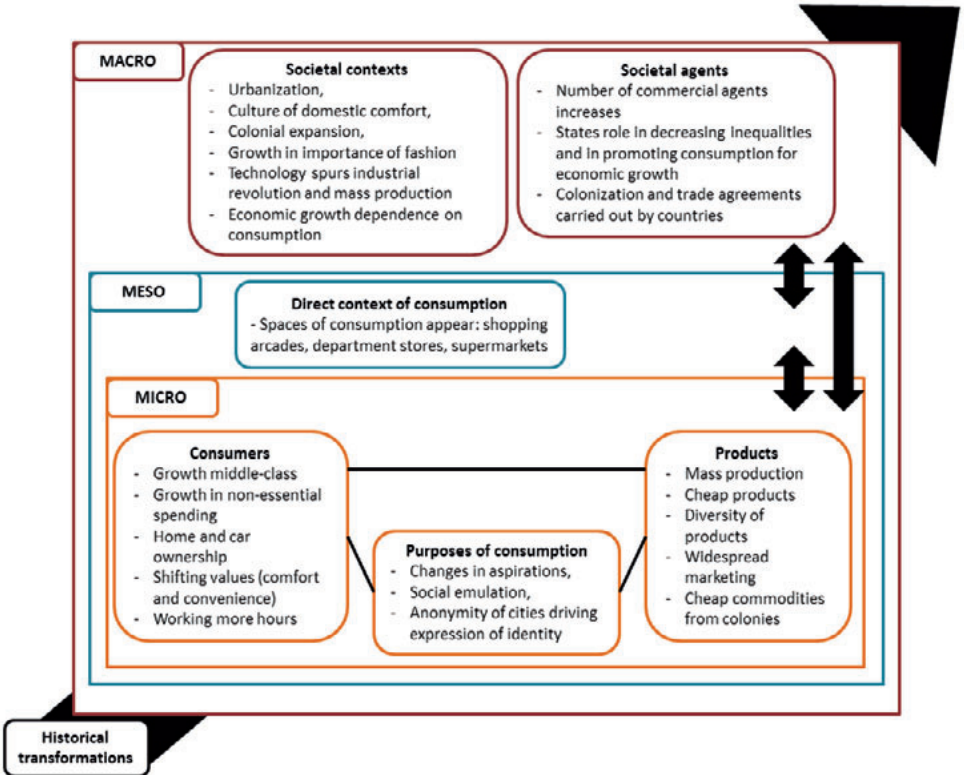

Figure 2.6—What influenced the historical growth of consumption?

2.5 Discussion

The initial aim of this paper was to provide a cross-disciplinary overview of explanations for what influences consumption. The cross-disciplinary review described four general themes of explanations, which were integrated into a conceptual framework. In this section, we discuss the added value and the limitations of reviewing 10 disciplines to better understand what influences consumption. For each theme (themes 2.3.3 and 2.3.4 were combined), we discuss 1) the main contribution of this research and 2) suggestions for future research. Afterwards, we discuss general limitations and recommendations.

2.5.1 Diversity of consumption purposes

Main contribution

Section 2.3.1 shows that consumption fulfils a rich diversity of purposes: individual preservation and survival, individual aspirations and satisfaction, social, practical and political. The results demonstrate that different disciplines sometimes explain consumption through similar purposes (see Fig. 2.3), e.g. neurosciences and anthropology mention kin care and expressing devotion, respectively. We have not found in literature such a cross-disciplinary summary of the purposes of consumption, although some authors, like historian Trentman (2016), refer to a diversity of reasons for why people consume. Somewhat analogously, Middlemiss (2018) reviews disciplinary explanations for unsustainable consumption, although not focusing specifically on purposes.

In some disciplines, like sociology and anthropology, different decades saw different purposes dominating their inquiry (Ilmonen, 2001). The currently trendy practices approach that highlights the practical purposes of consumption, overtook the cultural approach, which focused on meaning and identity. While new trends bring new insights, the dominance of any explanatory theory is counterproductive. Theories or explanations that stop being dominant do not stop being relevant, and they still have explanatory power which should not be forgotten. We believe such a cross-disciplinary visualisation of consumption purposes can help keep this diversity in mind.

Suggestions

There are two central research questions that could be asked. One, are all purposes innate in human beings, or have purposes evolved—and how have the ways through which purposes are fulfilled evolved? The purpose of expressing one's identity appears to have developed more in modern history, triggered by the anonymity of city living and by the increasing affordability of consumer goods (Røpke, 1999). The second question is how purposes could still be fulfilled with reduced consumption. This question could be explored by investigating consumers who aim to reduce their consumption and make it more sustainable.

2.5.2 Consumer behaviour – merits and limitations of marketing

Main contribution

Reviewing consumer behaviour across disciplines revealed the substantial cross-disciplinary work conducted by the marketing discipline, and it brought marketing's merits and limitations to the fore. Of all the reviewed disciplines, marketing is undoubtedly the most interdisciplinary, and it offers the most complex description of consumption. Marketing's models of consumer behaviour, although focused on consumer decision-making, acknowledge the existence of political, economic and sociocultural contexts, and our own conceptual framework builds on those models.

The limitations of marketing become evident, when seeing that these contexts are not very much studied, as they are seen as less malleable, in contrast with the factors that can be influenced by marketing ("marketing mix": product, price, promotion and place). This might be caused by the agenda of marketing discipline and practice. The goal is not only to understand consumer behaviour, but to influence it as well. Some marketing authors might insist that marketing merely identifies consumer needs in order to meet them, but others argue that marketing (practice) creates new needs, stimulating more consumption and a materialistic culture (Black et al., 2017; Ger and Belk, 1999), even if it could be used to stimulate less consumption (see research on "demarketing", e.g. Sodhi (2011)). Leaving aside the discussion on the role of marketing for sustainable consumption, we want to show the limitations of marketing in explaining consumption by focusing on two examples.

First, there is a tendency in the marketing textbooks reviewed (Peter et al., 1999; Kotler et al., 2008) to provide case-studies and examples of multinational corporations and brands. Bocconcelli et al. (2018) mention that large companies have always received more attention from marketing, and that knowledge about small and medium enterprises (SMEs) is still lacking, as usually SMEs were assumed to be just a smaller scale version of large organisations. In addition, less attention is paid to the wide diversity of contexts of SMEs (Jocumsen, 2004). Although apparently there is growing research on marketing of SMEs, the textbooks still highlight marketing in the context of multinationals. As small, local businesses can provide alternatives to mass-produced globalised products, one could ask how would marketing strategies differ, and be adapted to small businesses with little time and resources to spend on marketing. Perhaps marketing textbooks—the main introductory mean to the discipline—could be adapted to be of service not only to corporations but also to small businesses, producers, artisans and cooperatives, which also provide part of the world's consumption.

The second example is how the notion of consumer "knowledge" is described as something that influences consumer behaviour. It is straightforward to think that all kinds of knowledge influence consumer behaviour. However, in marketing textbooks, the examples refer to the knowledge of certain brands.

Suggestions

We argue that for the purpose of reducing and changing consumption, knowledge other than of brands is interesting to investigate: knowledge of repairing and maintaining practices, of using less and more environmental products, knowledge of the environmental and social consequences in the supply chains of most products (among all kinds of people). This understanding of knowledge and skills is also proposed by Thøgersen (2014) as one of the human limitations that causes unsustainable consumption.

2.5.3 Role of history and of non-consumer agents

Main contribution

In Sections 2.3.3 and 2.3.4, we showed the interactions between large scale societal contexts, the agency of businesses, states and consumers, and historical transformations in society. The importance of looking at the agency of non-consumer actors is in line with Akenji (2014), who calls it avoiding consumer scapegoatism, and with Sanne (2002), who emphasises the role of businesses, governments and people as citizens.

The dynamic between agents, technology and societal contexts becomes more tangible when focusing on specific cases. For example, washing machines were intended to save time, but people today own more clothes, which they wash more often, as standards of cleanliness have also changed (Røpke, 1999, p.412). The complex dynamics between agents, contexts and products are evident when studying the history of consumption.

The historical view is seldom researched within sustainable consumption (with some exceptions: Røpke (1999) and Chappells and Trentmann (2015)). A historical perspective is essential because it reminds us that societies were once different, even not that long ago. Many countries have transitioned to open market economies in the last 50 years. There is still a lot of memory, perhaps of poverty, which might have contributed to embracing consumption (Røpke, 1999), but also of knowledge of living with less and without wasting.

Suggestions

The first question that can be asked is what forces caused that knowledge to become less important, and can this knowledge be still revived and used? A second question is itself triggered by bringing to light the role that different agents played in stimulating consumption through history, that of which agents should influence societal contexts in ways that stimulate sustainable consumption, and how they can do it.

2.5.4 A more nuanced understanding of consumption – but what about production?

Main contribution

Integrating cross-disciplinary explanations for what influences consumption leads us to depict consumption as embedded in three levels and across multiple contexts, influenced by many agents and elements. These results support viewing consumption as a systemic problem,

entrenched within economic and political systems in modern societies, as stressed by other authors (e.g. Akenji, 2014; Brown et al., 2017; Fuchs and Lorek, 2005). But our framework also regards the role of consumers, emphasising that for consumption to be truly understood, all levels, with corresponding agents, contexts and elements, have to be considered.

Limitations and suggestions

When seeking explanations for what influences consumption, we often found answers that pointed to production (e.g. products, marketing, producers). It appears that consumption is inseparable from production, and that it makes more sense to speak of production-consumption systems (Vergragt et al., 2014; Geels et al., 2015). While it was outside of our scope, it would be equally important to understand what influences production. How would a conceptual framework for what influences production look like? How can the dynamics between production and consumption systems be understood? These questions are represented in Figure 2.7.

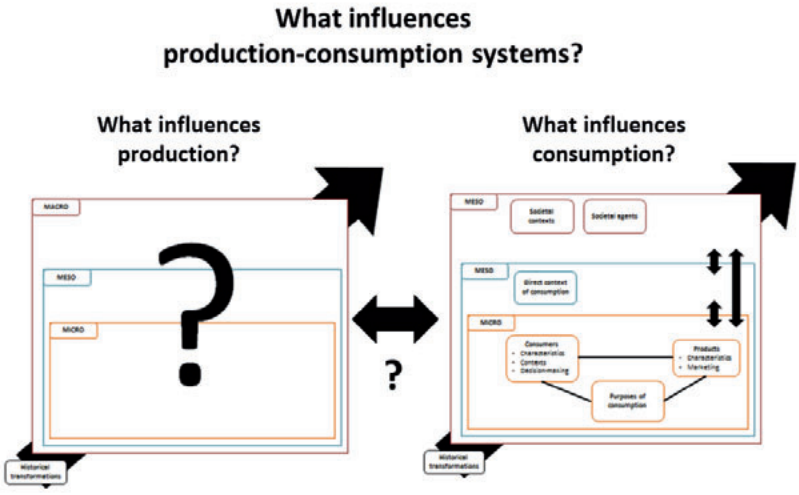

Figure 2.7 – What influences production-consumption systems is still unknown.

Understanding production-consumption systems is relevant because sustainability can only be achieved when the environmental and social impacts from these systems are greatly reduced, both through changes in the material nature of what is produced and consumed and through an overall scaling-down of these systems. Assessing impacts of consumption was also out of our scope, but ultimately for the goal of sustainability, we should investigate what kinds of interactions between the different elements of the framework can contribute to minimising social and environmental impacts of production-consumption systems.

In Figure 2.8, we hypothesise how a framework including production systems could look like, and we highlight interactions not only between agents and contexts, but also between agents themselves.

At the micro level, we speculate that producers would have their own production purposes, which would be also related to the products. Again, all levels are interacting and undergo historical transformations. Future research could investigate what kind of interactions between all levels, agents and contexts contribute to reduced social and environmental impacts and what is required from the different contexts and agents to reduce impacts.

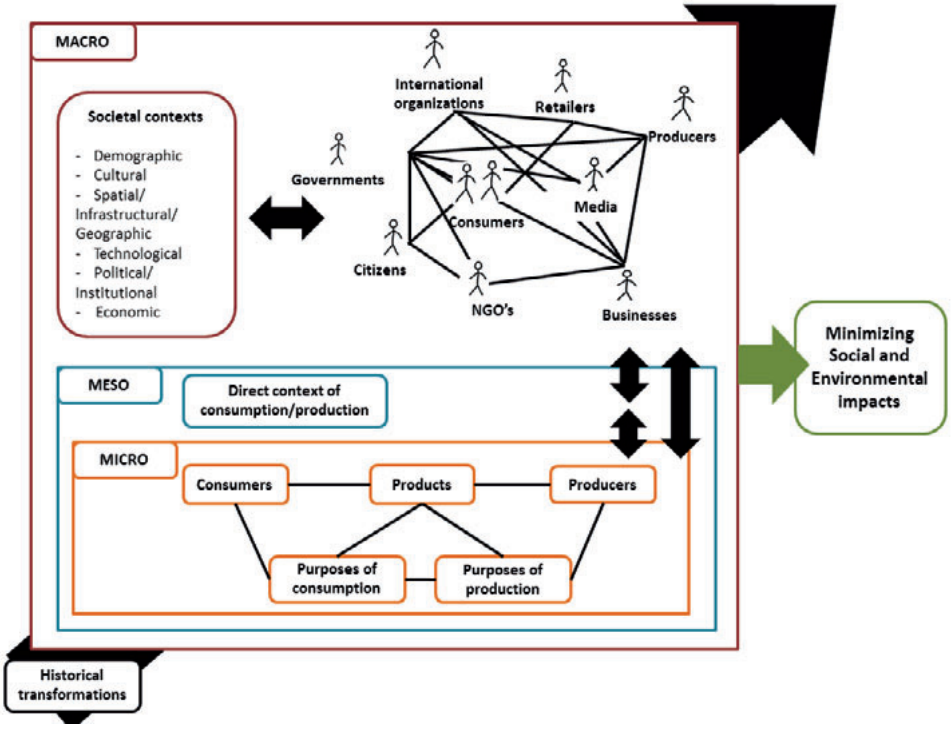

Figure 2.8 – Researching production-consumption systems in order to understand how to minimise social and environmental impacts - a hypothetical framework.

Using a broad definition of consumption was useful to keep a wide cross-disciplinary perspective and allowed to build the conceptual framework. However, to apply the framework, it would be better to focus on specific cases of consumption, or of production-consumption systems, as reiterated by Geels et al. (2015) and Fine (2016). Likewise, cross-disciplinary research is essential to keep in mind the multiple facets of a phenomenon, but it is not necessarily always required when investigating specific aspects of that phenomenon. The interactions between the levels of Figure 2.8, represented by the double arrows and their relations to social and environmental impacts, are to our knowledge less widely investigated in literature. That knowledge will likely require disciplinary and cross-disciplinary work and is essential to devise sustainable production and consumption policies, which are at the core of the UN's Sustainable Development Goal Number 12: Responsible Consumption and Production (UNDP, 2018).

2.6 Conclusion

Drawing from 10 disciplines to investigate what influences consumption allowed us to represent consumption as influenced by three levels, where multiple agents, contexts and other elements interact and which undergo historical transformations. These results add cross-disciplinary evidence to claims that consumption should be conceptualised as a systemic issue (including consumers) rather than an individual consumer phenomenon. We showed as well that, contrary to common discourse, consumption is not mainly caused by individual greed, or status purposes, but that there is a rich diversity of explanations for what influences consumption.

While production was out of our scope, the results often mentioned production, products and producers as influences of consumption, suggesting that consumption is inseparable from production. To contribute to the SDG Goal of Responsible Consumption and Production, future disciplinary and cross-disciplinary research on production-consumption systems should investigate which kinds of interactions between levels, agents and contexts can lead to minimising social and environmental impacts.

Acknowledgements

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Chapter 3

What do we need to need less? Reducing consumption in a growth-addicted society

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This chapter is based on a manuscript that has been submitted to a journal.

Abstract

Reducing consumption among high consumers is increasingly acknowledged as essential to address the climate and environmental crises. However, little is known about how consumption is reduced. Reducing consumption is often framed as merely abstaining from consumption. We investigated the practices and materials people use to reduce consumption, and the contexts that support or hinder them. We conducted six interviews and a survey (n=47) from people involved in communities sympathetic to the notion of reducing consumption. We propose a framework for reducing consumption, consisting of 1) abstaining from consumption, 2) engaging in low-consumption practices 3) consuming different materials, and 4) enabling or limiting contexts. Consuming differently means second-hand, durable/good-quality, alternatives to disposables (e.g., fabric handkerchiefs, menstruation cups, reusable water bottles, textile bags), resource-efficient (e.g., efficient shower nozzle), sustainable alternatives (e.g. organic, local, fair trade), and materials specific to low-consumption practices (e.g. repair tools). The low-consumption practices identified were being organised, sharing, extending lifetime, repairing, self-provision, and the enabling practices of learning and employing creativity. The following contexts can support or hinder reducing consumption: personal, social, cultural, geographical, systems of provision, and infrastructure/institutional. The pervasiveness of unsustainable provisioning systems is one of the main reasons limiting people from reducing their consumption.

3.1 Introduction

"It's time for Americans to buy less stuff" (Nguyen, Vox,2021)

"We need to stop buying stuff" (Chiles, the Guardian 2021)

"It's not that hard to buy nothing" (Robinson, NY Times 2020)

"Overconsumption and the environment: should we all stop shopping?" (Waters, The Guardian, 2021).

The idea that consuming less is key to tackle the environmental crisis has become more and more mainstream, as illustrated by the above headlines from recent years. The need to reduce consumption is increasingly acknowledged in literature calls for studying demand side solutions for mitigating climate change (e.g., Creutzig et al., 2018; Worrell and Carreón 2017, Allwood et al., 2017), and appeals from scientists to tackle high-consuming lifestyles (e.g., Wiedmann et al., 2020). Recent reports highlight the necessity of abandoning high-consumption lifestyles and the structures that foster those lifestyles to reduce greenhouse gas (GHG) emissions and stress on ecosystems (IGES, 2019; Newell et al., 2021; Brand and Wissen, 2021).

Among degrowth and sustainable consumption scholars, reducing consumption is often proclaimed as a requirement for sustainability, particularly in high-income countries, and among the middle and high-income classes. For Latouche, an early degrowth proponent, we

have *"to build a society in which we can live better lives whilst working less and consuming less"* (Latouche, 2009:9). Research on future scenarios (e.g., O'Neill et al., 2018b; Millward-Hopkins et al. 2020) shows it would be possible to meet the basic needs of the global population, while respecting planetary boundaries. However, that would require, a wide-scale adoption of efficient technologies, and radical changes to reduce consumption (Millward-Hopkins et al. 2020). Such changes would be a rupture with the historical prioritisation of consumption: in the past seventy years an economic model focused around increasing and diversifying consumption as a pre-requisite for economic growth has become dominant (Schmelzer, 2016). Hence, securing paths for a desirable future with greatly reduced consumption is a daunting task.

In the media, a common narrative is that you can either reduce consumption or shift consumption to more "sustainable", "green", products. As Nguyen (Vox magazine, 2021) puts it: *"sustainable shopping is still ... shopping. […] True sustainability requires reducing our consumption".* Putting it like this, suggests that reducing consumption in absolute terms is merely about refraining from consumption. But is it always that simple? In sustainable consumption literature, a "weak" approach, focused on efficiency and technological solutions is contrasted with a "strong" approach, based on sufficiency, which implies both a change in consumption patterns and a reduction in levels of consumption[4] (Fuchs & Lorek, 2005; Lorek & Fuchs, 2013). The empirical studies of people engaging in reducing consumption indicate that people do not only abstain from consumption (e.g., Black and Cherrier, 2010; Osikominu and Bocken, 2020). Reducing consumption is related to some, yet different, consumption (e.g., buying second-hand, or in bulk), and to what we designate as practices of low consumption (e.g., reusing, repairing, self-provision). In Table 3.1, we juxtapose these different views to highlight the shift in framing to which we aim to contribute. We aim for a shift from seeing reducing consumption as merely abstinence from consumption to understanding it as also requiring changes in consumption and practices (i.e., changing what people consume and what people do).

To better explore low-consumption practices and the contexts that support or hinder reducing consumption, we take inspiration from Social Practices theory (Shove et al., 2012), which highlights practices, materials, competences and structures.

In this paper, we aim to uncover the ways through which people attempt to reduce their consumption, including 1) abstaining from consumption, 2) the materials they use for reducing consumption, 3) the practices they engage in, and 4) the contexts that support them or constrain them when doing this. We focus on the themes of food, clothing, personal hygiene and cleaning. We conducted a qualitative survey (n=47), and six in-depth interviews with people who were aiming to reduce their consumption and/or to consume more sustainably.

4 In the 2005 paper the authors state clearly that this reduction is to happen in industrialized countries. In the 2013 they highlight that material consumption should be reduced mainly among the wealthy.

Table 3.1 – Perspectives on reducing consumption

	Common discourse				
	Buy "green" "sustainable" alternatives		VS		Stop buying/stop consumption
	Sustainable Consumption literature				
	"weak" Sustainable Consumption: efficient, green consumption		VS		"strong" Sustainable Consumption: reducing levels and changing patterns of consumption
	Empirical literature on reducing consumption				
	Abstaining from consumption	AND	Consuming differently for low-consumption	AND	Low-consumption practices

We should introduce the caveat that assessing whether consumption is in fact reduced is out of the scope of this paper. Literature on rebound effects (e.g., van den Bergh, 2011a) has shown that when there is a reduction in the financial resources spent on something, the saved resources are often spent on something else. This can also happen in the context of reducing consumption, but it is beyond the scope of this research.

3.2 Literature review

There is limited knowledge in literature on the ways people reduce their consumption and the contexts that support or hinder them, which might be explained by the following reasons. Firstly, most literature focuses on specific lifestyles associated with reduced consumption, rather than the phenomenon per se. Current studies look at lifestyles, such as minimalism (Dopierala, 2017; Hausen, 2019), voluntary simplicity (Alexander & Ussher, 2012; Craig-Lees & Hill, 2002; McDonald et al., 2006), downshifting (Schreurs et al., 2012), anti-consumption (Makri et al., 2020; Black & Cherrier, 2010; Cherrier, 2009; Hogg et al. 2009; Lee et al., 2009), and sufficiency (e.g., Sandberg, 2021; Speck & Hasselkuss, 2015). Secondly, studies addressing lifestyles of reduced consumption tend to investigate demographic and psychological characteristics of people (Craig-Lees & Hill, 2002; Huneke, 2005), their motivations (Callmer, 2018), the meanings they ascribe to their practices (Black and Cherrier 2010; Hogg et al. 2009), and the relationship between those lifestyles and wellbeing (Boujbel & D'Astous, 2012; Hoffmann & Lee, 2016; Oral & Thurner, 2019). Only few studies engage with the ways people reduce their consumption (e.g., Osikominu and Bocken, 2020; Sandberg, 2021).

The studies that do address the ways people reduce consumption show that reducing consumption is often achieved by 1)abstaining from consumption (e.g., reducing, rejecting); 2)

doing certain practices (e.g., reusing,, repairing, making yourself, donating, sharing), and 3) consuming things that enable the reduction of other things (e.g., buying second-hand, buying in bulk) (Black and Cherrier,2010; Ballantine & Creery, 2010; Bekin et al., 2007; Osikominu and Bocken, 2020; Sandberg, 2021; Shaw and Moraes, 2009) (see Table 3.2).

Table 3.2 – Strategies and practices for reducing consumption

Ways of reducing consumption	Strategies and practices for reducing consumption	References	Examples for clothes
Abstaining from consumption	Absolute reductions, rejecting consumption, reducing consumption, consuming less	Sandberg (2021), Black and Cherrier (2010), Osikominu and Bocken (2020)	Quit buying new clothes, use things for longer
	Reusing	Black and Cherrier (2010)	Reusing things
Consuming differently	Modal shift, consuming differently	Sandberg (2021), Osikominu and Bocken (2020)	Buying second-hand clothes, get repair kits/tools
	Buying second-hand	Ballantine & Creery (2010) ; Bekin et al., (2007)	
Engaging in practices that reduce the need for consumption of new material	Increasing longevity	Sandberg (2021)	Caring better for clothes
	Sharing/donating	Sandberg (2021), Ballantine & Creery (2010); Bekin et al., (2007)	Clothes' swaps, giving away or passing on clothes that one doesn't use anymore
	Repairing	Ballantine & Creery (2010); Bekin et al., (2007)	Fixing holes, rips in clothes
	Self-provision	Ballantine & Creery (2010); Bekin et al., (2007)	Knitting sweaters, socks, sewing own clothes, repurposing (e.g., using old clothes for other purposes)

This dynamic was also observed in an empirical study which dealt with reducing temperature of indoor heating and decreasing the frequency of clothes washing (Sahakian et al., 2021). In that study, participants started using different skills (e.g., smelling clothes to check if they need to be washed) and some bought new products, (e.g., warm pyjamas).

Thirdly, there have been few attempts at systematizing how people reduce consumption. Osikominu and Bocken (2020) developed a framework for describing the voluntary simplicity lifestyle, in terms of values, triggers, barriers, practices and effects of adopting the lifestyle. They listed 151 practices distinguishing broadly between consuming less, consuming differently, and doing something else (e.g, learning to cook, making preserves). Sandberg (2021), reviewing literature on sufficiency, has categorised four types of sufficiency practices: absolute reductions (e.g., reducing living space), modal shifts (e.g., shifting to plant-based diet), product longevity and sharing practices. These contributions bring more analytical depth to this field, but a more detailed framework for the ways people reduce consumption is missing.

Fourthly, no attention has been paid to the materials used when reducing consumption. The idea of consuming things to consume less might seem paradoxical. However, there are many examples of this, e.g., a reusable water bottle, handkerchiefs[5]. Can these products be dismissed as an expression of green consumerism (Akenji, 2014:13) or are they used to reduce the consumption of other products? In Social Practices Theory, practices are composed of three elements: materials (i.e., resources, devices, infrastructure), competences (i.e., skills, know-how) and meanings (i.e., symbols, ideas, and aspirations) (Shove et al., 2012). While there has been some research on the meanings associated with lifestyles of reduced consumption (e.g., Black & Cherrier, 2010; Hogg et al. 2009), there has been little attention to the materials and competences that are used or needed for low-consumption practices.

We address these four gaps by taking the following approaches. 1) We investigate reducing consumption practices and contexts, rather than the adopters of a certain lifestyle. 2) We ask specifically about materials used for reducing consumption, with two goals: to capture the material side of reduction, and as a stepping stone to identify low-consumption practices. 3) We focus on four specific daily life themes (food, clothing, personal hygiene and cleaning) to provide a more concrete picture of what reducing consumption looks like in those domains, and how that compares to current knowledge. 4)Finally, we investigate which contexts limit or support reducing consumption, to compare our findings to the barriers identified in literature (see Table 3.3).

Table 3.3 – Barriers to reducing consumption

Barrier	Reference
Consumer attitudes and behaviour	(Sandberg, 2021)
Lack of knowledge, lack of detailed information about sustainability and origins of products	(Osikominu and Bocken, 2020; Alexander, 2012)
Type of employment, working long hours	(Osikominu and Bocken, 2020; Alexander, 2012)
Social norms and pressure, social life and norms oriented around consumption	(Osikominu and Bocken, 2020; Alexander, 2012)
Exposure to advertising	(Alexander, 2012)

5 See for example: https://zerowastestore.com/collections/all

Physical environment e.g., low-dense urbanization, lack of alternative infrastructure to car-dependency and suitable transportation	(Osikominu and Bocken, 2020; Alexander, 2012, Sandberg, 2021)
Culture	(Sandberg, 2021)
Economic system, hard to find affordable (eco-)housing served by public transport	(Osikominu and Bocken, 2020; Alexander, 2012, Sandberg, 2021)
Political system	(Sandberg, 2021)

3.3 Methods

To explore the ways in which people reduce their consumption we wanted to maximize the richness of data collected, so we used two methods: in-depth interviews and a qualitative survey. We defined four themes of daily life to introduce the topic in a more tangible way: Food, Clothing, Personal Hygiene, and Cleaning. We asked respondents about the things they use that help them with reducing consumption or consuming more sustainably around a set of daily life themes. Daily practices (e.g., cooking, eating, cleaning) are often inconspicuous and carried out as part of routines, but they imply not only the use of the most varied material objects and resources, but are also enabled by large-scale material infrastructure (Spurling et al., 2013). We tried to capture wider contextual aspects by asking, for each theme, about "what made it difficult to consume less, or more sustainably".

As we saw, previous studies focused mostly on people engaging in low-consumption lifestyles, (e.g., voluntary simplifiers). We opened our query to people who were aligned with environmental concerns, and who self-reportedly tried to reduce their consumption or to consume more sustainably. We conducted six interviews using a purposive sample of people. Interviewees were selected based on the following criteria: studied or working on sustainability, or involved in sustainable initiatives (e.g., Community Supported Agriculture (CSA)). We conducted semi-structured interviews lasting up to two hours, in which we discussed how interviewees organised their consumption and practices of the daily life themes, and what material objects were useful in reducing their consumption. The interviews took place in person, or via online video calls, between August 2018 and February 2019. The interviewees were between 26 and 32 years old and lived in EU countries. More details can be found in Annex A (page 166).

To have a wider sample, we conducted a qualitative survey of participants in the degrowth and sustainable consumption online community[6]. We chose these communities because they are more likely to have people who try to reduce their consumption as part of consuming more sustainably. We sent an online open-answer survey to two mailing lists (degrowth and sustainable consumption) and obtained 47 answers. The respondents had the following

[6] Among the 47 valid survey responses, only one person replied with "No" to the question "Do you try to reduce your consumption", and three answered "No" to "Do you try to consume sustainably".

characteristics: 21 were reached via the degrowth- world rise-up mailing list [7] and 10 via the SCORAI mailing list[8], the other 16 got the survey because it was re-directed to them. Gender-wise, 20 identified as male and 27 as female. The average age was 40, with the youngest being 24 and the eldest 78. More details are available in section A1 of Annex A (page 166).

We analysed the data by identifying materials, practices and contexts that helped or hindered low consumption. The materials were a starting point to unravel the various approaches people take, the types of practices they engage with, and the competences and infrastructure they need either personally, or in their social and geographical surroundings.

The data was open coded with NVivo11. We coded the different ways through which people reduced their consumption (using the concepts of Table 3.2), and the constraints they experienced (using the concepts of Table 3.3). In the results, interviewees are identified by an "R", and survey respondents by an "S".

3.4 Results

The results confirm that reducing consumption is achieved by 1) abstaining from consumption, 2) consuming differently 3) engaging in low consumption practices, and 4) is influenced by a wide set of contexts: personal, social, cultural, geographical, systems of provision, infrastructural/institutional. Based on the results we propose a new framework for how consumption is reduced (see Fig. 3.1). This section presents the key findings with regards to the consumption themes investigated. Detailed results per theme can be found in the Tables A2.1-A2.4 in Annex A (pages 170 – 188).

[7] https://lists.riseup.net/www/info/degrowth-world
[8] SCORAI – Sustainable Consumption Research and Action Initiative - https://scorai.net/europe/

Figure 3.1 – Reducing consumption framework

How is consumption reduced?	Abstaining	• Rejecting • Using less • Using what you have, reusing
	Consuming differently	• Second-hand • Good quality, durable • Alternatives to disposables (e.g., reusable water bottle) • Resource-efficient • Sustainable alternatives (organic, local, etc.) • Others (e.g., tools for repair)
	Engaging in low-consumption practices	• Being organised • Sharing • Extending lifetime • Repairing • Self-provision • Learning • Employing creativity
	(Facilitating/hindering) Contexts	• **Personal** (time, preferences, knowledge, travelling, living situation, income) • **Social** ((un(supportive) relationships, learning and sharing with others, organising collectively) • **Cultural** (consumer culture, social norms) • **Geographical** (access to low-consumption services/products, climate and seasons) • **Systems of provision** (lack of package-free, lack of sustainable and durable, options, prices, marketing) • **Infrastructure/institutional** (educational, regulatory, non-commercial infrastructure)

3.4.1 Abstaining from consumption

The simplest way of reducing consumption is refraining from consuming altogether. Within this frame we consider rejecting consumption, but also using less of consumables at a time, and reusing. We find examples of this approach across all four themes, but it is less pronounced in the theme of Food (see Table 3.4).

Table 3.4. - Abstaining from consumption across daily life themes (quotes from respondents)

	Food	**Clothes**	**Personal hygiene**	**Cleaning**
Abstaining from consumption	Eating less, choosing with care	Buy as less as possible, not buy unless you need it, be unfashionable, "shop at home"	Use little cleansing agents, short showers, having just enough things	Not cleaning often, consuming less cleaning products, use a bucket to reduce use of water

In general terms, abstaining from consumption is mentioned as more important than consuming sustainable products: *"I believe in less consumption [more] than buying sustainable products"* (R2), *"I realized that it was more important to use things we already have, than to buy some sustainable product"* (R1).

Abstaining can mean merely not seeing the need of using whole sets of products, as elaborated by R2: *"if [the supermarket] would only sell what I buy, [it] would be extremely small […]. All these soaps, and shampoos, that is something I don't have."* In the Clothes theme, abstaining was related to the notion of having "enough" and buying for need and not for fashion: "*I buy very few clothes items, I am not a fashion person. I simply hold on to my clothes for a long time"* (S45). Respondents mentioned using what they owned until it broke apart, and "shopping" at home - finding forgotten clothes they could still wear. In terms of Personal Hygiene and Cleaning, abstaining was related to using little or less water and cleaning agents at a time, reducing the frequency of cleaning, but also to using few products: *"I don't want to own many things*" (S20).

Reusing was mentioned in the case of plastic bags (Food), clothing, and cleaning tools.

Not engaging in consumption because one does not see the need might appear straightforward, however, sometimes it requires fighting social norms, the wishes of partners, and notions of aesthetics. R5 convinced her husband not to renovate their kitchen, which he did not find beautiful, because: "*every time you renovate something you just throw a lot of material away, and I don't like it."* R3 reflects as well on the drive to renovate out of aesthetic reasons: *"we looked at a house and there was a bathroom, and it was old, and I didn't really like it. I was thinking we should replace it […] But on the other hand, it is functioning, why would you replace something that is functioning for something that looks better."* These comments

show the clash between reducing consumption and wider contexts of social norms, relationships, and aesthetic preferences.

3.4.2 Materials for reducing consumption – a paradox?

A key goal of this research was to identify materials people used for reducing consumption. While it might seem a paradox, we identified six types of materials that people use for reducing consumption: 1) second-hand, 2) durable, good quality, 3) alternatives to disposables/package-free, 4) resource-efficient, 5) sustainable alternatives, and 6) materials for low-consumption practices. We present examples for all themes in Table 3.5. We also note what type of consumption is reduced for each type of material, e.g., getting second-hand or durable, good quality materials will allow to buy less new materials.

Table 3.5 – Consuming differently for reducing consumption

Reducing the consumption of...	By consuming..	Food	Clothes	Cleaning	Personal Hygiene
New materials	**Second-hand**	Second-hand kitchen furniture, appliances, etc.	Second-hand shops for clothes, shoes	Second-hand cleaning appliances (dishwasher, vacuum cleaners, etc.).	-
	Good quality products	Good quality with warranty appliances	Good quality, long-lasting shoes and clothes	Good quality with warranty appliances (e.g. washing machine)	
Disposable materials/ Packaging	**Alternatives to disposables, Package-free**	Storage jars, boxes, cloth bags, cloth napkins, reusable water bottle and thermos, buying in bulk	-	Washable cloths and towels, cleaning tools that do not require bags. Detergents in bulk.	Fabric handkerchiefs, menstruation cup and reusable pads. Refills for shower gel, Solid shampoo and deodorant, soap bars.
Resources (water, heat, fuels)	**Resource – efficient tools**	Egg-boiler for microwave	Clothes that combine well	Drying rack	Efficient shower nozzle, timer in bathroom
Unsustainable goods	**Sustainable alternatives**	Organic, local, fair-trade, food.	Organic natural fibres, recycled fibres.	Ecological cleaning products.	Organic products.

Mix /Other	**Materials required in low-consumption practices**	Pressure-cooker to cook dried legumes bought in bulk	Repairing tools	Staples to clean (baking soda, vinegar)	Staples for do it yourself products (baking soda, sugar for wax)

The comparison shows that some materials are more prevalent in certain themes. For Food, the most mentioned materials were used for replacing disposables and for engaging in low-consumption practices of extending lifetime and self-provision. Common examples for replacing disposables are reusable bags (mentioned eight times) and a reusable water bottle (mentioned six times). S4 explains: "*I am using the same Dopper water bottle for 7 years now, which helps me to buy less plastic water bottles on the go."* S20 tells: *"to go 'plastic free' I need to spend time and money investing in the alternatives"*. On the other hand, R1 explains that she got some reusable products from her family, because they still had cloth napkins and bags for bread*".* By using own storage methods, one not only reduces disposables but can also, in some cases, control better the quantity that one consumes, as explained by S46: "*I use these little bags again and again and choose exactly the amount of food that I need, and I dispose less food because of doing so*." Disposables are seen as more convenient, but R5 explains she bought a 12 set of dishes to bring to picnics with friends and prevent the use of disposables. Replacing disposables for some people means buying in bulk, for which storage materials are needed. R1 shares: *"I had to buy some of the bigger glass jars that I use to store things in the pantry, but most of them were food jars that I cleaned, removed the labels and re-used."*

When it comes to Clothing, the most mentioned materials were second-hand stores, good-quality materials, and tools for repairing clothes or for extending lifetime, e.g., maintaining shoes with shoe brush and dye. S32 says he uses *"as much as possible second-hand clothing and repair so that the lifetime is at least 20 years or more*". S48 uses materials passed on by her mother: *"A sewing machine, sewing equipment, buttons, yarn, needles, etc. […] I never had to purchase any of these things. I'm using my mom's old sewing machine."* Second-hand items can be bought or passed on from friends, family, or in swap markets. R4 received trousers and shoes from colleagues and friends, as they know he is happy to use them. Buying good quality products that will last for longer is referred for clothes and shoes: *"I buy quality leather shoes that last"* (S12), *"ironically money helps since it allows me to buy better quality items that last"* (S16). But most of the mentioned materials are tools for repairing clothes: sewing kit and sewing machine, which are sometimes passed on by relatives or borrowed.

For Personal Hygiene, the most mentioned materials were used for replacing disposables. Ten people mentioned containers to carry small amounts, for refills or for storing self-made products, eight referred to solid shampoo bars which can be sold without packaging or in paper, reducing the use of plastic. Seven mentioned the menstruation cup or reusable pads. Some mentioned materials related to resource-efficiency, with three referring to water-saving showerheads. Three people referred to multi-purpose items, a new category, e.g., "*I try to use multipurpose items (e.g., a balm that can be used to style hair, as a face cream, lip balm*" (S16).

Finally, for Cleaning, the most frequent materials were sustainable alternatives, as 9 respondents referred to ecological cleaning products. Five mentioned alternatives to disposables (e.g., washable cloths, towels, cleaning tools that do not require consumables), and five named staples for self-made cleaning solutions: vinegar, baking soda, lemon, essential oils, linking to the practice of self-provision. One other group of materials was mentioned 12 times across four themes: computers, smart-phones, internet. These were used for the practice of Learning. To get information about products, but also to learn new practices, e.g., "*much info regarding recipes, tips, hacks is available for alternative cleaning methods, tools and products"* (S6).

3.4.3 Engaging in low-consumption practices

Reducing consumption is also achieved by engaging in low-consumption practices, which we categorised as Being organised, Sharing, Extending lifetime, Repairing, and Self-Provision, as well as two "enabling practices": Learning, and Employing Creativity.

Being organised

Planning and being organised was mentioned mainly with regards to food shopping: making a list, planning meals, eating before shopping, checking what one has at home before. But R3B argued that being organised was important in general: *"to be organised and know where all your stuff is, so you don't have to buy new things."* Avoiding disposable bags implies remembering to carry cloth bags/containers, and was mentioned by several respondents (S33, R1, R6).

Sharing

This practice was often mentioned as something that was enabled by living together with other people, as it would allow to share food, cleaning equipment (S36), or the task of picking up the local food box (R6). For Clothes it can mean finding ways of sharing clothes, e.g., by organising clothes swaps (S31, R6). In a broader sense, sharing can be facilitated by web platforms where people can lend things to their neighbours: the couple R3 borrowed biking travelling gear in this way. This practice is closely related to the social context, relationships and access to infrastructure that facilitates sharing.

Extending lifetime

This practice is about treating products in ways they last for longer. It was observed in the themes of Food and Clothing. For Food it meant mainly to store and refrigerate food, and to be able to carry leftovers. As for clothing, respondents mentioned maintaining shoes, and taking good care of clothes through air drying, washing at low or cold temperatures, and using gentle cleaning products.

Repairing

Even when taking good care of things, they still break, or degrade in some ways. When it happens it is important to be able to repair them, for which one needs repair competences

and tools, or to have access to people who can do the fixing. Repairing was the most mentioned practice for Clothing. Fifteen respondents mentioned sewing kits or sewing machines as tools for repairing clothes, and ten mentioned the practice of repair. Some people did it themselves, but two mentioned their mother as someone who would know how to repair clothing (S3 and S11). Some admitted they didn't plan to do it themselves (S23, S36), which highlights the importance of having relationships or services close by that can do it.

Self-provision

Self-provision can prevent shopping for new products when using resources one already has, but it might also imply the consumption of some resources for making homemade alternatives. Practices of self-provision are observed in all themes. For Food, this can mean preparing your own food, growing it, and preserving it, requiring access to a kitchen with some appliances, land, and tools for gardening, and containers for preserving. As R2 talks about her community garden: *"you always end up with too much stuff. So, we made marmalade and planned a pickled day for zucchini."* She contrasts the culture and availability of good canning jars in Italy, her home country, and the Netherlands, where she lives: *"in Italy, we have much more of an uninterrupted tradition of […] preserving things" [...]I reuse a lot of jars, [but] for preserves, sauces, marmalades, you need to have a good jar. In Italy […] there is a big market for this kind of jars where they sell the jars and the lids separately […]. You can buy them in Holland, but they are very expensive, they are like a fashion hip thing."* Still in Food, four people mentioned getting food from neighbours growing their own food, two mentioned composting, two mentioned sewing or crocheting their own shopping bags, and one referred to wild harvesting. For Clothing, two respondents said they make their own clothes. Self-provision was popular in Personal Hygiene as seven people declared making "do it yourself" (diy) products: e.g., R6 uses coconut oil and sodium bicarbonate to make a deodorant, R5 uses coconut oil as moisturizer. S35 uses a *"Small glass jar to store organic cocoa powder for makeup",* and *"sugar and lemons for sugar-waxing hair removal."* Also, seven people mentioned self-provision for Cleaning, either by making their own clothes, or cleaning solutions: *"Vinegar and baking soda have replaced most of our cleaning liquids"* (S27).

Enabling practices

Learning

The importance of learning was noted across all themes. Most often people used computers, smartphones and internet access for more information and tips, but books were also mentioned. Caring for things in a way that they last for long, repairing broken things, making your own products, choosing sustainable alternatives, all these actions imply learning new information and skills, which refers to the "competences" element of social practices. We can distinguish two main types of learning: information about sustainability in the theme, including environmental impacts and benefits of different options, and competences for repair, self-provision, or even just for using leftovers in a meal. S6 wrote with regards to cleaning: *"The Internet is of tremendous value. Much information regarding recipes, tips, hacks, etc. is available for alternative cleaning methods, tools, and products."* Interestingly, a lack of knowledge was one of the most mentioned limitations to reducing consumption, across themes.

Information is often lacking in the products, or is too small to be read (S3, S33), and sometimes people feel they miss certain competences, e.g., "*[Lack of] knowledge about how to make my own cleaning products"* (S10). Practices always imply acquired competences. While some are more easily accessible to everyone and can be learned online, via books or workshops, some competences tend to be passed in families, communities or between friends, such as mending clothes, growing food, and using leftovers.

Employing creativity

Creativity is important in several practices, e.g., finding multiple uses for things people already own. The way we observed it, it was related to resource-efficient practices, and multi-purpose items. For Food, R6 talks about using ingredients in creative ways to prevent waste. R6 says: *"Our cooking sessions usually start with what we have in the fridge. […] We cannot cook classic recipes […] if you want to use all the leftovers. […] you must be creative to upgrade the new meal you create. [...] it is not a system of recipes you learn by heart, like a book, it is rather a logic you use while you are cooking."* This narrative about being able to upgrade food contrasts with an experience from the couple R3, who plan beforehand the recipes for the week, and admit sometimes not knowing what to do with some leftover vegetables. Another way we can interpret creativity is the way R4 decides to use only one pot in the kitchen, for boiling water, making tea, cooking.

In the theme of Clothes, S3 mentioned using the clothes rack not only to dry, but also to air their clothing, reducing the frequency of washing. For Personal Hygiene, S35 uses cocoa powder for eyebrow make-up, eye shadow and bronzer. As for Cleaning, S41 tells: "[I use a] *microfibre cleaning mop, [...] to collect dust, then I only must use my vacuum cleaner to vacuum my cleaning mop (not the entire floor)".* S17 writes that they reuse the vacuum cleaner bag.

3.4.4 Contexts

This section presents the results for the question "what makes it difficult to reduce consumption in the theme of X?". The answers were categorised into different limiting contexts, but we noted that some answers to the first question on the materials that support reducing consumption indicated enabling contexts. We refer to both sides in this section, even if the framing of limitations was predominant. We have categorised six different contexts: Personal, Social, Cultural, Geographic, Systems of Provision, Infrastructure/Institutional. Culture was not mentioned in the theme of Cleaning, and Infrastructure/Institutional was only mentioned for Food, but we included it for a broader discussion.

Personal context

We identified six key aspects under Personal context: Lack of time, Personal Preferences, Lack of knowledge, Travelling often, Living situation (alone, with others, with children or not) and Income. Income was mentioned by 4 interviewees, who acknowledged they consumed less when they were students and had little income.

For Food, lack of time was mentioned 12 times, related to busy working lives. S9 admits that *"thinking in advance what to cook and what to buy, choosing appropriate products, all that requires time and cognitive effort"*. S27 shares*, as a working professional […] there isn't enough time to go to the destinations where I can buy things in bulk and with no packaging*". These comments suggest that finding sustainable alternatives is burdensome, while the non-sustainable is more convenient and easier to be found, which points to the underlying structure of Systems of Provision. Personal preferences were mentioned ten times, acknowledging personal motivations for wanting diversity, ingrained habits, taste, and wanting convenience, e.g. *"I like to eat less sustainable things because they taste good and provide variety"* (S23). A lack of knowledge was referred to 6 times, with regards to what sustainable food is, how to garden, and a struggle with contradictory information. Finally, traveling often makes it hard to get involved in a CSA for those would want to support regional food.

For Clothing, seven people declared a lack of knowledge, about the products, e.g.*, "not knowing if affordable shoes are long-lasting*" (S36), the environmental impact of the fashion industry and what sustainable alternatives would be. Three people admitted their liking for shopping, e.g., "*my desire of shopping and getting dressed nicely"* (S40).

As for Personal Hygiene, seven people mentioned a lack of knowledge on sustainable options, e.g. *"I use solid shampoo but I'm not sure if it is any better than fluid shampoo"* (S4). Four respondents said they had too less time to make their own products, and four others admitted their preferences for less sustainable habits, e.g., *"I really like baths"* (S2).

Finally, for Cleaning, four people mentioned a lack of time for making diy products, or for cleaning without using more damaging products: *"if the task is to be done quickly and thoroughly, there is probably a product (however damaging it may be to society and environment) that is available"* (S6).

Social context and collective organising

Social relations can be supportive or unhelpful in engaging in certain practices. For Food, S9 reflected on the drawbacks of living alone: *"Cooking for one person is sometimes difficult because often the portion turns out to be too big, and the food either goes to waste or I end up eating the same lunch for four days in a row".* S36 recognized the advantage of a shared flat for sharing food with flatmates instead of wasting it. S37 reflected on the role of the social environment: *"if I would be able to organize better and share cooking tasks with a group of friends or if there were similar structures, it would be much easier."* The influence of those around you can support or hinder your sustainability efforts. For S37, "*there's kind of a group pressure if you move in certain groups to do things fast and convenient, e.g., drop by in a fast-food restaurant"* while S48 states: *"when people around me eat vegetarian or vegan it is much easier to stick to veganism"*

For Clothing, sometimes it is one's relationships that know how to repair things (e.g., S3's mother), who can lend the tools (S27: "*A sewing machine is really handy and I look forward to*

borrowing my sister-in-law's machine"), or who have passed their tools (S33: *"I have my grandmother's old Singer sewing machine from 1902")*. On the other hand, S36 talks about *"lack of company and social motivation to go to repair workshops"*, and R5 complained about a strong peer pressure to use new clothing at parties. For Personal Hygiene one person mentions the factor of living with people not concerned with sustainability. And for Cleaning the same arguments are made: *"Living in a shared flat where someone always has cleaning equipment available"* (S36). But different motivations can make it hard, as told by S27: *"My husband does some of the cleaning, but he's not passionate about zero-waste or sustainability and he doesn't take the time to learn about the uses of vinegar and baking soda - so sometimes he comes home with a new commercial product in plastic."*

Collective organising is something that is enabled by social relations, and that is key to sharing resources, and finding ways of avoiding conventional markets. For example, R2's experience in a CSA: *"When I was part of one [CSA], I had to go to the supermarket twice in six months. You could buy almost everything, and you knew where everything was coming from. […] I recognize that it is a lot of organising [...] But this can also be done in smaller groups".* R6 speaks about the role of community: "*if you are in a community, you raise the possibilities. If I would live alone I would […] have more and less people would use it […] But on the other hand, I could not be so much in the role of creating space for possibility, which I love. [...And] then you need one printer less, or you don't need three screwdrivers."* R6, S29 and S31 also spoke about organising clothes swaps with other people.

Cultural context

This context was less touched upon, but the message was similar across themes. For Food, S6 spoke of *"popular culture and distractions urging consumption habits"* (S6). Regarding Clothing, five respondents mentioned fashion trends detrimental to simple living, culture of consumption and constant temptations. Lastly, for Personal Hygiene, S41 spoke of *"social norms on how to look and smell"*, and S6 addressed *"popular culture and imposed values and standards"*.

Geographic context

The geographic context refers to the bio-geographic conditions and what is physically accessible around one's place. Seasons and weather conditions influence things like the need for varied clothing (S44, S29), or limit food variety e.g., *"in late spring I would be limited to preserves, potatoes and cabbage, which from experience becomes boring very quickly"* (S23), and for S2 and S44 local, ecological farmers are only available in the summer.

But accessibility is the most mentioned aspect (12 times in Food, 5 in Clothing, 7 in Personal Hygiene, and 3 in Cleaning). For Food, it is often about having to go further to the supermarkets, or markets where more sustainable or bulk food is available. For Clothing, people mention the existence of local repair or second-hand services, e.g., "*It is very useful to have a tailor and shoemaker in my locality. When I lived in places that no longer have such*

professions, it led to me buying replacement items long before it was necessary" (S23), "*lack of good second-hand stores and repair workshops nearby or on the way to work"* (S36). S19 appreciates the existence of a *"room for a free shop in [his] local social center"*. For Personal Hygiene, respondents declare a lack of options in their local shops, and for Cleaning, S27 complains about the distance to the bulk vinegar store: *"it's very inconvenient to go there since I travel by bike and public transit"*.

Systems of provision

The systems of provision context are about the systems of production and consumption and how they operate to facilitate or hinder reducing consumption. The systems of provision were the most mentioned limiting context, with diverse aspects referred to (see Annex A, Tables A2.1-A2.4) We address here the most common factors: Lack of package-free and bulk options in shops, lack of sustainable alternatives in shops (organic, local, durable), the prices of sustainable alternatives, and the marketing and low-prices of prevalent unsustainable options. Regarding Food, the lack of non-packaged goods in stores was mentioned 13 times, showing that finding non-packaged products can be an ordeal: *"most of the vegetables and meat sold in the supermarkets comes with hard plastic packaging"* (S47). Eight respondents complained about the high prices of organic products compared to the cheap unsustainable food. Four people mentioned the limited options for buying organic or local food; *"It's not an easy and natural part of our shopping system to have locally produced organic food available"* (S27). Another four denounced marketing approaches by supermarkets, e.g., *"cheap meat at the front aisle"* (S3), discounts *"2 for 1"* (S25), *"advertising of food chains and supermarkets makes it sometimes hard to resist buying fancy but not sustainable stuff"* (S37). For R6, using a small shop keeps you from temptations of buying more stuff, and S46 misses "*small shops "around the corner" that give the opportunity to buy individually and sustainably".* But navigating where to shop for what can be a hassle, as S27 explains: "*There are too many different stores to go to - either for the different foods desired (i.e.: unpackaged cheese, unpackaged meats, unpackaged fresh produce, bulk dry goods) or for the variation in prices".* It does not help that farmers' markets are not open in the evenings (S36).

For Clothing, ten people mentioned the high prices of sustainably produced clothes, six shared that it was hard to find durable, good-looking items, e.g., *"lack of high quality and durable alternatives"* (S16). Six other respondents criticized the ways items are not made to last and are produced in unsustainable ways, and S3 pointed out the fact that new clothing is very cheap. Another issue mentioned three times is difficulties findings certain types of clothes and specific sizes in second-hand stores.

For Personal Hygiene, seven people denounced the prevalence of packaging in shops, five referred to the lack of refill and bulk services for cosmetics and other products, three pointed out the lack of eco-alternatives and three complained about the prices of sustainable products. R4 believes businesses create artificial needs: *"I think it's just an invention of businesses, to give an impression there is a soap for your finger, for your hand, your feet".* Regarding Cleaning, five

people said sustainable cleaning products were lacking in supermarkets, and four referred to a lack of information on the sustainability of the cleaning products, e.g., *"products labelled as green are not always green"* (S30).

This uncertainty towards assessing what is most sustainable was observed in other themes and is related to the lack of transparency of conventional supply chains, from not knowing the origins of products (S3) or what staples they contained, such as palm oil (S28). But even when some information is clear, the choices can be hard. Two people struggled with the contradictions of the organic cotton offer at a fast-fashion brand. For Food, R6 elaborated clearly on the burden of choosing the "right" option:

"*It gets difficult if the [cucumber] which is packaged comes from my region, and the [cucumber] which is not packaged comes from Spain. […] On one hand I think every little action counts [...] On the other hand if I go to the supermarket there is no right thing to do in the wrong system. [...]I could just go and do other projects […], and have more energy and a better motivation to really change something, not just the size of the package I was thinking about for 10 min."*

These reports show that regardless of individual motivation, the present state of most systems of provision make it hard to consume less, and more sustainably.

Infrastructure & Institutional context

This context was only lightly addressed by our respondents, but just as systems of provision will need to change to stimulate and support low-consumption practices, it is important to question in which ways can infrastructure and institutions promote long-lasting, non-wasteful products, supply chains, practices and services. In this context we consider structural aspects that are not directly related to provision systems, but that can influence people's ability to reduce their consumption.

Some infrastructural aspects mentioned within the "Personal context" could be considered here: e.g., land available to grow food. While some people own or rent land, municipalities and other institutions can also facilitate access to land, and safeguard land for growing food within the zoning of cities. Land can also mean access to space for other practices, as told by R6: *"[the garden] is a place where we can build furniture […] without having more space, and without making our flat dirty"*. Space for storage is also a recurring theme. S24 values the space in her home that allows to buy larger quantities and reduce packaging. In contrast, R2 told that the CSA she belonged to had access to a storage space from the municipality.

At another level one could think about the skills for repairing, for self-provision, for creative use of waste, and how to a) disseminate these skills in schools, universities, neighborhood centers, and b) create public spaces with the tools and room people need to pass those skills or just to enact those practices of low consumption (e.g., tool libraries and repair cafes). S36 spoke of the need for online libraries to facilitate sharing among people: *"a stationary lending library requires me to bring stuff to the station far away, […] In an online-based lending library, people can come to pick the stuff up from where I am."* This respondent also mentioned the

importance of repair workshops: *"I don´t need to own the sewing machine myself"*. Yet another level, is that of regulatory institutions and policies that can ensure the right to repair, support second-hand uses, and fight waste.

Ultimately, it is possible to understand reducing consumption and engaging in practices of low consumption as something that can be greatly influenced by all these contexts, as represented in Table 3.7 below.

Table 3.7 – Contexts that support or constrain engaging in low-consumption practices. Example of repair practices.

Personal	**Social**	**Cultural**	**Geographical context**	**Systems of provision**	**Infrastructure/ Institutional**
Motivation, time, skills, tools	**Relationships with whom to share knowledge, tools, materials, motivation, company, support**	**The narratives that are disseminated in pop culture regarding consumption**	**Possibility of accessing easily suitable services and products in one's daily life (e.g. second-hand shops, repair, bulk).**	**What is available to consumers is long-lasting, and/or repairable, tends to be package-free, and in environments that do not stimulate over-consumption.**	**Low-consumption skills are taught and disseminated in schools and communities. Legislation and policies tackle overproduction, waste and planned obsolescence throughout the supply chains.**
Example of repair: Repair by yourself or ask someone else. You need knowledge, tools, time, motivation, willingness	Someone who taught you how to repair Someone around you who has the skills and tools to share You can start a repair café with friends.	Campaigns are made to disseminate the importance of repair, prioritizing it to discarding.	You can access services of repair around you You can easily access a tool library, and someone you don't know but who can teach you to repair. You can go to a local repair cafe	The products are repairable The warranty is long and guarantees repair The company makes long-lasting repairable products, Companies share widely info on how to repair their products	Repair skills are taught at school, Repair services are incentivized, and workshops for repair are available in public spaces. Legislation ensures right to repair

3.5 Discussion

In this section we highlight our main contributions, discuss keys points for future research, and the limitations of our research. The results consolidate the need for reframing how we think about reducing consumption, and our key contribution is a framework that describes how consumption is reduced (Fig. 3.1). We challenge the narrative that merely individual willingness is required to stop consuming, which echoes the recurrent calls for frugality throughout history (Claeys, 2019; Witkowski, 2010). The results emphasize that reducing consumption is about abstaining, shifting consumption, engaging in low-consumption practices – involving competences and materials - and creating supportive contexts: personal, social, cultural,

geographical, systems of provision, and infrastructure/institutional. We have five contributions.

Firstly, we investigated reducing consumption among people not necessarily associated with a specific lifestyle, but merely sympathetic to the idea of reducing consumption and consuming sustainably. The results show that these people describe similar approaches to reducing consumption to those engaged in voluntary simplicity and other lifestyles (Sandberg, 2021; Osikominu and Bocken, 2020). However, we took it further, by achieving two other contributions: a comparison of reducing consumption approaches across consumption themes, and the identification of types of materials used when reducing consumption.

The comparison across the four themes of daily life (Food, Clothing, Personal Hygiene and Cleaning), showed that people were more likely to abstain from consumption for Personal Hygiene, Clothing and Cleaning. In these themes at least 8 people answered with expressions of sufficiency. For clothes it meant using what you have, buying only when in need and being resistant to fashion trends. For hygiene and cleaning, it is about using less of consumables at a time, using few products in general, and reducing the frequency of cleaning. For some people, and in some respects, this is easily achieved, when they refrain from things that they do not feel the need for (e.g., not wearing make-up, or not using shower gel and liquid shampoo). However, sometimes it implies tensions and negotiations with close ones, such as refraining from renovating the kitchen, and going against social norms. Tensions with social relationships regarding reducing consumption have been acknowledged before (Isenhour, 2010; Alexander and Ussher, 2012; Osikominu and Bocken, 2020; Boström, 2021), and authors have also stated and explored the importance of engaging in sustainability behaviour as part of a group (Keneddy,2011; Sahakian et al., 2021).

Our third contribution is the first analysis of materials used when reducing consumption. While consuming for reducing might seem a paradox, we found additional evidence that consuming differently is a key element for reducing consumption. We identified six types of materials people use: second-hand, durable/good-quality, alternatives to disposables (e.g., fabric handkerchiefs, menstruation cups, reusable water bottles, textile bags), resource-efficient (e.g., efficient shower nozzle), sustainable alternatives (organic, local, fair trade), and materials for engaging in low-consumption practices, (e.g., wax for shoes, sewing kit). We found that materials that replace disposables or that allow for buying in bulk are popular in the themes of Food, Personal Hygiene and Cleaning. For Clothing, people mentioned second-hand shops, buying durable, good-quality products, and tools for practices of repair and maintaining. Besides replacing disposables, for Cleaning the most mentioned materials were sustainable alternatives, such as ecological cleaning products, and staples for diy cleaning solutions. In common narratives, sustainable consumption is contrasted with reducing consumption, but in our results, we see that there are different types of consumption besides what is typically associated with the "sustainable" alternatives.

We should emphasize the term consuming differently does not mean that the materials listed must be bought. Respondents told about getting products from family and friends, but also in more formal spaces such as free shops and clothes swap events. The idea that consumption must change and not only decrease is present in the work of Gough (2017a, 2017b). He termed it "recomposition of consumption" which should be supported by public policies that stimulate the shift towards certain types of consumption and a reduction of other types, alongside defining an interval of sufficient consumption.

One question that was out of our scope was evaluating how sustainable certain approaches or materials were. In particular, there are many products advertised as “green” that could be considered unnecessary. For example, we found two ways to reduce washing frequency: S3 merely aired their clothing in a drying rack, while S44 used “environmentally-friendly” freshening sprays. In the zero-waste community, it is acknowledged that some products advertised as “zero-waste” are unnecessary, causing waste while claiming to prevent it (Spiteri, 2021). Future research should analyze more in-depth the variety of products marketed as “green” and propose some criteria for “greenwashing” products, but also explore the role of non-commercial spaces and events for circulating second-hand products, and diy competences.

Fourthly, partly through the materials identified, we detected seven low-consumption practices: being organised, sharing, expanding lifetime, repairing, self-provision, learning and employing creativity. Being organised is about planning and knowing what you have and is more often mentioned for Food shopping. Sharing is often about living together with others to share tools and food but can also be facilitated by online platforms. Expanding lifetime was observed in Food practices for storing longer, and in Clothing, in ways of caring for clothes and shoes that extended their lifetime. Repairing was also popular for clothes and shoes, and the work was done by respondents, their relatives or professionals. Finally, Self-provision was common for Food, including food growing and preserving, and for Personal Hygiene and Cleaning, where people made their own products out of simple staples. We consider Learning and Employing creativity as enabling practices. Learning was mentioned in all themes and often done via computer and internet. Respondents wanted to learn more about sustainability facts and practices for self-provision. Creativity was mentioned for using leftovers to make new dishes (opposed to cooking only set recipes), and was interpreted in other cases of resource-efficiency (e.g., reusing vacuum cleaner bag). Creativity has been mentioned before in the domain of clothes repair, upcycling and self-provision (Lapolla and Sanders, 2015). Osikominy and Bocken (2020) noticed that voluntary simplifiers took some time to learn both about the interconnections between economy, environmental, and consumption systems, and about self-sufficiency skills. Boost and Meier (2017) see knowledge and skills as preconditions for subsistence practices, but they mention also aspects such as access to land (e.g., for food self-provisioning). Engaging in some practices might require access to certain services, for example, repairing clothes, one might be able to do simple repair, but need access to a tailor for more advanced repair. Some people mentioned they had no time, or interest in learning how to

repair or some self-provisioning skills, which shows that these practices can be seen as extra work. In fact, Hobson et al. (2021) describe such practices as "consumer work" necessary for circular economy models to fully function.

Fifthly, practices can be fostered or hindered by six main contexts: personal, social, cultural, geographical, systems of provision and infrastructure/institutional. In comparison with the barriers mentioned in literature, we highlight existing systems of provision as a key limiting context. In contrast, we had only one respondent referring to the economic context, but we agree that political/economic context should be added to the framework, as systems of provision are highly influenced by economic growth policies. The most mentioned contexts were the Personal and the Systems of Provision. These contexts appear opposite, but the detailed results show their interconnectedness. Two of the most mentioned personal aspects were a lack of knowledge on the most sustainable options and low-consumption practices, and a lack of time to learn or engage with sustainable practices. In Systems of provision respondents mentioned mostly a lack of offer for non-packaged, durable, sustainable goods, the prices of sustainable alternatives and the marketing and prices of unsustainable products. Even in the Geographical context, the most common aspect was the long distance to or local absence of shops with second-hand, bulk, durable, sustainable goods, and repair services. This indicates that the pervasiveness of unsustainable provisioning systems is one of the main reasons limiting people from reducing their consumption. This brings us to the items we propose for future research: Pervasiveness of unsustainability in systems of provision, wellbeing for reducing consumption and low consumption as resilience.

Pervasiveness of unsustainability in systems of provision

Despite their efforts to reduce unnecessary consumption, four of the interviewees mentioned feelings of guilt, e.g., "*feeling guilty because I know that I am not doing enough*" (R5). This notion of guilt is related to the responsibility they feel. However, as vividly illustrated by the quote from R6 it is sometimes "*impossible to make the right choices in the wrong system*". Answers to what is the most sustainable option are often not straightforward, or even too complex, depending on the sustainability indicators one values most (GHG emissions, waste, water, local sourcing) and the scope of the analysis (direct impacts, indirect, how far removed?). It appears that people feel often helpless when trying to make the right choices, in current consumption systems. We argue for the importance of looking at consumption less from the perspective of individual decision-making (see Maniates (2001), Meissner (2019)), and more at the multiple contexts that are geared around consumption but could be reshaped to promote low-consumption practices, structures and provisioning systems. This echoes Baudrillard's quote: "*the system of needs is the product of the system of production*" (Baudrillard, 1998 [1970], p.74), who defends that the reason we have high-consumption societies is by design of the entire system of production and marketing and that there is a "*training in systematic, organised consumption*" (Baudrillard, 1998 [1970], p.81). It is necessary to find ways of changing the system of production and provision so that low consumption is

supported. For example, Bradley and Persson (2022) showed how repair practices can be disseminated by investing in repair spaces, skills sharing events and campaigns in a Swedish city. Examples of social infrastructure, as spaces for participation, sharing skills and building community, seem pertinent to these goals, e.g. Every One Every Day "shops" (MacKinnon, 2021; Engle et al., 2022). A more systemic approach towards understanding and tackling unsustainable consumption has been carried out before (Mattioli et al., 2020; Brand-Correa et al., 2020; Ribeiro et al., 2018).

Wellbeing for reducing consumption

While we focused mostly on the materials and practices for reducing consumption, three people mentioned aspects related to wellbeing as a precondition for consuming less. R4 claimed that reducing his consumption is not his ultimate goal in life, but rather *"a by-product* of living a satisfying life*"*. R1 told her story, typical for voluntary simplifiers, of quitting a well-paying job to find time to do things that truly satisfy her. She claimed that often people go shopping *"to fill the voids we have inside"* and says, *"even for sustainability we have to focus on ourselves, on how to become truly fulfilled/happy"*. In her case, spending time in nature helped to reduce the shopping habit. R6 takes this argument to the societal level and poses that *"to get further in terms of saving the world, we need to make people more satisfied"*. The effects of minimalism on wellbeing have been studied to some degree, with several studies finding positive effects (see Kasser, 2017), and some authors more skeptical (e.g., Middlemiss, 2018), but there are, to our knowledge, limited studies on how improving wellbeing could be an entry point to reducing "the need" for consumption.

Low consumption as resilience

Empirical research on reducing consumption for sustainability tends to focus on situations of voluntary reduction, but the most common examples throughout history come from periods of crises. MacKinnon (2021) in his book on consumption talks about the impacts of economic crises in Japan, Finland, and the fall of the USSR. Low-consumption practices in the context of crises can be considered "resilience practices", as termed by Boost and Meier (2017) in their study of vulnerable households in East Germany. They found two types of practices: cutting expenditures, and subsistence (or self-provision). For subsistence practices they argue that there are necessary preconditions such as specific knowledge, skills (e.g., to garden, preserve, to make/fix things) and access to (common) land and space (e.g., picking mushrooms, space to build furniture), which is aligned with our findings. The authors reflect that some of these skills were already valuable in the times of the GDR and have been passed to younger generations. Seeing low-consumption practices as resilient practices will become more and more obvious, as resource shortages are to become more frequent due to the climate and ecological crises. What can literature on reducing consumption learn from practices of resilience in economic crises or generally among people living low-consumption (but not deprived) lives? More

research is needed on these topics to explore how to alter contexts to support the dissemination of sustainable provisioning systems and resilient low-consumption practices.

Limitations

We see three main limitations in our research. Firstly, the sample of respondents was overwhelmingly young (29-39 in average), from Europe and worked in academia, due to the networks used to spread the survey. The findings could be different if we consulted people in other continents, and other target groups, e.g., elderly people who never got used to consuming a lot. Investigating people living in eco-communities could provide more insights into collective solutions that reduce the need for consumption. Secondly, the research design was biased towards material elements, and to limiting contexts. It is likely that the formulation of the survey questions has caused that helping factors were mostly mentioned as materials and that limiting factors were mainly posed as contexts. Future research could search deliberately for non-material ways of reducing consumption, and contexts that support reducing consumption to complement our findings. Thirdly, the fact that only 3 people mentioned income as something that facilitates consumption, might be because we asked for material things that helped reduce consumption, and they did not see income as a “thing”. But it can also indicate that people are not always fully conscious of the underlying factors that enable their behaviour.

3.6 Conclusion

Reducing consumption in high-consuming countries and populations is increasingly acknowledged as necessary for tackling the ecological and climate crisis, but little is known about what reducing consumption entails. In this paper we proposed a new framework for reducing consumption, composed by 1) abstaining from consumption, 2) consuming different materials, 3) engaging in low-consumption practices, and 4) enabling or limiting contexts for reducing consumption. Results show that reducing consumption is highly limited by how pervasive unsustainable provisioning systems are. The simplistic depiction of reducing consumption in the media, as synonymous with “stopping shopping” is misleading, and it individualizes the responsibility for transforming fundamentally a consumption-driven economy. Besides, it stops short of what is required, which is to change the structures supporting high-consumption and to spread low-consumption practices. This cannot be achieved by individuals alone, but only by collective efforts involving a myriad of actors acting in different contexts. Steps must be taken to understand how those contexts can be changed to facilitate low-consumption practices and structures.

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Chapter 4

Organising Alternative Food Networks (AFNs): Challenges and Facilitating Conditions of different AFN types in three EU countries

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Abstract

This study aimed to explore the constraining and facilitating factors impacting the emergence and consolidation of different types of alternative food networks (AFNs) in different countries. Drawing on the expertise of organisers of seventeen AFNs, we investigated the conditions and actors that hinder and promote the development of different types of AFNs in Poland, Portugal and the Netherlands. Using a multi-actor perspective framework, we categorised six types of AFNs according to their logic and characteristics: consumer-led, producer-led, third-sector led, community supported agriculture, public-led, and business platforms. Key challenges and facilitating conditions varied according to AFN type, and depended on AFN particularities. In contrast to the Netherlands, low social capital was commonly cited as a challenge in Portugal and Poland. AFN organisers appeared to exercise innovative power when creating new forms of food provision; however, a wide scope of actions by governmental and non-governmental actors are needed to support the emergence of more AFNs.

4.1 Introduction

Despite the extensive literature on alternative food networks (AFNs) (Feenstra, 1997; Renting et al., 2003; Whatmore et al., 2003; Venn et al., 2006; Goodman et al., 2012), our understanding of the factors that hinder and facilitate their emergence and consolidation remains fragmented. We argue that these limitations are partly due to the following reasons. Firstly, insights are dispersed in a literature that tends to focus on a few case studies and rarely engages with the wide diversity of AFNs. Emerging as a response to the 'standardization, globalization, and unethical nature of the industrial food system', AFNs share in common a concern with the product quality, the creation of relationships of trust between consumers and producers, the sourcing of local produce (Edwards, 2016:2), and addressing unequal distributions of power in the supply chain (Galli et al., 2013). However, there is wide variation in the ways that AFNs set about addressing these issues (Grivins et al., 2017). AFNs significantly differ in their approaches, motivations, involved actors, and models of operation (Mount et al., 2014; Chiffoleau et al, 2016). Some AFNs follow more traditional formats (e.g. farm sales, farmers' markets, urban agriculture), whereas others have developed fairly new approaches (e.g. community supported agriculture (CSA), vegetable box schemes, and online sales; Kneafsey et al., 2013; Kalfagianni and Skordili, 2018).

Although the literature has made important contributions to understanding the challenges and facilitating conditions experienced by AFNs (e.g. DeLind, 1999; EIP-AGRI, 2015; Galt et al., 2016), the applicability of findings to specific types of AFNs (e.g. cooperatives) is unclear. Studies tend to focus on single types of AFNs, e.g. consumer cooperatives (Öz and Aksoy, 2019), collective purchasing groups (Thorsøe and Kjeldsen 2016; Dedeurwaerdere et al., 2017), or CSAs (Nost, 2014; Galt et al., 2016; Hitchings, 2013). Some studies have broader scopes (e.g. Kirwan et al., 2013), but lack detailed comparisons across types of initiatives. Among a few

exceptions are the study by Si et al. (2015), which categorised AFNs in China into CSAs, farmers' markets, buying clubs and gardening plots, and Mount et al., (2014), which explored the relation between barriers to scaling up different types of organisations, and rationales of a wide set of community food projects in Ontario.

Secondly, comparisons between countries are limited. Previous research has discussed variations in AFNs' motivations and concerns in different European regions (Sonnino and Marsden, 2006; Bilewicz and Śpiewak, 2019; Goszczyński and Wróblewski, 2020), their relation to food security (Cerrada-Serra et al., 2018), and variations of alterity (Martindale et al., 2018). Some studies have compared Western and Eastern European countries with regards to food self-provisioning (Smith and Jehlička, 2013; Sovová and Veen, 2020) and farmers' markets (Fendrychová and Jehlička, 2018). However, little attention has been paid to variations across countries of the hindering and facilitating factors of AFN organising.

Thirdly, there is a lack of research on AFN organising and organisers. Previous research on AFNs has primarily focused on consumers and producers (e.g. Feldmann and Hamm, 2015; Hvitsand, 2016; Zoll et al., 2018), which can conflate the experience of organisers with the experience of participants. AFNs may be organised by consumers, producers, or third-parties; however, a common characteristic is that they all depend on the work of individual or collective organisers. These are critical actors, as founders or key organisers are most aware of the experienced challenges and facilitating conditions of starting up and running a short supply chain.

Fourthly, a greater understanding is needed of which actors have power over specific challenges or facilitating conditions. For example, in the study by Sellitto et al. (2008), the challenges of producers and consumers are often conflated rather than disentangled, which is problematic because it limits the potential of the diagnosis to inform processes of consolidation of AFNs on the ground. Additionally, it is important to examine who can act upon the changes needed for more AFNs to emerge. Identifying the actors and contexts involved in systems of production and consumption (such as AFNs) is essential to understand how these systems (can) change (Ribeiro et al. 2018; also see Oliver et al., 2018). To address the above-mentioned gaps, we draw on the expertise of AFN organisers to investigate the factors and actors that hinder and facilitate the development of various types of AFNs in three European countries: Portugal, Poland and the Netherlands. The study is driven by the following research questions:

1) How can AFNs be categorised according to their organising logic and characteristics?
2) What are the challenges and facilitating conditions experienced by different types of AFNs?
3) How do challenges and facilitating conditions differ according to the country in which AFNs are based?
4) How can the concept of power explain and assist in addressing the challenges and facilitating conditions experienced by AFNs?

4.2 Theoretical framework

AFNs have been categorised in the literature on the basis of their extension in time and space (Renting et al., 2003), the level of commitment expressed by producers and consumers (Mundubat, 2012), or other criteria related to the number of intermediaries (Chiffoleau et al., 2016; Jarzębowski et al. 2020). However, such typologies do not differentiate between economic models (for profit, non-profit) and other key characteristics of the AFNs (e.g. public/private, legal status/ informal). In order to distinguish between these aspects, we apply the multi-actor perspective (MaP) framework proposed by Avelino and Wittmayer (2016), based on the 'welfare mix' model of Evers and Laville (2004:17) and Pestoff (1992:25).

4.2.1 Multi-actor perspective (MaP)

Originally proposed in debates on sustainability transitions, the MaP framework (Avelino and Wittmayer, 2016) helps to conceptualize the different actors exercising power in a transition and analyse the changing power relations between them. This framework is applicable to AFNs because they can be seen as actors who play a role in a transition towards sustainable food systems.

An 'actor' is defined as 'a social entity, that is, a person or organisation, or a collective of persons and organisations, which is able to act' (Avelino and Wittmayer, 2016:634). As depicted in Figure 4.1, this framework distinguishes between four sectors, namely the state, market, community and the 'third-sector', which differ according to their 'logic' and characteristics - i.e. public/private domains, for-profit/non-profit purposes, and formal/informal legal statuses.

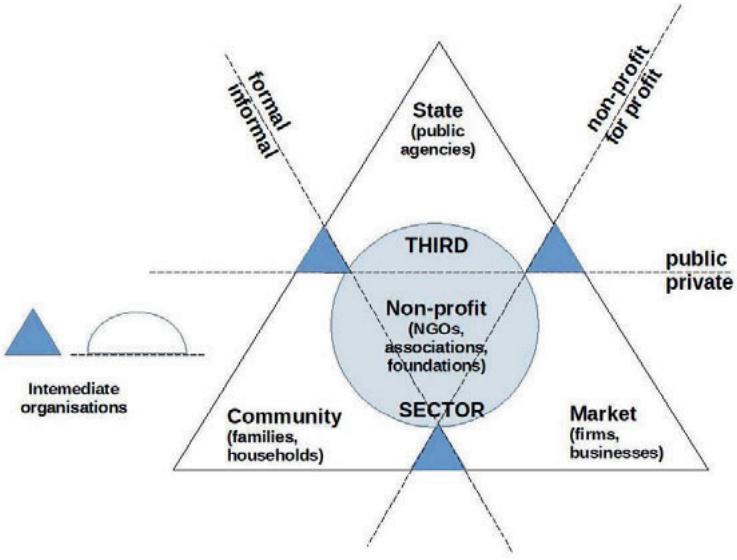

Figure 4.1: Multi-actor perspective. Level of sectors. (From Avelino and Wittmayer 2016)

The overlapping zones between sectors are described as the space of intermediate organisations and exhibit characteristics of different sectors (e.g. public-private partnerships would be placed in the triangle overlapping state and market). Avelino and Wittmayer (2016) acknowledge that the boundaries between sectors are not fixed, but rather contested and permeable.

4.2.2 Actors and power

Each sector has multiple actors, and the same person may have roles in multiple sectors (e.g. a policy-maker working for the state can be part of an association in the third-sector while also involved in a neighbourhood group). Actors can be individual (e.g. neighbour, entrepreneur, politician) or organisational (e.g. neighbourhood group, association, governmental body, multinational). Such variety suits research on diverse AFNs, as some are led by groups of people and others by organisations of multiple sorts.

Acknowledging the multiplicity of actors shows that power dynamics can occur between actors of the same sector or across sectors. We use Avelino's (2011:798) working definition of power: 'the capacity of actors to mobilize resources to achieve a certain goal'. Avelino and Wittmayer (2016:639) argue that 'in modern western societies, during the past decades of welfare state development combined with neo-liberal privatizations, our societies have been dominated by a two-sector state-market logic and the influence of the Third Sector has been underestimated'. This statement clarifies that despite the equal size of the sectors depicted in Figure 4.1, the market and state sectors are in fact more dominant than the others (see Figure 5 of Avelino and Wittmayer, 2016).

While it is generally accepted that state and market actors have more power than other actors, this is a limited view of the notion of power. Avelino and Wittmayer (2016) highlight that besides studying levels of power and who has power over whom, it should be acknowledged that there are different kinds of power, which can be exercised by drawing on different types of resources (e.g. human, monetary, mental; Avelino, 2011). One can also differentiate between reinforcive power (to reinforce existing institutions), innovative power (to develop new resources) and transformative power (to develop new institutions) (Avelino, 2011). There are diverse sources of power: economic, technological, political-institutional, symbolic, knowledge and legitimacy (Rossi et al., 2019:149). Legitimacy is at the basis of "discursive power and reframing ability" and informs normative stances of policies. The ability to create shared knowledge through sustained relationships of actors, seemed to be a key factor in the reconfiguration of power relations in transformations of agrifood systems studied by Rossi et al. (2019). According to Avelino and Rotmans (2011), power relations between hypothetical actors A and B can be categorised according to whether 1) A has more power than B, 2) A has power over B, or 3) A has a different power than B. These distinctions are useful to explore the different types of power exercised by the organisers of different AFNs and analyse the relations between AFNs and other actors in the food system.

4.3 Literature review

Table B1 (i.e. Table B1 is the first table of Annex B, page 189) synthesizes current knowledge on the challenges and facilitating conditions of different AFN types. There is considerably more literature focusing on challenges than on facilitating conditions. Whereas some authors have explored a specific challenge or facilitating condition within a type of AFN, (e.g. Thorsøe and Kjeldsen (2016) on trust in purchasing groups; van Oers et al.(2018) on legitimacy in CSAs), other studies and reports have more broadly enumerated several supporting or hindering factors (e.g. Kneafsey et al., 2013; Mount et al., 2014). The studies with most detailed enumeration of weaknesses of AFNs are EU (funded) reports (EU, 2013; Kneafsey et al., 2013; EIP-AGRI, 2015) drawing on numerous case studies and stakeholder meetings. While they do not distinguish between the barriers experienced by different types of AFNs, the view of producers involved in AFNs seems to be predominant. Literature on challenges of CSAs also seems to express the view of producers.

The study by Mount et al. (2014) is the only (to the best of our knowledge) exploring the relation between types of initiatives, their rationales, and the barriers to scaling-up. They distinguished between non-profit, private business, governmental agency or cooperative, as organisational types. Their results showed that initiatives that shared organisational form and rationales consistently identified similar barriers, but initiatives that only shared organisation form reported different barriers, suggesting that rationales might influence more the actions of initiatives than their organisational type. They found that initiatives with different rationales could indicate the same barrier, but express distinctive interpretations of it.

Generally, the results of Table B1 overlap with lists of barriers and success factors in literature on grassroots innovations (community energy projects (Ornetzeder and Rohracher, 2013), transition towns (Feola and Nunes, 2014), sustainable consumption (Grabs et al., 2016), and sustainable community initiatives (e.g. Forrest and Wiek, 2014).

4.4 Methods

4.4.1 Data collection and sample

We analysed 17 initiatives of AFNs, seven in Portugal, six in Poland and four in the Netherlands. We chose these countries because they are situated in contrasting EU regions (South/Mediterranean, Central/East, and West/North, respectively) with different food cultures and histories of food supply and distribution (see section 4.5). Moreover, AFNs in Portugal and Poland are under-researched (Moreira et al., 2020; Bilewicz and Śpiewak, 2018).

We conducted purposive sampling to maximize the diversity of cases in each country based on i) number of consumers reached or engaged; ii) mode of operation (e.g. for-profit, non-profit); and iii) types of organisations (e.g. farmer-led, consumer-led, or led by third-party). AFNs were defined as arrangements of food provision that aimed to reduce as much as possible the

number of intermediaries between producers and consumers. We only considered AFNs engaged in activities that either allowed for producers and consumers to connect through direct sales or facilitated that connection as sole intermediaries. We selected the initiatives through a sampling approach that included access to gate keepers (e.g. influential people in AFNs), snowballing, and mining of information from the internet. The list of initiatives and their characteristics is presented in Table B2 of Annex B (page 191). Applying the theoretical framework to the logics and characteristics of the AFNs' organisations, we were able to distinguish between six different AFN types.

4.4.2 Data analysis

Our goal was to glean an overview of the challenges and facilitating conditions experienced by the initiatives. Founders and current AFN organisers were the key informants, as the most knowledgeable sources on the experience of AFNs. We opted for a qualitative approach so that we could explore the topic in an open and emergent manner. Semi-structured interviews were conducted with 23 people from 17 initiatives (see Table B3, page 192, for details). We were able to interview 16 founders; we interviewed current organisers in cases when founders were no longer active and were unavailable. The interviews were conducted between February and July 2018 and lasted about one hour each. Two interviews were conducted via phone and the rest took place in person. The interviews were recorded and transcribed. We used the English language in the Netherlands and Poland and Portuguese in Portugal, which was then translated to English when transcribing.

Some of the interview questions aimed to collect background information on the initiative, e.g., motivation, views of the current food system, operations, relation to farmers, setting of prices. The main topics addressed were the challenges and facilitating conditions encountered by the AFNs. Interviewees were asked about difficulties they faced or were facing in the AFNs as well as which factors had helped them. The last section of the interview script focused on the changes and incentives that were needed for more AFNs to emerge. Throughout the interviews, challenges or facilitating conditions were mentioned in response to direct questions; however, the majority were interpreted from spontaneous answers (e.g., an interviewee mentioning that something was difficult or hard).

The interviews were open coded with NVivo11. We coded the different types of challenges, facilitating conditions, and actors associated with each AFN. Simultaneously, a database was built with the list of challenges and facilitating conditions organised according to respective initiatives in order to track the challenges and facilitating conditions mentioned across initiatives. We looked for patterns considering the different AFN types and the different countries. Regarding data on changes that would be needed for the emergence of more AFNs, we considered which actors had power to enact those changes.

4.5 Contexts of countries

The three countries home to the AFNs in our investigation are in three different European 'corners' in which the geographical characteristics and historical contexts have shaped distinct agricultural systems. For example, the average farm size in Poland (Central-East) and Portugal (South) is lower than in the Netherlands (North = EU average of 34 hectares). The Netherlands has the EU's highest share in the EU of very large farms in terms of economic size (more than 50% farms with outputs greater than 100,000€). In contrast, this share is less than 10% in Poland and Portugal, where very small and small farms (outputs lower than 8000€) have shares of 65% and 75% respectively (EUROSTAT, 2016).

A significant share of farms in the Netherlands are devoted to intensive livestock farming, dairy, and specialist horticulture (higher value-added crops), whereas agriculture in Poland is less intensive and productive, using mixed farming and permanent crops (EU, 2018). In 2015, the average net income per farm in the EU was highest in the Netherlands (over 60000€), whereas it was about 18000€ in Portugal and approximately 8000€ in Poland. The same report mentions the high cost of land in the Netherlands (EU, 2018). In terms of income indicators, income per labour unit at farms is lowest in the North and Central Regions of Portugal (below 10,000€) (EU, 2018). The share of households engaging in food self provisioning is significantly higher in Poland (54%, Smith and Jehlička, 2013) than in the Netherlands (14%, Vávra et al., 2018).

Alongside this data, we interviewed experts from national rural networks in Poland and Portugal. Direct sales of farmers to urban residents used to be common in Poland between the 1970s and 1990s, when they served as a more trusted alternative to the state-managed wholesale system. However, many Poles were ready to embrace the "'full supermarket"', which was associated with modernity (Bilewicz and Śpiewak, 2018). This dream appears to have been fulfilled, considering the increasingly dominant supermarket chains that are driving out independent food stores. On the one hand, a connotation of buying directly from farmers with memories of the communist regime, might not be conducive of closer relations with farmers. On the other hand, the memory of 'tasty' produce contrasts with what people find in supermarkets, driving some to look for alternatives to mass-produced food.

Farmers' markets in town squares are not a common sight in Poland, in contrast with countries in Western and Southern Europe. Although street sellers of produce are visible, they are mostly resellers from wholesalers, rather than farmers. Some of our interviewees (of initiatives K and L) commented that whereas there was a strong Polish cooperative movement at the beginning of the 20th century, cooperatives were controlled by the state during the communist regime (also see Chloupkova et al., 2003), and they are now mostly associated with corruption, hierarchies and mismanagement. The Polish expert drew a connection between countries entering the EU, agricultural industrialization involving large-scale specialized farming, and a drop in the quality (taste) of produce.

An expert in Portugal mentioned that there should be a role for local food procurement, namely in school canteens; however, this is hindered by, on the one hand, difficulties in incorporating criteria such as distance in public calls for suppliers, and on the other hand, by difficulties hindering collaboration. Collaboration would be needed to enhance food supplies, as farmers are mostly small-scale and unable to meet a school's demand on their own, but the expert perceived that cooperation would be easier for younger farmers. This expert also pointed out the existence of a specific EU fund for short supply chains and local markets, however, she argued that what is needed is not more financing, but rather more alignment between different policy goals both at a national and European level. Despite the existence of rural development funds, most policies and incentives are contrary to such coordination efforts. Desertification of the rural areas is ongoing in Portugal, and it is further stimulated by the shutdown of public services such as schools and local health centres, which has jeopardized farming livelihood prospects.

4.6 Empirical findings

4.6.1 Categorizing different types of AFNs

Applying the MaP framework, we plotted the initiatives according to the logic and characteristics of the AFN's organisations (i.e. formal/informal, public/private, for-profit/non-profit). Figure 4.2 and Table 4.1 show that our initiatives can be clustered into six AFN types: consumer-led, third-sector-led[9], business platforms, farmer-led, public-led, and CSAs (collaboration between farmers and consumers). Consumer-led initiatives are informal entities within the community sector that consist of purchasing groups and informal cooperatives of consumers. Third-sector-led AFNs are formally instituted non-profit organisations, such as associations, consumer cooperatives and foundations. Within the (for profit) market sector, initiatives were categorised into two types: business platforms, and farmer-led. Business platforms typically consist of web platforms where consumers can choose the produce they want to order from regional farmers. Besides developing the platforms, businesses organize part or all of the logistics of transporting the food from farmers to consumers. Farmer-led initiatives are farmers who find their own ways of delivering directly to consumers (e.g. home deliveries, markets, farmer's shops).

CSA initiatives were categorised as a separate AFN type in the overlap of market and community, as they consist of a joint commitment between farmers and consumers involving advance payments to the former (for some months, or a year). The final AFN type comprises public-led initiatives organised by public entities. In our sample, one initiative was started and is maintained by a publicly funded regional development organisation that created an online

[9] We define "third-sector" more strictly than in the original framework (Fig. 4.1) where it is seen as overlapping with all other sectors. In this paper we defined it as operating under the logic of private, legally established non-profits such as cooperatives, NGOs and associations.

platform where people can sign-up for a weekly food box from a regional producer. Together in a network of regional development organisations, they support small-scale farmers in different ways (e.g. finding consumers and pick-up locations for the deliveries of weekly baskets).

Table 4.1 – Categorisation of types of AFNs according to the AFNs' logics and characteristics

Types of AFNs	Description	Examples
Consumer-led	Informal groups of people who organize themselves to order food directly from farmers.	Purchasing groups, buying clubs, informal consumer cooperatives, solidarity purchase groups
Producer-led	Farmers who find ways of selling directly to consumers.	Home deliveries, shops, markets
Community-supported agriculture (CSAs)	Groups of people who have a joint commitment with a farmer, who is paid in advance (for a year or a season), for the produce.	CSAs, AMAPs (associations for the maintenance of proximity agriculture)
Business platform	Online for-profit web platforms working as marketplaces where consumers can order specific produce from regional farmers, and then get it delivered to their homes or to a pick-up location.	Online marketplaces for regional farmers
Third-sector-led	Non-profit, formally instituted associations and cooperatives (of consumers or farmers) that organize in various ways an exchange between producers and consumers.	Cooperative shop, cooperative farm, cooperative box scheme.
Public-led	Non-profit initiatives organised by public entities that facilitate direct sales from regional farmers, in various ways.	Web platforms with lists of farmers who deliver food boxes per region, local food procurement, farmers' markets

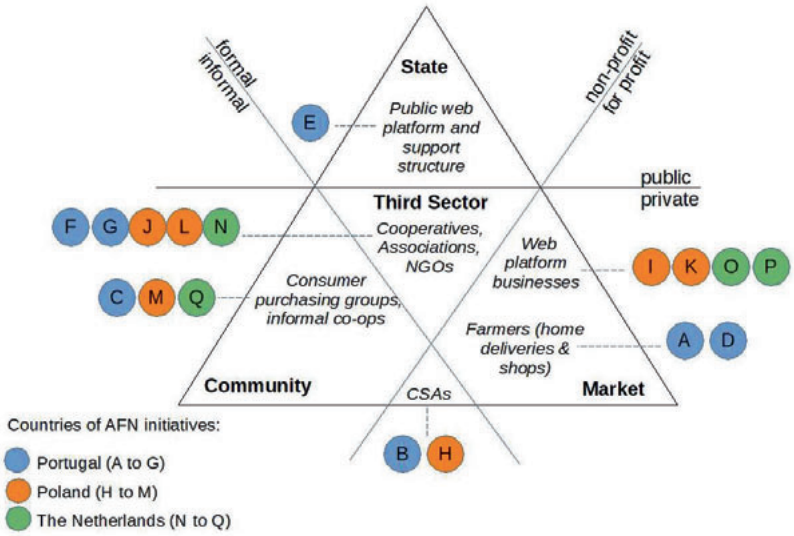

Figure 4.2: Types of AFNs studied in this paper according to the MaP framework

4.6.2 Challenges and facilitating conditions

Table B4 (page 194) provides an overview of the most mentioned challenges and facilitating conditions across initiatives organised by the different types of AFNs. In this section, we begin by reflecting on organisers' views on challenges and facilitating factors of each AFN type. Secondly, we provide a detailed description of the prevalent challenge of tensions between idealism and pragmatism, which was often cited in the interviews.

Main factors per AFN type

Consumer-led: These AFNs are managed by groups of people who organise themselves collectively to order and receive (or collect) produce from farmers. Participants in these AFNs form rotating shifts (twice a year in Q, 3h a month in M, and unspecified in C). The AFN Q, which is set in a village, struggled with finding vegetable farmers in their area, whereas the main challenges for groups C and M were self-organisation and engagement. In C, there was not a specific order of shifts, and this ambiguity sometimes caused problems during deliveries, when someone must be responsible for receiving the produce and paying the farmer. In M, they instituted a formal commitment to dedicating three hours a month to the collective as a pre-condition for membership. Nonetheless, some people did not comply and would have to leave the group after (repeated) warnings. Interviewees of C and M also complained about a lack of trust and social capital, poor skills in collaborative work, e.g. knowing how to participate in group assemblies.

The availability of locations for the delivery and assembly of the separate food boxes was cited as a key facilitating factor for all three AFNs. **M** is allowed to use a local neighbourhood centre in exchange for organising monthly activities, **C** pays a symbolic monthly fee to a local association, and **Q** uses the family farm of one of the members.

Third-sector-led: This is the most diverse type in our sample, including AFNs organised by cooperatives (**F** and **G**), a foundation (**J**), and two associations (**L** and **N**). Despite their formal statuses, they operate very differently — e.g. one cooperative is an organic farm with a shop (**F**), whereas another (**G**) arranges vegetable boxes for thousands of people by buying local produce that would otherwise be wasted due to appearance. They share a deep concern for farmers, particularly small-scale farmers, and for their livelihoods (which is also shared by public initiative **E**).

The main challenges of each initiative are related to how they operate, as well as the interviewee's role within the AFN. Difficulties at **G**, a cooperative with a farm, include managing relationships among the team and transforming land without investment. **L** is legally an association but operates as a cooperative organic supermarket, and the shop manager cited challenges arranging the logistics to receive produce from their farmers, due to the co-op's lack of vehicles and the farmers' inability to afford regular trips for relatively small quantities. Another **L** organiser, who is responsible for evaluating processes in the AFN, mentioned problems sustaining democratic and horizontal processes as the organisation grows in size and complexity, engaging the 250 non-employee co-op members in decision-making, and inspiring in them a sense of ownership. Both this **L** organiser and **J**'s organiser, whose foundation supports small-scale farmers around another Polish city through consumer groups and moments of direct sales, highlighted a lack of collaborative culture.

For **F**, it was difficult to convince farmers that someone would go to their farms to buy the produce they could not sell to wholesalers. The organisers of **N** created an association that developed an alternative CSA model whereby a community of families rents a piece of land and hires a farmer to grow food for them. They had assumed that the main hurdles to start the first project would be securing the required financing and recruiting 200 committed families; however, due to assistance provided by a group of the main organiser's friends, finding the families was less problematic than expected.

The role of friends and an established base of relationships seems to be crucial in enabling multiple processes, such as working long hours in a team for a year before launching the project (**L**) or having a long-term trusted community willing to crowdfund a new project (**G**). Similarly, **F**'s founder was assured that the project could take off after sending an email to friends and acquaintances and receiving more than enough interest to make the project viable. The facilitating role of friends and trust when starting things together is also visible in purchasing groups **Q**, **C** and **M**. Another supporting factor was crowdfunding for investments when starting four of the projects (**G**, **L**, **F**, **N**), which shows a strong capacity for mobilization.

Self-reliance appears to be a key characteristic of third-sector-led AFNs, which is also evident from their view on subsidies (see section on tensions between idealism and pragmatism).

Business platforms: These initiatives developed web platforms functioning as online marketplaces where producers can place their offers and consumers can order produce from a selection of regional producers and artisans (of vegetables, fruit, meat, dairy and some processed products). Organising logistics and marketing are two of their main challenges, which are related to the particular role of satisfying both producers and consumers. K's founder expressed the sense of being a mediator between the city and the village, e.g. explaining to producers that consumers are not interested in large portions of meat and teaching consumers that fresh natural yogurt is less sweet and creamy than what they are used to. Finding a sufficient diversity of farmers within a certain radius around the cities was a challenge for Dutch initiatives O and P.

Although some initiatives received subsidies, they were generally quite critical about them (see section on tensions between idealism and pragmatism). Initiative I had the largest number of users in our sample and received the largest subsidy, which came from an EU innovation grant and was used to finance the development of the platform's software.

Compared with purchasing groups, business platforms do not mention the importance of pick-up locations, although I and P also use them, nor do they denounce problems with self-organisation, as they are not attempting to create horizontal structures with the involvement of consumers, who are mainly viewed as clients. Their commercial nature and the existence of intermediaries in logistics makes other initiatives regard them with scepticism. Despite their for-profit nature, three out of the four initiatives appeared to struggle to grow consumer demand, as explained by P's organiser: *'to make our service more accessible to [consumers'] lifestyles. That's the challenge'*.

Farmer-led: Both farmers behind AFNs A and D changed their careers to start farming organically. For them, the main challenges were partly related to consumers, namely insufficient demand and lack of awareness of the value of supporting small-scale organic farmers (A) and the healthy nature of organic food (D). Other significant obstacles were taken as a given (difficulties and intricacies of producing organic food, finding skilled labour), or had been surpassed (finding suitable land with a long-term lease). Both farmers spoke fondly of the direct relation to consumers and educating them on seasonality and ways of preparing some less-known vegetables.

CSAs: In addition to the CSA organisers of B and H, we also interviewed a farmer's couple (A) who worked with B and the organisers of one of the consumer groups (M) that worked with H. Main challenges cited by the organisers of B and H included finding enough consumers. Particularly for the farmers of H and A, having enough consumers via a CSA means not only predictability of demand, but also preventing waste and saving time that would otherwise be spent trying to sell the produce. Both referred to the importance of being able to use locations for delivering the produce and composing the food boxes. Initiative B has unpaid arrangements

with different organisations to use their space weekly. H noted that whereas some consumer groups had arranged spaces in schools or neighbourhood centres, their pick-up location was under a bridge when delivering in a city where the consumers were not organised. The facilitator of B complained that most consumers were involved solely for the food rather than sharing the CSA's principles.

Public-led: E's organisers started by participating in several EU funded projects that allowed them to learn, develop, and test the method before launching it and replicating it in other regions, and they cited ensuring self-sufficiency as the main challenge. In this system, consumers cannot choose specific produce, but rather must sign up for a regular vegetable box from a farmer (or group of farmers) and commit to pick them up at a predetermined location. Employees of regional development organisations provide assistance to farmers by helping them find locations, marketing to consumers, and giving legitimacy to the project while representing them in contracts whereby the AFN agrees to use an organisation's space as pick-up location. However, the initiative is maintained pro bono by various supporting actors. The web platform that collects orders from consumers is connected to the tax office, which facilitates paperwork for farmers, and positions them close to other web platforms. However, their diligent work in support of small-scale farmers is closest to that of the third-sector initiatives.

Tension between idealism and pragmatism

In addition to the main hindering and supporting factors cited by each AFN type, we noticed that other challenges recurred across interviews (see Table B4, page 194). Among these is the tension between idealism and pragmatism, which is further discernible in the various ways that initiatives criticize subsidies and deal with consumers' expectations of diversity.

Tensions between idealism and pragmatism come up when organisers feel conflicted between observing the principles they set out for the initiative and adapting or forgoing those principles for practical reasons. We found 11 examples of such situations (see Table B5, page 195, for details), which predominantly occurred with non-profit initiatives, but were also alluded to by two businesses (P and K) and two CSAs (B and H). For example, L's organiser described this tension regarding the food offered at the cooperative shop:

'We thought we wouldn't be selling olive oil, because it is not local. We would rather have a sign describing how sunflower oil can be very tasty, and can be used in exchange for olive oil. But then in practice, this aspect of providing a wide variety of products to meet the client's expectations is such a strong incentive that is very hard to overcome. [...] we were thinking about this very pragmatic argument that [...] if we import dates, and they are organic, and sold by a non-profit cooperative shop, it is better than our clients coming to buy potatoes in our shop and then going to the conventional store to buy dates that are from conventional farming'.

In five of those examples, there was an effort to adapt the principles to practical requirements. In three cases, there was an acceptance of the situation despite its violation of the principles,

and one case remained unresolved. The two cases in which organisers stuck to their principles showed opposite results. In one case (B), doing so led to the loss of consumers, whereas in the other (P), addressing the tension through conversations was viewed as an opportunity to educate consumers about the pricing system in conventional food chains.

Critiques of subsidies were rooted in both practical and idealistic perspectives. Five for-profit initiatives complained about practical aspects such as the bureaucratic nature and inflexible conditions of subsidy schemes. As P's founder explained, *'It is terrible to get subsidies because they are designed from the perspective of the government, and not from my perspective, as an entrepreneur. […] they are very strict. One year ago, you submitted this proposal, so now you have to execute it. And now the world is totally different, we want to do something else'*.

Although receiving subsidies would provide some financial help, three third-sector AFNs (H, G, and N) resisted doing so in favour of adhering to principles of independence and self-sufficiency. Initiative H expressed pride at their independence from subsidies along with fear that consumers would otherwise not want to support them: *'The government does not help us, so we can say to people from our CSA that everything that we changed in this farm, every machine, you have contributed, so you can be proud. Maybe if we take the government's subsidies and we get some big machines, then maybe people won't want to support us'*. The interviewee from food co-op G also exhibited pride in managing without subsidies: *'Frankly, because I think that sustainability is also about that. It's about having a real awareness of our resilience, of how far we can go without help'*. The founder of N reported similar fears as H; however, he also argued that most subsidies in the EU promote a harmful agricultural system, and his AFN aimed to create something outside that system: *'...it could trigger in my farm, in my communities,[...], that when they get Brussels money, 'Oh that's easy. We can decrease our contribution…' And when the dependency comes, there will be these prescriptions we have to follow, and before you know we are the farm we already have. Dependency on the subsidy, on the loan, the mortgages... We have to keep it outside.'* This concern with self-reliance as an instrumental means of avoiding complicity in the industrial food system seems to be a strong theme in third-sector AFNs.

The challenge of expectations of product diversity is closely related to seasonality, as restricting consumption to seasonal regional foods limits the range of available products. Most of the interviewees described feeling the pressure of consumer expectations for the diversity of products they are accustomed to enjoying at supermarkets. For farmers engaged in delivering vegetable boxes, diversity is an essential challenge, as they are required to either offer a varied set of produce each week or organise that together with other farmers, which was problematic for E because many producers were used to growing monocultures. For a web platform business (K) that collects produce from farmers, product diversity was expressed as a matter of efficiency, as it would save them time if they could collect a range of produce from one farmer rather than driving to several specialised farmers. AFNs with shops experienced these expectations as pressure to provide a wide variety of products. As D described, '*Some customers were asking sometimes for nuts, or rice, pasta, jams, wine...So if you have those*

products you can have more consumers...[…]it should be interesting to take only fresh products. But the consumer is so lazy that if you can bring them everything, they prefer it'. Nost et al. (2014) and Galt et al. (2019) also refer to the challenge of managing consumer expectations of food quantity, diversity and quality, and Brunori et al. (2012) mention that consumers have to adapt their diet to seasonal produce.

4.6.3 Country differences

Some conditions differed across countries. Interviewees in Poland reported a general perception that conventionally produced food is unhealthy. Organisers in Portugal and Poland often complained about a lack of trust and collaborative culture. Three interviewees in the Netherlands cited concerns with farmers indebtedness, bankruptcy, and land speculation.

While discourse of conventionally produced food as unhealthy, unnatural, and not tasty is commonplace in the field of AFNs, it appeared to be more generalised in Poland. One interviewee from initiative K described mass produced food as *'not nourishing for anybody [...] It is cheap but it is not really giving you food, so you are starving eating'*. The view of I on food: *'We want zero tolerance for mass produced food with chemistry, fertilizers, herbicides. We want to be the tastiest, healthiest, the safest food in the market'*. L's organisers spoke of people coming to them because of *'the poor quality of the product that they encounter on the market'* and *'their kids are having problems with digestion, and they just learn that you need to go to the root [...] and just eat good quality food'*. When asked where this impression would come from, interviewees responded that it likely derived from memories of differently produced, tastier food from small-scale producers prior to the fall of the communist regime in the early nineties. We also found the initiative with the highest number of members in Poland (I had 100,000 registered users), which indicates a very significant demand.

Eight initiatives, all in Portugal and Poland, complained about the inability of people to collaborate. As E's organiser described, *'We have very small farms, and almost everyone has farming machinery. Everyone has at least one tractor. They don't share things. They are not able to do that. It is very, very hard'*. Similarly, initiative L in Poland explained that *'It is not that easy for people to cooperate with one another. This is not what is strongly embedded in this culture. It is not what you learn at school. It is rather the wild east of capitalism. We were taught to compete with one another, and that you should fight to secure your own interests'*. One interviewee from Polish initiative K referred to the role of governments in influencing culture: *'The strong message from government officials is competition is good. If they start promoting farmers getting together […] if we create a certain climate that would stimulate people to do things together rather than compete against each other all the time… It does not cost much; you just start talking differently and that's it'*. In contrast, in the Netherlands, 'doing things together' was mentioned as a solution for things that would generally take some time, such as this example provided by initiative Q: *'maybe we can grow our own [vegetables] in the winter time. We can do it together, so it is easy'*. This distinction might be related to levels of social

trust, which surveys have found to be significantly lower in Poland and Portugal than in the Netherlands (OECD, 2016).

4.6.4 Actors and power

In this section, we explore the types of power exercised by AFNs and the power relations between them. Furthermore, based on what organisers perceived as the changes required to facilitate the emergence of more AFNs (see the last column of Table B4), we consider which actors have power to enact those changes.

AFNs' power

Based on Avelino's (2011) description, AFN organisers appear to exercise innovative power in terms of their determination to create alternative food supply models. This innovative character is illustrated by the most cited challenge: the pioneering nature of the initiatives. As expressed by I, creating new types of organisations and finding the right structures is one aspect of this question. For AFNs E and F, the issue emerged when farmers did not understand the purpose of the initiative and were not eager to engage. Similarly, it was difficult for L to convince the municipality to allocate them a discounted rental space suitable for their first shop, as officials did not understand the concept of a food co-op supermarket; however, it was much easier for the second shop. Potential distrust and confusion are overcome with media exposure and collaboration with universities, which gives initiatives visibility and credibility and indicates the importance of these other actors.

Power relations between AFNs can be conceived as comprising either different types or levels of power. When focusing on initiatives within the same city, it seems that different types of AFNs (M, L, K and I) attract slightly different participants. For example, H's organiser explains to prospective consumers that weekly vegetable boxes are better suited to families who cook regularly at home rather than single people. As a shop, L can cater to co-op members who pay a monthly fee as well as the general public. In this dynamic, location is important to an extent. Some of M's participants created other informal consumer co-ops when moving to other city districts, whereas others chose to remain in a group of already established relationships, even if it meant crossing the city to get their products. Among the business platforms, one offers home deliveries (K), while the other relies on neighbourhood pick-up locations (I). Through their locations and operation models, participants' requirements, and the narratives they use, these AFNs employ distinct powers to attract different types of consumers. The relation between them appears to be one of neutrality.

However, there seemed to be some competition between business platforms K and I, which share similar goals. Nonetheless, the founder of K hinted at the possibility of a mixed competition-cooperation relation: *'I do believe that we play not against each other but against the corporate business, the establishment that is around us. It could be very helpful if these companies could [...] organise certain things together, the field that they don't need to compete on. Logistics, general promotion of the whole idea.'*

Power and non-AFN actors

Thus far, we have mainly focused on the roles of organisers, consumers, and farmers as agents in AFN development and operation. However, Table B4 shows multiple challenges, facilitating conditions, and measures that would facilitate the emergence of more AFNs, suggesting that a diversity of actors have power over these factors.

Various actors exert different types of power. Governmental actors have some power over the other actors (through legislation). Journalists and other media actors can create media attention around a certain initiative, thereby increasing their visibility and conferring legitimacy, as well as raise consumer awareness of problems with the industrial agricultural and distribution system. Collaboration with universities supports AFNs with legitimacy as well as potential research insights. Location availability was described as being provided by associations, a local neighbourhood centre (municipality), and shops. Winning the second prize of a competition organised by a foundation was the trigger to start initiative F. Some EU funds and projects have also assisted the start or scaling up of some initiatives.

For-profit initiatives D and P spoke of the need for consumer awareness campaigns concerning the importance of local, healthy food, which could be led by governmental actors. However, organisers of O and P complained that while local governments facilitated discussions and networking events around the topic of food systems, they did not directly support local food through their procurement departments. Six of the AFNs advocated for public food procurement favouring local (and organic) food sources. For example, E's organiser suggested that this could entail re-defining some public contracts to include a criterion limiting the sourcing of products to a certain distance, highlighting the role of institutional power in setting norms prioritising local sources. One member of L added that producers could collaborate to make it easier to respond to such a policy with larger volumes. K's founder saw another role for local governments, namely collaborating with farmers to build and manage shared infrastructures as cooperatives, e.g. packaging facilities.

The strict conditions of subsidy schemes can only be addressed by the governmental actors that define them. In this regard, the founder of N proposed that funding should be available for people who are preparing AFN projects:

'I think the main goal is to stimulate individuals to start new things [...] I think that when you are in the capitalist system, you would say you are crazy. So many hours not paid for, "why would you do that?" [...] I think that when you can pick out the right innovators, you should give them space, in the financial sense of the word.[...] Give them the trust for four years of having no worries. Let them work, let them go, I think so many beautiful things can happen. [...] All the people who inspire me as well as I inspire them, they don't mind how much money they earn, they just want to do their thing. It is kind of a call'.

He later reiterated that he perceived such support as an investment rather than charity, and in turn, funders would have to consider also non-monetary aspects such as soil improvement,

ecosystem restoration, or the number of families fed by local food. The call for investing in individuals or groups to create new things is pertinent: two other organisers took unpaid one year sabbaticals to prepare the launching of their AFNs; however, most would-be organisers lack the financial resources to afford such a sacrifice. Governmental actors with political-institutional power can use their economic and legislative resources to reinforce the agro-industrial system, or they can shift resources to support the transformation of food systems.

There is a contrast between organisers who advocate for the removal of subsidies and other support to industrial agriculture (B, I, L), and those who mainly focus on the role of consumers and themselves. One organiser of Q viewed consumers as key actors of change and expressed a sense of responsibility for spreading the awareness: *'I think the change can only come from the consumers [...] what we can do here, locally, is to tell what we are doing. We do it a little bit, but we have to do it a little bit more'*. AFN F's organiser claimed that:

'legislation in the case of food waste due to appearance is not the main problem, because it does not forbid the sale of those products. I think it is important that consumer choices change, because that is what has influenced supermarkets, but I think that is already changing [...] I think now it is time supermarkets start buying from farmers all fruit and veggies, regardless of their appearance'.

One member of the informal consumer co-op M argued that people should take the initiative to start their own consumer groups: *'Every day one person asks if they can become a member of our cooperative. […] But people have to organize themselves, not only through us, which is a really well-established institution'*.

Notably, six AFNs were engaged in educational activities, (five non-profit and one farmer-led), and others (e.g. CSA H) reported sometimes complying with requests for help starting CSAs, showing their commitment to sharing knowledge. CSA-affiliated interviewees proposed that other organisations (NGOs, associations) should support the creation of more CSAs. For example, it was a NGO's suggestion that introduced farmers in H to the idea of CSAs. As H's farmer elaborated:

'I think the most important thing to develop CSA in Europe is to create an organisation that will be focused only on the CSA model and find the methods of telling farmers that they can do everything in this model and it can be really good. In Poland there are many small farms that don't know how to sell their products with a good price. It should be maybe an NGO or some [organisation] that gets support from the government and they should focus only on how to make really good marketing for this idea'.

However, she also decried the precarious system of NGO funding: *'NGOs have a grant, because it's good to have something on CSA, it's a hot topic, so the EU gives you money for two years. And then the money is finished and people focus on something else'.*

Several initiatives highlighted the need for national governments and the EU to eliminate restrictive regulations. For example, several interviewees in Poland cited a regulation that

limits the sale of processed artisanal-made farmers' products. **E** and **L** argued that farmers should be able to exchange seeds to save on high purchasing expenses and noted that imported seeds are not necessarily adapted to local conditions. The founder of **N** spoke of the existent possibility for innovators in the Netherlands to apply to the ministry of economics for temporary exemptions from certain regulations in order to experiment, and later propose modifications to the law. The importance of legal space for experimentation is also reported by Rossi et al. (2019).

The diversity of possible measures, actions, and changes described above shows the multiplicity of actors who can foster the emergence of more AFNs. However, specific actors have the power to enact certain changes or measures. Starting a new consumer co-op is up to consumers; however, more information about consumer purchasing groups, CSA models, and local food could be disseminated by properly funded NGOs, local governments, education and media actors. Public food procurement is up to public entities, as are the current supporting mechanisms for industrial agriculture, which are maintained through reinforcive power.

4.7 Discussion and conclusion

This study offers four main contributions to the scholarship on AFNs: a) it proposes a categorisation of different types of AFNs according to the logics and characteristics of their organisations; b) it identifies the main challenges and facilitating conditions experienced by different types of AFNs; c) it indicates some country-specific factors impacting AFNs; and d) it provides insights into differential power in the emergence and consolidation of AFNs. In this section, we discuss each of these points in turn.

As depicted in Table 4.1, applying the MaP framework to the field of alternative food chains proved to be a useful method for categorising AFNs according to their logics and characteristics. The categorisation suggests that certain characteristics of AFNs are related to the main actors organising them (e.g. farmer-led for-profit AFN). However, applying the framework also neglected some elements such as the number of intermediaries. In Figure B1 (Annex B, page 189), we offer an alternative depiction of our AFN sample, adapting the scheme of Chiffoleau et al. (2016) to illuminate the different ways in which our initiatives operate according to the number of intermediaries. We found that in addition to initiatives with no or one intermediary, we can distinguish initiatives enabled by third-parties ('helpers') who do not act as formal intermediaries, but rather have created the conditions and structures that facilitate the exchange between consumers and producers.

We identified some patterns in the challenges and facilitating conditions of different types of AFNs. Business platforms were mainly dealing with the challenges of logistics and marketing to increase consumer demand. Consumer-led AFNs faced issues with self-organisation and member engagement but received support for delivery locations. Similarly to what Mount et al. (2014) report, farmer-led initiatives complained about limited consumer awareness and

insufficient demand but took pleasure in educating farmers about growing food, seasonality, and the food system. Public initiatives and third-sector-led AFNs appeared to demonstrate the greatest concern for small-scale farmers. Third-sector-led AFNs were organised to be self-reliant, and shared a base of established relationships at the root of their starts, and a capacity to mobilize people by crowdfunding as facilitating conditions. Trusted relationships with people who share similar goals are not only important for the long term success of AFNs (Thorsøe and Kjeldsen, 2016; Glowacki-Dudka et al., 2013) and for multi-stakeholder groups working on rural innovation (King et al., 2019), but are also critical preconditions for starting non-profit AFNs. While participating actively in some AFNs can expand one's relationships of trust, the absence of social trust as reported in Portugal and Poland, hinders processes of collaboration, and begs the question of how to create social capital. For Ostrom (1999:182) it is hard to create social capital from an external position, but it can be facilitated "*when considerable space for self-organisation is authorised outside of the realm of required governmental action*".

Third-sector-led AFNs presented specific challenges for each initiative, which might be explained by the diverse sample, and suggests that challenges are more likely to be shared by AFNs operating in similar ways. However, when interviewing organisers from the same AFN, we found somewhat divergent views on challenges. Differing views can be related to the specific roles of organisers (as in L), or to the principles that each organiser thinks the AFN should uphold (see tension observed between CSA H and member of purchasing group M in Table B5, page 195). The fact that perceived challenges can depend on the person interviewed is a limitation of this study, which was addressed to some extent by interviewing more than one organiser in five AFNs of our sample. Focusing on organisers allowed to survey the experience of starting and managing such projects, and complements the more abundant literature on participants of AFNs (e.g. Zoll et al., 2018). There are, however, examples of smaller AFNs in which the distinction between organisers and participants is blurred or non-existing (e.g. solidarity purchase groups in Italy, Grasseni, 2014).

Some of these findings are supported by Mount et al. (2014) and generally align with the literature review. The problem of lack of consumer awareness and its relationship with consumer demand is reflected in the extant literature (e.g., EU, 2013; Kneafsey et al., 2013; Mount et al., 2014). Likewise, the critique of subsidy schemes was mentioned by Seyfang and Smith (2007) with regards to grassroot innovations, and van Gameren et al. (2015) also noted that subsidies can lead to a loss of independence.

One of the most prevalent challenges that we identified is the tension between idealism and pragmatism which was mainly cited by non-profit AFNs. Others have also highlighted this challenge, not only regarding AFNs (Ashforth and Reingen 2014; Öz and Aksoy, 2019), but also in eco-communities (Cattaneo, 2015). Seyfang and Smith (2007) similarly referred to conflicts that arise between purists and 'system-builders' who are willing to compromise. Cattaneo (2015) described this issue as being a significant potential challenge of eco-communities: 'Any realization of utopian intentions depends on a strong willingness and a pragmatism that might

clash with original ideals'. Tensions between the different ambitions of organisers were also reported in DeLind's (1998) narration of her experience as part of a CSA.

Confrontations between idealism and pragmatism appear to be a common AFN challenge (see Table B5), showing that they are moved by specific ideals and principles. These principles could be conceptualized as the "the yardstick of the alternative ends" set by each AFN, according to Le Velly's view (2019:16) of AFNs' alterity: *"the degree of conventionalisation of an alternative network will be measured by the yardstick of the alternative ends that the project asserts rather than by referring to a general ideal of alternativeness."* Deeper inquiries into how AFNs deal with tensions between idealism and pragmatism can further contribute to the ongoing discussion on alterity in AFNs that sees relations between alternative and conventional systems as often fluid over time (Ilbery and Maye, 2005; Sonnino and Marsden, 2006; Holloway et al., 2007; Levkoe and Wakefield, 2014; Forssell and Lankoski, 2015; Lamine and Dawson, 2018). Other challenges identified in this study had not previously received much attention. The 'pioneering nature of initiatives' was among the most mentioned in our study; however, to the best of our knowledge, this issue has not been highlighted before now.

Despite some patterns per AFN type, we note that many factors are related to the particularities of each AFN. This finding could indicate that each initiative encounters very specific conditions and experiences, which requires them to work with what is available, as Grivins et al. (2017) described with the concept of 'bricolage' as 'making do'. Furthermore, we found that interviewees mentioned more challenges than facilitating conditions, which could be explained by a 'negativity bias', whereby issues or conditions of a negative nature receive more attention than positive factors with the same intensity (Baumeister et al., 2001).

The importance of context was investigated in cross-country comparisons, which highlighted two major issues. In Poland, we found a strong narrative of the poor quality of mass-produced food, which was also noted by Bilewicz and Śpiewak (2019). Goszczyński and Wróblewski (2020:259) perceived this narrative as being similar to the motivations of Western AFNs, however, they describe Polish AFNs as 'associated with a crisis of confidence in modern institutions' and experts. Whereas a lack of social trust and a culture of collaboration was often cited in Portugal and Poland, these issues were not mentioned in the Netherlands. This distinction might be related to levels of social trust, which are significantly lower in Poland and Portugal than in the Netherlands (OECD 2016).

This is one of the first multi-country, multi-organisational analyses to attempt to provide insights in the rich set of barriers and enablers of AFNs. Larger comparative studies across different AFN types in different countries are needed. For example, we included only two farmer-led AFNs, both of which were led by Portuguese farmers, and only one public-led AFN. Future research should use larger samples of varying AFN types to better assert what kinds of facilitating conditions and challenges are more prevalent among different types of initiatives. Comparative research across countries would benefit from choosing one or two AFN types and

comparing the facilitating and hindering factors of multiple AFNs in those countries (see project "Food Citizens", Leiden University 2020).

Finally, we observe that AFNs can be seen as exercising innovative power, which can be linked to the concept of political agency, which Heller and Jones (2013) defined as 'the capacity to take part in the struggle to define the modalities of life in common'. We revealed that the actors directly involved in AFNs do not necessarily have the power to address some of the challenges they experience (see section on Power and non-AFN actors). Many of the challenges mentioned by the initiatives, such as redefining the conditions of subsidy schemes, stopping subsidies for industrial agriculture, promoting local food through public procurement, and adjusting regulations, cannot be addressed by producers and consumers, but rather must be tackled by governmental actors. Even consumer-related challenges (lack of awareness, limited demand, expectations of product diversity) cannot be tackled by consumers or AFN organisers alone. Although AFNs address these issues to some extent by educating their consumers about seasonality, respondents also highlighted the importance of public awareness campaigns and education which could be led by governmental and non-governmental actors such as NGOs, universities, media actors, or social movements.

These results suggest that non-AFN actors could play a more active role in tackling the challenges that AFNs experience. However, regarding governmental actors, van Gameren et al. (2015) pointed out that closer links with public institutions could lead to additional resources, but such relationships can also pose disadvantages. For example, stronger government involvement may result in increased attention to the grey legal areas in which initiatives often operate, loss of independence, and softening of the initiatives' principles. One way that governmental actors could support AFNs without impinging on their autonomy is through public procurement (EU, 2013), which would set an example, promote adaptation to seasonal diets, and increase demand, thereby addressing some of the main challenges of AFNs. Other possibilities are funding AFN organisers when starting up initiatives, making legal space for innovations, valuing non-financial impacts such as healthier and more resilient regional food systems, and adding AFN modes of operation to the curriculum of agriculture studies. Municipalities could provide spaces to serve as pick-up locations.

Exploring the factors that facilitate and hinder diverse types of AFNs has shown that some factors depend on the AFN type, whereas others are shared by a broader group (e.g. non-profit AFNs) or are related to specific characteristics, contexts or phases of an AFN. Although challenges were predominant, we also recognized various facilitating conditions (e.g. base of established relationships, support with location, crowdfunding, subsidies). The cross-country comparison showed certain country-specific conditions. A more generalized critical view of mass-produced food contributes to a growing demand for AFNs in Poland and the lack of social trust and collaboration culture presents challenges for cooperation in Poland and Portugal. Finally, AFNs are created by organisers' innovative power; however, other actors (e.g. governmental, universities, NGOs, media) exercising other types of power (e.g. political-

institutional, educational, legitimacy through visibility) play an important role in enabling the emergence of a larger number of AFNs.

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Chapter 5

Food waste in an alternative food network – a case-study

This chapter is based on the publication:

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Abstract

This paper investigates food waste dynamics in a retail alternative food network (AFN). We provide a first contribution to assess food waste in an AFN in terms of 1) food waste levels, 2) food waste causes, and 3) food waste management practices (i.e. food waste reduction and handling). We use an exploratory case-study to investigate food waste in a Polish AFN. We place the results of this case-study in the context of conventional retail, by reviewing retail food waste literature. Quantitative results show that food waste levels at the AFN are very low compared to conventional retail literature. Qualitative results show that food waste causes at the AFN are partly shared with conventional retail, and partly specific to the AFN. Possible explanations for low food waste are provided by the food waste management strategies, in which food waste prevention is a key component of the AFN practices.

Two other possible explanations are the degree of flexibility and the main drivers of the organisation. Conventional retail is ruled by top-down policies, focusing on profit-maximization. The AFN we studied is small-scale, independently organised, and non-profit. Its main driver is to balance financial viability, accessibility and ethical guidelines. Looking beyond profit allows for a high concern with food waste, while the autonomy of the organisation gives its members flexibility to develop ways to prevent and handle food waste. Future research can build on our approach of combining food waste estimations with qualitative investigation of food waste causes and management practices. Food waste dynamics should be further investigated in other (retail) AFNs, in small-scale conventional and organic food retail, and in small and large-scale cooperative supermarkets.

Key words: food waste, alternative food networks, food waste management, food waste prevention, retail

5.1 Introduction

The recently revised EU Directive on Waste (EU 2018) restates the EU's commitment to meet the sustainable development goal (SDG) 12.3 of halving consumer and retail food waste by 2030 and reducing food losses in production and supply chains[10]. Food waste in the EU is estimated at 20% of the total food produced. In 2012, 88 million metric tons of food were wasted, of which 53% occurred in households, and 5% in wholesale and retail (Stenmarck et al., 2016).

Food waste is problematic not only because of its environmental impacts and resources use (Priefer et al., 2016) that occur mainly during the production phase (Scherhaufer et al., 2018),

[10] https://ec.europa.eu/food/safety/food_waste/eu_actions/eu-platform_en

but also for the ethics of wasting food in a world with increasing food insecurity (FSIN, 2018). In recent years, many studies have focused on understanding food waste at the consumer level (Aschemann-Witzel et al. 2015; Stancu et al., 2016). Significantly fewer studies focus on retail (Cicatiello et al., 2017), while even fewer have studied the causes of food waste at the retail level (Teller et al., 2018).

Despite the small share of food waste attributed to retail, supermarkets are at the center of the modern food system. The food system is riddled with overproduction and overconsumption but also hunger, and other environmental and social ills (Patel, 2007). Responding to these problems, alternative food networks (AFNs) have developed in Europe and around the world (Forssell and Lankoski, 2014), including alternative forms of retail, e.g. food cooperative shops. The characteristics, operations and motivations of AFNs vary, but overall there is a preference for locally sourced, small-scale, organically produced food (Forssell and Lankoski, 2014). Although hailed as more sustainable ways of food provisioning, some authors question the sustainability claims of AFNs (e.g. Tregear, 2011; Born and Purcell, 2006). According to Forssell and Lankoski (2014) more studies should investigate the environmental impacts of AFNs, for example by looking at food waste. While research on AFNs has been prolific in the last decade, we are only aware of one paper (Turner 2018) that addresses food waste in AFNs. In that paper, part of the focus is on the skills developed by participants in AFNs (e.g. dealing with food abundance, avoiding food waste).

In order to address this knowledge gap, this paper explores food waste dynamics in a retail alternative food network. The three research questions are: 1) What are the levels of food waste in the AFN?, 2) What are the food waste causes in the AFN?, and 3) What are the food waste management strategies in the AFN?

We use an exploratory case-study, for which we choose an AFN in Poland, one of the EU countries with the highest levels of food waste per capita (Bräutigam et al., 2014). To estimate food waste we had access to the food waste data of the AFN, and for information on food waste causes and management we interviewed the AFN shop manager and purchasing coordinator. We place the results of this case-study in the context of conventional retail by reviewing retail food waste literature.

This paper is organised as follows: a literature review of retail food waste (section 5.2), methods (section 5.3), results and discussion (section 5.4), limitations and future research (section 5.5), and conclusion (section 5.6).

5.2 Literature review of food waste in retail

The analysis of food waste in retail has, so far, received little attention. Literature tends to focus on estimating food waste, or on qualitative understandings of food waste causes and

management. We review four themes in retail food waste literature, which we will use as a frame of reference for the AFN case-study.

5.2.1 Quantifying food waste

Studies report a significant variation in the estimations of retail food waste (see Table 5.1). Variations can be partly explained by different food waste definitions (see Filmonau and Gherbin (2018) or Principato (2018) for a review) and by different methods. In this study we define food waste as measured by retailers, i.e. unsold food products. Although authors like Parfitt et al. (2010) distinguish between "food waste" (when occurring at the final consumer level) and "food losses" (occurring beforehand in the supply chain), we use these terms interchangeably.

The most common method to estimate food waste is using retailer data on unsold food, i.e. food that is taken out of stock. Retailers often have procedures to monitor the quantities of unsold food, and this data is interpreted as food waste by retailers and researchers. Some authors use a different scope, e.g. Eriksson et al. (2012) estimated food waste in relation to food quantities delivered to a Swedish retailer. They found significant values of pre-store food waste, i.e. the food that is received from suppliers, but considered to have insufficient quality to be sold.

Comparability between studies is limited, as different indicators are used to present food waste (see Cicatiello et al. (2017) for a list of food waste estimations). Some authors present the food waste rate (as % of total sales, or % of total volume/mass), while others provide only absolute numbers of food waste, per food category, or they show how much each food category contributes to the total food waste.

Within studies, variation in food waste estimates is also found due to diversity in retailing shops. Lebersorger and Schneider (2014) investigated food loss in 612 shops of an Austrian retailer, and found a wide spread of food waste levels across their shops (range of total food waste between 0.8% and 10% across the 612 retailer outlets). The results of correlations with shop characteristics (type of retail shops, area, sales, number of transactions) did not explain the variability, leading the authors to suggest that variation must be also influenced by factors such as "organisational aspects, individual behavioral aspects of the staff and situation specific aspects" (Lebersorger and Schneider, 2014:1916).

For comparison purposes, Table 5.1 includes only studies of food waste rates in retail stores calculated as a ratio of unsold to sold food.

Table 5.1 - Rate of food waste as calculated in different retailers and countries.

Study	Scope	Geographic area	Rate of food losses in retail
Lebersorger and Schneider (2014)	612 outlets of a food retailer	Austria	**By value** Fruits and vegetables - 4.2%. Bread & pastry - 2.8% Dairy products - 1.3% **By volume** Fruits and vegetables - 4.2% Bread and pastry - 4% Dairy products - 1.1%.
Beretta et al. (2013)	Across food supply chain. Distinguishes between avoidable, potentially avoidable and unavoidable food waste.	Switzerland	**By volume** Fruits and vegetables: 8-9% Bread and pastries: 5.1% Eggs: 1.4% Total*:1.8%
Katajajuuri et al. (2014)	Across food supply chain.	Finland	**By volume** Total*: 1-2%
Mena et al. (2011)	Supply-retailers interface.	UK and Spain	**By volume** Fruits and vegetables: 3-7% Bread: more than 7%
Gustavsson et al. (2011)	Global food supply chain.	Global, per continent	**By volume** Food waste in Europe at supermarket retail level Fruits and vegetables: 10%

*The "total" estimates given by Beretta et al. (2013) and Katajajuuri et al. (2014), refer to the complete (or almost complete, in the case of Beretta et al.) assortment of food products, and include non-perishable products.

Table 5.1 shows that the waste of fruits and vegetables, by volume, is estimated in the range of 3-10%, the waste of bread and pastries at 4-7%, dairy at 1.1%, and eggs at 1.4%. The only

accessible data for Poland is reported by one of the main retail chains. Their average food waste ratio, by volume, in 2017/18 equaled 1.1%, and after subtracting the 18% food donated to charities, the remaining food waste was equivalent to 0.9% of total food sales (TESCO, 2018). This is a low value when comparing with current literature.

5.2.2 Food waste causes and management

When reviewing literature on food waste causes and food waste management strategies in retail, we found that both causes and management strategies could be described by distinguishing among 1) the agents influencing food waste, 2) the products and infrastructure influencing food waste, and the 3) wider contexts influencing food waste. These three factors are key when describing why food waste occurs, but also how it could be reduced.

To better portray these different elements, we adapted the conceptual framework from Ribeiro et al. (2019) that described the different actors and contexts that influence consumption. This conceptual framework serves well, because 1) food waste is a direct result of production-consumption systems, 2) the framework structured the different types of influences acting on production-consumption systems, and 3) the framework highlights the agency of different actors, and contextual factors acting at different levels/scales, going beyond the direct logistics management at the shop, for which other models are more appropriate (e.g. the instore logistics model by Kotzab and Teller (2005)).

Figure 5.1 depicts the conceptual framework, in which food waste is pictured as influenced by the characteristics and/or actions of multiple elements: agents, products/infrastructure, and contexts. In terms of agents influencing food waste, the reviewed literature mentioned consumers, suppliers, and the different agents within the retail company (top management, shop managers, shop employees, buying department). We add also other retail companies, as competitiveness is a big factor in this sector. Food waste causes and strategies are influenced by the available infrastructure at the shop (e.g. cold storage). Also wider contexts influence food waste, and the ability of preventing it, such as legal requirements on food redistribution, global trends of food demand, and environmental conditions.

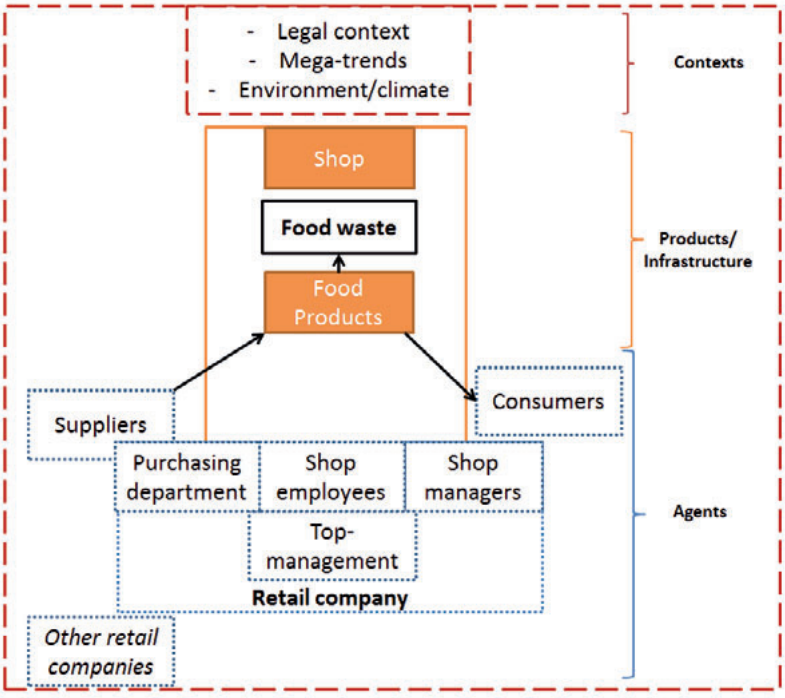

Figure 5.1 - Conceptual framework of the agents, infrastructure and contexts that influence food waste, adapted from Ribeiro et al. 2019.

Food waste causes

Older studies have addressed general causes of retail food waste (e.g. Kantor et al. 1997), but recent studies have investigated causes of retail food waste in more detail, by interviewing (shop) managers. Teller et al. (2018) studied the root causes of food waste at store level comparing four different types of retail (i.e. hypermarket, supermarket, discount store and convenience store). Mena et al. (2011) reviewed causes of food waste at the supplier-retailer interface, comparing food waste levels and causes for different types of food (ambient, chilled, frozen) in the UK and Spain. They interview managers in food production, wholesaling and retail. They categorised root causes of food waste as 1) mega-trends, 2) natural constraints, and 3) management root causes. Gruber et al. (2016) investigated the attitudes of shop managers regarding food waste, in different types of retail (convenience and discount stores, super- and hypermarkets, and wholesale stores). They found that some shop managers appeared to feel a moral burden regarding food waste, associated to two types of constraints: "(1) the societal and regulatory settings in which they operate and (2) the systemic constraints associated with the retail and wholesale organisation sector in general" (Gruber et al., 2016:6). Also through interviewing managers, Filmonau and Gherbin (2018) present barriers for food waste mitigation in retail as occurring at the level of consumers, corporate policies, suppliers,

employees, and supermarket size. All these studies presented best practices, or strategies for food waste management (addressed in section 5.2.3). Holweg et al. (2016) researched the instore logistics associated to unsaleable products, and the barriers for redistribution of unsaleable products. To present the results of the different studies in a concise way, we include the barriers for food redistribution in "food waste causes", as barriers to food redistribution also contribute to the levels of observed food waste.

Following the structure of Fig. 5.1, we can say that food waste causes occur at the level of agents, infrastructure/products and contexts.

Agents:

- Retail Company

Top-management

Many top-down policies influence the generation of food waste: 1) high quality standards by parent organisation (Teller et al., 2018; Filimonau and Gherbin 2018); 2) focus on cost, efficiency and availability is sensed by managers as pressure to maximize revenues, which can prevent them from donating food (Filimonau and Gherbin 2018; Gruber et al., 2016; Mena et al., 2011); 3) policy of rejecting products with less than 70% of their shelf life left (Mena et al. 2011); 4) lack of responsibilities and processes for food waste prevention and reduction (Mena et al., 2011); 5) policies that warn against giving food away to employees (Filimonau and Gherbin 2018); 6) promotions are imposed from the top (Gruber et al., 2016) leading to higher product allocations during promotional periods, making demand more unpredictable (Teller et al., 2018; Mena et al. 2011; Filimonau and Gherbin, 2018).

Purchasing departments

Purchasing departments cause food waste when 1) insisting on 100% on-shelf availability of a large width and depth of product range (Teller et al., 2018); 2) allocating products in excess to a shop, as it is more affordable to order in larger quantities (Filimonau and Gherbin, 2018; Gruber et al., 2016; Teller et al., 2018); 3) size and frequency of products delivered are not adjusted to characteristics of specific shops (Filimonau and Gherbin, 2018; Gruber et al., 2016); 4) forecasting difficulties result in poor ordering (Mena et al., 2011); and 5) sometimes supply chains take longer routes for the purposes of cheaper transport, requiring more handling (Mena et al., 2011), and can further deteriorate products .

Shop employees

Employees might not follow best practices in handling products at the shop due to lack of training and commitment (Teller et al., 2018; Mena et al., 2011). High turnover of personnel due to low wages can also result in improper handling of products, leading to lower shelf-life (Gruber et al., 2016).

- Consumers

Consumers influence food waste through 1) their unpredictable demand, creating forecasting difficulties (Teller et al. 2018; Gruber et al. 2016); 2) their expectations regarding range, availability and aesthetic qualities of products (Filimonau and Gherbin, 2018; Teller et al., 2018; Gruber et al., 2016); and 3) their behavior when selecting or handling products at the shop (Teller et al., 2018).

- Suppliers

Food waste is created directly through interruptions in the cold chain and poor handling during transportation (Teller et al., 2018; Filimonau and Gherbin, 2018; Mena et al., 2018). Indirectly, food waste is caused due to impossibilities to order small quantities (Teller et al., 2018), and due to lack of information sharing between retailers and suppliers (Mena et al., 2018).

Contexts:

- Legal system

Legal aspects are mentioned mainly as barriers for food redistribution (Holweg et al., 2016). They are: 1) requirements for products to have "best before" dates (Filimonau and Gherbin, 2018; Gruber et al. 2016); 2) liability on donors for donated food (Filimonau and Gherbin, 2018; Holweg et al., 2016) and 3) legal restrictions for processing food, which prevents retailers from processing food on its premises (e.g. fruit into juices) (Gruber et al. 2016).

- Mega-trends

Increasing demand for fresh produce, and for reduced use of preservatives in food, which results in shorter shelf-life (Mena et al., 2011).

- Natural constraints/environment

Seasonality plays a big role, through temperatures and weather, in how long products last fresh (Mena et al., 2011).

Products/Infrastructure:

Products that are more sensitive to handling are wasted in greater quantities (Gustavsson and Stage, 2011). The locations of shops (Lebersorger and Schneider, 2014) might also influence the levels of food waste. Contrary to Lebersorger and Schneider (2014) who have not found a significant correlation between food waste and shop size, some studies suggest that smaller retail shops have higher food waste rates than larger stores (Gustavsson and Stage, 2011; Beretta et al., 2013; Parfitt et al., 2010). This difference could be due to demand being more difficult to predict in smaller shops, as these shops are used for "top-up" (Parfitt et al., 2010), and because they might have less advanced methods to predict demand.

Food waste management

Food waste management refers to strategies to reduce and handle food waste. Most of the strategies reviewed are to be implemented by the retail company, e.g. by influencing consumers, changing practices of agents within the company, and adapting shops and products. Some strategies aim to change the legal context, which implies actions by legislative bodies, or by the retail company (through lobbying).

Agents:

- Retail Company

Top-management: 1) making food waste a key performance indicator (Teller et al., 2018); 2) encouraging redistribution of edible food waste to charities (Teller et al., 2018; Filimonau and Gherbin 2018; Gruber et al., 2016); 3) allowing flexibility to local shop managers in deciding how to reduce food waste (Filimonau and Gherbin 2018; Mena et al., 2011); and 4) adapting product offers to consumer demand, e.g. not restocking fresh produce shortly before the store closes (Gruber et al., 2016). Companies can also 5) rethink pricing and promotion strategies, by making products cheaper that are closer to the end of shelf life (Teller et al., 2018; Filimonau and Gherbin, 2018; Mena et al. 2011); and 6) reduce availability during promotions to avoid waste (Mena et al. 2011). In terms of handling food waste, Filimonau and Gherbin (2018) suggest recycling food waste into compost, biomass, bioenergy or animal feed.

Purchasing departments: 1) Improve forecasting and communication with suppliers (Mena et al., 2011); 2) adapting offer of food products (e.g. reducing product range, see section on Products/Shops).

Shop employees: Training employees to better handle products (Teller et al., 2018; Filimonau and Gherbin 2018; Mena et al., 2011).

- Consumers

Influencing consumers' behavior through education on food labels, food waste, the resources involved in food production, and that more choice is not always better. Using marketing and nudging to promote the "right choices" (Teller et al. 2018; Filimonau and Gherbin 2018; Gruber et al. 2016).

- Suppliers

The strategies reviewed do not target suppliers specifically, although changes in products will affect suppliers.

Context:

- Legal system

Legal measures include 1) exempting products from labelling requirement (Gruber et al., 2016); 2) check for quality of individual products in a batch, even if one product is spoiled (Gruber et al., 2016); 3) exempt donors from liability for donated products (Gruber et al. 2016; Teller et al., 2018). Also, more flexibility in 4) labelling to make it easier to donate food (Gruber et al., 2016); and 5) product quality assessment, as different appearances do not necessarily mean lower quality (Gruber et al., 2016; Gustavsson et al. 2011).

Products/Infrastructure:

Changing the selection of products to reduce food waste: 1) reduce product range, particularly in products with limited shelf life (Teller et al., 2018); and 2) use local products to reduce transportation times, and offer long-lasting varieties (Mena et al., 2011). Changes in the shops can also help: 1) having in-store butchers can preserve meat for longer (Mena et al., 2011); and 2) processing less fresh food at the shops (e.g. into juice).

5.2.3 Views of shop managers

Gruber et al. (2016) were the first to explore the personal views of store managers on food waste, finding that many managers seemed to struggle with the quantities of food wasted at the shops. Despite concerns with the levels of food waste, shop managers felt constrained by policies and practices that contribute to food waste but are beyond their control - this tension was described by Gruber et al. (2016) as a “moral burden”, and echoes the notion of widespread social norms that regard food waste as unethical (Gjerris and Gaiani, 2013).

5.3 Methods

We use a case study approach to explore the issue of food waste in an alternative food network.

5.3.1 Case-study: Raven Co-op

We examine the Raven[11] Food Co-op, a consumer food cooperative based in Warsaw, Poland (see key figures of Raven in Figure 5.2). Raven has been established in 2013 as a bottom-up initiative aimed at providing a practical alternative to what is perceived as low-quality products from supermarkets, and to expensive organic stores. Raven is seen by some of its members as a response to the growing domination of multinational, standardized retail chains. In Poland

[11] We use a fictitious name of the initiative for the sake of anonymity.

the market share of top 10 retailers in fast moving consumer goods has grown from 42% to 58%, between 2010 and 2015 (Roland Berger, 2016).

In 2014, after being registered as a non-profit association, Raven opened its first grocery store, and in 2016, a second store. The co-op stores are shared property of its members, who govern it according to international cooperative principles (ICA, 2018). The selling area is roughly 30m^2 per store, and is mostly used for fresh produce. The stores are accessible both to members and external clients, but the former pay reduced prices, a monthly fee, and work obligatory shifts (3 hours per month) helping with everyday store management, e.g. accepting deliveries, stacking and storing goods, and cleaning. The reduced price means that profit margin[12] in members' prices is set at 7% for all products, while profit margin for clients' prices is higher, averaging 34%, and more flexible, reflecting the general market prices for organic food.

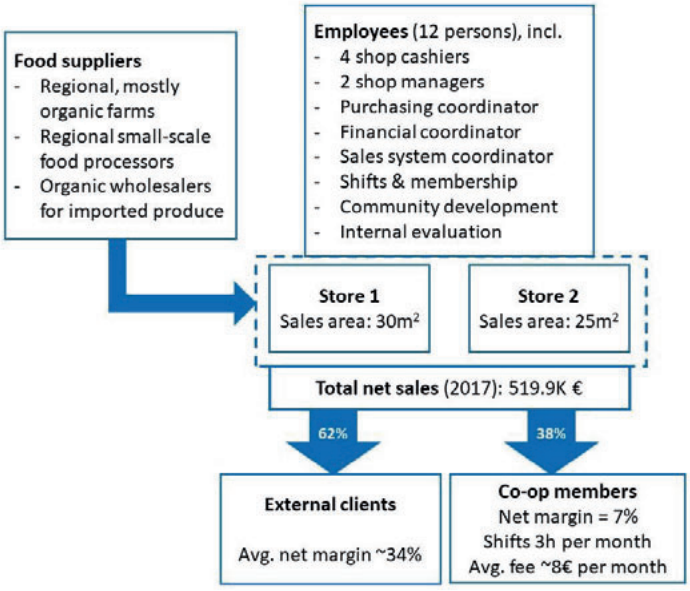

Figure 5.2 - Key figures of AFN Raven.

Food is ordered according to a list of criteria that emphasize seasonality, locality, and excludes meat, palm oil, and products from industrial farming. The products are sourced from about 20 small-scale farms, most of which are certified organic, from regional food processors, and from organic wholesalers in case of imported goods. Apart from food, Raven offers also a limited number of household care products and cosmetics. In total, around 1,500 products are on offer throughout the year, many of them only during a relatively short season. As of February 2019,

[12] Profit margin is calculated as a ratio of net profit to revenue.

the co-op has 305 member households and 12 employees (10.0 in full-time equivalent). Total net sales in 2017 amounted to 519.9K EUR, with external clients contributing 62% of this value.

5.3.2 Quantitative research

We assess both the scale and structure of food waste at Raven. The standard daily routine implemented in the co-op requires that all in-store food loss is weighted and written down by cashiers, and later entered manually in the store inventory management system. From this inventory, we obtained data on food loss and total sales for both stores from January, 1st 2017 up to June 30th, 2018. We used this time period because from July 2018 the procedures of food waste accounting were changed. For estimations of food waste scale and structure we use only 2017 data. For the temporal analysis (section 5.4.1), we follow food waste dynamics over the whole period (18 months). In the store inventory system, food waste data is available in mass/volume and corresponding net sales value, and is presented for each product (357 products in total) and product group. The sales database contains data on net and gross sales value, cost price, and volume/mass for over 1500 products, presented according to product groups and type of buyer (member or client).

We operationalise food waste in monetary terms as net sales value of unsold food compared to total net food sales, or - in physical terms - compared to total volume of food sold, as is commonly calculated in literature (e.g. Lebersorger and Schneider, 2014; Beretta et al. 2013). Products that are close to the end of shelf life are marked with a 50% discount, and promptly added to the food waste inventory, independently of being sold or not. The recorded food waste covers only in-store waste, i.e. articles accepted at the delivery that were neither sold nor returned to the supplier. Unlike Eriksson et al. (2012), we do not include estimations of pre-store waste as Raven lacks specific criteria of food quality at delivery, so the level of pre-store waste is insignificant.

We place our results in the context of food waste in conventional retail. For detailed food waste rates per product, we use Eriksson et al. (2012) as a reference, the only study we found that presents food waste rates at product level.

Data limitations

The data on food waste obtained from the inventory management system has some limitations. First, there is no consistent data on the mass of products. Products are quantified in kilos, packages or pieces. While it hampers the direct comparability across studies, this data might still be useful when expressed as a value relative to total amounts sold. In order to provide basic comparability across studies on mass of fresh fruit and vegetables (FFV), we assigned an unit weight to every product in the category sold per piece/package. For packages, we used the exact weight from the product description. For products sold per piece, we estimated the average weight based on products currently accessible in the Raven stores.

Raven has a policy of reducing food waste that includes a 50% discount for produce that is either one day before expiry date or fresh produce that lost its freshness or attractive

appearance but are still edible. Such products are put on the food waste list the moment they are discounted and thus included in the inventory irrespectively of being sold or not. Unfortunately, there is no separate data on the amount of products sold this way, so the values of food waste presented in the following chapter are overestimated. Also, all monetary values assigned to recorded food waste is according to (higher) clients' prices, thus its calculated share in total sales is overestimated, as the latter value includes also reduced members' prices. In the presentation of food waste value, we apply a coefficient (see footnote 13) that accounts for this discrepancy. Finally, a significant share of produce recorded on the food waste list is not wasted but informally distributed among co-op members and clients. We have no evidence to assess the scale of this process, but we describe it more thoroughly in our qualitative research.

5.3.3 Qualitative research

We investigated Raven's food waste management practices by interviewing the shop manager (A) and the purchasing coordinator (B) of Raven. Two semi-structured interviews were conducted (in total 1h30min), with four months in between. The questions were based on the interview guide used by Teller et al. (2018) to interview shop managers. The first interview with A focused on the strategy to handle food waste. The second interview with A and B focused on the causes of food waste and the strategies to prevent food waste. Inspired by Gruber et al. (2016), we also interviewed the shop manager about her views on food waste. From the degree of concern and the presence of feelings of constraint in handling or reducing food waste, we interpret whether the shop manager feels a moral burden.

5.4 Results and discussion

5.4.1 Measuring food waste at Raven

Scale of food waste

Total net sales in Raven in 2017 amounted to 2 239.3K PLN[13] (519.9K EUR), of which 90.8% is food sales. The food waste recorded in 2017 equals 18.2K PLN (4219 EUR), or 0.85% of total value of food sales. After adjusting for the double pricing system for members and clients[14], the final value is lower, at 0.78% of total value of food sales. In terms of physical units - 1.09% of total volume of food sales is wasted. This value is low, compared to the reported losses of conventional retail. Beretta et al. (2013) report total food waste by mass (across all food

[13] PLN stands for Polish zloty and equals 0.232 EUR as for 9th of October 2018

[14] Given that all food waste is calculated according to higher clients' prices, we re-estimated this value, taking into account that members' price is on average lower by 27 pp. and members' share in total food sales is 40%. Adjusted monetary value of food waste is thus lower, equaling 0.78% of total value of food sales. We use this ratio (0.78 / 0.85 = 0.92) as a coefficient to adjust monetary values of food waste recorded in the Raven co-op reported in this chapter.

categories) at the level of 1.8%, and Katajajuuri et al. (2014) - between 1 and 2%. For a more in-depth insight of how Raven performs in terms of food waste, we study the losses among different categories of products.

Structure of food waste

Fruits & vegetables, bread & pastry, and dairy products are the categories most often used to assess levels of retail food waste. Table 5.2 shows that at Raven, monetary values of food loss across these categories do not exceed 1%. These values are very low compared to conventional retail (see Table 5.1).

The volume of fruit & vegetables wasted at Raven is 1.9%, almost two times higher than its monetary value. This result indicates that cheaper products from this category have higher probability of being wasted, which conflicts with the results by Eriksson et al. (2012) for conventional retailers.

Table 5.2 Rate of food waste among key categories of products in Raven*

	Rate of food waste - by value	Rate of food waste - by volume
Fruits & vegetables	1.0%	1.9%
Bread & pastry	0.3%	0.4%
Dairy products	1.0%	0.6%

* Ratio between unsold food and sold food.

Food waste can be analysed also on per product basis, both in terms of absolute quantities wasted and waste percentages, like in Eriksson et al. (2012). In terms of largest waste percentage recorded across the fresh fruits and vegetables (FFV) category, Eriksson et al. (2012) found that Swedish hypermarkets are wasting mostly highly perishable and rather expensive exotic fruits (8 out of top 10 products, by percentage wasted). In case of Raven, the FFV products with highest waste percentage are root vegetables (4 out of 10) and soft, seasonal fruits (3 out of 10). The highest percentage of waste - 18% of the delivered quantity - was found in Raven for black turnip and black raspberry, while in conventional stores studied by Eriksson et al. (2012) it was tamarillo – 57%.

In Table 5.3 we present the top 10 most wasted FFV per absolute quantity at Raven. In Raven, 6 out of 10 products generating the largest quantities of FW are root vegetables, less perishable than most other FFV products, but marked with a relatively high average waste ratio that exceeds 5%. In Eriksson et al. (2012) only two root vegetables – potato and carrot – are on the equivalent list, with waste ratios not exceeding 1%. This finding may seem contradictory to earlier notions of relatively low level of FW in Raven. But the high level of waste across root

vegetables might be due to Raven's distinct policy of ordering vegetables from regional suppliers (see "Suppliers" in section 5.4.2). Thus, just before a new season starts stores are stocked with few-months old root vegetables, more prone to spoiling than fresh imported produce, offered in conventional retail.

Table 5.3 Products generating the largest quantities of recorded food waste in Raven, FFV category.

Product	Food waste mass [kg]	Food waste %*
Carrot	234	2.9
Potato	137	1.6
Root parsley	130	7.6
Beetroot	99	2.4
Tomato	92	3.2
Pumpkin	75	2.4
Apple	68	0.4
Onion	60	2.8
Parsnip	58	13.5
Lemon	51	2.9

* Ratio between unsold food quantity and sold food quantity.

Temporal approach to food waste

The impact of seasonality is examined by looking at the changes in levels of food waste between January 2017 and June 2018 (Figure 5.3). The food waste ratio in Raven varied from 0.4% to 1.8% of total value of sales per store. Throughout 2017 there were three spikes, experienced similarly in both stores - around February, July and December. The early summer spike corroborates the assumption that the beginning of a new season leads to relatively high waste ratios of root vegetables stocked in the previous season. The upward trend starting from

November 2017 might be attributed to a change in ordering policy that aimed at sales expansion, and entailed broadening the product range.

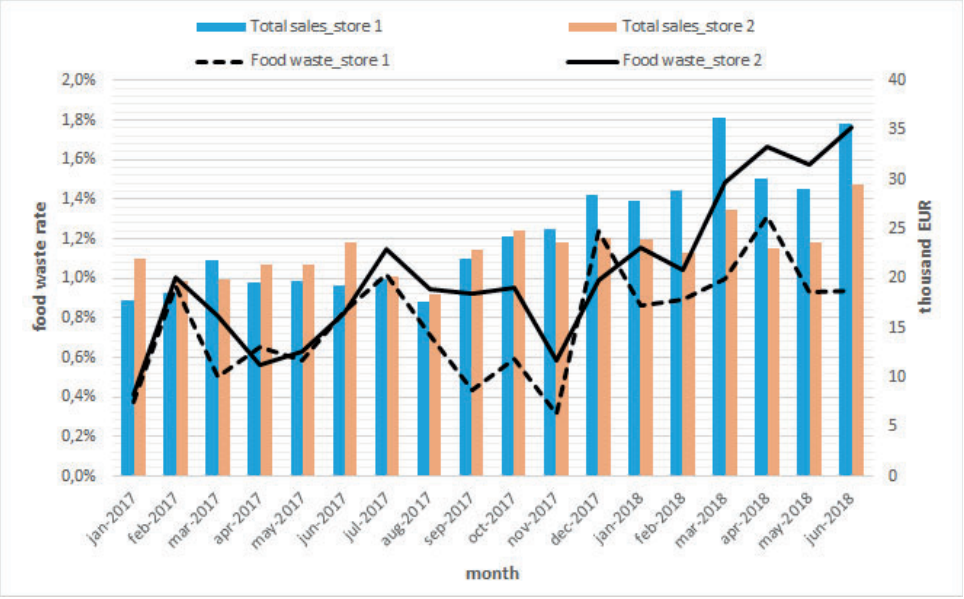

Figure 5.3 - Food waste rate by value and total sales at Raven's two stores.

The food waste levels at Raven are low when compared to most food waste data on conventional retail. Below we explore the qualitative factors behind these food waste values, to better understand the different approaches between AFNs and conventional retail, regarding food waste.

5.4.2 Food waste causes at Raven

Several reasons for food waste were mentioned in the interviews with the shop manager (A) and the purchase coordinator (B).

Co-op:

Shop employees and volunteers: Products deteriorate faster if they are not properly handled at the shop. Despite hiring the cashiers and a shop manager, most of the cooperative members who help at the shops do so voluntarily, as part of their monthly 3 hour duty. There are many detailed instructions (further explained below), but they are not always strictly followed, as mentioned by the purchasing coordinator: *"[sometimes] it is not properly sprayed during the day when it is exposed outside the fridge, and the cashiers or the members don't remember to go and spray it with a mist...My opinion is that it should be done more often than it is."* (B)

Purchase coordinator: It is difficult to predict demand for some products, especially dairy. This difficulty is reflected in the estimations showing a 1.0% waste ratio for dairy products, 0.2% percentage points higher than the average food waste value at Raven.

Suppliers: Products are ordered directly from farmers who, although mostly from the region of Warsaw, can still be at a significant distance, which means they will deliver to the shop once a week. Ordering for the whole week involves some risk, and might result in ordering higher quantities to ensure that there is sufficient stock until the next delivery. This also necessitates to store products for the whole week.

Shops and products:

Cold storage space at the shops is sometimes insufficient for the amount of products, especially during the warmer seasons, with high temperatures, and large amounts of fresh, perishable produce on sale. In one of the shops cold storage space is very limited, which will result in some products aging faster. This is visible in Figure 5.3 (section on temporal approach to food waste), where store 2, the one with less cold storage space, has higher values of food waste rate in 13 out of the 18 months.

Products are always seasonal. At the end of the season, products are more likely to be delivered already too ripe, or too old, resulting in shorter shelf life. Less familiar products are more likely to be wasted, as consumers do not know how to use them.

5.4.3 Food waste management at Raven

In this section we address food waste reduction strategies and the ways in which food waste is handled.

Food waste reduction strategies

There are different stages in the prevention of food waste at Raven: predicting demand, caring for products in the shop in a way that lengthens its shelf life, promoting the sale of products approaching their best before date (active selling, discounts). When products are not sold, they are accounted as food waste, but if they are still edible, they are informally redistributed.

Purchasing coordinator:

Predicting demand: As Raven is a young project that has grown in membership and in sales, it is not very useful to use previous years to forecast demand. However, the purchasing coordinator is daily at the shops and observes the sales of products directly. Also, Raven's stores are embedded in a community of suppliers, clients and members. The strong social and economic bonds between co-op members and the shops is a way to overcome the

unpredictability of consumer demand. This approach fits in the concept of community economy, as put forward by Douthwaite (1996).

Shop employees and co-op members:

Caring for products at the shop: There are specific guidelines for how each product needs to be handled to last longer in the shops. As the shop manager explains, it requires a lot of detailed attention: *"There are many many instructions. (...) What needs to go to the fridge, what needs to go to the fridge in plastic bags, what needs to get out of the plastic bags because it is going to get humid or moldy. (...) There are many vegetables coming throughout the year, so we have to really think about how to take care of each of them, and what is the best for them."*(A)

Promotion policies: When products are losing freshness, or approaching the "best before" date, a few strategies are used. A few days before, products are sold with 20% discount, which is raised to 50% on the day before expiring. This practice is consistently observed. The purchasing coordinator explains it: *"we definitely try as much as we can to discount stuff before it is too bad to be sold. So, profit second in this case, obviously." (B).*

These products are also sold through "active selling", meaning actively asking consumers if they would like to take a product, that would be wasted otherwise. The shop manager describes how new cashiers are taught to do active selling: *"Once you see that there is someone nice, and you are having this bond, and you feel there is good interaction, just give it to him, ask him whether he wants it or not, because we don't want to keep it in here. It is not in terms of being a good seller, it is just in terms of taking care of waste, and not keeping anything that is not needed at the shop". (A)*

Informal redistribution: Once products have passed the "best before" date, or are in a state that is not saleable, but still edible, there are different ways to redistribute them. One way is active selling: "*very often if there is something past the [best before] date, like dairy which is not vegan, and we have mostly vegans and vegetarians, we give it away directly. "Would you like to take some milk?" (...) So it is just talking to people. It is named active selling but it is just talking to people*."*(A)*

Both co-op members, doing their duty, and clients are invited to eat or take these products: "*There is no instruction for eating stuff that is going to waste, but people are really eager to take care of that, because they don't want it to go to waste. Because I think we share the same values and they just feel bad about food being wasted." (A)*

Products without "best before" dates such as fruits, vegetables and bread, are placed in a "free" box, which is located at the entrance or outside the shop, and there are specific instructions about this process: *"once you are closing up [the shop], if there is some stuff that is not saleable, and you are not taking it with you, (...) you have to take it out, and give it out*

for free. (...) "It [the "free" box] really works well at the second shop, because there are lots of homeless people and lots of really old people there, who just cannot afford. (...) I was observing the process of the local community getting used to this. At the beginning I think they were ashamed. You needed to close the shop and leave, and after dark the food was gone." (A)

Raven seems committed and concerned with preventing food waste, using a variety of strategies to use food before wasting, and it has no problems with redistributing products to employees, co-op members, clients, and local communities. Could such a strategy also work in conventional retail? While Filmonau and Gherbin (2018) mention that surplus food is sometimes donated to employees, they also explain that this goes generally against corporate policies, fearing that employees would be less motivated to sell the products, and also that this would be against staff health and safety. However, employees in conventional retail are not usually involved in selling the products to consumers, so it is not so clear how they could actively undermine sales.

Note that while the shop manager makes no references to legal concerns regarding food redistribution, usually legal issues are significant barriers to food redistribution in conventional retail, as mentioned in the literature review (e.g. Holweg et al., 2016). For retailers to donate unsaleable food to charities or other organisations, often legal arrangements have to be made between the organisations, so that retailers are no more liable for the food quality. In the case of Raven, the redistribution is not directed at other organisations or charities, but is directly done to employees, co-op members, clients, or passersby, who are duly informed if the products are expired. Recent legal arrangements at EU level also aim to make it easier for food donations to take place, as the Guidelines on Food donations attest: "*Redistribution of surplus food and engagement in food donation activities may therefore be carried out by food business operators at each stage of the food supply chain. Food business operators (e.g. farmers, food manufacturers and retailers) may donate surplus food through redistribution organisations (such as food banks), gleaning networks and other charity organisations or directly to consumers themselves (e.g. employees).*" (EU Commission 2017)

Handling food waste

Raven has developed strategies to reduce food waste, but when food waste still occurs, it does not end up in municipal solid waste, but is composted (a handling method also mentioned by Filimonau and Gherbin (2018)). Three strategies were attempted: creating a local community compost, providing it to a supplier, or to a local permaculture garden.

The local community compost would be placed in the inner courtyard of buildings close to one shop. This idea was not accepted by the residents of the buildings, because they feared the compost would attract rodents and diseases.

The second strategy was to give away the food waste to a supplier, i.e. an organic producer. The co-op members knew that he collected organic matter for composting, and asked him if

he could take the food waste from the shop, in his deliveries. This strategy worked well, except for the low-season in which the producer did not visit the shop. Hence, a third strategy was developed. One member of the cooperative knew someone who had a permaculture garden and was willing to take the food waste. So, throughout the year there are always one or two persons collecting the food waste to produce compost. This solution, especially the collaboration with the supplier, can be considered a "closed-loop" as the farmer retrieves food waste from the shop he supplies.

5.4.4 Personal views of shop managers

The shop manager at Raven declares that food waste at the shop is actually quite low, and that avoiding it is a concern shared by most members: *"I don't feel that we are wasting food, so that's good. Because if I did... It is really heartbreaking for us once anything goes to waste. All the members, even not the workers, are also like "oh my god, I am going to eat it, I don't want it to go to waste", and we are cutting out the rotten stuff and we just eat it all together. We really care about that."(A)*

While the shop manager appears to refer to a moral burden ("*It is really heartbreaking for us once anything goes to waste"*), contrary to many shop managers in conventional retail (Gruber et al., 2016), the shop manager of Raven does not feel constrained when striving to reduce and handling food waste. Without strict corporate policies (often motivated by maximizing revenues), there is flexibility and autonomy to organize the prevention and management of food waste. In fact, it is mentioned that *"profit is not really the priority"* (A), something that makes sense coming from a non-profit cooperative.

5.4.5 Comparing AFN Raven with conventional retail

From a single case-study we are not able to evaluate the exact reasons for the low food waste rate in the studied AFN. However, juxtaposing the main differences and similarities between the AFN and conventional retail might shed some light on this issue. When juxtaposing food waste causes and management in Raven with those of conventional retail (section 5.2) a few characteristics stand out. The characteristics represented in Table 5.4 are structured along the elements of the conceptual framework of Figure 5.1, i.e. they belong to the agents involved (company or co-op, consumers and suppliers), to the contexts, and to the infrastructure/products. The characteristics can influence food waste in different ways, and it is likely that the low values of food waste at Raven are explained by a combination of these elements.

Table 5.4 - Different characteristics of AFN Raven and conventional retail

			Conventional Retail	AFN Raven
Agents	Company / Co-op	Main drivers of the organisations	For profit companies. Maximizing profits, minimizing costs, constant availability of products, efficiency (Gruber et al., 2016).	Non-profit organisation. Balance between ethical guidelines, accessibility, financial viability and minimizing negative environmental impacts.
		Degree of flexibility	Top-down corporate policies (Gruber et al., 2016).	Autonomous.
		Promotions	Imposed from the top, can lead to food waste (Gruber et al., 2016; Teller et al., 2018).	Implemented to prevent food waste. Includes active selling.
		Redistribution	Some retailers are involved in external redistribution, but it does not seem to be a standard generalised practice (Filmonau and Gherbin, 2018).	Internal, external and informal redistribution. Part of daily instructions.
		Shop personnel	Both refer that better handling of products is needed at the shops, by employees (and co-op members at Raven).	
	Consumers		Regular consumers.	Co-op members and external consumers. Particularly co-op members are likely to share co-op values.
	Suppliers		Sometimes products arrive not fresh due to cold chain interruptions, poor handling in transportation, or longer transportation routes due to cost-efficiencies (Mena et al., 2011).	Direct relations with farmers and insufficient capacity to organize own deliveries' system result in limited frequency of deliveries. Less fresh products delivered in the end of seasons, reflecting a loyal relation to suppliers.
Contexts	Legal system		Managers feel constrained by legal aspects (Gruber et al., 2016; Holweg et al., 2016).	Legal issues were not mentioned.
Infrastructure/ Products	Shop size		Typically larger shops.	Small shops.
	Products		Large assortment of food products.	Smaller assortment of products, and no selling of meat or tropical fruits.

The only characteristics shared by Raven and conventional retail is the handling of food products at the shop level. The main drivers of the organisations are different, and determine how priorities are set throughout the organisation. The scale of conventional retail organisations is typically also much bigger than Raven, which results in top-down policies for promotions and orders, and provides only a small degree of flexibility for shop managers, aside from profit maximizing goals. The legal context was the only context explicitly mentioned as a barrier to food redistribution in the review of conventional retail, but it was not mentioned in the interviews with Raven. The small size of the shops might also contribute to reduced food waste, combined with a smaller inventory, and the fact that 40% of the food sales are done to co-op members, suggesting some loyalty of demand. However, the influence of the shop sizes might contradict current literature which has not found a significant correlation between shop size and food waste levels (Lebersorger and Schneider, 2014), or which suggests that smaller shops have higher food waste levels than bigger shops (Gustavsson and Stage, 2011; Beretta et al., 2013; Parfitt et al., 2010). Another possible explanatory factor is the fact that Raven does not offer meat products. For conventional retail, Mena et al. (2010) indicate refrigerated meat as one of the food categories with the highest food waste rates.

5.5 Limitations and future research

As we present a first exploratory research of food waste in an AFN, various limitations apply. First of all, there is an obvious need for future research to compare the results with other AFNs, both retail food co-ops and other types of AFNs.

Secondly, we compared Raven to conventional retail. However, Raven is more analogous to small-scale independently owned fruits and vegetables shops, also because of the independence that shop owners have in those contexts. While Gruber et al. (2016) and Teller et al. (2018) do study different types of shops, they do not provide quantitative data on food waste, focusing instead on food waste causes and management. Also, the smallest shops studied in these papers - convenience stores - are still about ten times larger than Raven's shops (areas up to 197 m^2 (Teller et al. 2018) or 400 m^2 (Gruber et al., 2016) in convenience stores versus Raven's areas of 25 m^2 and 30 m^2). More research is needed on food waste quantities in small-scale independent shops.

Third, our research design did not allow to discern the impact of two key factors, i.e. the small scale of the initiative (which entails a certain level of autonomy) and its alternative approach to retail, based on co-op principles, involvement of members, and policy of direct orders. Thus, more research should be carried out both in large co-op supermarkets, and in small scale independent organic shops.

Fourth, there are no figures for the total amount of food redistributed at Raven, which leads to an overestimation of total food waste. While some studies refer to amounts of donated food

by retailers to charities (Alexander and Smaje, 2008; Cicatiello et al., 2017), we did not find literature estimating informal redistribution within the shop (to employees or clients).

Fifth, there is also an important question of self-selection. Members of the co-op are most probably more concerned with reducing food waste, which may partially explain their decision to join and their dedication to act. It would be interesting to examine to what extent participating in the co-op influences members' approach to food waste. On the other hand, even concerned consumers have very little impact on food waste practices in conventional stores.

Sixth, retail is only one of the stages where food losses occur. It would be interesting to study the losses in the full supply chain, to examine how AFNs influence food waste on farms (with its emphasis on direct relations, but also on good food quality) and in households.

Finally, the definitions and methods used for food waste accounting significantly influence the levels of measured food waste. The composition of the food on offer is important. Conventional retail typically offers a higher share of processed non-perishable food than Raven, but also (fresh) meat, which does affect the total food waste rate.

5.6 Conclusion

In this case-study we have explored the food waste dynamics in the AFN Raven. Quantitative results showed that Raven had very low food losses, when compared to most studies of conventional retail. Specific reasons for this result are difficult to discern. Food waste causes show that Raven shares some food waste causes with conventional retail (e.g. unpredictability of demand), while its reliance on loyal relations to regional farmers can contribute to food waste, when products are delivered too ripe in the end of the seasons.

Possible structural explanations for the low food waste values could be the loyalty of customers which guarantees demand and the exclusion of some perishable products (e.g. meat, tropical fruits) from the assortment. Food waste management practices at Raven show a high degree of autonomy and flexibility, not often seen at the shop level in conventional retail. In Raven, when products are marked as food waste, they might still be sold with a 50% discount, or informally redistributed among the co-op members and clients. When the products are not taken nor redistributed they are collected for composting by a farmer and a permaculture gardener.

While structural reasons and food waste management strategies cannot solely explain the low food waste levels, as they occur after the products are accounted as food waste, two factors might provide an explanation: the degree of flexibility and the main drivers of the organisation. In conventional retail, the lack of flexibility experienced by shop managers, and the overarching pressure and focus on maximizing revenues make it difficult to make food waste a priority. On

the contrary, at Raven, there is autonomy, and the main driver of the organisation is to balance financial viability, accessibility and ethics (including minimizing environmental impacts).

Looking beyond profit allows for a high concern with food waste, and the autonomy of the organisation gives co-op employees and members flexibility and freedom to reduce and handle food waste. AFNs might be considered an institutionalized reflection of a societal need to reduce food waste. In times of growing complexity of various structures, where moral burden is a result of tension between personal values and imposed regulations and practices, AFNs create an opportunity for agency and ownership.

It should be emphasized that these results are based only on a single case-study. Future research is needed to assert the general food waste performance of AFNs. Our results suggest, however, that conventional retail would benefit from giving their shop managers more freedom to address food waste, and reducing the overall predominance of revenues as main concern for company decisions and practices. Social and environmental concerns, which are commonly endorsed in companies' CSR reports, should influence decision-making to reduce food waste, even if potentially impacting revenues.

Declaration of interest

Jakub Rok is a member of the association that has been studied in this paper. He is also partly employed there, working on the topic of internal evaluation systems. His participation in the studied organisation did not bias in any way the opinions presented in the manuscript.

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Chapter 6

Conclusions

6.1 Research context

In 2022, the effects of the climate crisis are felt all around the world. Record-breaking heat temperatures have become regular, and so have once-in-a-century floods. Despite long-standing scientists' warnings about effect of rising GHG emissions, emissions have more than doubled since 1990, the year of the first IPCC report. In the past decades strategies for mitigation of emissions have mostly focused on technological solutions for changing supply sources, or energy efficiency. However, despite the increased capacity of renewable energy, the use of fossil fuels has also increased, with no reduction in absolute global energy use. There has been a lack of demand-side approaches to focus on how to reduce energy and resource use in absolute levels. This situation might be explained partly by how economic and political systems are dependent on economic growth, which requires a constant expansion of production and consumption. It has become mainstream to defend "Green Growth" and the feasibility of decoupling economic growth from emissions and resource use. However, recent studies suggest that the observed decoupling of emissions and other environmental impacts is limited and not enough for the urgent and drastic reductions required to stay within 1.5-2.^{0}C of warming which were agreed upon at the UN's Paris Climate Agreement (Parrique et al., 2019; Alfredsson et al., 2018). More and more voices call for envisioning new systems which would not depend on economic growth but would provide enough for everyone to live a good life, reducing inequalities and ensuring the health of ecosystems for future generations. It has become clear that we need demand-side approaches for finding ways of changing production-consumption systems and reducing the absolute levels of consumption. The notion of sufficiency must become an inseparable companion to the concept of efficiency, if we are to have absolute reductions in energy and resource use.

6.2 Research Questions

Degrowth and (strong) sustainable consumption are two academic fields that engage with these themes. They defend the urgency of changing production-consumption systems and reducing levels of consumption to reduce GHG emissions and tackling the climate and environmental crises. This PhD thesis contributed to these fields by addressing the question of:

How to change and reduce consumption for sustainability?

More specifically we addressed the following sub-research questions:

RQ 1) What influences consumption?

RQ 2) How to reduce consumption?

RQ 3) How to change systems of production and consumption?

RQ 4) What are the environmental impacts of changing models of production and consumption?

We summarize here our conclusions for each research question and finalize by addressing the main research question.

6.3 Main findings

RQ 1) What influences consumption?

Our main research question is recurrent in the field of sustainable consumption, and the wider subdiscipline of ecological economics (Røpke, 2015). We addressed RQ1 by following calls for more interdisciplinary research on consumption (e.g., Reisch et al., 2016; Wilk, 2002; Heiskanen and Pantzar, 1997). We conducted a 10-discipline interdisciplinary review of explanations for consumption. The results reinforce the strand in sustainable consumption that advocates for a greater acknowledgment and deeper understanding of the structural influences on consumption, to balance the predominant narrative that focuses on individual consumer behaviour.

The explanations for consumption proposed by the different disciplines can be understood as answering slightly different questions: 1) what are the purposes fulfilled by consumptions? 2) what influences consumer behaviour?, 3) what societal contexts and actors influence consumption?, and 4) why has consumption increased throughout history?. First, consumption can be seen as fulfilling a wide range of purposes: basic needs (e.g., to eat, to dress), caring for kin (e.g., buying food for family), maintaining relationships (e.g., gift-giving), expressing identity and status, a desire for novelty, engaging in certain practices, increasing satisfaction and aspirations for greater comfort and convenience. These purposes can be aligned with the notion of universal human needs (Gough, 2020), and begs the question: are these purposes innate to human beings, and if so, can they be fulfilled by less consumption or means that do not require consumption? This question points to the concept of “satisfiers”. Satisfiers can be “objects, activities and relationships which can satisfy our basic needs” (Doyal and Gough, 1991: 69). Authors such as Gough (2020) and Fuchs et al., (2021) defend that there are universal human needs, and that these needs can be met in multiple ways, through “satisfiers” which might involve a great disparity of resources. Our research is aligned with the calls from these authors for more research on which satisfiers can meet human needs while using low levels of resources. Secondly, consumer behaviour is mostly investigated within marketing with the purpose of stimulating consumption. In this perspective many aspects influence consumption: from characteristics of consumers (e.g., age, income, personality, values), to what is called the “marketing mix” of price, product, promotion and place, which deals with everything related to the product and where and how it is promoted to the consumer (e.g., music in the shop, colour, design, placement on the shelf). This type of research often focuses

on the question of why someone chooses a certain product instead of another, rather than why they consume it at all.

Thirdly, there are broader contexts that influence consumption: cultural, economic, political, technological, and geographic/infrastructural, through actors such as producers, marketers, companies, banks, governments. Typically, these explanations are brought by authors from sociology and political economy. For example, Schor (1991) sees that consumption is related to the preference by companies to transform productivity gains into higher wages rather than free-time. She sees "consumerism as a learned behaviour, a specific product of capitalism, promoted by businesses, new ways of advertising and increased possibilities to pay through credit or instalments" (Schor, 1991)

In sum, the results show that consumption is not merely the result of consumer actions, but of the actions of myriads of actors (e.g., governments, producers, companies, banks) over time, affecting wider contexts (social, cultural, geographical, infrastructural, economic and political). This understanding reinforces the systemic view of consumption that has been emphasized by other authors (e.g., Akenji, 2014; Brown et al., 2017; Fuchs and Lorek, 2005). Understanding how consumption has changed and increased in the last century, helps to frame more realistic ways through which it could be altered and reduced in the future.

If environmental policy and research would take this up it could mean in a drastic change in terms of approach. From emphasis on individuals and consumer behaviour to policies that target the actors and contexts that often define what is consumed. For example, instead of urging consumers to have environmentally friendly behaviour by, for instance avoiding plastic packaging, why not target the retail industry reliance on (disposable) packaging?

RQ 2) How to reduce consumption?

Reducing consumption was investigated in Chapter 3. We found that despite a common discourse around simply "stopping" consumption, there are various ways in which people manage to reduce their consumption levels, and again multiple contexts that make it easier or more difficult. The results showed that abstaining from consumption is one approach taken for reducing consumption, but it is accompanied by engaging in various types of practices: being organised, sharing, extending lifetime, repairing, self-provision, learning and employing creativity. In addition, we found that people use different types of materials to reduce consumption: second-hand, durable, alternatives to disposables, resource-efficient, sustainable alternatives, and materials to engage in the aforementioned practices (e.g. tools for repair, materials for self-provision). This shows that reducing consumption is not merely about abstaining from consumption, but also about doing things differently, for which different things are needed. Finally, various contexts influence how easy or difficult it is to engage in low-consumption practices: personal, social, cultural, geographical, systems of provision, and infrastructure/institutional. Our research reaffirms Maniates' conclusion that to address sustainability we must un-individualize responsibility (Maniates, 2001). Just as we have shown

in Chapter 2, we must see consumption not only as a result of personal choices, but need to understand how the multiple contexts we inhabit support and promote high-consumption practices and lifestyles. A step must be taken to know how those contexts can be changed to facilitate low-consumption skills, practices and structures, instead of assuming that reducing consumption requires simply an individual decision to abstain.

RQ 3) How to change systems of production and consumption?

We analysed this question by focusing on the theme of food. Food systems are responsible for a significant amount of GHG emissions and other environmental impacts, but there are also a lot of experiments happening in this field with the purpose of building more sustainable food systems. Alternative Food Networks (AFNs) are initiatives that aim to provide alternatives to conventional food retail, by closer and fairer relationships between consumers and farmers, and often based on organic and local/regional agriculture. In Chapter 4 we looked at what it takes to change food provisioning systems, from the perspective of AFNs' organisers, capturing the ways in which broader actors and contexts supported or made it difficult to start and maintain AFNs. Chapter 4 showed (and categorised) various types of short food-supply chains. We saw how alternatives to the conventional unsustainable food system can be created and organised by people, who are using their agency not as consumers, but as organisers of their own provisioning system. The organisers of AFNs we interviewed were not satisfied with the pre-defined options they found in the market, nor with what they learned about the industrial food system. That drove them to organise a variety of AFNs (e.g., business-led, consumer-led, third sector-led, public-led, Community Supported Agriculture, farmer-led), depicting a diversity of for-profit and non-profit provisioning systems for short food supply chains.

While literature on AFNs is prolific there have been few papers that 1) categorised the different types of AFNs, 2) focused on the support and the difficulties experienced by organisers, 3) compared AFNs in different countries, and 4) used a power lens on the challenges and facilitating conditions experienced by AFNs. Key challenges and facilitating conditions varied according to AFN type and depended on AFN particularities. For example, the existence of solid social relationships was an important facilitating factor for starting (and maintaining) non-profit AFNs. Some general challenges were related to the pioneering nature of these initiatives which meant they had no models to follow, or that they lacked credibility at the start, when cooperating with other actors. Another key challenge we identified multiple times was the recurrent tensions between idealism and pragmatism, which is also observed in other literature on sustainable initiatives. Organisers also felt consumers could be difficult to handle, particularly regarding their expectations of (vast) product diversity and their unawareness of seasonality and issues with the industrial food system. The strict conditions of subsidy schemes were also mentioned as a barrier.

Changing production-consumption systems is filled with challenges, from lack of financial and legal support for devising new models of operating between producers and consumers, to

creating democratically run cooperatives of consumers. There are logistical challenges related to developing the right organization structure, and web platforms or software for collecting orders and managing payments. One of the aspects most mentioned was the competition from industrial agriculture, e.g., the availability of very cheap subsidized food from non-sustainable agricultural sources, the availability of products outside of their season. Aspects like these, which are widespread in the sheer amount of big food retail in the countries where we did our study, influence consumers expectations about what to eat and what to pay for food, regardless of its sustainability for the environment or for the livelihood of farmers.

The cross-country comparison showed that the underlying culture can support or hinder the creation of initiatives that rely on trust and collective work, as exemplified by the contrast between the Netherlands on one side, and Poland and Portugal on the other, where low social capital was commonly cited as a challenge.

The power lens showed that different actors have power to address certain challenges. AFN organisers exercised their agency in creating new forms of food provision and six of them engaged in educational activities and increasing awareness. However, they argued that other governmental and non-governmental actors had power to support the emergence of more AFNs through a wide scope of actions: e.g., public food procurement, stopping subsidies for industrial agriculture, and allowing legal and financial space for experimentation with new models of local food systems.

RQ 4) What are the environmental impacts of changing models of production and consumption?

In Chapter 5, a case study is used to evaluate the environmental impact of a cooperative food supermarket, by focusing on food waste, and comparing the results with literature on food waste in conventional retail. While there is growing literature on AFNs and on retail food waste, there was (to the best of our knowledge) no research on the levels and management of food waste in a retail AFN. The evidence showed that the levels of food waste at the AFN were lower than in conventional retail. The qualitative research on food waste management strategies suggested that looking beyond profit at the AFN allowed for a serious concern with food waste. The autonomy of the organisation gave its members flexibility to develop ways to prevent and handle food waste, which contrasts with more top-down management and profit maximization strategies in conventional retail. These results suggest that it is possible to organize production-consumption systems in ways that minimize environmental impacts (food waste, in this case), and that non-profit arrangements might have more motivation and leeway in applying strategies for effectively reducing food waste.

6.4 Overarching limitations

First of all, we must stress that our conclusions and research offer only a partial answer to the research question, given the complexity and scope of the topic. This research has the following limitations.

Our research questions were broadly formulated, but our geographic scope was mostly limited to Europe. As chapters 2, 3 and 4 were of exploratory nature, their sample sizes were reduced. Chapter 3 on organising Alternative Food Networks, compared 17 AFNs in three different EU countries (Poland, Portugal and the Netherlands). In Chapter 2 on reducing consumption, we did 6 interviews with people living in different EU countries, and the survey, which had 47 valid responses, had a high predominance of responses from young people and academics, mostly from EU countries as well. Chapter 5 aims to respond to the question of environmental impacts of different models of production-consumption, but narrows its focus on food waste, and is based on one case-study of an AFN retail shop in Poland.

While we aimed to capture the influence of contexts, we relied mostly on individuals' perceptions regarding the contexts they feel influence their behavior (Chapter 3), or their AFN organisation (Chapter 4). A more direct investigation of contexts could have used legislative, geographical, or policy research. However, in these chapters we were dealing with interviewees who were living and operating in a multiplicity of cities, regions and countries, which would have required extremely burdensome research to investigate the local, regional, national and European policy and legislative contexts.

In terms of changing production-consumption systems we addressed only the theme of Food, where a lot of bottom-up initiatives have popped up in the last decades. This type of dynamic is different in the theme of Mobility, for example, where people cannot simply create their own infrastructure for railways, public transport or cycling. However, the role of social movements in pressuring local and national governments for mobility transformations has been explored (e.g., Bruno et al., 2021).

6.5 How to change and reduce consumption for sustainability?

In the title we called "consumption" the elephant in the room. This expression refers to something very big and visible, but that everyone is trying to ignore. The role of increasing levels of production and consumption in the climate and ecological crises is something like that. It is difficult to acknowledge and tackle consumption due to its necessity for economic growth, on which our current economic system is dependent. Consumption systems are also entwined with social norms, habits and (infra)structures. At the outset of our research, we wanted to grasp the complexity of factors that influence consumption as an entry point to explore how to change and reduce consumption for sustainability.

Our conclusions are manifold but start with the importance of taking a step back from seeing consumption as something that originates simply in the domain of (individual) consumers. It means as well seeing people as having multiple roles, agency, and not only as consumers. Zooming out on the role of consumption in people's lives can be achieved by taking a cross-disciplinary approach to understanding the multiple drivers, contexts and actors that influence production and consumption and have contributed to ongoing rising levels of consumption. Taking this broad view is a good first step to investigate how to reduce and change consumption.

Our investigation on reducing consumption indicates that reducing consumption is about refraining from consumption, but also about engaging in a multitude of practices of low-consumption, such as repairing, sharing, being organised, self-provision and learning. Sometimes these practices require the use of some materials: e.g., tools for repairing, reusable containers to avoid non-disposables, which might appear paradoxical. Another finding is that skills for practices of low-consumption are often passed by relatives and friends, and these practices of low-consumption can be facilitated or hindered by the (lack of) accessibility to spaces or services for repair, sharing, refillable options in shops, etc. This last factor highlights the importance of the contexts of systems of provision and what people can access in their geographical context.

To change consumption, AFNs reminds us that people can act not only as consumers, but also as actors with agency to change and create (collectively) alternative food systems. Changing production-consumption systems seems to be possible in the domain of food, in relatively small scales, by creating alternative provisioning systems. These initiatives were created by a diverse set of enablers: strong trust bonds and support, some of for-profit initiatives had some subsidies at the start, a public one started as part of an EU project, crowdfunding campaigns, and of course the (consumers') demand for local, (often organic) food, directly from farmers. The challenges faced by the initiatives point to the underlying system that supports industrial agriculture (e.g., EU subsidies), the way people are used to global supermarket food chains, unaware of what is season, and with expectations of great product variety. AFN organisers argue that more fundamental changes in the food system are possible if governmental actors opt for local food procurement and stop industrial agriculture subsidies. This is a reminder to look at the ways that current (unsustainable) systems are structurally supported, when aiming to transform them.

To ensure that alternative production-consumption systems are more (environmentally) sustainable, it is important to evaluate their environmental impacts and compare them to those of conventional systems. Our research of the food waste in a food co-opretail indicated that it is possible to have a lower food waste rate than in conventional retail. This was only one case-study, so it is necessary to expand this type of research to a higher number of AFNs. An important aspect was not focusing merely on quantification of food waste but identifying the causes and the strategies employed to minimise it. For the food co-op (which is a non-profit association) profits were less important than minimizing food waste, and this attitude informs

their strong policies for minimizing it. This suggests that a non-profit logic might provide greater scope of actions for reducing environmental impacts.

6.6 Future research

In the previous chapters we provided recommendations for further research specific to the sub-research questions. Here we propose three broader avenues of research for changing and reducing consumption. First, understanding the underlying pervasive unsustainability of current systems of provision. Secondly, taking the opposite approach and exploring what truly sustainable and fair systems, structures and practices would look like. What changes would be required, among actors and contexts? Thirdly, taking an alternative approach: looking away from consumption and exploring non-material needs and how to meet them in non or low material ways.

Unsustainable provisioning systems

This theme relates to the following paradox-questions: How to reduce consumption in a consumer society? How to go zero-waste when supermarkets and shops are filled with single use packaging?

We found in our results for chapter 3 and chapter 4 people with willingness and agency to find ways to reduce consumption and create alternative food systems. However, the background reality of unsustainable, cheap, often poor-quality products easily available made it hard to reduce consumption, and to find long-lasting products (e.g., clothes, shoes). For the case of AFNs, initiatives found it hard to compete with conventional food system which they argued received structural subsidies despite environmental externalities (e.g., pesticides, fertilizers, biodiversity loss). People buying from AFNs had to change their expectations regarding all-year availability of every produce to which they had gotten used to in conventional food retail. They often had to learn how to cook with what was in season, instead of preparing just what they felt like. This goes against the notion of “comfort and convenience”, which Shove (2003) argues are key modern conventions that shape consumption practices, together with “cleanliness”.

Understanding how dominant, unsustainable systems are maintained requires a greater attention to power. Power plays “a central role in creating structural barriers to sustainable consumption and in delimiting opportunities for intervention" (Lorek et al., 2015). According to Fuchs et al. (2016) the field of sustainable consumption lacks attention to the concept of power, and scholars in this field tend to not question or even declare their assumptions around "what drives changes in society" (p.299). Fuchs et al. (2016) describe various power strategies employed by incumbent actors to determine and influence the dissemination and maintenance of certain production-consumption systems, such as the "cheap meat" market. Similar to what has been uncovered by Oreskes and Conway (2010) with regards to the intense

and sophisticated lobbying for climate denial, financed by fossil fuel interests, it would be useful to disclose and determine the ways through which unsustainable systems are kept in place for food, mobility and so on. The study by Mattioli et al. (2020) on the political-economy factors that support car-dependency could be a model for future studies into structures that lock people and society into unsustainable patterns.

We attempted to look at a variety of actors and contexts, to depict the efforts for changing and reducing consumption in a more systemic way. We achieved this with some success, at least from the perspective of analysing what and who is supporting or hindering the efforts to reduce and change consumption. The conclusion of our Chapter 2 emphasized the importance of not looking solely at consumption, but at production-consumption systems. In this way, we agree with Røpke's (2015) metaphors that 1. *"human society as a whole can be seen as a metabolical organism that keeps itself alive by appropriating energy and materials from the biosphere"*. Therefore, 2. *"resource use can be seen as a result of the overall functioning of the metabolic organism rather than as a result of different functions in the organism (production, distribution and consumption)"* (Røpke, 2015: 334). This quote underlines the importance of understanding the interactions and interdependencies within a system, rather than a piecemeal, silo-constrained focus. This kind of work will require greater efforts for interdisciplinary research, as argued by Reisch et al. (2016) for future research on sustainable consumption. One example is the work by Brand-Correa et al. (2020: 313) proposing a framework depicting the four interconnected levels through which consumption escalates, covering provisioning systems, activities (which are socially and culturally constructed), services (provided by energy and materials), and the specific materials and goods that are used to satisfied human needs. In the article, the authors apply the framework to explain the growth in car-dependency. Mobility is a classic example to show how supposed independent decision-making by "consumers" is actually limited by the infrastructure and mobility services available to them. Further research is needed to ascertain how to change structures for sustainability in mobility and other themes.

Imagining structures and contexts for low-consumption futures

Understanding the ways through which consumption increases and is promoted can show points for intervention. For example, according to Røpke (1999) one of the aspects that contributed to increases in consumption is the increase in commercialized public space. Our research (see chapter 2) mentioned the emergence of department stores, and later of shopping malls, associated with the trend of car-dependency and suburban living. Many centuries ago, cities were already associated with trade and consumption (Trentmann, 2016). Could cities return to sustainable levels of consumption and become sources of local sustainable production? Current urban trends aim to increase and improve public space, returning space formally used by parked cars (private property) to people in the form of green space, bike paths, wide sidewalks, benches (e.g., Sim, 2019). Little attention has been paid to

how cities would change if we no longer had a mass-consumption society. What would there be in place of mass retail and how would shops change? What would an urban space look like that would support inclusivity, wellbeing, low-consumption lifestyles and sustainable provisioning systems? We have mentioned elements in Chapter 3 (e.g., community repair facilities with shared tools, provisioning systems based on refillable packages instead of disposability). More research is needed to explore which policies and actions across all sectors improve the health and wellbeing of people and communities, while reducing inequalities and environmental impacts.

Looking away from consumption and towards meeting non-material needs in non-material ways

This dissertation starts with a quote from Donella Meadows saying that we would "need" way less resources if we were able to articulate our non-material needs (e.g., being respected, loved, belonging, having fun, learning) and to find non- or low-material ways of meeting them. This is an aspect that we might miss when we direct our focus to consumption. Future research should explore non-material needs and non-material (or low-resource) ways of meeting those needs and improving wellbeing. Looking away from consumption, acknowledging our "non-material" needs and finding non-material ways of meeting them relates to something that some interviewees described in Chapter 3. They suggested that satisfaction was a pre-condition to needing less, and therefore to consuming less. Previous research has focused more on the potential benefits of sufficiency for wellbeing (see Kasser, 2017), but there was also some research that suggested that people in a state of happiness were more likely to engage in prosocial behavior (Lyubomirsky et al., 2005), which might be applicable as well to pro-environmental behavior (Kasser, 2017).

At the societal level, this is defended by those we cited in the introduction who propose focusing on improving the wellbeing of their citizens and societies, rather than on GDP. Recent research has addressed the underlying causes for improved wellbeing and found that rather than increased incomes or discretionary spending, systemic provisioning factors are more important such as sanitation, access to education and healthcare (Baltruszewicz et al., 2021). This highlights the need for a different logic that should underline political and societal goals. Instead of the goal of ever-increasing consumption, economic growth for sake of growth, (or of profits), a new logic should focus on improving people's lives, reducing inequalities, and lowering environmental footprints for the health of ecosystems and the planet. Our research on Chapter 4 and 5 showed that it is possible for non-profit associations to operate successfully in the food sector employing very different logics. Future research could explore how such a shift in logic can be implemented, and the changes required by different actors and in different contexts.

6.7 Final remarks

This thesis explored the question of how to change and reduce consumption for sustainability. Tackling high-levels of consumption and unsustainable production-consumption systems are actions increasingly recognized as necessary to tackle the climate and ecological crises. It is unclear whether these changes will be implemented by “design or disaster” (Victor, 2008). The present news - autumn 2022 – are of spikes in energy prices, warnings of food shortages due to the war in Ukraine and to climate-related crop failures, and worldwide shortfalls in many goods. This reality reinforces the urgency for devising systems for reduced (sustainable) consumption. This is crucial not only for mitigating the climate and ecological crises, but also for greater resilience and adaptation to a future of more unstable climate and global supply chains.

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Annex

Annex A (Chapter 3)

A1. Respondents characteristics

Table A1.1. Interview respondents

Interviewees	Gender	Age	Occupation	Residence
R1	F	30 - 39	Zero-waste freelancer	Portugal
R2	F	30 -39	Researcher	Netherlands
R3A; R3B	F; M	20-29; 20-29	Civil servant; researcher	Netherlands
R4	M	20-29	Office worker	Spain
R5	F	30 -39	Researcher	Germany
R6	M	20-29	Student	Germany

Table A1.2 Survey respondents

Respondent	Gender	Age	Occupation	Residence
1	Male	30-39	Policy advisor	Netherlands
2	Female	30-39	Associate Professor	Sweden
3	Male	20-29	Student	the Netherlands
4	Female	20-29	PhD candidate	Netherlands

5	Male	20-29	PhD student	USA
6	Male	70-79	Retired / Energy Worker	USA
7	Male	70-79	Retired, business and research	USA
8	Female	40-49	Independent researcher	Turkey
9	Male	30-39	Post-doc researcher	Poland
10	Male	40-49	University professor	Canada
11	Male	30-39	Research	Germany
12	Female	70-79	Retired	Australila
13	Female	40-49	Program Manager for Sustainable Behaviour	Denmark
14	Female	30-39	Science	Switzerland
15	Female	30-39	Researcher	Germany
16	Female	20-29	PhD candidate	UK
17	Prefer not to say	40-49	Teacher	Netherlands
18	Male	50-59	University Professor	Sweden
19	Male	40-49	Researcher, Professor	Catalonia
20	Female	20-29	PhD	England

21	Female	20-29	Student	Sweden
22	Male	30-39	Researcher	SPAIN
23	Male	30-39	Research	Spain
24	Female	30-39	Researcher	Sweden
25	Male	30-39	Business owner / self-employed scientist	Greece
26	Male	20-29	Student	Sweden
27	Female	30-39	Student / Nonprofit Project Director	France
28	Female	30-39	Student and part time worker	Sweden
29	Female	60-69	Designer	US
30	Female	20-29	Environmental Policy Student	France
31	Female	30-39	Designer researcher teacher	Spain
32	Male	60-69	Lecturer	Germany
33	Female	70-79	Retired researcher	Sweden
34	Male	30-39	PhD student and graduate teaching assistant	United Kingdom
35	Female	30-39	Student/ Project Manager	France
36	Female	30-39	Researcher	Germany

37	Female	20-29	Student	Austria
39	Female	30-39	Project coordinator	Germany
40	Female	20-29		Sweden
41	Female	40-49		Sweden
43	Male	60-69	University professor	Denmark
44	Female	30-39	Research scientist	Finland
45	Male	40-49	Film maker	Germany
46	Female	40-49	Research associate, PhD	Germany
47	Male	30-39	Student	London
48	Female	20-29	PhD student	Germany
49	Female	30-39	Researcher	Portugal

Note: The survey respondents S38 and S42 were excluded for invalid answers.

Key figures:

Age: Average of 39 years old.

Occupation: 24 work in research, 8 students and 4 retired.

Qualifications: 25 Master Degrees, and 14 PhD Degrees.

In terms of income of survey respondents, 15 people had between 10,000 and 25,000 euros; 10 had less than 10,000 euros; 10 had between 25,000 and 50,000; and the (2) had more than 50,000 euros per year. Most of them live in a city (31), 8 live in a town, and three in villages, all in Europe, North America, and one in Australia. In terms of living spaces, 25 lived in a flat, and 13 in a house with a garden. Note: The numbers do not always add up to 48 respondents because some people did not answer to all the questions.

A2. Detailed results tables

In the literature review we saw that reducing consumption is often achieved by: abstaining, consuming differently, and engaging in low-consumption practices.

In our research, we asked two main questions in our survey: 1. Regarding [theme, e.g. food] what material things help you in consuming less, or more sustainably? 2. Regarding [theme, e.g. food] what makes it difficult to for you to consume less, or more sustainably?

When answering the first question:

a) sometimes people mentioned things they did that helped, but that did not involve material things directly. When they refer to ways of directly abstaining from consumption, we categorize it as "Abstaining".

b) When people mentioned material things they used, we categorised these answers generally as "consuming differently" and we specified the following categories for consuming differently:

1. second-hand
2. good-quality, durable
3. replacing disposables and package-free
4. resource-efficient
5. sustainable alternatives
6. Multi-purpose
7. to engage in low-consumption practices (identified below)

c) sometimes people mentioned things they did which helped them to consume less. We called these "Low-consumption practices", and categorised them as:

1. being organised
2. sharing

3. extending lifetime

4. repairing

5. self-provision

plus two enabling practices

6. learning (knowledge and skills)

7. employing creativity

some practices can be associated with some of the "consuming differently" categories

8. resource-efficient (e.g. cold showers to use less energy, covering pots when cooking)

9. sustainable alternatives (e.g. looking for local food or products)

10. avoiding disposables (buying in bulk, etc.)

d) sometimes people mentioned aspects that helped which were more like contexts, in this case we categorised them as contexts.

When answering the second question:

e) most of the times people mentioned aspects which could be considered as "contexts", but many of them can be associated to certain practices too. e.g. a certain context can make it easier or more difficult to engage in a certain practice. In this case we opted to categorize the answers mainly as contexts, but to refer in the analysis to the practices that were associated for those most mentioned. In the results table these are referred to as "Limiting contexts":

1. personal
2. social
3. cultural
4. geographical
5. systems of provision
6. infrastructure /institutional

Note: in the following tables the interviews' respondents are indicated by an R prefix (e.g. R1), and the survey respondents are indicated merely by a number (e.g. 17).

Table A2.1 - Results for Food

THEME: FOOD			
Abstaining			
	Ways of abstaining	Respondents	Quotes
	To eat less, to buy less	17, R1	
	Lack of some things can help: no car, bringing less food.	44	
	Saving and reusing old bags and packaging, jars	36, R1, R2	
	Refraining from renovating the kitchen	R5	"he [partner] wanted to change the kitchen completely, because it is not beautiful for him.[...] So I really really tried to stop this process [...] everytime you renovate/ something you just throw a lot of material away and I don't like it"
Consuming differently: materials for reducing consumption			
Types of consumption/ practices	Materials	Respondents	
Replacing disposables	Reusable bags /cloth bags /crocheted bags	3, 9, 24, 27, 15, 33, 37, 44, R1,R2, R5, R6	
	Reusable water bottle	4, 16, 22, 27, 46	
	Citrus juicer	35, 45, R1	
	Funnel for bulk stuff	27	
	Cloth napkins	27, R1	
	Tea strainers	35	
	Waxed cloth to cover food	35	
	Thermos and mug at work for coffee	4	
	Dishes to bring to picnics	R5	
	Pressure cooker	R2	R2: "to cook dry beans fast instead of buying them in cans"
Resource efficiency	Rolling shopping caddy, bicycle bags	35,36	
	Teapot (to make more than one cup at a time)	35	
	Plastic chicken to boil egg in microwave	4	
Sustainable alternatives	Tasty and easy to use vegan products	36	
	Networks in locality – options to buy local products	8	
	Farmers' markets, grocery stores near to house	5	
Multi-purpose materials	One pot to make everything, swiss-knife	R4	

Materials for e low-consumption practices::			
Sharing	Shared flat to share food with flatmates	36	
Extending lifetime	Freezer, fridge, storage space at home	3, 12, 18, 23, 24, 33, 36, 44, R3	
	Tupperware boxes and cutlery	3,4,9,18,20,25, 34, 37, 44, R2	
	knife sharpener		
Self-provision	Kitchen /cooking tools, electricity and gas to cook, measuring cups, small appliances, blender,	20, 5, 10, 23,27, 33, 37,40, R3	
	Containers to store food at home, canning jars	9,16,21, 27, 31, R1, R2	
	Gardening tools to grow food, soil	10, 36, 37, 46	
	Land to grow food, olive grove, house garden	10, 19, 43, 46	
	Clean running water to water garden/drinking water	10, 37	
	Food dryer	24	
	Boat	43	
Learning	Books about growing food	10	
	Computer/smart phone and internet	13, 28, 36, 41	13: "Internet shopping: I can make decision while looking at what I have in the cupboard"; 28: "I always read the labels on the food […] I check up the ingredients on google if I am uncertain about them"; 36: "to inform myself about sust.consumption options"; 41: "for inspiration on what to do with ingredients in fridge and freezer (instead of buying new ingredients)"
Engaging in low-consumption practices			
Type of practice	**Detailed practice**	**Respondents**	**Quotes**
Being organised	Choosing with care	29	
	Plan or make a list for groceries	33, R1, R3, R5	
	Always having own bags when buying stuff	33, R1, R5, R6	
	Eating before shopping	3	
	Having routines	R6	
Sharing	Sharing food with flatmates, sharing tasks of picking up local food boxes with flatmates	36, R6	
Self-provision	Getting food from neighbours, Relationships that support	32, 43, 5, R2	

	Growing own food, preserving food	32, 33, R2	
	Composting	9, 29	
	Making own shopping bags	15, R5	15: “I have crocheted a vegetable bag to carry loose tomatoes or apples.”; R5: “I made small bags, out of textile, for shopping.”
	Wild harvest	36	
Replacing disposables	Buying in bulk/zero-waste	27, 29, 16, 31	
	Try to buy food wrapped in little plastic or none	30, R5, R6	
Resource efficiency	Put a lid on when cooking	4	
	Start cooking by looking at what you have in the fridge	R6	
Sustainable alternatives	Joining CSA or farmers markets	29, R2	
Learning	Always read labels to know what they contain	28	
	Developed personal values and standards used for decisions and actions, knowledge about facts and practices.	6, R6	R6: “Knowledge includes knowledge about facts, like how things grow, or how things have to be done in order to reach something, like grow a courgette and harvest it. But I also mean knowledge about how to do things.”
Employing creativity	Being creative when cooking leftovers	R6	
	Limiting contexts		
Type of context	**Limiting factor**	**Respondents**	**Quotes**
Personal	Stress, fast pace of life, lack of time (to garden, to educate oneself)	4, 5, 9, 10, 24, 27, 14, 37, 40, R1, R2, R3	9: “thinking in advance what to cook and what to buy, choosing appropriate products, all that requires time and cognitive effort”; 24: “lack of time “which means I cannot make it to the organic store or a farmers’ market”, 27: ““as a working professional […] there isn’t enough time to go to the destinations where I can buy things in bulk and with no-packaging"
	Personal preferences and taste – wanting diversity, but more one buys, more one eats, habit of eating too much, being lazy, addiction to sugar, leisure preferences, taste and habits, wanting convenience	3, 18, 19, 23, 4, 12, 34, 40, R4, R6	
	Lack of knowledge of what is sustainable food, how to garden, or environmental impacts, contradicting information	10, 24, 36, 40, R2, R6	
	Travelling often makes it hard to set up a vegetable box scheme, most meals consumed away from home	20, 45, 37, R6	
	Living situation: by oneself (food goes to waste or its repetitive to eat); having children creates food waste,	9, 13, 37	

	Changing habits is hard (shopping in bulk, bringing bags with you, etc.), lack of motivation	R1, R3, R6	
	Wanting to use time for something else than cooking or storing, or choosing package-free,	36, R3	
Social	Group pressure for fast and convenient food, taking decisions together when you live with others, missing coordination with other people to share food	9, 37, R6 As helpful: 36, 48	9: "Cooking for one person is sometimes difficult, because often the portion turns out to be too big, and the food either goes to waste or I end up eating the same lunch for four days in a row"; 37: "if I would be able to organize better and share cooking tasks with a group of friends or if there were similar structures, it would be much easier." Helpful: 36:"shar[ing] food with flatmates in order to avoid it getting old." ; 48: "when people around me eat vegetarian or vegan it is much easier to stick to veganism"
Cultural	Popular culture and distractions promoting consumption habits	6	
Geographical	Distant more sustainable supermarket/bulk shop/ supermarket around the corner has lots of packaging, Living far from food street markets	3, 4, 5, 20, 27, 32, R3, R4, R5, R6	
	Local groceries have few ecological products/Sust. items not available in the area	2, 11, 32, 44	
	Local ecological farmers only available in summer / season local food very limiting	2, 23, 44	23: "in late spring I would be limited to preserves, potatoes and cabbage, which from experience becomes boring very quickly"
	Town layout means you have to drive to go to farmers markets and health shops	10	
Systems of provision	Too much packaging in shops, lack of shops to buy in bulk	3, 15, 16, 2, 22, 24, 18, 34, 47 R1, R2, R5, R6	47: "In the UK most of the vegetables and meat sold in the supermarkets comes with hard plastic packaging. [...] for every 1kg of food purchased, I get at least 100/200 grs of plastic waste" R2: "they [shouldn't] have to go to the next shop to find vegetables that are not wrapped. It just should not be wrapped in the mainstream supermarket."
	Price of organic products and local food / cheap conventional food	1, 11, 20, 27, 43, R3, R4, R6	
	Limited options to but local products/ lack of organic local food in shopping system	8, 27, 10, 21	27: "It's not an easy and natural part of our shopping system to have locally produced organic food available".

	Promotions in supermarkets /advertising, quantity and diversity of products in supermarkets	3, 25, 37, R6	3: “cheap meat at the front aisle”; 25: “discounts “2 for 1”; 37 “advertising of food chains and supermarkets makes it sometimes hard to resists to buy fancy but not sustainable stuff”.
	Lack of second-hand shops for general goods (including kitchen tools)	R2	
	Price of things you need to invest to go plastic free	20	
	Take-away systems not prepared to bringing your own container	29	
	Too many different shops to go (bulk, price, etc.)	27	
	Difficulties finding things without palm oil	28	
	Farmers markets are in the morning, they should be open in evening	15	
	When eating out hard to know the sustainability of the food	16	
	Misfunctionality of collective sustainable supply systems (e.g. CSAs)	36	
	Packaging and vegetable sizes in shop are large, and there is limited space in freezer	3	
	Supermarket not transparent, don’t know origin of a product	3	
	More tasty and better digestable non-vegan products	36	
Infrastructure/Institutional	Lack of garden space to grow food	23, 30	
	Economic: inflation means cheap but less sustainable food	8	

Table A2.2 – Results for Clothing

THEME: CLOTHING			
Abstaining			
	Ways of abstaining	Respondents	Quotes
	Attitude of sufficient buying /shop at home/reusing	1, 6, 33, 34, 29, 43, 45, 49, R5	1:”I buy as less as possible ans as much as necessary”; 6: always purchased clothing based on need and not on fashion; 33 “ we both have enough clothes and almost enough shoes to last our life-time”; 34 “I dont consume much clothes and shoes. They all last me for ages. I dont buy anything unless Im sure its the right thing”; 43” I myself hardly consume any clothing. I use

			the old ones I have"; 45 "Im not a fashion person...I buy few clothes items. I hold on to my clothes for a long time"; 49: "I have what I need and rarely happens that I need to buy virgin material"; R5: " I really reuse my clothing until they are really not usable anymore"
Consuming differently: materials for reducing consumption			
Types of consumption/practices	**Materials**	**Respondents**	**Quotes**
Second-hand	Second-hand stores	2, 5, 12, 15, 30, 36, R6	
Good-quality, durable	High quality, durable clothing items	9,15, 16, R5	
	Money to buy good quality items	44	
Resource- efficient	Choosing clothes that mix well	R1, R5	R5: "I buy shoes that go with different kinds of clothing, I dont buy buy colours that cannot be used often"
	Recycling bins for textile closeby	30	
Materials for the practices of:			
Sharing	Free shop in local social center	19	
Extending lifetime	Shoe brush, shoe dye	3, 4, 26, 39, R3A, R5	
	Clothes-rack	3, 27	
	Environmentally friendly freshening spray	44	
	Steamer and pill shaver	44	
	Gentle cleaning products	25	
	Washing machine with possible heat adjustment	44	

	New shoelaces	3	
Repairing	Sewing kit, sewing machine	3, 4, 20, 22, 23, 26,27, 18, 24, 33, 36, 39, 41, 46, 48	18:"you need access to infrastructure to repair things"; 33: " I have my grandmas sewing machine from 1902 and I mend a lot of things (not only clothes but towels, sheets,etc.)"; 36 :"I dont need to own the sewing machine myself"; 48: "I never had to purchase the repair tools and thread, Im using my mom olds sewing machine that she never uses and all those things one can find second hand or even in the trash".
	Repair workshops	36	
	Specialist shops e.g. buttons	R6	
Learning	Computer and internet, book	11, 36, 46,R1	11: "computer (internet) to buy sustainable options"; 36: "computer, smartphone and internet to inform myself about sustainable consumption options"; 46 " I bought a book about this issue and hope to get some hints about consuming clothes less and more sustainably"; R1 "reading about minimalism"
Engaging in low-consumption practices			
Type of practice	**Detailed practice**	**Respondents**	**Quotes**
Second-hand	Buy or get second-hand	2, 29, 30, 31, 32, R1, R2, R4, R6	R4: "With clothing I never buy it myself. This I got from my colleague. Usually people know already, if they dont want to use something any longer, they can ask me."
Sharing	being part of swap shop/group	2, 31, R6	
	Set up swap market	31	
Extending lifetime	Taking good care of clothes and shoes	28, R1, R5	R1: To wash clothing at cold temperatures; R5: cleaning and maintaining shoes
	Air clothing to wash less	3	
Repairing	Repair clothes	2, 3, 4, 30, 32, 33, 45, 46, 48, R6	
	Asking someone (e.g., mom, taylor) to repair	2, 11, 45	
	Borrowing sewing machine from sister	27	

Self-provision	To sew ones own clothes	28, 31	
Employing creativity	Air clothing to wash less	3	
		Limiting contexts	
Type of context	**Limiting factor**	**Respondents**	**Quotes**
Personal	Lack of knowledge	5, 9, 24, 28, 36, 41, 45	36:"not knowig if affordable shoes are long-lasting", 41 "knowledge and time-reparation"; 45 "until recently I didnt even realise to what extent the fashion industry is polluting the planet. Having learned more about it, I will switch to "aggressively" sustainable businesses now for the few clothes that I do buy"
	Desire for new, nice clothes	4, 40, R6	4: "I'm sometimes tempted to buy something new and nice even if I do not need it very badly"; 40: " desire of shopping and getting dressed nicely"; R6: "My little sin in consumption are clothes."
	Lack of time	13, 24	
	Not wanting to learn to repair/want to use time for something else	23, 36	
	Need for professional appearance	27	
	Need to buy good shoes, rain jacket, sports pants	48	
	Leisure preferences	19	
	Unsuccessful repair attempts	20	
Social	Lack of company and social motivation to go to repair workshops	36	
	Not looking ok with too many holes	39	
	Peer pressure to constantly use new clothing	R5	

	Helpful: inherited clothes or tools from relationships, or relatives/friends who can repair	3, 33	3: “usually ask my mother [to repair]”; 33: “I have my grandmother's old Singer sewing machine from 1902”;
Cultural	Fashion trends, culture of consumption, constant temptations	14, 16, 7, R5, R6	
Geographical	Not easy bike access to 2nd hand stores /lack of nearby 2nd hand stores and repair workshops	10, 36	36:“lack of good second-hand stores and repair workshops nearby or on the way to work”
	Living in 4seasons city/climate demands wide range of clothing	29, 44	
	Taylor and shoemaker available locally	23	
Systems of provision	Price of sustainable clothes	3, 5,20, 28, 27, 29, 30, 36 46, 48	
	Hard to find comfortable, good-looking, durable items	9, 16, 27, 43, 44, 46	9: “inability to find goods that are comfortable, good-looking and durable”; 16: “lack of high quality and durable alternatives”; 27: “really nice shoes that are also sustainable seem like an impossibility”; 43:”no access to sustainably made good quality shoes and little access to sust.produced clothing”; 44: “ ethically and ecologically produced clothes and shoes are impossible to come by in local businesses (…) this pushes one to buy from the internet and often overseas which is hardly sustainable”; 46 “ the market for sustainable clothes and second hand clothes is not big and not visible enough”
	Items not made to last, breakability of clothes from natural Material, shoes are made with harsh chemical in faraway countries	16, 18, 22, 25, 36, 48	22: “Planned obsolescence”
	Hard to find right sizes in second-hand store /hard to find professional clothes, shoes in second hand shops	3, 15, 48	
	Contradictions of organic cotton at H&M	3, R3A	

	Lack of online based borrowing services	36	
	Very cheap new clothing available	3	
	Second-hand stores not operating online	3	
	Ease of Amazon	5	
	Economic inflation, buying cheap products produced abroad	8	
	Lack of transparency of clothing companies	3	
	Not found something one likes at swap shop	2	
	Lack of technology for recycling artificial fiber	36	

Table A2.3 – Results for Personal Hygiene

THEME: PERSONAL HYGIENE			
Abstaining			
-	Ways of abstaining	Respondents	Quotes
	To try to have short showers /to conserve water, heat and use little cleansing agents	2, 4 , 7, 16, 20, 23, 32, 34, 42, R6	2 " I try to shower a little shorter but I really like baths"; 7: " we conserve water, heat and use little cleansing agents"; 42: "only shower every few days"; 23 " having just enough things"; 20: " I dont want to own many things"; 16: "the key is minimization of consumption"; R6: " I try to limit the things I use."
	To believe the body needs a natural amount of bacteria and exposure	7	

Consuming differently: materials for reducing consumption			
Types of consumption/practices	Materials	Respondents	Quotes
Good-quality, durable	Reliable repairable machine with warranty (ex Miele)	23	
Replacing disposables	Containers to carry small amounts, refills, and to store self-made	9, 22, 27, 30, 35, 36, 37, 39, R1, R6	
	Menstruation cup, cloth menstruation pad	15, 20, 35, 37, 48, 35, R1	
	Solid shampoo	4, 11, 16, 20, 37, R1, R2, R6	
	Shower instead of toilet paper	48	
	Refills for shower gel	39	
	Non-packaged/zero-waste shop	16	
	Solid deodorant	20	
	Fabric handkerchiefs	27	
	Sunhat	35	
	Pot for cleaning mooncup and making sugar wax	35	
Resource-efficient	Water and energy saving shower head	3, 13, 41	
	Good infrastructure non leaking pipes, running water	8, 19	
	Boar bristle brush	27	
	Gas from waste materials	45	
	Having timer in bathroom	4	

Sustainable alternatives	Bamboo toothbrush, bamboo make up brush	20, 27, 35, R1	
	Non-toxic make up	27	
Multi-purpose items	Multipurpose items	16, 18, 35	16 “I try to use multipurpose items (e.g. a balm that can be used to style hair, as a face cream, lip balm, etc.”, 18 “Savon de Marseille that I use for multipurpose and lasts long”), 35 “use cocoa powder as blush and eyeshadow”
Materials for the practices of:			
Self-provision	Clay (for peeling)	37	
	Sugar and lemon and pot for making sugar wax	35	
Learning	Computer, internet, phone, for info /leaflets with recipes for diy products	36, 30	
Engaging in low-consumption practices			
Type of practice	**Detailed practice**	**Respondents**	**Quotes**
Replacing disposables	Using less packaging and disposables (solid shampoo, glasses over lenses, zero packaging)	4,11, 16, 20, 37, 27	
Sustainable alternatives	Choosing organic	32, 47	
	Try to limit use of spray cans	4	
Sharing	Living with others (concerned people)	8	
Self-provision	Making own products	16, 37, 48, 22, 35, 30, R6	
Learning	To get more information	1,27, 28	
Limiting contexts			

Type of context	Limiting factor	Respondents	Quotes
Personal	Lack of knowledge	1, 3, 4, 9, 24, 28, 45	1 “my information level on the sustainability of personal hygiene products is low”; 3: lack of knowledge on sustainability of detergents”; 4: “I use solid lush shampoo but Im not sure if it is any better than fluid shampoo”; 9: “lack of knowledge on what to choose and where to buy”; 45: “not knowing what shampoo does to natural systems”
	Lack of time for diy	4, 36, 37, 49	49 “to reduce consumption it would be nice to make my own products like many people do, but again the problem is availability (time)”; 36 “lack of skills and time to learn to make own cosmetics and mistrust on their functionality (e.g. toothpaste)”; 37: “sometimes I dont have the energy and time to produce it myself”
	Preferences and habits: liking baths, warm showers, shaving, laziness	2, 4, 9, 23	2: “I really like baths”; liking warm showers (4); laziness (4); 9:” I got used to the Old Spice deodorant and I really like its smell and ability to fight the unpleasant smellls but it comes in high”; 23:” I could go without shaving but prefer not to largely due to comfort and not due to any material obstacles”
	Mistrust effectiveness of diy	36, 37, 48	36: toothpaste; 37: “washing hair with ryeflour is okay but makes your hair not as nice as with shampoo”; 48:” I try making my own face cream but they are not as good as some from a company so I am considering buying the cream again”
	High cognitive effort involved in choices (what to choose)	9	
Social	Living with wrong people (not concerned)	8	
Cultural	Popular culture and imposed values and standards	6, 41	
Geographical	Lack of choices in shops in hometown	9, 10, 11, 17, 24, 36, 43	
Systems of provision	Prevalence of packaging in shops	9, 15, 27, 33, 34, 45, 46	

	Lack of choices (e.g. to buy in big containers or in bulk), lack of cosmetics refill services	9, 10, 36, 46, R1	
	Lack of eco-alternatives	20, 27, 49	
	High price of sustainable products	20,30, 46	
	Promoting unnecessary products	R4	R4: "I think its just an invention of businesses, to give an impression there is a soap for your finger, for your hand, your feet. It doesnt make sense to me."
	Not transparent in soaps, detergents what products they contain that are not sustainable	3	
Infrastructure/Institutional	Waste of water as it gets warm	47	

Table A2.4 - Results for Cleaning

THEME: CLEANING			
Abstaining			
	Ways of abstaining	Respondents	Quotes
	Not cleaning often, using less	2, 45 , 8, 12, 32, 30	32: " using as little as possible"; 30: "using little water by having a bucket"
	Reusing yellow wipes, by cleaning them in the washing machine, with detergent; Reusing vaccum cleaner bag	3, 17	3: "Wash machine and detergent to wash yellow cleaning wipes to reuse them."
Consuming differently: materials for reducing consumption			
Types of consumption and practices	Materials	Respondents	Quotes

Replacing disposables	Alternatives to disposables	24, 25, 27, 33, 35	35:"regular mop instead of swiffers"; 24 "washable cloths", 27: "towels, dishrags"; 33: "hoover that does not require bags"; 25: "cleaning tools that require no consumables"
Resource- efficient	Drying rack for plates	3	
Sustainable alternatives	Ecological products	2, 10, 11, 9, 23, 32, 35, 39, 45	
	Supermarkets with organic products	43	
Materials for the practices of:			
Self-provision	Staples for cleaning: vinegar, soaps, baking soda, lemon, essential oils	16, 27, 24, R5, R6	
	Glass spray bottle to store diy cleaners/ saving bottles to refill	35, 36	
Learning	Computer, smartphone, internet for information	6, 36	6:"much info regarding recipes, tips, hacks is available for alternative cleaning methods, tools and products"; 36: "to inform myself about sustainable consumption options"
Mechanical effort	Scourer	4	
		Engaging in low-consumption practices	
Type of practice	**Detailed practice**	**Respondents**	**Quotes**
Resource-efficient	To wash at 30C	1	
	Collecting dust with mob and then clean the mop and not the floor *(also Employing creativity)*	41	S41:"[I use a] microfibre cleaning mop, [...] to collect dust, then I only have to use my vacuum cleaner to vacuum my cleaning mop (not the entire floor)"
Sharing	Living in a shared flat	36	36: "sharing cleaning equipment in a shared flat"
Self-provision	Making cleaning cloths, making cleaning solutions	46, 16, 24, 27, 35, R1, R5	
Context: syst. of provision	Existence of refill services	36, R6	

Limiting contexts			
Type of context	**Limiting factor**	**Respondents**	**Quotes**
Personal	Lack of time (to clean with effort or for diy cleaning products)	6, 10, 36, 41	6 “time available to clean. If the task is to be done quickly and thoroughly, there is probably a product (however damaging it may be to society and environment) that is available”, 10 “time to make my own cleaning products”, 36 “lack of skills and time to learn making detergent myself”,
	Lack of knowledge	3, 10	3: “lack of knowledge in this field”; 10: “ lack of knowledge about how to make my own cleaning products”
	Preferences – convenience	40	40 “convenience. I prefer what helps me get the work done more quickly and easily”
Social	Not willing flatmates&partners	27, 28	27 “my husband does some of the cleaning but he’s not passionate about zero-waste or sustainability and he doesn't take the time to learn about the uses of vinegar and baking soda so sometimes he comes home with a new commercial product in plastic.”; 28: “Living with parents who decide on products and choose cheap and good quality”
Geographical	Lack of local offer	24, 27, 32	24 “poor selection at my local store”; 27: “its very inconvenient to go to bulk vinegar store is far and I travel by bike and public transport”; 32: “ some cleaning material is not available in a sustainable way locally”
Systems of provision	Lack of sustainable cleaning products	10, 24, 27, 30, 32	27 “not found alternative to yellow sponge, washing up liquid, or big plastic bottle of ecologically friendly clothes detergent”, 30 “the lack of choice of sustainable products in normal shops […] even the products labelled as green are not completely green”
	Lack of information (not clear which products are not sustainable)	3, 24, 30, 33	30: “products labelled as green are not always green”; 33 “there is not always info about what various cleaning liquids contain, plus text so small it is impossible to read”
	Lack of refill detergent services	36, 46	
	Brands linking cleaning products with replacement accessories	25	

	Small packages for dishwasher cleaning	46	
	Price of sustainable products	30	

Annex B (Chapter 4)

Table B1: Challenges experienced by different types of AFNs. Literature review.

Type of AFN	Challenges	General challenges	Facilitating conditions
Public	Difficulty securing collaboration between initiatives within and across-regions (Mount et al., 2014)	Achieving economic viability (both income and organisational funding) (Mount et al., 2014; EU, 2013) Lack of public procurement (EU, 2013, Mount et al., 2014) Lack of appropriate policy (regulations, government support, and systemic issues) (Mount et al., 2014; EU, 2013) Competition with conventional market players (EU, 2013) Need for consumer education and awareness (Mount et al., 2014)	
Cooperatives	Overreliance on volunteer support and need to maintain engagement (Mount et al., 2014; Kirwan et al., 2013) Need for collaboration (Mount et al., 2014)		Self-reliance (Mount et al., 2014)
CSAs	Competition with other food initiatives (Galt et al., 2016) Finding and managing labour (Nost, 2014) Dealing with seasonal crop production (Nost, 2014) Managing consumer expectations of food quantity, quality and diversity (Nost et al., 2014; Galt et al., 2019) Self-exploitation of farmers (Galt, 2013)		Clear organisational structure (Hitchings, 2013) Suitable site with secure land tenure (Hitchings, 2013) Able and competent land workers (Hitchings, 2013) Having access to a large population (Hitchings, 2013) Good communication (Hitchings, 2013) Realistic pricing and pragmatic forecasting (Hitchings, 2013) Creating internal legitimacy and social capital (van Oers et al., 2018)
Purchasing consumer groups	Conflicts between idealism and pragmatism (Öz, and Aksoy, 2019) Organising logistics (Dedeurwaerderea et al. 2017; EU, 2013)		Trust facilitates collaboration (Thorsøe and Kjeldsen., 2016)

Challenges of consumers	Adapting diet to seasonal produce (Brunori et al., 2012) Lack of knowledge of where to access short food chains and difficulties accessing produce (Kneafsey et al., 2013; EU, 2013; Mount et al., 2014)		
Other non-profit	Managing internal dynamics, power relations, dominant voices (Kirwan et al., 2013) Need for stable funding (Mount et al., 2014) Need for more collaboration (Mount et al., 2014) Competition with similar initiatives (Mount et al., 2014)		People having necessary skills, e.g., to apply for grants (Kirwan et al., 2013)
Producers	Meeting large quantities of demand (e.g., from the public sector; Kneafsey et al., 2013; Mount et al., 2014) Lack of resources and skills for marketing and communication (EU, 2013; Kneafsey et al., 2013) Hard to scale-up due to high production, processing and transportation costs (Kneafsey et al., 2013) 'Small workforce and reliance on key individuals to multi-task can lead to 'burnout' (on-farm)' (Kneafsey et al., 2013) Low level of organisation among farmers (EU, 2013) Balancing consumer access and fair prices for farmers (Mount et al., 2014) Low demand for local produce (EU, 2013; Mount et al., 2014) The location (if in rural areas) can make it difficult to scale up (Kneafsey et al., 2013)		
Other for-profit	Regulation standing in the way of innovation and growth (Mount et al., 2014) Competition with local businesses (Mount et al., 2014) Lack of processing and distribution infrastructure (Mount et al., 2014)		

Table B2. List of studied initiatives and their characteristics

Initiative anonymised	Country	Type of AFN	Number of households	Year started	Modes of operation
A (1)	Portugal	Producer-led	10-50	2012	Producer who sells through a CSA, home deliveries, and a market.
B (1)	Portugal	CSA	10-50	2016	CSA organised by a facilitator. Consumers pay every three months, and pick up from a location.
C (2)	Portugal	Consumer-led	10-50	2011	Consumer purchasing group. Have (non-fixed) shifts for paying the farmer and receiving the produce at a pick-up location. Orders through shared documents.
D (1)	Portugal	Farmer-led	100-300	2012	Producer who sells in his shop, through home deliveries and a market.
E (1)	Portugal	Public-led	2000-5000	2004	Project developed by a regional development organisation. They support small-scale farmers with finding consumers to whom to sell food boxes directly. They manage the structures and a webplatform that allows for ordering from producers, but producers deliver themselves to pick-up locations, or to homes.
F (1)	Portugal	Third-sector-led	2000-5000	2013	Consumer cooperative driven by tackling food waste due to aesthetic reasons. The employees organize the logistics of collecting produce from farms within 70km, and of assembling the weekly food baskets for the co-opmembers.
G (1)	Portugal	Third-sector-led	100-300	2007	Farmers with a farm shop and a consumer cooperative. The co-op members are consumers who pay a yearly fee in exchange for discounts in the shop and other activities and workshops organised.
H (1)	Poland	CSA	100-300	2014	Farmers who deliver produce to five consumer groups using a CSA model. Consumers pay in advance for the season which lasts between May and October. Some consumer groups are self-organised in consumer coops, others are organised by the producer.
I (1)	Poland	Business platfom	More than 50,000	2014	For-profit company with a webplatform which allows consumers to order from regional farmers. The produce is brought by farmers or a logistics company to a central warehouse in the city and the company organises the delivery to decentralized pick-up locations in different neighbourhoods.
J (1)	Poland	Third-sector-led	10-50	Unassigned	Foundation that promotes direct sales from regional farmers through “buyers’ clubs” and organises moments and locations for farmers to deliver their produce to consumers.
K (1)	Poland	Business platform	2000-5000	2014	Company with a web platform for ordering produce from regional farmers. The company arranges the pick-up and home delivery of produce.

L (4)	Poland	Third-sector-led	100-300	2014	Cooperative with two organic shops opened to the public. Eleven employees manage the logistics and the shops. They order mostly directly from small-scale producers. Co-op members do monthly 3 hour shifts, pay monthly fees, and receive discounts at the shop.
M (2)	Poland	Consumer-led	100-300	2009	Consumer purchasing group where members contribute with x hours of work per month. They have a CSA with a farmer, but also order directly from many other producers, not only food.
N (1)	The Netherlands	Third-sector-led	100-300	2016	Non-profit association which promotes and assists local citizens groups with organising a model of CSA in which a group of households invests on a farm and hire a full-time farmer to produce food covering about 60% of their needs.
O (1)	The Netherlands	Business platform	100-300	Unassigned	Company with a web platform that makes it possible for consumers to order from regional producers, and also organises the logistics of deliveries. They supply several student groups with a weekly food basket.
P (1)	The Netherlands	Business platform	2000-5000	2013	Company with a webplatform that allows consumers to order directly from producers, and organises the logistics and deliveries to pick-up locations in neighbourhoods.
Q (1)	The Netherlands	Consumer-led	10-50	2017	Consumer purchasing group of 25 families in a village. They organize in shifts to collect products from producers within 10km, and have made their own web ordering system. One of them provides her farm as social pick up point.

Table B3. List and characteristics of interviewees

Initiative	Role of interviewee	Gender	Age goup
A	Farmer	F	30-39
B	Facilitator	F	40-49
C	Founder- and ex-member	M	40-49
	Current member	M	30-39
D	Farmer	M	30-39

E	Facilitator	F	30-39
F	Founder	F	30-39
G	Founder	F	60-69
H	Farmer	F	20-29
I	Founder	M	40-49
J	Founder	M	50-59
K	Founder (interviewed jointly with PR manager, F, 30-39)	M	30-39
L	Co-founder	M	30-39
	Shop manager	F	30-39
	Supply manager	M	30-39
	Member	M	30-39
M	Founder	F	30-39
	Member	F	30-39
N	Founder	M	40-49
O	Founder	M	40-49
P	Co-founder	M	30-39

Q	Co-founder	F	30-39
	Facilitator at the start of initiative	F	40-49

Table B4. Challenges and Facilitating conditions of different AFN types

AFN types	Challenges	General challenges	Facilitating conditions	What would help the emergence of more AFNs?
Consumer-led	- Lack of member engagement - Lack of collaborative culture and skills - Unclear legal status (M) - Finding vegetable farmers (Q)	- Pioneering nature of initiatives - Tension between idealism and pragmatism - Consumer expectations of product diversity - Consumer unawareness of seasonality and issues with the industrial food system. - Strict conditions of subsidy schemes	- Setting clear rules - Support with locations for deliveries - Base of established relationships - Social moments and relationships (Q and M)	- Stopping subsidies and other supporting factors of industrial agriculture - Public food procurement favouring local (and organic) sources - Supportive legislation and regulations - Awareness campaigns - There should be support for NGOs or other entities to promote and give trainings about the CSA model - Investing in people who want to start such initiatives, so that they can dedicate time to it. - Accessible software for simplifying orders and payments - People starting their own consumer groups
Third-sector-led	- Managing relationships in the team (G) - Transforming land without investment (G) - Organising logistics with farmers (L) - Maintaining democratic and horizontal processes when growing in scale and complexity (L) - Engaging co-op members (L) - Convincing farmers at the start (F) - Securing investment (N) - Working long hours		- Self-reliance - Crowdfunding - Base of established relationships - Consumer demand - Permission for temporary exemption from some regulations (N) - Media attention (F and L) - Collaboration with universities (N)	
Public-led	- Difficulties achieving self-sufficiency		- EU-funded project allowed time and processes for learning and experimenting before launching the initiative.	
CSA	- Finding enough consumers (for H, at the start)		- Working through a CSA, allows for predictability of demand, saves time and resources, reducing food waste as well.	

			- Support with locations for deliveries	
Farmer-led	- Lack of sufficient or sustained demand - Finding skilled labour - Consumer unawareness of seasonality, issues with industrial production, health impacts of food - Difficulties inherent to organic farming - Difficulties finding land (for long term lease, affordable, with non-polluted soil) - Working long hours		- Enjoyment in educating consumers about farming, seasonality, particularities of small-scale organic farming. - There is some consumer demand. - Working with consumers in a CSA model is very beneficial (A)	
Business platform	- Mediating between farmers and consumers - Organising logistics - Lack of sufficient or sustained demand - Providing customer convenience and service - Communication and marketing - Finding enough diversity of farmers within a certain radius around the cities.		- Received subsidies, and/or grants from the EU, local governments, foundations (I and P). - Receiving financial investments (I and P).	

Table B5. Examples of tensions between idealism and pragmatism

AFN	Principle	Tension	Conclusion/Resolution
B	As facilitators of the CSA they had the principle of not interfering in the relations between farmers and consumers.	One farmer was delivering produce in bad conditions, but the facilitators thought consumers should be the ones addressing that.	*Sticking to principles* Facilitators did not interfere, and consumers left the CSA, probably displeased with the poor produce from the farmer.
C	As a consumer group they wanted to have a close relationship with a farmer using agro-ecological practices, and not driven by profit.	The only farmer they found who was willing to collaborate had the goal of automatizing organic food production, and was market driven. But their relationship was good, and so was the produce.	*Accepting* As fewer people of the group were politicized, they seemed to accept the situation. But it decreased the political motivation of one member who left the AFN.

C	Consumers did not want the farmers to use commercial fertilizers, and some also opposed to a greenhouse.	The farmer wanted to use commercial fertilizers and a greenhouse to grow a wider diversity of food throughout the winter	*Accepting and adapting* Consumers accepted the benefits of a greenhouse, and negotiated with the farmers that eventually the goal should be to produce their own fertilizer at the farm.
L	They wanted to limit the products in the organic co-opshop to regional and national origins (Poland).	They realised that consumers would then go to other shops to buy products like olive oil, or dates, which were not organic, nor from cooperative entities.	*Adapting* They decided to offer some imported products but sourced them from organic and cooperative sources, only using (organic) wholesalers as a last resort. Still, they don't import produce that grows in Poland.
F	They were set up to help commercialize produce that farmers are not able to sell, because of size or aesthetic reasons.	Farmers have better selling conditions with them than with wholesalers and supermarkets, so it happens that they try to sell them also “non-ugly” produce.	*Adapting* They accept conditionally, if farmers mix produce that would be wasted for aesthetic and size reasons with other “good-looking” produce.
N	The founder had the principle of not wanting to take a loan, to start the project, because of the dependency he sees in Dutch farms.	Despite gathering half of the needed investment amount from consumers, they still missed half.	*Accepting* In the end the AFN accepted a loan from the owner of the land who was motivated to have that project in his land. Accepting the loan was necessary to launch the first project.
J	The idea of weekly deliveries was to promote a moment of interaction between consumers and producers.	In practice, consumers were too busy and just wanted to pick up the produce and leave.	*Accepting* They seemed to accept that consumers were not motivated, or had enough time to engage more in the interactions.
K	First they aimed to deliver only fresh seasonal produce from regional farms.	Consumers wanted to buy also other type of produce (e.g.bananas, oranges).	*Adapting* They decided to import some produce not available in Poland from other EU countries, but they still keep the principle of seasonality.
H	In the original model of CSAs, consumers and producers are supposed to have a close	Farmers engaged consumers from the start, but consumers having little understanding of farming	*Adapting*

	collaborative relationship, involving, e.g. help with labour, and decision-making..	prefer to trust farmers than giving input in decision-making. The farm is relatively far from the city, which makes regular visits from consumers impractical.	The farmer acknowledges they have a more commercial model of a CSA, where consumers are not very involved. A relative assists the farmers with delivering the produce, and some consumers recognized that was good for the farmers because they work very hard.The farmers still ask consumers to decide whether to use chemicals or not, when they have pests that are not solved by organic methods. They also host a yearly gathering at their farm. The consumers accept, because they also don't have time to go regularly to the farm, and because they enjoy the relationship and the good quality of the produce.
H and M	In the CSA model consumers commit to pay in advance, supporting the farmers for a season or a year, and receive weekly boxes of produce.	The farmers started selling on the side the excess produce. They used to just spread it through all boxes, but consumers complained that it was too much. Now it's available to buy for people who want some extra. According to one organiser, some people left the CSA and are now buying only weekly, because of that possibility.	*Unsolved.* For the farmer it works well to avoid food waste, for one of the organisers the weekly sales call into question the CSA principles.
P	The AFN web platform stands for a principle of transparency of prices. They instituted a formula where for every euro spent, consumers know which fixed percentage goes to: the tax office, farmers and the AFN business.	The fixed profit margin creates different prices than in supermarkets. Consumers see that some products are cheaper than what they are used to (with which supermarkets have high margins), and some products are more expensive (where supermarkets have low margins). Some consumers find the expensive products, very expensive, and complain.	*Sticking to principles* The founder acknowledges that this might not be commercially an easy approach to defend, still they stick with this pricing system. He says it is sometimes uncomfortable for consumers, but he sees it as his role to take time to explain this transparency. Those conversations become educational opportunities to illuminate hidden and (unfair) aspects of conventional food systems.

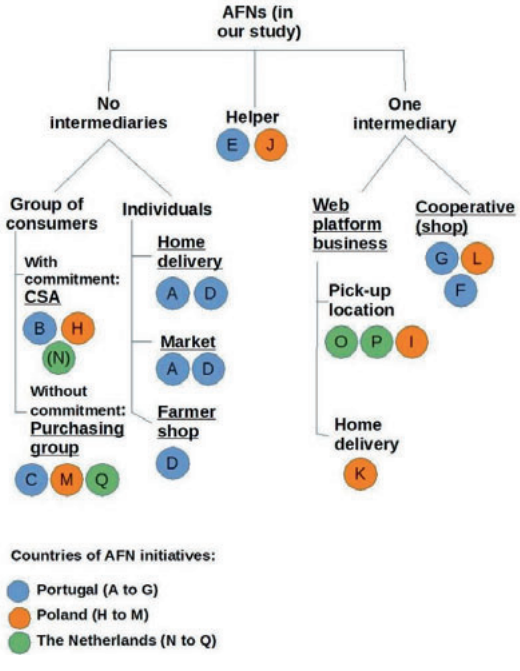

Figure B1 – Diversity of initiatives according to the number of intermediaries (based on Chiffoleau et al.,2016)

Samenvatting

De effecten van de klimaatcrisis waren in 2022 overal ter wereld voelbaar. Ondanks dat wetenschappers al decennialang waarschuwen over de effecten van stijgende broeikasgasemissies, zijn deze meer dan verdubbeld sinds 1990, het jaar van het eerste IPCC-rapport. Veel strategieën voor het verminderen van deze emissies zijn vooral gericht op koolstofvrije of -arme technologische oplossingen of het verbeteren van de energie efficiëntie. Ook vandaag nog is er maar beperkte aandacht onder onderzoekers en beleidsmakers om het probleem aan de vraagzijde aan te pakken, benaderingen die de relaties erkennen tussen milieucrises, energie- en hulpbronnengebruik, productie-consumptiesystemen en de afhankelijkheid van economische groei. In dit proefschrift behandel ik de volgende onderzoeksvraag: **Hoe kan consumptie worden veranderd en verminderd ten behoeve van verduurzaming?** In elk hoofdstuk staat een andere deelonderzoeksvraag centraal.

Mijn eerste vraag was: **"Wat beïnvloedt consumptie?"**. Discussies rond het thema consumptie richten zich veelal op 'consumenten' en op persoonlijke motieven, zoals 'hebzucht' en 'status'. Ik beargumenteer dat consumptie een complex fenomeen is dat niet volledig kan worden verklaard vanuit één specifiek vakgebied. Om deze reden heb ik een literatuuronderzoek uitgevoerd op basis van tien verschillende vakgebieden. Verklaringen voor consumptie zijn divers en afhankelijk van de thema's die door elk vakgebied worden onderzocht, zoals bijvoorbeeld de doelen die worden bereikt via consumptie; consumentengedrag en besluitvorming; actoren en omgevingen die consumptie beïnvloeden en de historische consumptiegroei. Met deze verschillende thema's en perspectieven in mijn achterhoofd heb ik een conceptueel raamwerk opgesteld over wat consumeren beïnvloedt. Het raamwerk bestaat uit drie niveaus:

1) op microniveau wordt consumptie beïnvloed door kenmerken van de consument (bijv. leeftijd, inkomen, persoonlijkheid, waarden), omgeving (sociaal, cultureel, etc.), kenmerken van het product (de prijs, de plaats waar het wordt verkocht, de manier waarop het wordt verkocht en de promotie) en de consumptiedoeleinden. Consumptie kent een grote diversiteit aan doeleinden: persoonlijke, zoals gezondheid, persoonlijke aspiraties en wensen (bijv. zoeken naar iets nieuws); sociale aspecten zoals zorgzaamheid, relaties onderhouden, identiteit en status uitdrukken als wel praktische doeleinden in het uitvoeren van specifieke activiteiten (bijv. schrijven, kamperen) en politieke doeleinden (bijv. door het boycotten van een bepaald merk of land van herkomst).
2) Op mesoniveau kijk ik naar de directe omgeving waar wordt geconsumeerd, bijv. de supermarkt of de online winkel.
3) Tot slot wordt consumptie op macroniveau beïnvloed door de maatschappelijke context (demografische, culturele, ruimtelijke/infrastructurele/geografische, technologische, politieke en economische) en maatschappelijke actoren (bijvoorbeeld overheden, bedrijven, burgers, handelsorganisaties). Historische perspectieven op de

evolutie van consumptie tonen de onderlinge relaties tussen de verschillende niveaus en elementen van het raamwerk, met name tussen actoren en contexten.

Het onderzoeken van de complexiteit van consumptie, was belangrijk voor het beantwoorden van mijn tweede vraag: **"Hoe kan het consumptieniveau verminderd worden?"**. Het is steeds normaler geworden om in opiniestukken en media-uitingen te lezen dat we moeten "consuminderen" of meedoen aan de volgende "koop-niks-nieuws-*challenge*". Het belang van een gereduceerd consumptieniveau wordt erkend in de literatuur omtrent duurzame consumptie en *degrowth*, maar er is weinig bekend over de manier waarop mensen hun consumptieniveau letterlijk kunnen verminderen. Door interviews met mensen die minder en duurzamer proberen te consumeren, ben ik tot een voorstel gekomen voor een nieuw raamwerk om het consumptieniveau te verminderen. Consumptievermindering wordt bereikt door af te zien van consumptie (bijv. weigeren, hergebruiken), door anders te consumeren (bijv. tweedehands, producenten van goede kwaliteit/duurzaam, wegwerpartikelen vervangen, enz.), het ontwikkelen van andere gewoontes met een lagere consumptiedruk (bijv. bewustzijn, delen, levensduur verlengen, repareren, zelfvoorzienend zijn), en door omgevingsfactoren die consumptievermindering kunnen ondersteunen of belemmeren (sociaal, cultureel, geografisch, infrastructuur/institutioneel, economisch). De resultaten tonen ook aan dat het terugdringen van het consumptieniveau sterk wordt beperkt doordat niet-duurzame bevoorradingssystemen alom aanwezig zijn. Het verminderen van consumptie overstijgt de discussie over individuele verantwoordelijkheid van de consument te gaan. Het gaat er ook om te onderzoeken welke collectieve inspanningen, van diverse partijen, kunnen bijdragen aan het transformeren van de structuren die het huidige hoge consumptieniveau ondersteunen. En hoe gewoontes die passen bij een laag consumptieniveau zich kunnen verspreiden. Begrijpen hoe productie-consumptiesystemen veranderen en worden beïnvloed door diverse actoren en omgevingsfactoren, is belangrijk om onze kijk op veranderingsprocessen te verbreden.

De derde vraag die ik oppakte was daarom: **"Hoe verander je productie-consumptiesystemen ten behoeve van verduurzaming?"**. Ik heb deze vraag onderzocht binnen het thema voedsel, omdat veel initiatieven worden ondernomen om alternatieve voedselsystemen te ontwikkelen. We hebben ons gericht op alternatieve voedselnetwerken, zogenoemde: AFN's (Alternative Food Networks). Dit zijn korte keteninitiatieven die producenten en consumenten met elkaar in contact brengen met als doel een betere toegang tot gezonder en duurzamer voedsel, en een eerlijker inkomen voor de boeren. Er is veel onderzoek gedaan naar AFN's maar er is maar weinig onderzoek dat zich specifiek richt op de initiatiefnemers; de stimulerende en beperkende factoren die AFN's ervaren; de verschillende categorieën AFN's en de invloed van verschillende gewoonten binnen landen op het succesvol functioneren van AFN's. Dit hoofdstuk bestudeert zeventien AFN's en hun initiatiefnemers. Ik heb onderzocht op welke manier verschillende omstandigheden en actoren de ontwikkeling van de verschillende typen AFN's in Polen, Portugal en Nederland belemmeren en bevorderen. Ik heb de AFN's in zes typen gecategoriseerd volgens de criteria publiek/privaat, profit/non-profit en formeel/informeel. AFN's kunnen worden gestuurd door: bedrijven, consumenten/burgers, maatschappelijke organisaties, de overheid, en door collectieven van boeren en burgers ('community supported agriculture') en door individuele boeren. Het onderzoek laat een diversiteit aan modellen voor korte voedselketens laat zien. Voorbeelden van ondersteunende voorwaarden zijn bijvoorbeeld: een basis van gevestigde relaties (met name voor non-profit

AFN's), crowdfunding en subsidies. Uitdagingen verschilden per AFN-type. Waarbij meerdere van de winst georiënteerde AFN's de vraag van de consument misten, ging het bij de 'non-profit' AFN's voornamelijk om het beheren van relaties en het uitoefenen van democratische processen ter ondersteuning van collectieve besluitvorming. Mijn artikel toont de uitdagingen waarmee mensen worden geconfronteerd die ervoor kiezen om zich binnen alternatieve voedselsystemen te organiseren. Veel initiatiefnemers van AFN's stellen dat andere actoren (bijvoorbeeld overheden, media, universiteiten, en maatschappelijke organisaties) een belangrijke rol kunnen spelen in het versterken van AFN's, bijvoorbeeld door het stopzetten van subsidies voor industriële, niet-duurzame landbouw; door middel van publieke voedselinkoop door de lokale overheden; door meer media-aandacht voor de milieueffecten en sociale ongelijkheden van het gangbare voedselsysteem; en door werkmodellen van AFN's te verspreiden onder boeren en agrarische studenten via onderwijs, beleid en maatschappelijke informatievoorziening.

Binnen het thema van AFN's, was er nog een vraag: **"Wat zijn de milieueffecten van veranderde productie- en consumptiesystemen?".** Het evalueren van de duurzaamheid van alternatieve vormen van productie en consumptie is belangrijk om te begrijpen in hoeverre dit soort initiatieven daadwerkelijk een verbetering zijn. Om dit te onderzoeken, heb ik een studie uitgevoerd naar voedselverspilling in een AFN voedselcollectief. Ik heb de mate van voedselverspilling onderzocht en de strategieën van het collectief om voedselverspilling tegen te gaan. Ik heb mijn resultaten vergeleken met onderzoekscijfers van de traditionele levensmiddelenindustrie waaruit bleek dat de AFN zeer lage voedselverliezen had. Het kwalitatieve onderzoek naar strategieën voor het verminderen van voedselverspilling laat zien dat AFN's verder kijken dan winst en serieus bezorgd zijn over voedselverspilling. De autonomie van de onderzochte organisatie biedt flexibiliteit en geeft leden de kans om passende manieren te vinden om voedselverspilling te voorkomen en aan te pakken. Dit staat in contrast met meer top-down bestuur en strategieën voor winstmaximalisatie in de traditionele levensmiddelenindustrie. Deze resultaten suggereren dat het mogelijk is om productie-consumptiesystemen zo te organiseren dat de negatieve milieueffecten, in dit geval voedselverspilling, worden geminimaliseerd, en dat non-profit organisaties mogelijk beter gemotiveerd zijn en meer speelruimte hebben in het effectief verminderen van voedselverspilling.

Hoe kan consumptie worden veranderd en verminderd ten behoeve van verduurzaming?

Dit onderzoek begon met de veronderstelling dat de schaal en samenstelling van huidige productie-consumptiesystemen onhoudbaar zijn, en dat er in klimaat- en milieubeleid te weinig erkenning voor de rol van consumptie is. Wanneer consumptie aan de orde komt is dat vaak in termen van consumentengedrag, individuele verantwoordelijkheid en de afhankelijkheid van moderne economieën van (alsmaar groeiende) productie en consumptie. De eerste stap om consumptiepatronen te verduurzamen en consumptie te verminderen is het veranderen van de framing van consumptie. Dit betekent een verschuiving van consumptie als iets dat wordt veroorzaakt door individueel consumentengedrag, naar iets dat wordt veroorzaakt en gestimuleerd door meerdere actoren en de context waarin die zich bevinden. Het vraagt om een brede interdisciplinaire kijk, met zowel disciplines gericht op het microniveau als disciplines die kijken naar de macrodynamiek van de samenleving, om zo beperkte perspectieven te vermijden en om de relaties tussen actoren en de omgeving te begrijpen.

Mijn onderzoek laat zien dat mensen die zich binnen alternatieve systemen van productie en consumptie organiseren, zich richten op vormen van zelfvoorziening als een manier om hun consumptie te verminderen. Ik laat zien dat de keuzevrijheid van mensen verder gaat dan het kiezen welke producten ze consumeren, en dat veel andere actoren een rol spelen in het veranderen van productie en consumptiesystemen en contexten. Het veranderen en verminderen van consumptie is dus meer dan een individuele uitdaging. Het is een maatschappelijke verantwoordelijkheid, die vereist dat we goed kijken naar de manieren waarop huidige praktijken, systemen en structuren niet-duurzame (over)consumptie stimuleren. Ten eerste betekent dat erkennen dat verschillende actoren verschillende rollen spelen bij het in stand houden en bevorderen van het huidige systeem, en ten tweede onderzoeken wat er gedaan kan worden, en door wie, om huidige structuren, praktijken en systemen te transformeren ten behoeve van consumptievermindering en verandering.

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About the author

Ana Poças grew up in Vila Nova de Gaia, the municipality across the Douro River from Porto. She graduated from Porto University in 2009 with a Bachelor in Astronomy and a minor in Geographic Information Systems. In 2009/2010, she took part in an European Voluntary Service programme in Warsaw, Poland, supporting the Foundation for the Polish-German Reconciliation. In 2012, she graduated from Utrecht University in the Netherlands, with a Masters on Sustainable Development, Energy and Resources track.

Ana has worked on sustainability on the urban realm at the European Urban Knowledge Network in 2013, and as a consultant for the Santo Tirso municipality within the URBACT Thriving Streets network in 2021-2022. Between 2014-2022, her PhD research at Utrecht University focused on understanding, changing and reducing consumption. She conducted a cross-disciplinary review of 10 disciplines on what influences consumption, she interviewed organisers and founders of 17 initiatives of Alternative Food Networks in three countries, investigated the types of practices, materials and contexts (un)supportive of reducing consumption, and pioneered a case-study of food waste quantity and management in an Alternative Food Network.

Alongside this professional work, Ana has been involved in several activist collectives and associations in the Netherlands and Portugal on degrowth, urban cycling, cities for people, (green) public space, and climate action. In 2016-2019, as part of Prout, the PhD candidates association at UU, she has campaigned for mental health support for PhDs. After a symposium on PhD mental health, an open letter, and a petition with more than 1000 signatures, Utrecht University hired a psychologist for PhDs.

Ana was a co-founder of the Dutch chapter of Scientists4Future, and of Ontgroei – the Dutch degrowth network. In 2019, she co-ordinated the organization and co-hosted the 1st Utrecht Degrowth symposium. For a few years, she participated in the group promoting the Global Degrowth Day. She has given many lectures and moderated sessions on degrowth and consumption, and written opinion pieces for P3 – an online section of Portuguese newspaper Público.

In 2021, Ana ran for mayor of Vila Nova de Gaia in the Portuguese local elections, as an independent running with a green-left party, and got 582 votes (0,46%). It was a way to use her voice in a domain dominated by older conservative men, and to dare people to imagine how Gaia could be a much better place to live, for everyone. Ana likes to work collectively on changing structures to allow for fairer, healthier, more democratic and sustainable societies and cities.

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