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# **Food Waste in Norway**

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## **Declaration**

I, Helle Sofie Greiner Beddari, declare that this thesis is a result of my own research and findings. Sources of information other than my own have been acknowledged and a reference list has been appended. This work has not previously been submitted to any other university for award of any type of academic degree.

Signature:.....*Helle Sofie Greiner Beddari*.....

Date:.....15/05/2023.....

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## **Abstract**

Food waste being economically, environmentally and climatically, and ethically unsustainable has gained increasing momentum and is increasingly on the agenda, especially over the last years. This can be seen by measures set in motion globally as a part of the sustainable development goals, in the EU and at a national level in Norway.

With a qualitative study, this thesis will look into ongoing work on food waste reduction through Norway's implementation of the SDG target 12.3 on halving food waste within 2030, as a measuring goal through the Voluntary Agreement on Food Waste Reduction and assessing if it has been sufficient enough. Currently, there is an ongoing process of drafting a food waste law where multiple parties discuss if a food waste law can be a better solution towards reaching the set goal by increasing the pace and width of the work, as the findings of this study show that the voluntary agreement has not been satisfactory in reaching the 12.3 target. The law is not new to the discussion, but where some have preferred to keep the food reduction work voluntary while others believe that the food waste law is long overdue.

This study applies an integrative approach to transformation theory through three spheres, being the practical, political and personal spheres. Circular economy thinking will supply as a further tool of thinking towards sustainability.

**Key words:** food waste, food waste law, voluntary industry agreement, transformation, circular economy, climate change, consumer

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## 1. Introduction

Food waste is a large global issue where around one-third of all food produced in the world ends up as food waste according to the FAO (Food wastage footprint, 2023). This contributes to about 10% of the human made climate gas emissions on a global level (Matavfall og matsvinn, n.d.). Food waste is a complex, global and interdisciplinary issue that can have profound effects for sustainability of the globe (Thyberg and Tonjes, 2016). Producing and distributing food demands land use and areas as well as different resources like workforce, transportation, water, pesticides and fertilizers. Throwing away edible food is therefore both an economic- and ethical issue, in addition to have negative consequences on the environment footprint and climate due to a large resource issue (Matavfall og matsvinn, n.d.). Norway is not exception when it comes to challenges regarding food waste. Households are accountable for around half of the food wasted where it is estimated that 40,3 kilos are wasted per person according to 2020 numbers. A lot of edible food is also wasted in the food industry, grocery stores and in agriculture in Norway. Extensive work has been done to map out food waste over the last years, from farm to table (Matavfall og matsvinn, n.d.). The most recent mapping report for the food industry and the consumer section show that food waste in the food industry has been reduced by 14% measured in kg/inhabitant from 2015 till 2021 (Stensgård et al., 2023). The report further states that the same food industry constituted for 173 100 tons of food waste in 2021 which includes that of food industry, wholesaler, grocery stores, catering and KBS (convenience stores, petrol stations, department stores, kiosks) (Stensgård et. al., 2023). These numbers shows that the industry as a whole did not reach the set sub-goal of 15% reduction within 2020, but as the report does show is that the grocery store level has reduced its food waste by 19%, which is beyond the 2020 sub-goal and is well placed in achieving the next sub-goal of 30% reduction within 2025 (Stensgård et al., 2023).

Despite positive reduction numbers in levels of the food value chain which is due to work through a Voluntary Industry Agreement on reduction of food waste with various of actions, the discussion of a Norwegian food waste law is probably more than ever on the agenda where one moved from considering the need for a food waste law (Szulecka and Strøm-Andersen, 2022), to now having selected a working group that is to consider the content of the law (Matsvinnutvalget, n.d.). The food waste law is set to be ready in 2024, opening up to the

question of, can it provide stronger food waste reduction results than that of the voluntary agreement has provided so far?

The aim of this thesis is to see how the implementation of SDG 12.3 through the Voluntary Industry Agreement on Reducing Food Waste has played out regarding food waste reduction in Norway and to bring forward different initial perspectives regarding particularly the planned food waste law to get insight to how it might play out and potentially decrease the amounts of food going to waste in Norway further. Through a qualitative approach, this master's thesis will seek to answer the research questions of:

- a) *To what degree and how has the adoption of SDG12.3 in 2015 and the measures taken to reduce food waste, contributed to food waste decline in Norway?*
- b) *Why has Norway not yet a food waste law in place, and what difference could a food waste law make regarding food waste reduction?*

This thesis will be presented in the order of: chapter two will present the theoretical framework which presents thought patterns of approaching the food waste issue where transformation theory and circular economy is central, chapter three will elaborate on the selected methods for this thesis, influencing the findings. Chapter four summarizes food waste in Norwegian context which gives background to the findings that is outlined in chapter five. Chapter six then discusses these findings and lastly, chapter seven concludes with the provided insights and suggests how further research can draw from it.

## **2. Theoretical framework**

This chapter will outline and review literature related to the research questions. Included here are key concepts and theories that can be used as a framework in approaching the findings thorough the discussion around food waste. As there is an absence of a unified definition of food waste the most central definitions relevant for this thesis will be presented, before moving on to other central theories being transformation theory and circular economy. The climate and environmental perspective, and the ethical perspective will be looked into as well. As the focus of the thesis will be on food waste which is not to be confused with food loss, definitions of both concepts will be explained to show the distinction as well.



## **2.1. Defining concepts**

As a part of the discussion of developing a food waste law, finding a common ground for a definition of food waste must be agreed upon. The reason for this is that the width of the definition can have something to say in how the law is outlined and for the reach of the working areas in decreasing food waste (EU FUSIONS, 2016). As there are multiple definitions out there, some central definitions will be presented. These includes those of the UN - as part of the sustainable development goal 12.3, EU definition, the voluntary industry agreement working definition as it is currently the central tool in Norwegian context of food waste reduction and lastly the EU FUSIONS definition, which reaches wider than the other definitions outlined here. The distinction between the Norwegian word “matsvinn” and the English word “food waste” that can also translate into the Norwegian word “matavfall” needs to be accounted for too. Before looking at the distinctions amongst the definitions of food waste, the differences between food waste and food loss will be presented first.

### **2.1.1. Food loss and food waste**

As there is a distinction between food waste and food loss, food loss needs to be defined as well. Food and Agricultural Organization of the United Nation (FAO) refers to food loss as “the decrease in edible food mass at the production, post-harvest and processing stages of the food chain, mostly in developing countries”. While food waste according to the FAO follows the line of edible food that is discarded at both levels of retail and consumer, again, mostly in developed countries (Food wastage footprint, 2023). Wider definitions of these terms have also been presented by the FAO in the paper “Save Food for a Better Climate – Converting the Food Loss and Waste Challenge into Climate Action” from 2017 (Wieben, 2017). Here food loss is described as “a decrease in quality and quantity of agricultural, fisheries and forestry products intended for humans to consume but are in the end not eaten by people. These food losses occur along the supply chain from production, to harvest, post-harvest handling, to storage and processing, as well as during transportation (Wieben, 2017). Moreover, “food losses are largely unintentional and are caused by inefficiencies in the food system, such as insufficient access to technologies and energy, poor infrastructure and logistics, inadequate market access as well as managerial limitations and capacity constraints of supply chain actors. Climatic factors and variability such as extreme events, along with pests and diseases, are also causes of food losses” (Wieben, 2017). Moreover, food waste is referred to as “food appropriate for human

consumption being discarded, either by choice or after the food has been left to spoil or expire as a result of negligence or oversupply. Food waste occurs predominantly, but not exclusively, at consumption level and is often related to consumer behavior as well as being policy and regulatory driven” (Wieben, 2017). Further, a joint definition of the two is presented and is defined as “a decrease, at all stages of the food system from production to consumption, in mass and/or quality, of food that was originally intended for human consumption, regardless of the cause (Wieben, 2017).

### **2.1.2. Food waste**

Now that one has an example of the distinction between food loss and food waste, the next challenge can be looked into regarding defining food waste itself. First, as the Norwegian word “matsvinn” and “matavfall” can both translate into the English word “food waste”, it is important to acknowledge that what is in focus here is that of the Norwegian word “matsvinn”, shortly meaning edible food produced for humans that either is thrown or taken out of the food chain for other purposes than to be consumed by humans (Landbruksdirektoratet, 2023), not “matavfall” which can translates into “all waste that comes from what you can put in your mouth” (matavfall, n.d.) with emphasis on the word waste. Therefore, if not stating otherwise, when talking about food waste in this thesis food waste regards that of “matsvinn”.

Moreover, as different organizations and establishments use different definitions of food waste with a variation of stretch, the most central and widely used definitions will be outlined to clarify the differences. As a UN definition has been outlined above (FAO), the definition from the Voluntary Industry Agreement (Bransjeavtalen), EU definition and the FUSIONS-definition will be looked at.

The voluntary industry agreement on reduction of food waste (Bransjeavtalen) has a working definition stated as “Food waste includes all usable parts of food produced for humans, but which are either thrown away or taken out of the food chain for purposes other than human consumption, from the time when animals and plants are slaughtered or harvested” (2023, Landbruksdirektoratet). Included here is also when usable parts of produced food for humans ends up as animal feed, amongst things. Moreover, in the consideration of food waste, wastage before slaughter and harvest might not be included in the definition, but utilization of resources throughout the value chain in the best possible matter must be contributed to the parties and the industry that has signed the agreement, by seeking in obtaining data for the primary stage and carry out measures that can reduce the wastage of food (2023, Landbruksdirektoratet).

One definition issued by the EU states that “food waste is any food that has become waste under these conditions:

- a. it has entered the supply chain,
- b. then has been removed or discarded from the food supply chain or at the final consumption stage,
- c. it is finally destined to be processed as waste.” (Danielsen et. al., 2021)

The EU Commission (Framework Programme 7) funded project FUSIONS (Food use for social innovation by optimizing waste prevention strategies) define food waste as “any food, and inedible parts of food, removed from the food supply chain to be recovered or disposed” (EU FUSIONS, 2016) included here are crops ploughed in or not harvested, composted, co-generation, bio-energy production, anaerobic digestion, incineration and lastly disposal to landfill, sewer, or discarded to sea (EU FUSIONS, 2016). More specifically, the FUSIONS’s definition comprehend waste of any materials ready for harvest but are not harvested, fish that is discarded at sea and well as liquid and drink waste. It considers even the inedible parts as food waste like skin and bones as a means in supporting the development of the efficiency of resources and sustainable food systems in the European Union. As this definition includes as much as it does, its perimeter is therefore broader than many other definitions out there, including those outlined above (EU FUSIONS, 2016).

## **2.2. Sustainable development and target for food waste reduction**

### **2.2.1. The climatic and environmental perspective**

As stated in the introduction, food waste is both a climatic and environmental dilemma at multiple levels. This can be seen by the nine planetary boundaries where food waste can be connected more or less to all boundaries in either direct or indirect ways (The nine, n.d.). The amounts of resources that goes to production, processing, transportation and storage before reaching the consumers table all contribute to an environmental footprint and climate gas emissions that are pushing planetary boundaries (Matavfall og matsvinn, n.d.;The nine, n.d.). The last stage of the food cycle being the processing of food waste, both edible and inedible, contributes in effecting the environment as well (Matavfall og matsvinn, n.d).

Food waste can be seen as a mixed function of economic, cultural, personal, geographic and political drivers (Thyberg and Tonjes, 2016). Overproduction more specifically example wise, is another (Silvennoinen et. al., 2015). This can be seen in a Finnish study from 2015

conducted of the food service sector. Buffet service was pointed out as another main driver in this case, but as overproduction can be more of an overall driver of food waste, the focus will be directed at that. The Finnish study findings concluded that 20% of all handled and prepared food was wasted in the food service sector. This included 51 different food service outlets including restaurants, diners, day-care centers, schools, petrol stations and canteens at workplaces where the food wasted was divided in originally edible and originally inedible food waste (Silvennoinen et. al, 2015). Wasting edible food rather than consuming it is both economically and ecologically unsustainable due to the substantial impacts producing and processing raw materials into food have on the environment (Silvennoinen et al., 2015). Avoiding overproduction and transforming towards sustainable production and consumption patterns can help in reducing wasting edible food. Making good with the food produced sufficiently reduces the need for an increase in food production which again puts less pressure on the environment (ForMat-prosjektet, 2015). This is also in line with a circular economy, moving away from the dominant linear economy (Borrello et. al., 2017), which I will get back to later on.

### **2.2.2. The ethical perspective**

As mentioned, food waste is not only a climatic and environmental dilemma but an ethical dilemma also, due to the unequal and skewed distribution of food resources around the globe. Letting edible food end up in a trashcan or a landfilled when there is several hundred million people living in poverty and struggles in having access to food and in general food security overall is morally not something one should ought to maintain (Schrøder et. al., 2015; A global food crisis, 2023). As the “ForMat-project” report states “less food waste will make food more available for the worlds increasing population” (Schrøder et. al., 2015). FAO follows this line of thought stating that “... food wastage represents a missed opportunity to improve food security...” (Sustainable, 2023).

### **2.2.3. Target**

To consider these areas of issues that has just been presented on, of climatically and ethically concerning effects the United Nations created the 17 Sustainable Development goals which .... This thesis will be concentrated around Sustainable development goal 12 named “Responsible consumption and production”, which more specifically includes the 12.3 target which is central here in the first research question, namely, “By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including

post-harvest losses” (Sustainable, 2023). Relevant here is the sub-indicator 12.3.1.b – Food Waste Index which is still under development, where the UN Environment is taking the lead on this sub-indicator (Sustainable, 2023). STG 12.3 has become a guide and goal in the work on food waste reduction (Sustainable development goals, 2023) also in the Norwegian context of food waste (Ministries, 2016).

## **2.3. Environmental transformation and change**

This section will outline theories and ways of thinking towards food waste reduction that will be used in the analysis of collected data and the discussion of it. The theories in mind are circular economy, as an equivalent to the linear economy model towards transforming to sustainability and transformation theories on different levels as another line of thinking towards potential changes to a more sustainable society where food waste reduction can contribute to those sentiments by being a more low-hanging fruit to grasp.

### **2.3.1. Circular economy**

Borrello et. al. (2017) states that the current linear system is unsustainable in regard to both consumption and production. Despite that valuable natural resources are intensively used in the food sector in producing and distributing food product, efforts are lacking in upcycling generated residues along the supply chain. It is therefore considered crucial to use strategies of circular economy in restructuring “the take-make-dispose model” by having actively participation throughout the supply chain, including all actors (Borrello et. al., 2017).

Working towards becoming a low emission society, circular economy is considered significantly in that transition (Klimakur 2030, 2020). The Directorate for the Environment (Miljødirektoratet) defines circular economy as an economy where the products have to last as long as possible, be repaired, upgraded and used again to a larger degree than that of now. When the products reach a point of not being able to be used again, the waste can be recycled and used in further production, to exploit the same resources multiple times and wasting as little as possible. This implies a transition where one has changes in design of economy, production and methods of production, and the pattern of consumption. Moving away from a linear economy that has been dominating since the industrial revolution which is based on extraction, production and use, and where the product later ends at incineration or general disposal of waste. To achieve a circular economy, users have to have the opportunity to take environmentally friendly decisions and contribute in taking those decisions (Sirkulær økonomi,

n.d.). Central here is sharing economy, digitalization and the use of services. The public on their part can promote circular economy through their purchases to make a difference in these regards. Further, the transition to a circular economy is considered crucial in becoming a low-emission society as well as in reaching the Sustainable Development Goals set by the United Nations. Using the resources more efficiently as described above reduces emissions of climate gasses, reduces the pollution load, slows down the loss of biodiversity, and contributes to green business models and workplaces (Sirkulær økonomi, n.d.).

Food waste is a target area in a circular economy as well, where ideally one work towards building food systems that prevents food ending up as waste (food, n.d.). In this line of thinking one redistributes edible surplus food to people in need and use the by-products from food that are inedible as well as human waste for new causes and products (food, n.d.).

The avoidance of food waste is expressed getting increased attention and momentum amongst political and corporate decision makers, where MacArthur (2013) brings up examples of voluntary initiatives like in the UK with the Courtauld Commitment and multiple initiatives from the European Commission. The now ongoing Courtauld Commitment 2030 is “a voluntary agreement than enables collaborative action across the entire UK food chain to deliver farm-to-fork reductions in food waste, greenhouse gas emissions and water stress that will help the UK food and drink sector achieve global environmental goals”. (The Courtauld Commitment 2030, n.d.). It has a working goal to deliver against UN SDG 12.3, being “a 50% per capita reduction in food waste by 2030 vs the UK 2007 baseline (covering manufacture, retail, hospitality and food service, and households” (The Courtauld Commitment 2030, n.d.). This can perhaps be seen as the UK’s version of the Norwegian Voluntary Industry Agreement, sharing objective of food waste reduction at a voluntary basis (The Courtauld Commitment, 2030, n.d.). MacArthur (2013), divide motivations for food waste reduction in three. The motivation of increasingly keeping organic waste away from landfill in fulfilment to the European directive, motivation of surrounding questions of having access to food and social justice, and lastly, the motivation – on a more complex indirect manner, the need to downscale food waste for agricultural supply chains to continue providing nutritional needs (MacArthur, 2013, p. 51). Land restoration – a key component of circular economy - and energy provision is highlighted areas where food waste plays a part. Food waste (in addition to sewage and animal waste) can for example serve as an alternative source of nutrients used in fertilization, moving away from the dependency of foreign minerals, MacArthur states. Moreover, for energy provision, this energy can be extracted from food waste (MacArthur, 2013, p. 55). As one can see however, that this seems to regard food waste, as in waste.

Circular economy will be discussed further in the Norwegian context of food waste reduction in the last discussion chapter, as a way of potentially transitioning to a more sustainable society.

### **2.3.2. Transformation at different levels**

To address several of the earth's great social and environmental challenges, transformations towards sustainability is needed (Bennet et al., 2019). As with circular economy, there is an extensive amount of literature out there about transformation pathways towards sustainability. Bennet et al., (2019) for example focuses their perspective of transformation on that it needs to be just transformations, meaning that in the process of shifting towards sustainability one need to take social justice into the consideration. This includes considerations of procedure, distribution and recognition in forming a pragmatic framing of just transformation. Moreover, all three factors need to be considered in the decision-making process before, during and after the period of transformation according to Bennet et al., (2019), where both practical and methodological guidance is offered to navigate just transformations (Bennet et al., 2019).

Bentz et al., (2022) explores beyond just talking about transformation, but moving toward action results. Here the focus is directed towards the distinguishing of the dimensions of means and the manner of transformation, which is considered key in findings answers of the "how" of transformation (Bentz et al., 2022). The means on the one side can comprehend methods of the practical and technical, actions or solutions that are seen as significant to transformative change. On the contrasting side one has the manner which represents the ways of doing something. For example, the ways of acting. Included here are the descriptions of relationships, principles, core values and qualities that motivate and underpin both the transformative change and process of it and its shaping (Bentz et al., 2022). Stating that "integrating rather than conflating the means and the manner is important to better understand how transformations come about" (Bentz, et al., 2022).

Westley et al., (2011) explores the links amongst innovation, agency and institutions towards navigating shifts and global sustainability transformation of large-scales. Asking if social and technical innovations have the potential to reverse trends that are critical threshold-challenging and that creates earth system tipping points, and if that's not the case, what are the circumstances needed to get out of the current lock in. The nurturing of promising social and technical innovations that holds the potential to change trajectories that are unsustainable is what Westley et al. (2011), argues for, where these social and technical innovations need moreover to be connected to institutional responses and resources that are broad. At the same

time, institutional entrepreneurs can work on reducing dominant institutional systems' resilience and site and option more sustainable shadow alternatives and niche regimes (Westley et al., 2011). Using innovation as a somewhat tool against itself where technological innovation has been the driving force for much of population and economic growth that has resulted in the compromising of ecosystems services, one can turn the tables to switch that trend, stating that "we propose that the human capacity for innovation can equally be used as a positive force for supporting transformations toward global sustainability; indeed that is essential" (Westley et al., 2011). Leichenko and O'Brien (2019) argues for interrelated changes across three spheres, which will be presented beneath. This is the transformation theory that will be applied in the findings and discussion chapters to help answer the research questions by functioning as an analytical and theoretical framework.

### **2.3.3. An integrative approach**

There are several entry points and approaches to transformation, but the concept itself can be defined in a general matter as "significant changes in form, structure, and/or meaning making" (Leichenko and O'Brien, 2019, p. 180). Often, transformations can challenge and upset the status quo of existing patterns and "business as usual" sentiments. Representation of the multidimensional nature of transformation can be done through the exploration of three spheres, being the practical-, political- and personal sphere, where in this model, transformation is considered a continuous process involving interrelated changes across all three dimensions (Leichenko and O'Brien, 2019, p. 180). The three interrelating spheres portray how a combination of structure, meaning making and changes in form contributes to a process of transformation. This model recognizes therefore that transformation process cannot only be limited to one dimension but is a multifaceted process. Moreover, this also implies that deliberate transformations towards a sustainable, equitable and thriving world can be approached through multiple entry point for engaging (Leichenko and O'Brien, 2019, p. 180).

Of transformation, the practical sphere is the most common entry point for engagement, where sustainability outcomes are focused on through changes in form. In this sphere, activities and actions are often aimed towards presenting measurable goals and results, like for example climate change adaptation or the lowering of CO<sub>2</sub> emissions (Leichenko and O'Brien, 2019, p. 180-181). Efforts may for example include reducing meat consumption, and/or installing windmills and solar panels, just to mention a few. The practical sphere of transformation often comprises technology innovations but also practice- and behavioral changes which leads to observable outcomes. Suitable investments in improved management, policy incentives that



support behavioral change, transfer of technology or in research and development is often related to the feasibility of the transformation (Leichenko and O'Brien, 2019, p. 181).

For addressing climate change, practical transformations are fundamental. However, structural and systemic changes are needed to support the practical transformations, which is where the next sphere, the political sphere of transformation comes in. This sphere incorporates governance systems that shapes actions, investments and behaviors, cultural and social norms, and institutions. As Leichenko and O'Brien put it "it is in the political sphere where the rules of the game are negotiated and decided, where goals and outcomes are prioritized, and where conflicts and movements emerge to directly or indirectly influence systems" (Leichenko and O'Brien, 2019, p. 181). Examples one can bring forward here are encouraging energy saving taxes or regulations or negotiations and implementations of renewable energy source development in the middle of a competing political environment of priorities, commitments and goals, were the maintaining of jobs in regions producing fossil fuels can be one more concrete example. Though changes in formal politics might be important in some contexts in the political sphere, this sphere does involve more than that (Leichenko and O'Brien, 2019, p. 181).

The last sphere, the personal sphere, embodies the transformations that occur with changes in meaning-making at both an individual and shared level. This regard meaning of worldviews, values, beliefs and paradigms that form one's actions, attitudes and apparent options (Leichenko and O'Brien, 2019, p. 181-182). Being "subjective" dimensions that influence favored transformation approaches or strategies, as well as perceiving both individual and collective intervention. Prioritization of certain actions and dismissal of others in the practical and political spheres, can be explained by worldviews, values and beliefs (Leichenko and O'Brien, 2019, p. 182). The objectives or goals of systems are therefore influenced by the personal sphere indirectly. This includes whose voices and decisions that count, as well as who can and should benefit from a certain system (Leichenko and O'Brien, 2019, p. 182). The personal sphere shed light on the cultural and social construction of meaning that effect behaviors, rules and norms, including bringing attention to which structures and systems that are regarded unchangeable or fixed. In addition, social consciousness is acknowledged as important in transformation process in the personal sphere (Leichenko and O'Brien, 2019, p. 182).

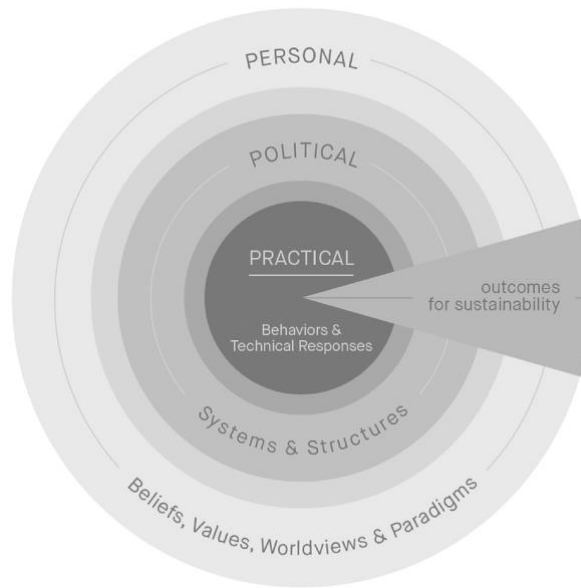


Figure 1 Three spheres of transformation. Source: Leichenko and O'Brien, 2019, p. 182

Though the three spheres of practical, political and personal have been outlined somewhat separate and may therefore appear to be, this is not the case. There is an experience of continuous interactions and connections of all three spheres in one's daily life (Leichenko and O'Brien, 2019, p. 182). One example Leichenko and O'Brien points this out is in the case of food waste. Here starting off with the practical sphere they state that transformations in this sphere directed at pronounced food waste reduction can be supported by the political sphere by transformations which may include changes in cultural norms associated with "use before" dates or investing in facilities for food storage by creation of institutions that facilitate such (Leichenko and O'Brien, 2019, p. 183). Moreover, transformations in the personal sphere can influence structural and system changes through for example change one's perceptions or beliefs of food leftovers. A combination of the three spheres of the practical-, political- and personal sphere, as just demonstrated, one can see how sustainability outcomes require social processes, typically involving all three spheres (Leichenko and O'Brien, 2019, p. 183).

### 3. Method

This study was conducted using a qualitative research method when answering the research questions of "To what degree and how has the adoption of SDG12.3 in 2015 and the measures taken to reduce food waste, contributed to food waste decline in Norway?" and "Why has Norway not yet a food waste law in place, and what difference could a food waste law make regarding food waste reduction?", with semi-structured interviews to get a more in-depth

understanding and allowing participants to answer more freely on the overall subject of food waste in Norway, which presented a varied array of answers and perspectives from the interviewees. In addition, literature, reports and governmental documents were reviewed.

### **3.1. Study area**

The area of study for this thesis – food waste, is both a global and a national problem. On a global basis it is estimated that one-third of all food produced goes to waste (Food wastage footprint, 2023). Like stated, this is also a challenge in Norway (Matavfall og matsvinn, n.d.). The reason why I chose to look at Norway regarding food waste, is that the work on the food waste law was just promised in the end of November 2022 (Riise, 2022), meaning that it is a subject that is being discussed and elaborated on as I am writing this. Making it super relevant to research and work on in times of global warming and climate change and in a world with economic deficits and inflation, increasing also Norway's numbers of people in poverty, covering both an environmental and climatic concern, as well as an ethical concern of letting edible food go to waste (Mortensen, 2021; Food wastage footprint, 2023). I am myself from Norway as well and wanted to look at something our own nation is working on regarding contributing positively to the environment and climate, in addition to responding to the sustainable development goals set by the UN, where goal 12.3 is relevant here as described in chapter 2 and which I will come back to in chapter 4 and 5. Focus was set on actors that had influence, knowledge and/or a specific interest of the area of food waste.

### **3.2. Sampling approach**

The selected sampling approach for this study was purposive sampling, where there is a direct reference to the research question(s). As Bryman et al., 2021 states, “Researchers select cases and units of analysis precisely because they will allow the researcher to answer the research questions in a way that is as meaningful and informative as possible” (Bryman et al., 2021, p. 378). Eligible participants were therefore chosen based on having direct influence regarding food waste in Norway and the law itself, or expressed interest and knowledge regarding the topic in some way, fronting it publicly and/or actively working on the matter by for example publishing research, articles or through information sharing to consumers and actors in the food industry. Meaning, eligible participants had to be able to speak on the matter of food waste more ground-based and preferably have knowledge on the work of the food waste law, this was however hard to know beforehand contacting different potential interviewees. Snowball

sampling became relevant here as well as some participants would ask me which kind of actors I was planning to contact next and would come with suggestions and help with contact information. Some would also refer me further to others within their organization or company that were more relevant than the ones I had contacted. Leading me to the “right” people. This is in correlation with how Bryman et al., 2021 describes snowball sampling as “a technique in which the researcher initially samples a small group of people who are relevant to the research questions, and those sampled then recommend other participants who have experiences or characteristics that are relevant to the research. These participants will then suggest others, and so on” (Bryman et al., 2021, p. 383-384). My supervisor also put me in contact with two of the people I interviewed. Totally, I ended up with 16 interviews, were in one of them, two participants participated, resuming to 17 interviewees of different ages and genders. Several of the participants take part in other arrangements and forums dealing with food waste, but their main workplaces are those listed here, as additional information could be too revealing and expose their identity. The interviewees can be grouped into different categories of: NGOs, Public sector, Private sector, Research.

Respondent	Gender	Category	Workplace
1	Women	Private actor	Throw no more x2 (app for reducing food waste)
2	Man	NGO	Framtiden i våre hender
3	Woman	Research	NORSUS
4	Woman	Private actor	Matvett
5	Man	Private food sector	Coop
6	Man	Food saver and distributer	Blå Kors
7	Man	Food saver and distributer	Matsentralen
8	Man	Private food sector	Nortura
9	Woman	Farmers organization	Norges bonde- og småbrukarlag
10	Woman	Private actor	Green House
11	Man	Private food sector	Norgesgruppen
12	Man	Research	Associate professor at NMBU and social geographer
13	Woman	Research	Senior researcher and social geographer
14	Woman	Research	Professor, VKM (vitenskapskomiteen for mat og miljø)
15	Woman	NGO	Foodsharing Ås and student

16	Woman	Public sector	Mattilsynet
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Secondary data are used in the findings and discussion chapter to support the primary data and fill out potential voids as the sample size of interviewees did not get as wide as first intended. The used secondary data consists of a variation of reports, journal articles and government documents.

### 3.3. Data collection

The data collection can be divided into two parts, the collection of primary data from the interviewees and the collection of secondary data from reports, documents and other literature. For the primary data, potential participants were contacted through email, mainly found on home websites of organizations and the like, asking if they would have an interest in participating in a semi-structured interview with focus on food waste in Norway and the coming food waste law. An information letter with a consent form at the bottom was attached to the email as well. For some organizations the joint company email was attempted at first with varying luck. Where I would try to find emails that went more directly to persons within the company as well. One of the participants was approached and recruited in person on campus of the NMBU university. If the invitation for an interview was accepted, day and time for the interview was agreed upon and I further sent out invitations for a Teams meeting which after some trials and error turned out to be the best solution online for meetings for my purpose. Two meetings were conducted in person, but as I sometimes had two meetings scheduled on the same day with two different actors, I found it easier to conduct the interviews online to reduce time limits and stress as participants offices were spread around Oslo and Viken and I live in Ås. The Teams service also has a transcribing function that allowed the interview to be transcribed simultaneously as it was recorded, though plenty had to be corrected manually. Moreover, I believe that questions answered to the theme of food waste necessarily do not have room to be “read between the fingers” so to speak, but is quite straight forward though still a complex subject. I was therefore confident that conducting the interviews mainly online would be satisfactory. As I had chosen to go for semi-structured interviews, all agreeing participants were sent an interview guide prior to the interview, except for one person, where I forgot to include it. This is a list of questions that needs to be outlined in an open way, encouraging and allowing the interviewees to communicate responses fairly detailed (Bryman et al., 2021, p. 425-426). The interview guide, see appendix 1, contains background questions to give context

to answers, a set of overall questions about food waste and a set of questions directed towards the food waste law. Some actors had questions “tailored” to make them more relevant to their field as well as some of the questions were not equally relevant to all actors. I worked on keeping the questions open-ended, some of them rather big, but it gave however the interviewee the possibility to answer the questions more spontaneously of what came to mind and in several ways. Other questions were asked outside of the interview guide if certain answers from the participants opened up to it, to get more insight. The interviews were all recorded with permission of the interviewees, some notes were taken in relation to almost all interviews with aspects that stood out, and the interviews were later transcribed and sent for quote check and approval. Each interview lasted between 35-60 minutes, depending on how the participants responded to the questions.

For the secondary data, as stated, several of the reports and articles were provided by interviewees with intent with an idea of being valuable to this study. These were reviewed to either see if they could feed into the data collected through interviewing and support findings, or add valuable data that was missing entirely to give a wider image to the food waste debate. Other pieces were collected through searching in the NMBU library base online called Oria or through Google Scholar, searching on key words depending on what I was looking for. The selected secondary data is a mix of various reports regarding food waste reduction work, journal articles and governmental documents on the same topic.

### **3.4. Data analysis**

The data analysis was divided into that of the primary and secondary data. A thematic analysis was applied for the primary data, while the secondary data was analyzed with either secondary analysis of data collected by other researchers or secondary analysis of data collected by government departments, depending on the type.

The thematic analysis used is more specifically that suggested by Braun and Clarke, described in Bryman et al., 2021. It has a theoretical and methodological transparency in addition to being “sympathetic to the emergent properties of the data and those themes of interest that are actively chosen by the researcher” (Bryman et al., 2021, p. 538). The reasoning behind choosing this analysis is that when interviewing, I noticed a pattern of certain themes being repeated by different interviewees to the same questions. Therefore, I decided to build on that in my coding and data analysis. “Coding is a way of thinking about the meaning of your data and of reducing the vast amount of data that you have gathered” (Bryman et al., 2021, p.

535), meaning that it is not the actual analysis but an important part of it (Bryman et al., 2021, p. 535). The approach that I decided to go for regarding the thematic analysis, is that suggested by Braun and Clarke, a method involving six-stages described in Bryman et al., 2021. Familiarization, initial coding, identifying themes, reviewing themes, defining themes and lastly, evidencing themes (Bryman et al., 2021, p. 538). First, familiarization here dealt with transcribing my interviews. Second, initial coding was done through open coding where one apprehend the surfacing properties of the data and further move to doing more theoretical coding of concepts that are becoming more relevant. Third, identifying themes. Here one compare and contrast any emergent codes both with earlier codes as well as with theoretical concepts of interest. Allowing one to make interconnections between the data by elaborating the properties of emergent themes if any. Fourth, reviewing themes. Themes are further developed by as described by Bryman et al., “combining them into high-order constructs and by identifying and then searching for sub-themes that help to further articulate their analysis” (Bryman et al., 2021, p. 538). Fifth regards defining themes. Here the analyst develops a narrative which describes properties of the emerging themes and sub-themes, indicating potential relations or non-relations. Lastly, the sixth step concerns with evidencing themes. Here, one uses the evidence provided by the codes underpinning the themes to demonstrate the analysis, as well as aiming at linking the themes to the wider literature and theory (Bryman et al., 2021, p. 538). The reviewed documents, journals and reports were analyzed in a manner of seeing if they could support findings from interviews or give additional essential information for a more rounded image.

While going through findings I kept the research questions and transformation theory by Leichenko and O’Brien in mind as guidelines of thinking when assessing if and how preventative and reduction-based work of food waste can have something to say in limiting this in Norway as means in transforming toward sustainability, further using it as a theoretical framework in the discussion (Leichenko and O’Brien, 2019). Circular economy thinking as a means of food waste reduction was kept in mind as well.

### **3.5. Ethical considerations**

To secure ethical considerations of this study, there were several steps taken. Prior to the data collection, an application to the NSD (Norwegian Center for Research Data) with information regarding the study was sent in for approval. This is something all NMBU students must apply

for if conducting interviews, securing the interviewees privacy and confidentially when gathering, processing, storing and sharing data. As the interviews for this study did not include or needed any sensitive information from the participants, the application was manually approved. Further, all contacted protentional interviewees were contacted through emails including an information letter to the study and asked to sign a consent form where the candidates were given the option to be referred to by name and position as well as workplace, or anonymizing their name but disclosing position and work place. I was flexible however if they did not want to have their workplace mentioned either as it could be too revealing, suggestions were made to how the participant could be referred to and where we came to an agreement that the informant was comfortable with. This was later change as all interview participants ought to be anonymous. All participants were asked if it was ok to be recorded while interviewed, either during the Teams meeting or if the interview was conducted in person. Transcripts of the interviews were also sent to each participant for approval. Securing quote check. Lastly, I would like to mention that the views expressed by the interviewees in this thesis are of those of the interviewees and therefore do not necessarily reflect the views of the organizations or the workplace they are part of.

### **3.6. Limitations**

Choosing food waste in Norway with more specific focus on the coming food waste law had both its perks, namely being very a current topic due to that the law was given a “yes” from the Norwegian governments late November and had therefore not been researched (Riise, 2022). However, it proved to have some downsides as well for the same reason just mentioned, in that answers given to certain questions I had about the law specifically could only be answered from a hypothetical point of view as at the interview-round centered around January and February, the process of the food waste law was only in its beginning stages were a working group and a sub-group was selected in February (Matsvinnutvalget, n.d.). Definitive answers on what the law would look like and fold out could not be secured. However, several of the interviewees are a part of the now working-group of the food waste law or have long-years of experience with the topic in different ways, giving weight to their statements. Some did not want to give answers about the law altogether as it would only be based on perceptions from their part. Despite this, other valuable information regarding food waste on a more overall level was shared.



Further, there were some technical difficulties at some of the Teams meetings where the sound was somewhat bad or it was hard to hear certain specific words being said, but I sent all the participants transcripts of the conducted interviews for approval and giving them a chance to alter and clarify if something was unclear. Lastly, I would like to mention some problems of non-responses. For some cases it was hard to find candidates that had time to participate in interviews or did not respond at all resulting in that the sampling did not get as wide as first planned. Further, some that initially accepted the request of an interview did not get back to me later on. Time limits made some restraints as well, as I had to proceed with the thesis process. At some point I had to draw the line in contacting new people. However, the interviewees ended up including people from various sections, and with various standpoints on food waste reduction.

#### **4. Contextualizing food waste in Norway**

In this chapter, general information that informs the research topic will be outlined. Hence, food waste will be elaborated on in the context of Norway to give an image of the development in these regards and to explain why a food waste law has become a part of the discussion as a measure in working towards reducing edible food going to waste. In addition to acting on the sustainable development goals set by the United Nations within Norwegian borders (Ministries, 2016).

As stated, food waste is both a global and national concern, in Norway included (Matavfall og matsvinn, n.d.). Norway has both signed and ratified the Paris Agreement in 2016 and has committed on working towards the UN Sustainable Development Goals 2030 agenda by regarding it and the 17 SDGs as “a transformative global roadmap for our national and international efforts aimed at eradicating extreme poverty while protecting planetary boundaries and promoting prosperity, peace and justice” (Ministries, 2016). For this thesis Sustainable Development Goal 12 Responsible Consumption and Production with target 12.3 is like stated of relevance, stating that “By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses” (Sustainable, 2023). Commitment to acting on climate has been enforced through a law on climate goals (Klimaloven) where goals for both 2030 and 2050 is included towards the transitioning into a low-emission society within 2050 (Lov om klimamål, 2021). Climate goal for 2030 translates “The aim shall be that greenhouse gas emissions in 2030 are reduced by at least 50 and up to 55 per cent from the emission level in the reference year 1990” (Lov om klimamål, 2021), mirroring that of halving food waste per capita by 2030 (STG).

Food waste was on the agenda in Norway before these agreements and goals came into place however, all the way from 2007 but where 2010 might be seen as a particular starting point (Szulecka and Strøm-Andersen, 2021). Through the ForMat-prosjektet (literally “ForFood-project) the authorities have collaborated with the food industry since 2010 in putting food waste on the agenda in Norway to reduce and prevent food waste (ForMat-prosjektet, 2015). The idea for this five-year long project (mainly from 2010-2015) was envisioned in 2008, created in 2009 and in 2010 the mapping of food waste in large parts of the value chain started, with the final report ready in 2016 (Schrøder et. al., 2015). This project also reduced food waste and put it on the agenda by informing consumers and carried out networking projects between central actors in the food industry. A growing recognition of the fact that edible food in large quantities were being thrown away inspired the start of this project, where this food could profitable be given to people in need instead in addition to reducing environmental impacts (Schrøder et. al., 2015). To strengthen the work financially and professionally, and to put food waste on the agenda in the value chain on an overall level, Matvett was established in 2012 as a measure. Financed by the business life and the authorities with a 60 to 40% ratio of the costs (Schrøder et. al., 2015). Matvett is “the food and catering industry’s company to prevent and reduce food waste and collaborates on behalf of the industry with authorities and research environments” (Schrøder, n.d.). Several individual companies and organizations have collaborated fruitfully, the ForFood-project final report states, through carrying out diverse awareness-rising activities and communication measures. The establishing of the Food Center (Matsentralen) in Oslo in 2013 is a result of this work, so is the labeling of a large number food products with “Best before” instead of “Use by”, which has again later in recent times developed into “Best before, often good after” or “Best before, not bad after”. Along the way, the project and the problem of food waste has gotten a lot of media attention, further pushing the agenda (Schrøder et. al., 2015).

Further on in 2015, an agreement of intent on reduction of food waste was entered by the authorities and representatives from the food industry. This agreement was replaced by the so-called Voluntary Industry Agreement on Reduction of Food Waste (Bransjeavtalen) signed by five departments in the government and twelve industry organizations in 2017. This agreement is also supported by a number of other companies through a declaration of support (Landbruksdirektoratet, 2023). The goal here is to halve the food waste in the entire food chain within 2030 with a division of sub-goals. “Based on the UN’s sustainability goal 12.3, an overarching goal is set of a reduction of food waste in Norway by 50% by 2030. This is calculated for the entire food chain measured in kg per person” (Landbruksdirektoratet, 2023).

This goal on reduction within 2030 is further divided down to two overarching sub-goals of a 15% reduction within 2020 and a 30% reduction within 2025. These goals apply to all the parties of the industry agreement as a whole. Reduction of food waste must be done throughout the food chain and all the way up the consumer link in order to achieve the set reduction targets. Another goal in this agreement is that food waste does not shift from one section to another (Landbruksdirektoratet. 2023).

KuttMatsvinn 2020 (literally CutFoodWaste), is another project working on reducing food waste, though in the catering industry in Norway. This was a four-year project where the idea came in 2016 and came into live and was established from 2017, with the main purpose of mapping out and reduce food waste with participating businesses. Participating actors were representatives from restaurants, hotels, public sector, canteens, service trade and bakeries (Schrøder, et. al., 2020). As the description above demonstrates and the Directorate for the environment states as well, there has been done substantial work on mapping out food waste in Norway in the last years in all parts of the food chain, from the starting point of producing the food and all the way to it being served (Matavfall og matsvinn, n.d.). Despite the collaborations through these different projects just mentioned, preferences or a wish to discuss a food waste law have been expressed for by for example NGOs and politicians and a parliamentary majority (Szulecka and Strøm-Andersen, 2021). One argument in favor of the law is that the work on food waste reduction is not going fast enough (, which will be elaborated on in the findings as these frustrations are not without reason. November 2022 saw a turning point however, where the drafting of a food waste law was promised, and a working and reference group was chosen in early February of this year to discuss how to best approach work further into reaching the SDG 12.3 target (Matsvinnutvalget, n.d.). This is where the findings come in.

## **5. Findings**

This chapter will outline the findings from data collection in relation to the two selected research questions regarding food waste reduction in Norway. Several themes came up during the interview-rounds and in the secondary data that feed into the analysis towards answering the research questions. The presented theories in the theoretical framework as well as the contextualization will serve as support and tools to discuss these findings. The findings will be divided into two main sections, approaching the findings of the two research questions being “To what degree and how has the adoption of SDG 12.3 in 2015 and the measures taken to reduce food waste, contributed to food waste decline in Norway?” and “Why has Norway not

yet a food waste law in place, and what difference could a food waste law make regarding food waste reduction?” where the findings being a combination of primary and secondary data will be presented under the sub-headings “Self-regulating transformation” and “Governance-regulating transformation”.

## **5.1. Self-regulating transformation**

As the first research question suggests, Norway has committed to adapt the Sustainable Development Goals set by the United Nations where this thesis is focused on SDG 12.3 towards reducing food waste (Sustainable development goals, 2023). This commitment brings forward questions of why regulations or initiatives of reduction are necessary, reflecting that food waste is an issue in Norway as well. The reason for this – meaning reasons for food waste - can be based on a variation of causes which can be seen from the responses given by the interviewees.

### **5.1.1. Challenges in the political and personal sphere**

Despite increasing food prices during the past year or so, the interviewee from the farmers organization believed that food has been too cheap in Norway, so did one from the private food sector category and one from research. This was mentioned by another from the private food sector additionally, where the increased prices one has seen lately might cause people to think more about what they buy and eat what they have. The farmers organization participant stated that,

*“I think it’s a bit harsh to say right now when there is so much focus on increased food prices, but I think food has actually been cheap in Norway. Compared to many other countries, we spend very little of our income on buying food”. Adding as well that “and then there are quite a few people who have a slightly funny view that buying cheap food is actually a greater pleasure than buying good products” (Farmers organization interviewee).*

3 for 3 campaign was also seen as a contributing factor to food waste were people think that they are saving money but perhaps buy more than they actually need. That quality food can at times have poorer durability was mentioned as a potential cause as well, even though it might have a greater nutritional value, people tend to go for the food that keeps better longer (with lesser nutritional value and poorer quality), causing food to pile up. This again was according to the farmers organization interviewee connected to consumer awareness.

All respondents, in one way or another, expressed that the biggest challenges to food waste in Norway and why food is wasted is due to lack of knowledge and awareness regarding food with the consumers. This included how to handle, cook, store food as well as how to use

leftover foods. Bringing this kind of knowledge forward early through for example educational systems was mentioned by several as a measure in increasing knowledge on how to handle food at all levels for the youth growing up by starting of early on (research, food saver/distributor, private actors). Lack of planning when going to the store was repeated as well.

On a food production and retail level, from a commercial standpoint there were other challenges that were expressed. Others were expressed due to expectations from consumers of full shelf and wrong orders, where one of the respondents from the private food sector stated that:

*“In our part of the value chain (food waste occur) due to wrong orders. Ideally, all shelves should be empty at 11 pm in the evening and the store closes. But that does not happen, and there are large volumes of food that has to out to 1200 stores every day, so to hit exactly on the last bread or the last packet of meat-topping? Is not simple. So having increasingly better systems for forecasting, ordering, automatic product replenishment (is something) we work extremely hard with. The overall point is that every product that is thrown away or not sold is a loss for us”.*

Emphasis was further put on that *“we have no interest in throwing food”*. Moreover, there are some elements of regulations that affect food going to waste as well. The example of eggs was brought up by several (private food sector, public sector, research), where Norway has to follow EU regulations due to Salmonella. For commercial packed eggs, meaning store-bought eggs in Norway does not have this problem of Salmonella, but as Norway have to follow EU regulations, stores have to follow these and are not allowed to sell eggs when the statutory expire date has expired. Quality requirements was another thing that could lead to food waste. Both those “set” by the consumer, but also by the stores themselves of for example requirements of the appearance of fruits and vegetables which would not necessarily lead to a lot of fruit and vegetables being wasted in the stores but earlier on in the value chain (private food sector). News launches of new products (hard to know if it will be a success or not) and campaigns when there is a shift in seasons or holidays like the summer which Barbeque-season, Christmas, Easter and so on was mentioned as a factor as well of food going to waste because one order in more, because one don’t know how much will be sold.

The participant from the farmers organization noted that now one has a lot of specialized foodstuffs, or specialization related to single goods like for example lamb chops, while “back in the day” one thought more holistically where for example if you had an animal, *“how do we use the whole animal and how do you see the resources you have in context”*. As a result, consumers get a more distant relationship to the food and certain parts of an animal is more

easily tradable were perhaps more resources are lost along the way. Another challenge stated was that the store buys in too much goods to have filled shelves for people to find everything they need, as well as making it more inspiring, which drags in more costumers. Too many stores at one place were mentioned as another push factor to food waste, due to the creation of competition amongst the stores, again buying in more goods than there is a market for.

One last challenge that will be included, was that of hidden food waste on the primary level. Where there is food that never reach the storage, store or the home due to for example vegetables that are ploughed down, laying hens and baby goats that are euthanized, salmon that are not slaughtered and therefore are not brought into the food chain, causing large volumes of loss and large resources that are thrown away (Private food actor, private actor, NGO). Reduction of food waste is however something one is working on reducing, as seen in the section below.

### **5.1.2. Transformation in the practical and political sphere**

Szulecka and Strøm-Andersen (2021) states that “Private industrial actors and organized interest groups are increasingly charged with or take initiative to design regulation by and for themselves” (Szulecka and Strøm-Andersen, 2021). This can in particular be welcomed when dealing with environmental and climate change governance being a complex issue due to consensus difficulties of definitions and frameworks used for evaluation (Szulecka and Strøm-Andersen, 2021). The food waste reduction challenge is not an exception, where the government in this case, have to rely on the knowledge and data the industry itself possesses and produce, also further on with the implementation of the food waste law which can be seen as something made available through the Industry Agreement. The more self-regulatory governance of food waste reduction with focus on the Voluntary Industry Agreement on Reducing Food Waste has accomplished various things through adopting the SDG of 12.3 as the guiding target (Ministries, 2016) where some have set internally more ambitious targets (private food actor). Interviewees observations on if there has been food waste reduction change especially since the SDG came to place, will be looked at too.

First of all, as stated, Norway’s response, or perhaps more precisely, the industry’ response to the 2015 SDG 12.3, was the creation of the Voluntary Industry Agreement on Food Waste Reduction (private actor;Bransjeavtalen, 2021). The overall guiding goal here was and still is, that stated in this target being “By 2030, halve per capita global food waste at the retail and

consumer levels and reduce food losses along production and supply chains, including post-harvest losses” (Sustainable, 2023; Miljødepartementet, n.d.; Ministries, 2016). Estimates done on food waste in 2020, shows for example that a bit under 770 000 tons of food waste was thrown where about 450 000 tons of this was edible food (Matavfall og matsvinn, n.d.). Though being a large amount of food going to waste, reductions has been made. The newest report, shows that the food industry has reduced their food waste by 14% jointly between 2015 till 2021, though being below the set sub-goal of 15% reduction within 2020 (Stensgård et. al., 2023). Here, it is the household level and food industry category (as in the Norwegian word *matindustri*, not the industry as a whole) that are the two categories with the largest amount of waste in the mapping of the food industry (agriculture, sea food, food industry, wholesaler, serving, KBS (see introduction), teaching and care, grocery) and the consumer link. Based on 2020 numbers for the consumer link, teaching and care, seafood and agriculture (Stensgård et. al., 2023). These number comes in addition to the reduction of 14%, from 2010 to 2015 which the food industry, the wholesale and the grocery trade achieved through the ForMat project. Grocery and wholesale are two categories that are further ahead with the reduction, where grocery has a 19% reduction (Stensgård et. al., 2023). Moving on from numbers, there are other measures that has come from working on food waste in Norway as presented by interviewees, however also before the SDGs and the industry agreement came.

One from the food saver/distributor category said that the establishment of eight food centers around Norway is a result of the industry agreement and collaboration between the authorities and the business life. However, the interviewee hope that the food centrals get more of the surplus food, though wanting that the surplus decreases in volumes, but that there will be a great potential to donate more of the food than going to biogas (Food saver/distributor).

The farmers organization interviewee noted that food waste is something that has been on their agenda at all times due to the holistic way of thinking, but that she had noticed that it is more generally on the agenda and that more people are talking about it. The farmer’ organization is also a part of the voluntary industry agreement (as is all three representative from the private food sector through the grocery trade’s environmental forum (*dagligvarehandelens miljøforum*)), stating that the agreement has pushed forward to find new ways of utilizing resources where it has been talked about unripe vegetables and that more can be used for juicing and pickling. Changes one from the private food sector noted was that he has seen a large change from when they started with discounting food that was about to reach the expiration date, where one had a stiffer attitude towards that both from consumers and stores themselves that it might look a bit untidy. But now it has changed to be a popular thing that

people appreciate, where consumers might get a good deal, and less food is wasted (Private food sector).

One from the private food sector said that *“Waste problems are always on the agenda. But it is actualized and put more into the system and was worked on on a wider front with that initiative. And I would argue that Matvett would never have existed without the grocery industry and the grocery trade's participation and pressure on it. It was groceries that took a lot of the load, at least initially, and now eventually kiosks, petrol, catering, hotels and other parts of the food industry come along. And of course the primary link, both the blue and green sector, is included. So, the work that has taken place under the auspices of Matvett through the industry agreement has of course been important without a doubt”*.

Other positive measures that were noted on were campaigns towards the consumer of signing with “see, smell, taste” in encouraging the consumer to use their senses before throwing away food (Public sector, research), but one also need to know what to look for, smell for and what the right taste of a good is, where one NGO noted that it is a useless campaign is one does not have this knowledge. The farmers organization participant mentioned discounted prices as a good additional measure, but that it seems as if stores are starting to pull back a bit on it from 50% off, to less discounts. But that it continues to be a solution that saves food that might go to waste. A shift in date stamping was mentioned that has had and has contributing effects, so was the use of app-arrangements (private food sector, private).

The developing better closing mechanisms for food products could be something to look even further into (private food sector), moreover, thinking about how food waste is handled was considered by another private food actor as an area that should be looked into further to get more circular solutions, like using food waste for insect feed and later animal feed, or directly give it to animals.

When asked if the follow-up on and the establishment of the industry agreement has been good enough, interviewees who had sufficient knowledge of it elaborated. One private actor said that the framework of the agreement is good, but the time has come to evaluate the agreement as the main report of the 2015 to 2020 is ready, showing different development amongst the food sectors. The report shows that collectively for all sectors one has a 10% reduction, 5% less than the goal set for 2020. Looking at the sector where the deviations are the largest, being the food industry and household level, is therefore needed. Finding the largest barriers that cannot be solved by the actors must be explored further to see if one can find better solutions and see if the industry agreement is sufficient enough or if one need to implement



other instruments. Emphasizing a wish to tighten up the voluntary industry agreement and potentially develop it further before moving onto a law. Also trying to recruit more and get the waste down from those who sign the agreement (Private actor).

Another private actor was more skeptical as it is those who want to join it that does, and that she was not sure how representative the joined actors are. One can expect that there are large amounts of food waste and dark numbers for those not involved, which might contribute to weakness of the data and the reality description for time not spent on food waste reducing means, lacking perhaps systems for mapping out one's food waste, that in itself can be challenging. But more so for those not following a specific food reduction target. But that it's good that progress is made. One from research said both yes and no. Yes, because it works better than much out there, having yearly reporting and mapping on food waste which has worked very well. It also includes measures of for example considering food going to animal feed as food waste, which is not the case in the EU. But if it's good enough, no, as one has not come as far as one should have towards halving the food waste within 2030. A lot must happen going forward to reach the goal which can be done through the agreement, but the speed and quarters needs to increase.

One NGO said that they view it as good, but not sufficient. Being well established for those who have signed, wanting to work on their food waste. However, noting that it seemingly has hit a wall now with recruiting more actors. Where one could imagine that if one is not part of the agreement by not, it's an active choice. What is needed now is stricter demands as well as getting more actors to join, however, stricter demands might work against recruiting and where one might lose members as well. Sharing of data and different measures for different actors was considered positive, but there are no sanctions if you don't (NGO).

### **5.1.3. Beliefs of incentives for food waste reduction**

When asked if there has been missing incentives to lessen food waste incentives that were considered lacking was incentives for donating more where one could make it more profitable in a way to donate (food saver/distributor) and looking at regulations of donations from cruise ships and the like regarding VAT (private food actor, research). One should also look at lessening negative incentives of overproduction, for example with buns at a gas station where 90% more buns are sold if they lay in piles, but you might have to waste 10% of them, but as one sell much more, it's worth it. Being an example where one has a planned waste where it pays off to waste for the businesses (research). One private actor stated that "*Yes, you can safely say that there has been lacking incentives to waste less food*", feeling that it has in a way become

incentives to waste food, due to specialized standardized requirements to ensure food safety, though noting that she understood that one needs to ensure that too. But further stating that:

*“As a private consumer, you can use a great deal of discretion by using your senses to discern what kind of food is good, what is not good, and the opportunity to exercise that type of discretion is absent. With, say the rules which should always be very well on the safe side. It can also be said to be a regulatory incentive for food waste to be generated. Also, when there is an absence of requirements to cut food waste and the food has such a low value that for many it may be economically profitable or at least not a big loss to throw away the food instead of taking the time to take measures, then I can understand that a lot of food is thrown away. This was indeed on the food value chains side, while on the private consumer side, one can say that when the individual Norwegian on average throws away just over 40 kilos of food a year, there may also have been a lack of attitude-creating initiatives. It is a major social problem that we waste resources on a planet in a society that has a scarcity of resources”* (private actor).

Further on, a new sorting requirement was enforced January first of this year on all Norwegian public and private institutions and businesses producing household-like waste, where one of the requirements is that these institutions and businesses have to sort out and separate food waste from plastic waste and deliver this for material recycling (Thorp, 2022). The interviewees were asked if this could have something to say for food waste reduction. At the time of interviewing, the actors that this requirement will consider still lacked some guidance/direction of how this would be implemented. Answers reflected this, but that it could potentially raise awareness of the amount of food going to waste but serving as preventative to food wasted could not be secured (private actor). One private food actor did not believe it could contribute to food waste reduction but that it will contribute to better handling of food waste (as in waste) and get cleaner fractions that can directly be used in animal feed production directly or through an insect solution. Another private food actor did not believe it could contribute to food waste reduction at first, but that if it means that much more of the food has to be separated from the plastic wrapping, it might motivate stores to discount more food to save time and efforts of this. One NGO viewed that it could be positive for food waste reduction as it increases the cost of throwing food as someone must manually separate food from plastic, sometimes clean the packaging as well. Sanctions needs be strong enough though, holding the actors accountable if not separating. One from research held this as a hypothesis too as a potential bi effect of the new regulation, where stores would rather prep the food for donations. Stores might be incentivized to create packaging solution that are easier to open, but might decrease the durability of food again, contributing to more food waste. Negative effects could

also occur in the context of dumpster diving where the food might be harder to save if it's covered in gravy for example. Dumpster diving is a discussion in itself however, which will not be deliberated on.

## 5.2. Governance-regulating transformation

Szulecka and Strøm-Andersen (2021) states that “self-regulatory mechanisms underpinned by state intervention can prove more resilient and effective than self-regulation in isolation” (Szulecka and Strøm-Andersen, 2021). This can mean that a law constructed as an extension of ongoing voluntary work for example might serve even further results. This is something that I will come back when looking at findings of what the law could include and look like. As stated, there is an ongoing discussion of a food waste law in Norway towards minimizing food that could be eaten by humans going to waste. One of the respondents from research withheld from answering questions about the food waste law as it is not in place yet and therefore found it hard to say something research-based about it. Another in the “research” category did not have knowledge about the law, but responded where he could from a researcher standpoint.

There were some varying answers amongst the respondents that responded on questions regarding the food waste law and in being in favor or not. Two private actor respondents, two from the foodsaver/distributor category, two NGOs and one from research stated that they were in favor of a law, another respondent from research did not have any specific opinion on the matter, while a third from research said that it could be something to it stating in the context of creating change towards food waste reduction that “*a law, why not, can start with that*”. The rest did not want to express either or as one does not know how the law will look and what it will grasp, and that it therefore was too soon to give a firm answer on the matter.

One of the private actors stated that they are in favor of the law and that it is very good that is coming. But that it “*would be desirable that it would not be necessary but that it may turn out that it is. That it must cost to throw away food*”.

Respondent 10 (Green House) “*Yes, I'm very in favor that there is coming a food waste law. That there is coming a legal authority to make industry actors take accountability for reduced food waste*”. One of the food saver/distributor respondents said “*we have been quite clear on that we think that the idea of a law and with extended producer responsibility is good*”.

One from the research grouping noted that she was in favor of one form or another of a regulation that contributes to prevention of food waste. But also stated that did not have a

particular opinion if that should be done through regulation or the industry shall solve it themselves. A public sector respondent stated that “...we have to see what the regulatory process contains” “...it is too early to say something about if we are in favor or against such a law before we see the draft of it, but we are going to contribute into that regulatory process with formulating it”. Another private actor answered the same and also added that barriers for food waste reduction had to be looked on by

*“what has been achieved, ...which barriers can be solved already with the trade agreement (the voluntary industry agreement), which barriers do we have to solve by perhaps tightening the trade agreement, developing it further? And that there may be a barrier where you think that you are unable to solve with enhanced measures, but that you then have to lift it into a food waste law”. “I am very much in favor of that we get time to work both thoroughly and systematically focusing more on the content than on having a law”.*

One person from the private food sector was a bit more on the skeptical side as well stating “what we have said from both our side and from the industry’s side is that we think it’s a big strange to somehow legislate a behavior that we basically try to avoid for all it’s worth. So, we don’t quite see how a food waste law will contribute, necessarily”, but also noted that the discussion around a food waste law contributes to raising awareness and a further dimension in the debate which is positive. Another respondent (private food sector) answered

*“when someone say we are for or against a food waste law, and no one has suggested the content, then it is completely impossible to say that we are negative or positive. ...and now we have an industry collaboration and ongoing work through the industry agreement where a food waste law should support and strengthen that, not find its own ways”. Further he states that “it is better that someone sets a goal and follows up on that goal and that the business sector manages to find the most appropriate solutions for it. So, initially, we may have thought on one side that a food waste law is a bit redundant in relation to the work that is now, at least what er see going forward, but at the same time, it cannot be taken lightly that a little extra pressure through a food waste law can certainly be good”.*

A respondent from the farmers organization stated that “I’m a bit ambivalent about this food waste law. It really depends on how it is designed”. And lastly, one respondent from the private food sector did not see how a law could have an effect on their areas of challenges and moreover stated that

*“We think that the measure that is here with the declaration of support (to the industry agreement) should be allowed to work. Because as I said, we don’t know what a food waste law is going to look like. We also do not know to whom it will apply. And if a law comes into conflict*

*with what we are possibly working on today, which we think is important via the declaration of support, then it can be unfortunate, because then the law will win. So, we think perhaps that a food waste law will not solve the challenges associated with food waste. The largest share of food waste occurs with the consumer, and the law will not apply to them.*

Answers as one can see was on a spectrum of directly positive to the law, unsure and on the more skeptical side.

### **5.2.1. Personal beliefs**

There have been multiple rounds on the discussion if Norway should follow in line like France and Italy for example of getting a food waste law (Szulecka and Strøm-Andersen, 2021), where frustrations have been expressed for its lagging (research, private actor) (Szulecka and Strøm-Andersen). The answers were somewhat divided when asked about why Norway has not a food waste law in place. A respondent from the private food sector stated that he does not share the opinion that it has taken long to get the law in place, stating that they believe that they are going to reach the goal of 50% reduction within 2025 (where the common goal is within 2030), but that this is not the case for the entire industry as a whole. Political parties have meant that a voluntary agreement is a good way to work towards reducing food waste and has created results though not flawlessly. It has therefore not been such a big drive from the authorities to create a food waste law. Moreover, stating that *“from our side there is not a big need for it (law). But again, if it is designed in a reasonable way and gives more pressure for us and others, we can be positive”*. This reflects somewhat the thoughts of one of the NGO’s on the matter, of optimism of the industry agreement and to give it some years to see if it worked and is sufficient, but one the other side stated that the law should have been here already as the were several rounds of Parliament voting in favor. Lobbying against the law was seen as one cause and food industry actors not wanting the regulation as it will incur some economic cost to them but noted that:

*“We believe that the economic cost is so small compared to the environmental benefits and it’s also their responsibility to incur the cost which is currently in externality for the activity which they’re profiting off of”*. Moreover, *“seemingly some bureaucratic actors have used their power to slow down the process as much as possible because they are not keen on it”*.

but that one now has gotten a proper governmental order for a draft of a food waste law where the process of slowing it further will be harder, as well as lobbying against it silently.

One private actor was clearly frustrated by the halt of the law, that it is provocative that it has taken this long especially considering the parliamentary majority for the law being undermined. A food waste law was also a prerequisite for the then sitting Minister of Agriculture and Food from the Christian People's Party (2019-2021), Olaug Bollestad, to be a part of the governmental cooperation under Erna Solberg. She was, however, also unable to start the law drafting (private actor). Moreover, the private actor believes that a widespread lobbying is the cause as there was not democratically decided to stop the work of a law. Lobbying that is inaccessible to most people, of great powers that might be afraid of loosing financially and therefore does not want it, mirroring what was said by one of the NGOs.

One of the participants from research said that she understood that it takes time to investigate if a law is the best way to reduce food waste and considering if there are any other ways to achieve food waste reduction first. Moreover, one has to figure out which sanctions to include if people are not following the law, which is a big thing, getting everything in place and understanding all the effects it might have, stating that *“it has to take time. It has to be well thought through to become a law that people can follow”* (Research). Further, one of the food saver/distributor interviewees held the same line thought stating that:

*“introducing laws in new areas is a rather extensive thing to do and it takes time. In a way the whole society need to mature a little. A law should not be pushed forward by a tiny minority. It must be pushed forward because the majority agree that they want some regulations to deal with, and that takes time”* Food saver/distributor).

### **5.2.2. Systems and structure**

Views of how the law should be constructed and what the content should be, opened up to a variation of answers depending on the participants focus. As these interviews were held early on in the law process, it was hard for several of the participants to say something tangible, things listed here are therefore to be considered initial ideas and thoughts on what a law could consider, what to think of when discussing the food waste law and which working areas it could possibly comprehend to reducing food waste. Opinions might have shifted since the interviews, but the most central aspects will be presented here to get an image of focus areas.

At the very foundational terms, meaning what is considered as food waste, included in the working definition of food waste, a private actor and an NGO held sentiments of wanting a discussion around widening the definition of food waste to include more than what the working definition of the Voluntary Industry Agreement is basing the food waste reduction work out of. One private added that one should create incentives for the value chain on working on hidden

food waste and give credit to those who does. Moreover, one from private food sector shared the sentiment of looking towards the challenges regarding hidden food waste stating that “I hope that the law covers the entire value chain, ... it is produced food that never reach a storage. I believe that the law in a sense must embrace the whole value chain from farm to table”. Another private food actor stated that he hopes that the food waste law will consider how one collectively can contribute into involving the entire value chain, a food saver/distributor the entire industry, where a private actor talked in the same lines of getting more actors on board on work towards food waste reduction and reporting on their food waste to generate more data, perhaps through an obligatory requirement for reporting. One from research emphasized a reporting system through a binding law.

The most repeated thought, was that the law should be an extension or a supplement to the already ongoing work, strengthen it and not work against that in any way (two private food actors, two private actors, food saver/distributor, research) where the Voluntary Industry Agreement could function as a basis and how the food waste law could function constructive in the interaction with the agreement. Some specified that it could be up to the industry itself to figure out how to internally reduce food waste. One private food actor expressed preferences of strengthening incentives of reducing food waste to ongoing work rather than creating a law.

Notions were made that the law should be carrot-based not whip-based where some used the Italian (carrot) and the French (more whip) food waste law as examples. Stating that the French law was not something to implement in Norway as it would not work positively in Norwegian context, agree on by private food actors. The Italian would neither function here (research). Sanctions or a sort of punishment could be implemented if set goal are not achieved (research, private actor, food saver/distributor, private food sector). One participant from the private food sector said that the law should generate greater drive to introduce measures, not being detail oriented. Instead “the authorities set a target for how much to collect of something. And then it is up to the industry to find solutions to that. Then you are measured and punished or rewarded based on the achievement. It can be a model to work from”.

Focus was also put on that the law must not result in that the food industry suffers financially, this sentiments was shared by participants from the food saver/distributor and one of the NGOs. These two, in addition to the other participant for food saver/distributor would like to see a law that strengthen the facilitations for donations of edible food that is at risk of going to waste. A private food sector participant mentioned that it might be time to revisit previous challenges regarding donations and create functioning systems at least in the bigger

cities and more urban areas. But that there is a lot that needs to get in place for that to function, regarding freezing of food, traceability and who are responsible for the food.

Prevention work on the occurrence of food waste in the first place was highlighted as well by several, where overproduction was one aspect to consider. Production systems were brought up in this case (Food saver/distributor, NGO, private actor). Participant food saver/distributor expressed that a goal should be to not produce too much, NGO participant focused on that population needs should exceed population wants regarding food, while one private actor participant talked about how one should incentives the markets to bring in by-products and offer for example not just the finest pieces of meat, but also pieces of a sheep for example that are not as culturally accepted, to decrease food waste. Creating a collaboration between the food chain and consumers to reach the goals of 50% reduction, through attitude-creation changes and knowledge raising, and where the value chain and food industry make it easier for the consumer to reduce food waste. Moreover, one private actor talked about how wasting less food would prevent depleting the soil for nutrients and prevent having to increase food production due to an increasing population, prosperity and meat consumption, by taking full advantage of the food that is already produced. The other private actor participant talked about how one should work on changing the norm around food where the concept of “just enough” should be the new norm, where one move away from always wanting more, shifting to a “less is more” mentality, where one might consider jointly lowering the sometime abundant amounts of goods in retail. In addition to learning from previous mistakes of producing more than needed.

Lastly, to look at how food waste is handled when it reaches the point of a trashcan was considered important too by participants of the private food sector, research and one of the private actors.

Summary outline of findings

Category	Included in the law (key aspects)	Most repeated themes
Private food sector	Strengthen the industry agreement and potential other measures that exist and work, revisit the challenges regarding donations from store-level, cover the entire value chain, preventing that food waste occur in the first place, take care of hidden food waste challenges	<ul style="list-style-type: none"> <li>- Strengthen the industry agreement</li> <li>- Donations</li> <li>- Tackle hidden food waste</li> </ul>



Private sector	Look to EU for directions, reporting obligation to generate more data, involve more actors and reaching wider, appropriate, awareness rising, carrot-based not whip, look at existing but also strengthening measures to the industry agreement, must work constructively to ongoing work, change the norm of food, targeted action to prevent food waste from occurring, hold the food industry accountable, the possibility of moderating the pressure of goods in stores	<ul style="list-style-type: none"> <li>- Strengthen the industry agreement</li> <li>- Report on food waste</li> <li>- Carrot-based</li> </ul>
Private food sector	Work as an extension of the industry agreement, given a goal by the authorities to work on internally, then one either get punished or rewarded based on the achievements, carrot-based not whip, not interfere with ongoing work, greater drive to introduce measures, appropriate	<ul style="list-style-type: none"> <li>- Strengthen the industry agreement</li> <li>- Carrot-based</li> </ul>
Research	Binding, a form of supervision that supervise that the law is followed, report on food waste, clear guidelines and sanctions if the law is not followed, invest resources to the law and the supervising-body, traceability of food waste	
Private actor	Supplement to the industry agreement, bit tougher demands, freedom for the value chain to work internally of food waste reduction, but sanctions if not accomplished, not interfere with potential ongoing work that works better, legal authority-based, consider widening the food waste definition, incentives in the value chain to work on hidden food waste (food waste that is not included in the current definition), economic incentives to balance the demand for by-products and main products, balance in sales of the various fractions by taking in taxes on something to subsidize something else more cheaply	<ul style="list-style-type: none"> <li>- Strengthen the industry agreement</li> <li>- Tackle hidden food waste</li> </ul>

Public sector	Target-driven regulations not detail-oriented, those involved must figure out internally what works to reach the goal of wasting less, good management system for the food system at all levels, plus certain individual requirements	
Food saver and distributor	Reward-based to make it more profitable to reduce food waste, facilitates that they get more access to healthy surplus food for redistribution to those in need, includes the entire industry, facilitate the possibility for donations better, carrot-based, not just punishment, must not result in that the industry suffers economically, bring down overproduction	<ul style="list-style-type: none"> <li>- Donations</li> <li>- Carrot-based</li> </ul>
NGO	Flexibility on discounting food that is about to pass the expiration date, make it more attractive and available to consumers, the industry should not suffer economically, rethink best before/expiration dates to make them more realistic, preventative work and changes before the food reach the store -> prevent overproduction, production should happen differently (focused on needs, not wants regarding food), better systems and focus directed towards donations, social incentives	<ul style="list-style-type: none"> <li>- Donations</li> </ul>
Food saver and distributor	Functional, build on what has been worked on, mandatory regulations but not too much bureaucracy, build on internal-control food systems and HSE regulations, strengthen responsibility by demanding an internal plan for food waste where donating surplus food is a key element, report and register internal food waste, establish a short route (geographically, formally and economically) between donator and food-saver and strengthen the contract amongst these parties, get more food related actors involved	<ul style="list-style-type: none"> <li>- Strengthen the industry agreement</li> <li>- Donations</li> <li>- Report on food waste</li> </ul>
Research	Look at practices in stores, prohibit campaigns that sell food at really low prices, investments in attitude changes	

Farmers organization	Must consider potential underlying consequences it can have in several links and in general be well thought through, appropriate, holistic thinking-based, makes actors accountable, use resources with consideration	
Research	Look at directives implemented in other countries for inspiration, perhaps make it more expensive to throw: increase fees on waste, food waste or increase food prices (but might create other problems), regulate how contracts are designed to regulate the power relations, must be flexible and not create more trouble, regulate trade practices that contributes to generating unnecessary food waste, takes Norwegian context into account, appropriate, don't disturb the ongoing work but strengthen it and increase the speed up the work that has be ongoing under the industry agreement	- Strengthen the industry agreement
Private food actor	Strengthening incentives of reducing food waste to ongoing work rather than creating a law, carrot-based not whip	- Strengthen the industry agreement - Carrot-based
Private actor	Propper waste management, hold the authorities accountable that this is managed properly not just sending waste out of the country	
NGO	Revisit the food waste definition and have a discussion of what should be considered food waste, open process of the law, not diluted to the point of being ineffective, strong enough to ensure the 50% reduction goal or more, extended producer responsibility to make it more holistic by working preventatively in reducing food waste before it occurs and handling and managing food waste or surplus food when it does occur, promote the waste-hierarchy, better founded and applies to everyone kind of system through regulation	- Tackle hidden food waste

Consumer level was something that was debated as well as the last level where around half of the food going to waste does occur. This was though considered a hard area to tackle, expressed amongst those who commented on it, where the food waste law would not be enforced on the consumer level. This was considered one of the challenges regarding the implementation of a food waste law and reaching the SDG 12.3 goal of 50% reduction as it will not seemingly effect consumers directly (private food actors, private actors), which brings me to the challenges of implementing or negative outcomes a law could have.

### **5.2.3. Potential effects through the political sphere**

If the law could have a positive effect, answers were again influenced by the uncertainty of what the law will look like, where the outcomes depend on the structure (Food saver/distributor, public sector, private actor). But several thought that is could (Research, NGO, Private actor, food saver/distributor). One from the food saver/distributor believed that is definitely would have a positive effect on food waste reduction, also in saving more food considered important for the environment and contribute to those in need. One private food actor said that *“it is assumed that if there is a sensible food waste law that is on target and aims to reduce environmental burdens, then we cannot say no to that”*. The farmers organization participant expressed that a positive effect has to be the goal of the law. One of the private actors thought that is might have a competitive advantage for those who already have things in order regarding food waste reduction and sorting routines, and believed that is could have an advantage for them as well, creating a larger need for their business idea. One NGO was positive as criteria for participation, and duties of both the companies as well as government in accomplishing the SDG’s would create positive effects. One private actor stated that:

*“Yes, of course it can. I think it can mainly have positive effects from a legal authority that obliges actors to work with reduced food waste. But in the worst case, it can also have negative effects. That what has been a passionate volunteer-based initiative in some places becomes less passionate or that it gets a flawed design that gets in the way of food being saved. It all depends on how the design turns out”*.

Another private food actor did not believe that a law would have much to say for them on a supplier level, would not touch the consumer, and not the wholesaler barely creating food waste, which leaves the stores left, questioning what they would do. *“Have a continuation of*

*the pressure of goods and donate or reduce the pressure where the risk of expired shelf life thus not throwing away the food? I don't know".*

Moreover, there was a consensus that participants did not see how a food waste law could affect negatively by “hiding” the challenge of poverty and inequality with people having to make use of free food schemes and serve as a “bandage on the wound” (ref. interview guide). When the volumes of donated food increases and why, which is due to the increasing amounts of people coming to get help, the food distributor centers and actors directly giving food to those in need and the issue might get increased visibility and bring more attention to the problem of poverty (Private food sector). The demand for food amongst disadvantaged people is large and on the radar, in the media as well (private actor). One NGO noted the importance of creating different streams for managing surplus food in order to manage a bigger food waste problem, not being dependent on people in need receiving free food from charitable organizations.

#### **5.2.4. Challenges lurking in the political sphere**

Regarding challenges to implementing the law or if there could potentially come any negative effects from it, new sets of answers emerged. Again, participants found it hard to give firm answers as it is unknown how the law will be and who it will consider. Some potential challenges/negative though pointed out. The respondent from the farmers- organization expressed a fear that the food waste law will mean that one will have a much greater variety in what foods one can buy in different parts of the country. That it will be much more risky for small convenience stores to buy fresh produce, fruit and vegetables when one have a smaller customer base. This may contribute to the fact that there is more ultra-processed food and less choice when it comes to fruit and vegetables in such shops. Potentially being a very negative development that should be taken into consideration in the food waste law discussion. One could end up with something that strikes back at Norwegian food producers. Emphasizing that one need to think holistically when figuring out how the law should be implemented so it won't get any surprising consequences not taken into the consideration. Further elaborating on how a law might have something to say on the goods one finds in stores and their nutritional value, one specific example of fruits was noted where awareness thinking is important, stating that:

*“You start to get a lot of technology now that affects the storage and durability of some goods. Such as fruit and vegetables. And you have research that means you get varieties that can withstand longer storage. But it has its sides. They are not always as good as the others. You*

*can look at some of these imported apples that you buy in the shops, which can sit in the shops for 3 weeks, and look just as nice. It is not certain that all substances in them are completely good for us who eat them. Compared to Norwegian apples that don't necessarily look as nice, but taste 100 times better, but don't necessarily keep as long. So, there is a danger that it could affect the kind of food we actually get access to and the shops want to sell. And I'm actually a little afraid of that."*

Meaning as well that it could sway stores to import more goods that have a longer shelf life but are perhaps not as good to consume from a nutritional health aspect, effecting the livelihood of Norwegian farmers.

Other things that were talked about was that it could have a negative effect on smaller stores due to limited resources (private actor) and the challenge (again) of limiting the consumers food waste (all). One private food actor elaborated on that if the law decide to address the welfare problem mainly, not the environment, one could face challenges of transporting the volumes of say fruits and vegetables that can get bad relatively quick, how are one going to redistribute those quick enough and if there is enough interest for them elsewhere, where if that is not reached it could be negative in the relation to finding other more appropriate solutions if the focus is on donating. Adding that the last link – the grocery stores – is not the most appropriate place to primarily collect this kind of food. Finding a common goal of either addressing the welfare issue, environmental issue, or optimizing the value of food economically as a way of saving food for example was consider a challenge as well, where this participant would prefer to focus on the environmental aspects as in his opinion because the other areas could not be solved in a commercial context (Private food sector). One private actor respondent said that it generally will be hard to know how it will be enforced and how to follow it up, as well as ensure halving food waste in all links, consumer too. In addition to learning from one's mistakes of, if food waste occur once, how do one make sure it does not occur again. Also, the challenge of reaching the consumer, one might have to get used to having less food options when being a hotel guest, at a buffet, canteen or restaurant, though not compromising on the quality, as a step toward changing the norm to a more "less is more" line of thinking.

One of the participants grouped as research could not see any particular challenges at the moment of interviewing, as it was a bit outside her knowledge base and professional field but noted that issues could occur if one were to implement the law too quickly without having everything at place. An NGO shared some thoughts of if the law would be enforced on for example the stores, she could see some challenges emerge in the beginning where potential

transitional efforts must be made both for the stores adapting and the consumers with changing consumption habits which might create discontent in the beginning as change can be uncomfortable. Organizing everything to prevent confusion for those the law is enforced upon can be a challenge as well.

### **5.2.5. Consumers influence through the personal sphere**

As the law is not prognosed to fall upon the consumer level that stands for around half of food waste in Norway, but as it is such a big challenge to grasp, it was interesting to hear if the interviewees believed a law somehow could have an indirect effect on the consumers. The farmers organization participant pointed out that it will be exciting to see how the law will be implemented as it is not always the signals that are given in advance that come out in the end, when I noted that it will most likely not directly influence the consumer level.

The main thoughts here were that the consumer might be indirectly affected through what the stores, being the last and direct level in the value chain, do. A person from food saver/distributer category and one from public sector highlighted that consumers might buy discounted goods that is close to expiration date where one might see more of such initiatives in the stores that promote food saving. Different apps might create increased awareness, where a participant from food saver/distributer stated that *“it initiates consumers to think that first of all that is an affluent society, that one is producing more than what is needed, and secondly that one can make use of the foods before it goes to waste”*. Media profiling of the law was brought as another indirect measure that could cause more awareness amongst consumers too (food saver/distributer). The private actor, like stated earlier on, talked about changing the norm where less is more and not always abundant of food in the stores or service outlets which can influence consumers. Also, smaller packings of food instead of many options of on food type was highlighted. Options of small and large packages could for example make it easier for a single person to buy just enough, stating further that the companies have a responsibility here. One of the private actors followed in these lines where value chains can help the consumers to waste less through certain packaging solutions, more food is sold in loose weight/bulk or that campaigns of 3 for 2 are more restricted so not as much food is sold unnecessarily as it can through such offer campaigns. A respondent from research also said one might be influenced in that a law will affect the society, where one will see that and perhaps change one’s behavior in line with the law. One is influenced by the things that happens around one and food is a very central part of the existence. An NGO respondent believed that if the conversation around food waste becomes more mainstream and relevant, people will become more aware of it and perhaps

subconsciously integrate this increased awareness into their actions at home regarding food. Stating further with an example that:

*“if it becomes more relevant in the stores, people are also going to experience buying different things and then change their habits”, but also made the notion that “I do think that more success could be achieved in households if we also added social workshops or social education about food or made the food waste issue more relevant than just in the stores”.*

Another from the food saver/distributor category spoke somewhat in the same lines regarding being influenced holding sentiments that in general, attitudes related to food waste in society have a positive effect on consumers and believing that the more it is talked about, the greater awareness there is. But that he though thought that the increased food prices have more to say in a food waste reduction context. One of the participants from the private food sector talked about that they are working on measures on the consumer-level and if the work on the consumer-level had been given higher priority by a sort of cooperative arrangement where both the authorities and stores are given demands in relation to the consumer both could contribute in their own way to reach the consumer. Being the last link before the consumer in influencing. But that a solution is yet to come and that practical solutions and investments might be a barrier (private food sector).

It was also repeated by a mix of the respondents (research, public sector, private sector and NGO) that this is an issue of lack of knowledge around food – as presented earlier on reasons why food is wasted, on how to cook, handle and store food as well as planning what to buy when going to the store and not buy things on impulse. All summing up to a need for skill and awareness rising regarding food and changes in attitudes and values to target the consumers more directly than indirectly through a law. (Matvett, public sector, private actor, NGO, research) and to feel a responsibility for the administration of- and resources one has and uses that with consideration (farmers organization). Another from NGO stated that:

*“There are a lot of things that we think a regulation that affects industry could have a positive effect on consumers. You could have stricter incentive demands or incentives towards less offers, being dependent on excessive quantity, you could have better storage in the store so that the food has a longer shelf life when you get it home. For example, fruits and vegetable have a really opposite way that they like to be stored compared to how they sell. Like if they’re*



*bright and warm and lit up and all together in pile, they sell really well ... because it looks good”.*

The rest were unsure of how the food waste law could indirectly influence the consumers, or did not believe that the law could have something to say on the household and where consumers must focus on using up what they have (private food sector), but where some again, believed more in awareness campaigns (research). Lastly, one of the private actors hopes that the law can influence, though not directly regulate the consumer.

### **5.2.6. Working group: all spheres interrelate**

Which voices are heard could have something to say for how the law is formed. The working group was chosen in the start of February (Matsvinnutvalget, n.d.) and the chosen working group and reference group reflected that of who the respondents thought would be and should be included with a wide range of actors from the whole value chain, interest groups, authorities, ideal organizations, consumer insight and research, resulting in a mix of contributors to the discussion from the whole value chain as well as outside of the value chain, resulting in a wide discussion on the matter of a food waste law. One respondent from the private actor category stated that she hoped to *“Come up with measures that are well rooted and worked through and discussed with the actors themselves”*. One of the representatives from the private food sector had some worries stating that *“the whole value chain is a part of it so I’m a little afraid that there will be a game of pointing fingers and a lot of politics out of it. But I don’t know. I hope one of the things we do first is figuring out why we should throw away less food so that is at least falls into place”*.

The working group consist of both actors in the food industry as well as other actors with interest in reducing the food waste. This consist of as listed on the government pages: NHO Mat og Drikke, VIRKE, NHO Service og handel, Dagligvarehandelens miljøforum (DMF), Norges bondelag, Kommunesektorens organisasjon (KS), Framtiden i våre hender, Sjømat Norge, Forbrukerrådet, Matsentralen, Norsk Nærings- og Nytelsesmiddelarbeidsforbund (NNN), NORSUS (Norwegian institute for sustainability research), NIBIO (Norwegian institute for bioeconomy), Forbruksforskningsinstituttet SIFO and SINTEF Ocean (Matsvinnutvalget, n.d.). Members of this committee or working group are assumed to coordinate their positions in addition to obtain views from their part of the value chain from relevant actors. Moreover, there is a reference group that shall give professional input to the work of a concrete suggestion to a food waste law. This consist of: Naturvernforbundet, Avfall Norge, Norsk bonde- og småbrukarlag, Dagligvareleverandørens

forening (DLF), Norges Fiskarlag, NHO Reiseliv, Nofimas divisjon for sjømat and Green House AS (Matsvinnutvalget, n.d.).

## **6. Discussion**

This chapter will discuss the findings through the analytical framework for this thesis of the three spheres (practical, political, personal) of transformations as described by Leichenko and O'Brien (2019), showing that transformations is indeed an overlapping of all three. The findings will also draw on central concepts of circular economy and definition varieties and extensiveness will feed into the discussion as well. The discussion will be divided in between the findings of the two research questions of: “To what degree and how has the adoption of SDG 12.3 in 2015 and the measures taken to reduce food waste, contributed to food waste decline in Norway?” and “Why has Norway not yet a food waste law in place, and what difference could a food waste law make regarding food waste reduction?”.

### **6.1. Transformations in all spheres**

The findings show that self-regulatory initiatives through a voluntary agreement have contributed to multiple measures for food waste reduction but that it has not come as far as one planned.

#### **Practical sphere**

“The most common entry point for engagement is the practical sphere of transformation, which focuses on sustainability outcomes through changes in form” (Leichenko and O'Brien, 2019, p. 180). As stated, the Industry Agreement was Norway's response to the 12.3 SDG target and can be seen as the most prevalent entry point towards reducing food waste so far in Norway. Here one established an agreement amongst food actors to work on reducing their food waste internally, based on self-regulation. Aiming towards the goal of 50% reduction of food waste from 2015 levels (Miljødirektoratet, n.d.), correlating with Leichenko and O'Brien (2019) ideas of the realizations of measurable goals through actions and activities. As the findings states, the Industry Agreement as a whole did not reach the sub-goal of 15% reduction within 2020, but close to it percentage wise at 14% (Stensgård et al., 2023).

The ForMat project can also be placed in this sphere as the starting line for what has been accomplished in the Industry Agreement by paving the way for self-regulation. Increasing the political attention by a large extent toward the issue of food waste and more effectively laying out the pavement for changes in behaviors and practices that could lead to observable

outcomes of food waste reduction. Which, like stated, was further put into life later by the 2017 signing of the Industry Agreement. 2017 also saw an unanimously agreed request from Parliament to the government of evaluating the dating of expiration-date marking, waste reduction work with municipalities and a food waste law (Szulecka and Strøm-Andersen, 2021). These can also be seen as actions of transformational change toward sustainability (Leichenko and O'Brien, 2019).

### **Political sphere**

“Although practical transformations are fundamental for addressing climate change, they need to be supported by structural and systemic changes” (Leichenko and O'Brien, 2019, p. 181). As a part of the Voluntary Industry Agreement, a governance system – a part of the political sphere - was adopted of working internally on food waste reduction through means of one's own preferences, where reporting on food waste is a part too. Reporting on food waste can and has helped to map out where the largest amounts of waste are occurring as well, giving an image of which areas that needs to be given more attention and worked on further to find perhaps additional more innovative solutions for the occurrence of food waste in these exact areas by generating data. Furthermore, the political sphere, an example which was mentioned by Leichenko and O'Brien too, can help the practical sphere by investing in storage facilities to reduce food waste. This is where the eight food centers (Matsentralene) around Norway comes in, that were pushed forward by the food industry themselves, in dealing with food waste reduction which they saw was a problem. The rethinking the cultural norm of “best before” or expiration dates on food can be another example her, which again, Leichenko and O'Brien includes in their example of transformation theory section. This is something one have seen the occurrence of in recent years as a nudging tool towards consumers but also perhaps the industry itself of more realistic approaches to stamp dates on food, to reduce food being thrown away at store level as well before reaching the point of being inedible. One now sees for example new wordings like “best before, often good after”. Awareness campaigns towards consumers of using their senses (look, smell, taste) was mentioned too as a nudging tool to remind and educate the consumer of not only looking at date stamps for indications if a good is edible or not, following into the personal sphere of changes in meaning making.

### **Personal sphere**

“The personal sphere of transformation represents changes in meaning making, which includes the individual and shared beliefs, values, worldviews and paradigms that shape attitudes,

actions, and perceived options” (Leichenko and O’Brien, 2019, p. 182). As mentioned above, trying to influence the consumer in making better choices and learn how to evaluate if a certain food has gone bad follows in line with the acknowledging of social consciousness in transformation where one sees tendencies of lack of it in food waste context as the household stand for around half of the food that is wasted. Working on reaching the consumer is therefore considered highly important if one is to reach the goals set by the SDG target of 50% reduction within 2030. This has not been sufficiently achieved through work so far, whereas the personal sphere has not be pushed further.

## **6.2. The potential for further transformation**

Findings directed toward the previous research question can feed into the discussion of the second as well following a timeline of events from voluntary industry agreement to potentially a food waste law, a change in the practical sphere.

### **Practical sphere**

As the findings show, food waste is still an extensive problem due to multiple causes and continue to be a complex problem. Strengthening the work on food waste reduction, increasing the paste and getting more food actors involved is something a food waste law might contribute to. The attitudes towards the law are varying however as reflected somewhat by the interview respondents, some being in favor of a law (two NGOs, two food saver/distributor, two private actors, one from research) while others were more skeptical as one does not know what it is going to look like, reflecting different beliefs and views. Here one can see how all three spheres are intertwined, but also reflect a division in beliefs, belonging in the personal sphere. All private food sectors interviewees were on the skeptical side, which might not be surprising, as participants of the industry agreement. A law is either way predicted to come in 2024. In practical terms, the discussion of introducing a food waste law as a means of reducing food waste through legal authority is one example of how one can – potentially - change the food waste narrative one step further than actions have achieved until now, as a sustainability focused means through changes in form, meaning in the form of a law, as a policy incentive to support behavioral change (Leichenko and O’Brien, 2019, p. 181).

### **Political sphere**

It is in the political sphere the “rules of the game” as Leichenko and O’Brien puts it, are negotiated and decided. It is also in this sphere where one might run into conflicts that can influence systems directly or indirectly (Leichenko and O’Brien, 2019, p. 181). This can correlate with the findings of why Norway does not have a food waste law, where one could see the frustrations of some of the interviewees with the halting of the law. Resistance and lobbying were used words, and where one of the private actors saw it as undemocratically due to halting of the assessment for the law and later of writing a draft for a law, when it had political majority. Others noted more in favor of the voluntary agreement arguing that one wanted to let the voluntary industry agreement have time to work and do not see a need for it in their regards. Perhaps mirroring an industry favoring at the time when parliamentary consensus for a law was dismissed. These findings reflect the politics of different policies of either keeping food waste reduction at a voluntary level or moving onto continuing the work through a food waste law (Leichenko and O’Brien, 2019). Power relations were considered a factor, again, through lobbying and influencing the shaping of food waste reduction means. Letting the industry agreement have some time to create results and changes was another argument here.

Interview participants from various categories (private actor, NGO, research, food saver/distributor), highlighted demands for internal food waste plans, obligatory to report on one’s food waste and the suggestion of setting a goal to work on internally where, based on the achievements, one is either punished or rewarded (private food sector, private actor, food saver/distributor) which goes into the political sphere supporting the practical sphere, through systems of governance that can shape further behaviors, actions and investments (Leichenko and O’Brien, 2019). An obligatory law will also, naturally, make more if not all actors accountable for their food waste and where more reporting will generate even more data. However, it might create challenges too. Say one are to be punished or faced with sanctions due to too low food waste reductions, one might be motivated to push oneself and one’s business further to create results. This is however not a given, one might be discouraged as well. This can be reflected by challenges smaller stores for example can have in limiting their food waste due to lack of resources, which was mentioned by one of the private actors as a challenge to getting the law. Moreover, a law might extend beyond the voluntary bit, getting more involved and report on the food waste, generating even more data. Furthermore, a food waste law must not affect negatively economically of those the law falls upon in the food sector. As several respondents highlighted when asked about what they saw as important to consider

in the law. Reflecting a various amounts of priorities and goals as the political sphere includes (Leichenko and O'Brien, 2019)

A law might open up to widen the discussion further in politics around agriculture and power structures within the food industry. One example one can point to here if one were to go with the more wide definition of food waste taking for example ploughed carrots and the like into consideration, as well laying hens not being considered edible food, one would have to look at making these areas pay off for farmers. This expose flaws in the agricultural sector, when it is cheaper to let food go to waste than to process it. This also shows the complexity of causes of food waste in the entire food system and value chain and further being able to reduce food waste all over (power, values, world views dynamics), but this is a larges discussion that will not be elaborated on further.

### **Personal sphere**

As indicated by multiple participants, a food waste law could perhaps influence the consumer level towards thinking twice about their food waste if exposed to for example changes in grocery stores, being the last level in the value chain in more direct contact with the consumers. However, that campaigns for awareness and knowledge rising is seen as a more certain means towards that, starting early by getting more focus on learning about food in the educational systems. Shaping beliefs, knowledge and worldviews from an early stage (Leichenko and O'Brien, 2019).

### **6.3. Food waste reduction toward circular economy**

The elimination of food waste is also prevalent in circular economy thinking, by the idea of building a food system which ensures that food never creates or end up as waste. Circular economy is intended to prevent food waste, making human waste and inedible food by-products contributions to production of new products (Food, n.d.). These action creations of the agreements can and has contributed towards these ideals of food waste to a certain extent, at least at a reduction level, and can contribute further perhaps through an obligatory law. Increasing the paste and width of food reduction it is important to hold all actors accountable as Borrello et. al., 2017 suggest through active participation. This was considered important by various categories in what should be included in a food waste law, holding actors accountable and include the entire value chain.

As one can see from the findings, the need to further develop in food waste reduction means is on the agenda and “gathering momentum” as MacArthur (2013) states at several levels, both corporate and political. Motivated by social justice aspects, European directives on the keeping of organic waste out of landfill – which is illegal in Norway, and by the notion of agricultural supply chain regards where one should ought to create environments that keeps up with nutritional needs (MacArthur, 2013, p. 51). Letting edible food for humans go to waste is logically contradicting in that food has a value economically, but also ethically. Throwing away food that potentially could give profit for a business per se is something that does not make sense, neither does that of not distributing it to people in need. Having functioning business functions in place with more accurate prognoses and flow of goods is therefore preferable as the findings state. The amounts of resources that are used throughout the value chain from farm to table, taking a toll on the environment and climate is worth consideration too (research, NGO, private actor, private food actor, food saver/distributor).

## **7. Conclusion**

The findings show that Norway is not on track regarding the SDG 12.3. It has contributed to some extent in reductions, but as especially the consumer level and food industry level show, one has a long way to go. Raising questions of what needs to be done to provide food waste reduction that shows even stronger results. As the findings show, several see a food waste law as a solution perhaps mostly directed to the food industry. There have been established measures that could nudge the consumer further over the last years, but again as the research indicates, the consumer level continues to be a target area one must work on further. Changing and pushing beliefs about food further in a more sustainable matter. This is seemingly something that has to come from elsewhere than what has been done and potentially can be done from an industry agreement or a food waste law.

As the findings suggest, a food waste law has been long discussed but might have been pushed away by stronger forces, not wanting a law but a self-regulatory agreement, in addition to being paused due to wanting to see how the industry agreement would play out.

Further, one can see a somewhat division amongst the various actors in the debate around a food waste law, if it's about time it's coming, how it should play out through its implementation is not unexpected as it is a complex issue. However, it opens up to a wide discussion through the food industry and other interest parties on how to approach the challenges regarding food waste in Norway, and perhaps contributing to more sustainable and

ethical ways of treating and handling food at all levels. Moreover, multiple respondents believed that a law could build further on the systems set through the industry agreement. Strengthening of donations and implementing carrot-based means to inspire actors, were considered central too.

One can see how all three spheres of the practical, political and personal are surely important in the transformation towards sustainability where food waste reduction is an important target area in terms of considerations of both an ethical and environmental and climate perspective, but where one have in the Norwegian case of voluntary agreement versus governmental authority food waste law that reflects different opposing perceptions.

This thesis can give insight to an ongoing law-making process and initial perspectives surrounding the theme of a food waste law from various food actors but also other interest groups that are engaged, in addition to insight of previous and ongoing projects, showing that one is moving in the right direction, but not fast enough. This research is probably mostly directed at other students in the field who might want to explore food waste reduction work further when, or perhaps if, the food waste law comes, in a Norwegian context.



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# Appendix 1

## Interview guide

### Background:

- Name, age, gender/pronouns
- What do you work with?
- How long have you been involved in this job, company, organization, initiative etc.?
- What is your relation and/or interest regarding food waste in Norway?

### For all interviewees:

#### Food waste in Norway

- What do you consider to be the biggest challenges in Norway regarding food waste?
- Why is so much food wasted at food industry, business, store level (laws, values, systems, theories) do you believe?
- Has there been lacking incentives to waste less food? If yes, which?
- How was the SDG 12.3 adopted in Norway and which food waste measures did the SDG 12.3 set in motion to reduce food wasted in Norway? Have these measures brought forward change/reduction?
- Is the follow-up on food waste initiatives like the “Industry agreement on reducing food waste” from 2017 well established? Are there proper routines in place for following up on such projects? What is the status here?
- Can the new waste management regulations for separation of food and plastic waste lead to less food being thrown away?
- What (other) measures can limit the amount of food wasted?

#### Food waste law:

- Are you for or against a food waste law?
- Why has it taken so long to get a law in place?
- How should the law be implemented and do you see any challenges in implementing a food waste law?
- What should be included in the food waste law for it to be sufficient in making changes?
- Which effects can a food waste law have? Positive/negative?
- Do you believe that a food waste law can contribute into wasting less food? If so, how?

- Which parties should have a say in the construction of this law?
- Can a food waste law directed towards the value chain of food have an impact on the consumer level and influence people at home to change their “habits” when it comes to wasting food?
- Can a food waste law "overshadow" a larger societal problem such as poverty and inequality in that, on the one hand, it can contribute to less food being thrown away and possibly donated to those who need it, but on the other hand put a band-aid on a larger societal problem such as poverty and the fact that people actually have to make use of such schemes?
- Are there any important questions that should have been included/is there something else you would like to add?

For food waste initiatives and apps:

- What was the motivation behind this app/initiative? Why was it needed?
- Have you met any resistance to collaboration from stores regarding the app?
- Have you met any challenges to collaborating, if so, which?

For food stores representatives:

- Do you cooperate with different apps that are working to limit food waste? Why, why not?
- What do you do with the surplus food, food that has expired or is about to expire?
- Are there any corporate/store regulations in relation to food that contribute to higher amounts of food waste?
- Are there any particular health and safety (or other) regulations that are causing more food to end up as waste? Which ones?

For charitable schemes:

- Who do you collaborate with for donations? (Stores, wholesalers, etc.)
- Are there good enough routines and arrangements in place to donate food rather than throw it away?
- Have you noticed any particular change after, for example, the sustainability goals, the industry agreement and the like came into place in relation to donating food and your opportunity to help more people?
- What effect can a food waste law have on their work?

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