Bachelor Thesis Project

Lucerne School of Applied Sciences and Arts - Business

Implementing Corporate Social Responsibility:

Reducing Excessive Inventory at Hug Retail AG

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by

Sibylle Landolt

Student

sibylle.landolt@stud.hslu.ch

Dr. Claudia Astrachan

Supervisor

claudia.astrachan@hslu.ch

Didi Mathis

Client

didi.mathis@baeckerei-hug.ch

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Management Summary

By 2050, water, land and food scarcity will seriously challenge our current consumption behavior. The question remains how to provide water, shelter and food for a population amounting to 9 billion people. One possible response to the nutritional side of the challenge is the reduction of food waste. Food waste refers to food that is essentially suitable for human consumption but is not consumed due to the fact that people discard it, either before or after it spoils. Food waste bears enormous environmental and economic costs due to wasting valuable, scarce resources whilst producing greenhouse gas emissions upon disposal. Food waste also raises ethical concerns with nearly 870 million people starving. It exemplifies society's devaluation of food and particularly contradicts the notion of sustainable development.

In Switzerland, every fourth bread is wasted. Bakeries feel pressured to provide varied and fresh products at all times and at the same time encounter difficulties in forecasting or planning customer demand. A particular type of avoidable food waste incurred at the retail level in bakeries is so-called "excessive inventory". Excessive inventory primarily incurs if the amount of products offered at the store exceeds customer demand. Excessive inventory consists of products that either were not sold within the defined selling period, exceeded the best-before date or incurred a loss of quality.

This bachelor thesis aims at exploring different strategies for reducing excessive inventory for Hug Retail AG (Hug), a bakery chain located in Switzerland. Furthermore, this research investigates how bakeries can communicate their engagement of reducing food waste both internally (to employees) and externally (to customers). Primarily, this research focuses on the retail, rather than the production level of the challenge, as the client wished to leave the amount of products manufactured unaltered at this point.

In a first step, a literature review is conducted in order to build a theoretical background on food waste, the concept of CSR and corporate sustainability. In a second step, the research context section elaborates on the Swiss bakery industry and this thesis' client. Based on the findings from the literature review, and taking into consideration the research context, a questionnaire was developed to investigate the

research question. Subsequently, results from 10 qualitative expert interviews are analyzed and discussed, followed by a description of further findings. Among others, the interview results provide insights into causes, prevention and disposal methods of food waste. In a last step, recommendations are drawn which include 1) prevention and reduction strategies, recover and disposal options and 3) external and internal communication strategies.

In terms of prevention and reduction of excessive inventory, the findings substantiate the assumption that the sensitization of customers is crucial. Correspondingly, customers should be informed subtly on 1) how Hug handles excessive inventory, 2) how to store and reuse bakery products, 3) the concept of rework and 4) the ecological, economic and social consequences of food waste in general. Apart from Hug, the media and the Swiss government are considered key players with regard to sensitizing and informing consumers about food waste.

Not only customers, but also employees need to be sensitized on both the issue of excessive inventory and food waste. Referring to internal communication strategies, management plays a vital role in motivating, inspiring and educating employees on the matter. Motivated, knowledgeable and experienced sales assistants act as messengers and represent Hug's philosophy towards food waste. Furthermore, they can explain to customers why Hug decides to reduce food waste and why recovering bakery products leads to quality revaluation rather than quality impairment.

Ultimately, the collaboration between bakeries within the bakery industry should be fostered. Hug and other bakeries can share experiences and best-practices with regard to excessive inventory and food waste. Hug can act as a role model for not only other companies operating in the food industry, but also for its customers. Hug may eventually also inspire the local community to reevaluate the appreciation towards food whilst promoting the sustainable development of our current food consumption.

Preface

Growing up, I was taught by my parents to always finish my plate. I could never understand children in the cafeteria who threw away food without hesitation whilst at the same time millions of other children were starving to death. My first job as waitress then made me realize that not only children, but also adults still do not seem to understand the consequences of wasting food. With every plate I cleared, I not only trashed the cook's work, but also nature's valuable and scarce resources. Food waste as such has therefore always been an emotional and sensitive issue to me. Later on, when I was working as a sales assistant in a bakery, I became even more deeply conscious of how we treat and appreciate food. Customers expected warm and fresh bread, perfectly shaped strawberries in March and Swiss organic chicken in their sandwiches. With every product I had to throw away, I grew sad and angry knowing that most of the products were still edible.

I would firstly like to express my gratitude to this bachelor thesis' client for giving me the opportunity to explore what bakeries, as part of society, can do in order to tackle this issue. Furthermore, I would like to thank my supervisor, Dr. Claudia Astrachan, who always supported and motivated me for excellence. I would also like to thank Heinz Nussbaumer for all his materials, inputs and insights. Above all, I owe my gratitude to all interviewees who took their valuable time. Ultimately, I am most indebted to my sister, whom I will never be sufficiently able to express all my recognition.

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Category	English	German
Organizations	Federal Office for Agriculture (FOAG)	Bundesamt für Landwirtschaft (BLW)
	Federal Office for the Environment (FOEN)	Bundesamt für Umwelt (BAFU)
Concepts and Definitions	Environmentalism	Umweltschutz
	Waste incineration plant / Municipal solid waste incineration (MSW)	Kehrrichtverbrennungsanlage (KVA), Müllverbrennungsanlage (MVA),
	Residual waste, waste	Restmüll, Kehrricht
	Fermentation	Vergärung
	Biogas plant, mechanical-biological waste treatment (MBT)	Biogasanlage, mechanisch-biologische Abfallbehand-lungsanlage (MBA)
	Bio-waste container	Biotonne, Grünabfuhr
	Defective batch	Fehlcharge
Products	Open rolls / sandwiches	Belegte Brote/ Brötli
	Tarts	Wähen
	Cake	Torte
	Pie	Pastete
	Ready meals	Fertigmenüs
	Pastries	Patisserie, Süssgebäck
	Pastry	Feingebäck
	Bun	Kleinbrot
	Breadcrumbs	Paniermehl
	German Zwieback	Zwieback
Bakery Industry	Wheat	(Brot)Weizen
	Grain / Cereal(s)	Getreide
	Grain of Wheat	Weizenkorn
	Feedgrain	Futtergetreide
	Spelt	Dinkel
	Barley	Gerste
	Rye	Roggen
	Confectioner	Confiseur
	Confectionery	Confiserie
	Pastry Cook	Konditor
	Pastry Shop	Konditorei
	Baked Goods / Bakery Products	Backwaren
	Pregelatinized flour	Quellmehl
Retail	Best-before date	Mindesthaltbarkeitsdatum (MHD)
	Use-by date	Verfallsdatum, Verbrauchsdatum (VBD)
	Inventory Overhang	Warenüberhang
	Food retailing	Lebensmitteleinzelhandel (LEH)
	Self-service	Selbstbedienung (SB)

1. Introduction

1.1 Initial Situation

In 2000, 189 countries of the world assembled to create the Millennium Development Goals (MDGs) (United Nations Development Programme [UNDP], 2015, p. 1). Among others, this set of goals aimed at ending poverty and hunger. In September 2015, the United Nations Development Programme (UNDP) introduced the new agenda for future sustainable development – the sustainable development goals (SDGs). Again, the SDGs highest priority is to "end hunger, achieve food security and improved nutrition" (UNDP, 2015, p. 5). In reflection of its importance, the prevention of food waste is included in SDG 12 – "Ensure sustainable consumption and production patterns" (United Nations, 2015, p. 24). As an explicit sustainable development target, SDG 12.3 states: "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" (p. 25).

Food waste, therefore, is an issue of considerable global attention. In 2011, a study conducted by the Food and Agriculture Organization of the United Nations (FAO) suggests that each year, "roughly one-third of food produced for human consumption is lost or wasted globally, which amounts to about 1.3 billion tons per year" (2011, p. v). Furthermore, the "direct economic cost of food wastage of agricultural products (excluding fish and seafood) (…) is about 750 billion USD, equivalent to the GDP of Switzerland" (FAO, 2013b, p. 11). Yet, food waste not only causes economic costs. Sharon Dijksma, the Netherlands' Minister for Agriculture, summarizes the most serious impacts of food waste:

> If only one-fourth of the food lost or wasted globally was consumed, it would be sufficient to feed 870 million people – feeding nearly all who go to bed hungry every night – 12% of the world's current population (...). Food loss and waste has a negative impact on already scarce natural resources. Around 30% of available agricultural land is used to produce food that goes uneaten; three times the volume of Lake Geneva in terms of water use is lost. And food loss and waste is contributing to climate change more than most of the world's countries. (FAO, 2015, p. 1)

Food waste therefore includes not only the direct loss of natural resources. The fact that land, water and biodiversity required to produce the food are wasted as well is frequently overlooked. Food waste additionally contributes to global warming by producing greenhouse gases upon disposal. If food waste is disposed in a landfill, for instance, “it decomposes and is a significant source of methane gas, which is 20 times more effective at trapping heat in the atmosphere than carbon dioxide” (Business for Social Responsibility [BSR], 2011, p. 3).

In regard to Switzerland, the waste figures are similar to the FAOs global estimates. One-third of the overall food is lost or wasted (Federal Office for the Environment [FOEN], 2015, para. 2; WWF, 2014, p. 2). One half of this amount is due to the fact that the food is not consumed in sufficient time which in turn leads to decomposition. The other half is thrown away due to quality norms and personal eating preferences that the food does not comply with (WWF, 2012, p. 5). The production of the food wasted requires 85% of Switzerland’s farmland – an equivalent of twice the size of the canton of Zurich (WWF, 2012, p. 5). Furthermore, if all the avoidable food loss in Switzerland could be recovered, 150% of the Swiss population could be fed (Beretta, 2012, p. 9).

However, only 5% of the overall food waste in Switzerland is generated at the retail level (Beretta, 2012, p. 2). The same figures apply for the European Union (EU), where only 5% of the entire EU food waste is caused by retail and wholesale (Monier et al., 2010, p. 13).

Ultimately, food waste is a problem on the national, industrial and organizational level. The bakery industry – as well as other parts of the food industry – is affected considerably by food waste. In the UK, according to Wrap (Waste and Resources Action Programme), bakery goods are the fourth largest category of food thrown away whilst “800,000 tonnes of bakery waste is disposed of in the UK annually” (Wrap, 2011, p. 3).

Nevertheless, in Switzerland, one-fourth of the pastries bought are thrown away at the customer level. This amounts to 10,500 loaded trucks transporting a value of approximately 220 million Swiss Francs (United Against Waste, 2015, p. 1).

1.2 Problem Definition

Food waste is an issue of great importance particularly at the organizational level. In the context of this bachelor thesis, the focus of investigation is placed on a bakery chain located in Switzerland. Hug Retail AG is a family-owned business currently operating in the Swiss bakery industry. Throughout this thesis, Hug Retail AG will be referred to as "Hug". However, this name shall not be confused with other legal entities connected to Hug Retail AG.

At Hug's stores, bread, pastries, baked goods and other related products are sold to end consumers. At the retail level, one distinct form of food waste in bakeries – thus also at Hug's branches – is called *excessive inventory* (in German "Retouren"). This term will be explored in more depth in chapter 2.2.2. In order to avoid any mismatches in German and English terminologies, translations of industry-specific terms can be found in the List of Translations on page 9.

Excessive inventory consists of products that either were not sold within the defined selling period, exceeded the best-before date or incurred a loss of quality. Excessive inventory is primarily produced at the retail level when quantities ordered exceed customer demand, leading to excess supply. Excess supply might be created by inaccurate forecasting or planning of demand (WWF, 2014, p. 12).[1]

Excessive inventory is caused due to the fact that bakeries feel pressured to provide varied and fresh offers until closing time: either to (1) stay ahead of competition, (2) prevent customers from defecting to the competition, or (3) avoid customer loss in general. Excessive inventory causes loss of economic value and therefore loss of profits. Yet, as excessive inventory is considered to be food waste, it does not only lead to unrealized profits. According to Göbel (2012, p. vii), food waste contradicts the notion of sustainable development. Particularly, food waste is economically, ethically, socially, and environmentally questionable. The German Institute for Sanitary Engineering, Water Quality and Solid Waste Management (ISWA) argues that food waste "widens the gap even further between prosperity and

[1] Hug sales assistants have the possibility to bake („nachbacken") different types of 'semi-finished' products directly at the branches. 'Finished' products are freshly produced at the production site, then delivered to the branches and need to be ordered by sales assistants (or branch managers) on a daily basis. Excessive supply is therefore created if sales assistants either order too many products or „bake" too much. Both scenarios lead to products not being sold by the end of the day and thusly create excessive inventory.

poverty, affluence and malnutrition and industrialized and developing countries" (ISWA, 2012, p. 1).

Food waste has received considerable political and media attention during the last years. Bakeries thus face the challenge of meeting the evolving corporate social responsibility needs and concerns of consumers. However, combating food waste presents special difficulties, particularly for the (Swiss) bakery industry. Bakeries (including Hug) face the following challenges:

- selling products in a manner that is both customer-oriented, socially and environmentally responsible,
- complying with required regulations, and
- pursuing a sound internal and external communication strategy

Pursuing a sound communication strategy with regard to excessive inventory is considered relevant since bakeries need to prevent using food waste as a public relation tool. Customers and employees should not perceive that Hug aims at reducing food waste only for marketing or branding purposes. Communicating honestly and authentically is therefore crucial for maintaining Hug's brand and image. For Hug, ultimately, balancing different stakeholders' interests and ensuring the family business continuance whilst tackling sustainable business practices is an issue of considerable complexity.

1.3 Objectives and Research Questions

As afore-mentioned, excessive inventory causes loss of profits. As a small and medium enterprise (SME) and a family-owned business, Hug is particularly concerned with ensuring the company's future economic performance. Primarily, therefore, reducing excessive inventory implies reducing economic costs. Furthermore, reducing excessive inventory might lead to raising and increasing consumer awareness with regard to food waste – an important sustainable issue to address.

According to Millere (2015, p. 44), 76% of the generated food waste in 16 Swiss bakeries – in total 12,153 kg – occurs at the retail level, whereas only 23%

origins at the production level. Consequently, Millere (2015, p. ii) concludes that for bakeries, retail proves the greatest potential for the reduction of food waste. In order to narrow down the focus, this thesis thus only discusses excessive inventory, which incurs at the retail, and not the production level.

Derived from the background information and the problem definition, this bachelor thesis addresses the following research questions:

1. What actions can Hug take to minimize excessive inventory, and in particular, reduce excess supply of bread and related products?
2. How can Hug communicate these actions both internally (employees) and externally (customers) and thus leverage their image as a socially responsible company?

1.4 Structure of the Thesis

This thesis consists of eight main parts. Chapter One provides the reader with a general understanding of the food waste problem. Subsequently, Chapter Two lays out a theoretical foundation with key definitions and concepts used throughout the thesis. Chapter Three then elaborates on the research context which comprises the Swiss bakery industry and this thesis' client. Chapter Four explains the methodological procedure applied. Chapter Five describes the results obtained from both the literature review and the qualitative interviews. Chapter Six discusses and concludes these results. Chapter Seven then represents a key chapter of this thesis since it outlines the research-based recommendations for the client. Furthermore, it includes suggestions on communication strategies.

2. Theoretical Foundation

2.1 Corporate Social Responsibility (CSR) and Related Concepts

In today's information age, customers put increased pressure on bakeries and other organizations to act socially and environmentally responsible. At all hours, information on companies and their activities are readily available. Additionally, daily news on climate change, natural disasters or worldwide hunger further influence people's minds. According to Meyer (2014, p. 3), these influences not only change people's attitudes, but also their behavior towards corporations. The world-community has become more aware and concerned about the social and environmental impacts of corporate activities and demands more socially responsible behavior (Meyer, 2014, p.4; Bally Meyer, 2000, p. 1). DuPlessis and Grobler (2014, p. 267) point out that it is "not acceptable for business to supply goods and services at a profit without contributing a part of that profit towards the empowerment of people in the community". Companies are forced to deal with these issues in the context of corporate social responsibility (CSR) and sustainability. In Germany, 79% of small and medium-sized enterprises (SMEs) assess their awareness about sustainability and environmentalism as being rather high (Meyer, 2014, p. 5).
Food waste is considered to oppose the fundamental principles and ideas of both corporate social responsibility (CSR) and sustainability. The United Environmental Programme (UNEP) explains:

> Environmental sustainability is the core issue that will need to be addressed for development to focus on human well-being and yet stay within the limitations of planet's capacity. Environmentally sound waste management is one of the key elements for sustainable development. (2015, p. iii)

Firstly, this chapter provides the definitions of CSR and its current position in the food industry which embeds the bakery industry. Additionally, CSR and corporate sustainability (sustainable development) are closely linked to one another. Secondly, therefore, the chapter defines corporate sustainability followed by drawing connections between the two terms. Furthermore, food waste and CSR relate to

further concepts. As a last step, corporate environmental responsibility (CER) and green washing are thus briefly addressed as well.

2.1.1 Definition of CSR and its position within the food industry

CSR has currently received considerable attention, importance and significance in both the business and academic world (Campopiano, De Massis, & Cassia, 2012, p. 1; Idowu et al., 2015, p. 1; Carroll & Shabana, 2010, p. 85). However, the concept of CSR is not new. Idowu (2013a, p. vii) shows that CSR has been around for over 50 years. According to Block and Wagner (2013, p. 2) CSR "comprises several facets, which range from employee relations to ecological concerns and product issues". Idowu (2013a) argues that CSR is a concept that is difficult to define since it "overlaps with sustainable business, environmental responsibility [and] the triple bottom line (…)".

Dimensions	**The definition is coded to the dimension if it refers to**	**Example phrases**
The environmental dimension	The natural environment	▪ a cleaner environment ▪ environmental stewardship ▪ environmental concerns in business operations
The social dimension	The relationship between business and society	▪ contribute to a better society ▪ integrate social concerns in their business operations ▪ consider the full scope of their impact on communities
The economic dimension	Socio-economic or financial aspects, including describing CSR in terms of a business operation	▪ contribute to economic development', 'preserving the profitability','business operations'
The stakeholder dimension	Stakeholders or stakeholder groups	▪ interaction with their stakeholders ▪ how organizations interact with their employees, suppliers, customers and communities ▪ treating the stakeholders of the firm
The voluntariness dimension	Actions not prescribed by law	▪ based on ethical values ▪ beyond legal obligations ▪ voluntary

Figure 1. The five dimensions of CSR. Adapted from "How Corporate Social Responsibility is Defined: An Analysis of 37 Definitions", by Dahlsrud, A., 2006, p. 4

In the academic world, Dahlsrud (2006, p. 1) confirms that uncertainty about the definition of the term exists. He then describes that CSR definitions rather refer to

five different dimensions – which include the environmental, social, economic, stakeholder and voluntariness dimension, as described in figure 1.

The final definition of CSR used for this thesis can be found in Dahlsrud's compilation of different CSR definitions. The Commission of European Communities defines CSR as a "concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis" (as cited in Dahlsrud, 2006, p. 7). This definition highlights all five dimensions of CSR and provides an overview of the most important notions of what it means to act socially responsible. Additionally, this definition is widely shared in academic literature (Fischler, 2013, p. 19; Del Baldo, 2013, p. 135; Carroll & Shabana, 2010, p. 89). In regard to family firms (such as Hug), Block and Wagner (2013, p. 2) state that "family identity and a strong family-to-firm identity fit can increase CSR responsibility". Furthermore, particularly family businesses, as Godfrey suggests, have "incentives to be socially responsible to maintain a positive image, since a positive reputation in the minds of key stakeholders may serve as a form of social insurance, protecting the firm's (and family's) assets in times of crisis" (as cited in Dyer and Whetten, 2006, p. 785).

In regard to the food industry, consumers' CSR expectations are high, given that "companies in this industry face many CSR issues, such as obesity, food/product safety, alcohol abuse and packaging management" (Assiouras, Ozgen & Skourtis, 2013, p. 109). Hartmann (2011) shows that CSR provides particular challenges with reference to the food sector. Firstly, the food sector "has a high impact and strongly depends on natural, human and physical resources" whilst "food covers basic human needs people have strong views on what they eat" (p. 298). Furthermore, the food sector might further be closely linked to societal concerns such as animal welfare or labor practices. Secondly, Hartmann argues that large (multinational) companies have the power to influence and pressure SMEs to improve their environmental and social performances. Consequently, this request for complying with CSR standards and codes by supply chain partners might lead to more sustainable food supply chains (p. 313). Hartmann concludes that SMEs (such as Hug) should be aware of this supply chain pressure and pursue a proactive strategy since "the current trend of a stronger recognition of social and environmental aspects of main stakeholders continues" (p. 315). Maloni and Brown (2006, p. 38) also argue that CSR gains importance in the food supply chain not only due to the "nature of the product as

animal/plant based consumables that are required for existence but also the complex, labor intensive nature of food supply chains". In figure 2, they show how CSR can be placed within the food supply chain.

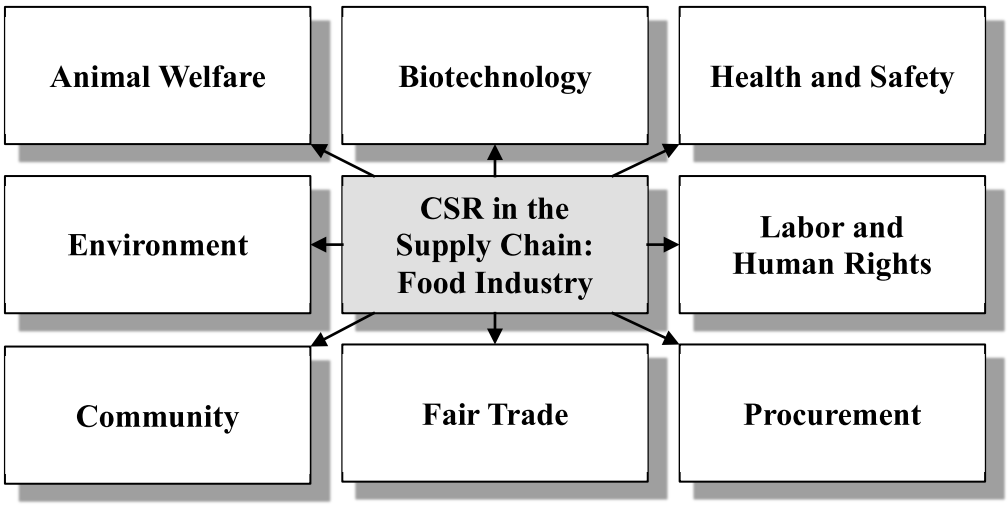

Figure 2. Dimensions of CSR in the food supply chain. Adapted from "Corporate Social Responsibility in the Supply Chain: An Application in the Food Industry", by Maloni, M. J., & Brown, M. E., 2006, p. 38

2.1.2 Corporate sustainability and its connection to CSR

The term 'sustainability' was used for the first time by Hans Carl von Carlowitz in 1713 to explain "the simple principle that you cannot harvest more wood from a forest than it can grow, if you wish to durably preserve the forest" (Fischler, 2013, p. 14). Sustainability therefore stems from forestry and can be seen as a reserve-conserving concept to ensure future gains of resources (Stierl & Lüth, 2015, p. 5). Nowadays, the most frequently quoted definition of 'sustainability' or 'sustainable development' can be found in *Our Common Future,* also called the Brundtland Report, issued by the United Nations in 1987:

> Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. (United Nations, 1987, p. 37)

However, the notion of sustainability emerged and gained attention particularly in 1972, when the Club of Rome released "Limits of growth" (Jeronen, 2013, p. 2371;

Stierl & Lüth, 2015, p. 5; Kanning, 2013, p. 23; Fischler, 2013, p. 14). Baumgartner (2013) argues that sustainability cannot be defined as a condition per se, but rather a capability – thus "sustainABILITY" (p. 302). Furthermore, Jeronen (2013, pp. 2371–2373) describes sustainability as the following:

> Sustainability is seen as a paradigm for thinking about the future in which environmental, societal, and economic considerations are balanced in the pursuit of an improved quality of life (…). Sustainability is often said to pertain ecological issues. It concerns our environment, but should not and cannot be restricted only to our natural environment (…) It is (…) a dynamic balance between human beings, artificial systems, and their environment.

The environmental, societal and economic considerations might also be referring to the three-dimensional model of sustainability, as shown in figure 3 and defined by the Swiss Interdepartmental Sustainable Development Committee [ISDC] (2007, p. 9). These three dimensions are also described as goals for sustainable development (Stierl & Lüth, 2015, p. 6; Kanning, 2013, p. 27). Furthermore, both the ISDC and Kanning stress the importance of balancing the dimensions and considering them as equitable goals. These dimensions might also refer to the 'triple bottom line' which requires corporations not only to strive for profits, but also to care for the people and the planet (Du Plessis & Grobler, 2014, p. 1; Hasenmüller, 2013, p. 21; Klein, 2011, p. 8).

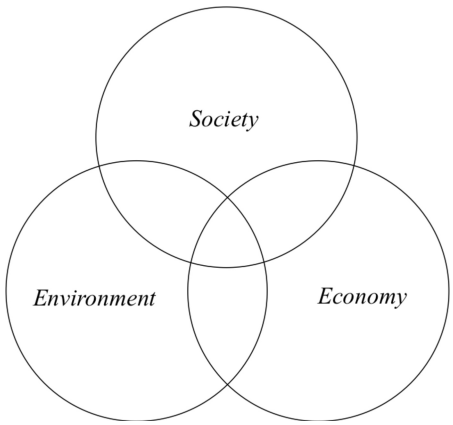

Figure 3. The three-dimensional model of sustainability. Adapted from the "Sustainable development in Switzerland: A guide", by the Interdepartmental Sustainable Development Committee [ISDC], 2007, p. 9

In Switzerland, the Swiss Federal Council (2012) developed a sustainable development strategy which draws on the importance "that there are limits to what the global ecosystem can bear, and the priority that must be given to satisfying essential needs, particularly those of the poorest sections of society" (p. 4). Furthermore, the strategy implies that all the cantons must strive for "a balanced long-term relationship between nature and its capacity for renewal, on the one hand, and the burdens placed on it by humans, on the other" (p. 12). In view of the food industry and food waste, the strategy includes the following measure "4–1: Promoting sustainable agricultural and foodstuffs industries":

> The Federal Council is committed to sustainable agricultural and foodstuffs industries which encompass the whole of the value chain, from production to foodstuffs waste management. The objective is therefore to establish an integrated quality strategy at national level. At the international level, the federal government specifically supports the UN Food and Agriculture Organization (FAO) and the UN Environment Programme in drawing up its programme to promote sustainable agriculture and a sustainable foodstuffs industry. A forward-looking animal health strategy also forms an integral part of sustainable agricultural and foodstuffs industries.
> (Swiss Federal Council, 2012, p. 34)

Ultimately, the Swiss Federal Council further stresses the importance of the renewal of Millennium Development Goals towards targets for global sustainable development (p. 44). The last sections in this subchapter will describe how corporate sustainability is connected to CSR.

According to Baumgartner (2013, p. 302), the European Communities' aforementioned definition extended the term CSR to ecological aspects. Hence, Baumgartner argues that this is the reason why CSR might also be used as a synonym to corporate sustainability (p. 302). Lloret (2015, p. 1) states that "conceptually, corporate sustainability stems from the broader concept of sustainable development and represents a construct parallel to corporate social responsibility".

Horrigan (2010, p. 34) explains that it is "impossible to find a meaning [of CSR] that will accommodate even the majority of actual uses of the term (…), let

alone its increasingly popular surrogate 'corporate sustainability'". Stierl and Lüth (2015) also show that the concept and idea of sustainability led to the later concept of CSR. Klein (2011, p. 51) illustrates both corporate sustainability and CSR as being part of contributing to society's sustainable development. Furthermore, the International Organization for Standardization [ISO] states that "the objective of social responsibility is to contribute to sustainable development" (2014, p. 5). Fischler (2013, p. 19) argues that "the best way to put sustainability into practice in the free economy is by means of CSR". Ultimately, in their Sustainable Development Strategy, the Swiss Federal Council (2012, p. 33) considers CSR as "a voluntary contribution by business to sustainable development". Thus, CSR and corporate sustainability (or sustainable development) are indeed closely linked and might often be considered or even used interchangeably.

2.1.3 Corporate environmental responsibility (CER) and greenwashing

In one of their empirical studies, Lunau and Wettstein (2004) asked 1000 German citizens on their thoughts on corporations' social responsibility. 100% state that environmentalism ("Umweltschutz") and thus also sustainability is part of corporate social responsibility (p. 36). Additionally, both corporate sustainability and CSR embed the environment into one of their dimensions. McCarthy and Marshall (2015) stress the importance of the following:

> In previous decades, companies were allowed to use natural resources such as air and water with no thought for the cost to society. Due to the damage done to the environment and to the health and safety of their citizens, governments intervened to address these environment-damaging practices. (p. 344)

Therefore, companies – including Hug – need to account for the fact that consumers increased their demand for environmentally sound products. At the same time, however, consumers are aware of the fact that not all companies care for the environment on a voluntary basis. This chapter thus briefly discusses corporate environmentalism and the phenomenon *greenwashing* since corporate environmentalism is often connected to the notion that companies make use of 'green' practices in particular for image purposes (Meyer, 2014, p. 5). Hug also expresses the concern that their stakeholders (consumers, employees or suppliers)

might share these opinions. The following sections thus provide a brief description on both corporate environmentalism and greenwashing.

(1) Corporate environmentalism. Bowen (2014) describes corporate environmentalism as the following:

> Corporate environmentalism is the voluntary attempts of managers to adopt, implement and communicate solutions to environmental problems (...) [It] is defined as environmental changes made by managers to firms' practices, process or strategies beyond those required by law. (p. 41)

Corporate environmentalism can thus also be linked back to the dimension of voluntariness as seen in CSR. Furthermore, Gunningham (2009, p. 1) argues that corporate environmental responsibility (CER) can be seen as a subcategory of CSR, "which refers to voluntary and unenforceable action beyond that which is required by law". According to Meyer (2001, p. 19), "environmental issues, not the environmental impacts themselves, are the reason why stakeholders are changing the rules of the game for business".

(2) Green washing. Bowen (2014) defines green washing as "the label given when deliberate positive disclosure exists in parallel with poor substantive environmental performance" (p. 32) or "a special case of merely symbolic in which firms deliberately manipulate their communications and symbolic practices so as to build a ceremonial façade" (p. 33). Dahl (2010, p. 247) adds that green washing describes the "practice of making unwarranted or overblown claims of sustainability or environmental friendliness in an attempt to gain market share". At this point, it should be noted that by preventing green washing, miscommunication with stakeholders can be avoided. Thus, a sound CSR communication strategy should take into consideration that consumers and other stakeholders are in no way misled about a firm's environmental performance. Furthermore, the underlying drivers of why companies engage in green practices should be highlighted as well.

As an ultimate step, figure 4 gives an overview of how all the afore-mentioned concepts and definitions are related with one another.

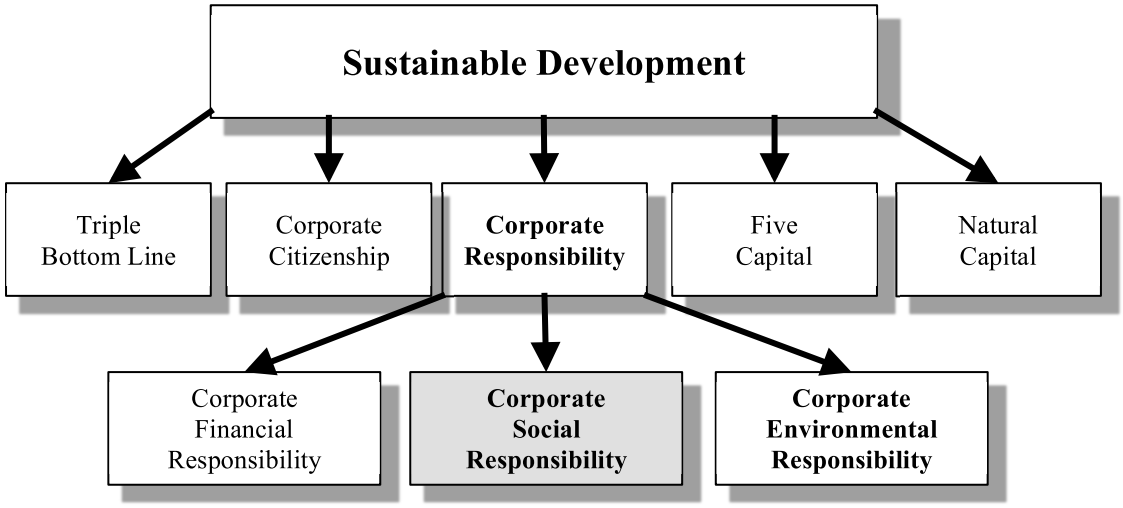

Figure 4. Five notions of sustainable development in corporations. Adapted from "Exploration of corporate social responsibility (CSR) in multinational companies within the food industry", by Rana, P., Platts, J. & Gregory, M., 2009, p. 9

2.2 Food Waste

Firstly, this chapter addresses the concept of excessive inventory and food waste, presenting both definitions and discussing the different types of food waste. However, as outlined in the introduction, food waste is only discussed in more depth at the retail, and not at the production level. Secondly, figures on food waste of both the global and Swiss bakery industry are shown. Thirdly, reasons and causes for food waste are discussed before elaborating on prevention and reduction strategies on both the overall and the bakery industry level. Ultimately, barriers for reducing food waste as well as food waste initiatives are discussed.

2.2.1 Definition of food waste

Firstly, it is worth mentioning that definitions on food waste differ across the globe. This thesis leans on definitions provided by the Food and Agriculture Organization of the United Nations, which is cited most often and is also used by the Swiss Federal Office for Agriculture (FOAG). Furthermore, the FAO's study "Global Food Losses and Food Waste—Extent, Causes, and Prevention" (2011) was "the first systematic effort to quantify food loss and waste at a global and regional level [which] was an important step in addressing this challenge" (Lipinski et al., 2013, p. 28). In one of their papers, the Organization for Economic Co-operation and Development (OECD) further stresses the importance of finding a commonly agreed

definition since it is "key to measuring food waste in a consistent way across sectors and countries" (Bagherzadeh, Inamur, & Jeong, 2014, p. 7).

Consequently, a distinction needs to be made between food loss, food waste and food wastage. According to the FAO, food waste, loss and wastage can be described as the following:

Food loss	▪ refers to a decrease in mass (dry matter quantity) or nutritional value (quality) of food that was originally intended for human consumption ▪ losses are mainly caused by inefficiencies in the food supply chains, such as poor infrastructure and logistics, lack of technology, insufficient skills, knowledge and management capacity of supply chain actors and lack of access to markets. In addition, natural disasters play a role.
Food waste	▪ refers to food appropriate for human consumption being discarded, whether or not after it is kept beyond its expiry date or left to spoil ▪ often this is because food has spoiled but it can be for other reasons such as oversupply due to markets, or individual consumer shopping/eating habits
Food wastage	▪ refers to any food lost by deterioration or discard ▪ the term "wastage" encompasses both food loss and food waste

Figure 5. Definitions of food waste. Adapted from "Toolkit: Reducing the food wastage footprint", by FAO, 2013b, p. 11

Unlike food loss, food waste refers more to retailers and consumers' behavior. Food waste therefore occurs rather at the end of the food supply chain whilst food loss can occur throughout the entire food supply chain (FAO, 2011, p. 2). Food that is considered inedible or not intended for human consumption is excluded at this point.

2.2.2 Definition of excessive inventory ('Retouren')

Primarily, it is to be noted that this chapter aims at defining and translating the German term '*Retouren*'. This term is rather industry specific and is known and used in both the Swiss and German bakery industry. However, the translation of this term into English has proved to be difficult. Hence, for further interest, the digression portrayed in this chapter describes the process of agreeing on the English term *excessive inventory*.

With regard to Hug, excessive inventory is defined as products (sales articles) that cannot be sold within the defined selling period – the best-before date. It refers to excess supply of products at the end of a sales day. Excessive inventory is considered as loss; however, it differs from other types of losses incurred at Hug. For

instance, the term used for products which do not meet required quality requirements is *'Bruch'* ("breakage"). Breakages include products that are not allowed to be sold to consumers for other reasons than their best-before date. In 2015, breakages and excessive inventory were measured as separate entities. As per January 2016, the two measurements were merged. The *Schweizerischer Bäcker-Confiseurmeister-Verband* (SBC) also refers to the term Retouren. Furthermore, the *Neue Zürcher Zeitung* (NZZ) describes in one of their articles that minimizing excessive inventory ('Retouren') implies reducing the excessive supply of bread (Gallarotti, 2014, para. 8). With reference to Germany, Schünemann (2008) defines excessive inventory in his textbook as the following:

> Retouren (= aus dem Französischem) sind Rücksendungen an den Lieferer. (…) Die Warenmenge soll die Nachfrage für den Verkaufstag abdecken. Es sollen jedoch auch nur so wenig Waren wie möglich übrig bleiben (= 'Retouren' genannt). (p. 228)

Furthermore, the German *Allgemeine Bäcker Zeitung* also uses the term Retouren in order to describe a specific type of cost incurred at bakeries (Speyer, 2006, para. 2).
The German term 'Retourenmanagement' is related to the notion of reducing or managing excessive inventory more efficiently in order to reduce the costs incurred. Furthermore, it includes defining strategies to generally reduce the amount of excessive inventory. In contrast, Retourenmanagement is referring to or translates into the English terms 'returns management' or is similar to 'reverse logistics' (Asdecker, 2014, p. 14). Asdecker notes that Retourenmanagement is a rather recent term and concept in German-speaking regions and has thus not yet received considerable attention in academic research fields (p. 13). Rogers et al. (2002, p. 5) define returns management as "part of supply chain management that includes returns, reverse logistics, gatekeeping and avoidance". It further includes disposition guidelines and the measurement of financial aspects of returns (p. 16). However, it is to be noted that both Retourenmanagement and returns management refer to 'returns' which might stem from other retail industries, particularly online sales. Returns thus support the notion of products returned from the customer, supplier or seller. Ultimately, it can be said that certain ideas and concepts of Retourenmanagement and returns management might be applied to the idea of excessive inventory.

Mollenkopf, Russo and Frankel (2007, p. 570) state that the "notion of returns management in Europe became an issue related to sustainable development". Furthermore, they argue that the subsequent changing legislation triggered further academic research in the field of returns management. Yet, special attention needs to be paid to the distinct differentiation of excessive inventory used within the bakery industry and the commonly used term for returns from both customers and suppliers.

***Digression**:*
The difficulty of translating 'Retouren'

The initial term used to translate 'Retouren' in the title of this bachelor thesis was denoted as "returns". However, as returns refer to the notion of (dissatisfied) customers bringing products back to the store, returns were not considered as the appropriate translation. Yet, few sources exist which refer to returns to describe Retouren. A report on bakery products submitted by the US International Trade Commission states (USITC, 2003):

> A standard cost for commercial bakeries is the cost associated with returns of unsold, stale bread and other fresh bakery products. (…) technology extends the shelf life of the bread or other bakery products, allowing the product to remain on the store shelves longer and thus reducing returns. (…) as a result of fewer returns, bakeries need to produce fewer loaves of bread (p. 20)

In this report, returns might indeed be compared to the German term Retouren. Another report on the US bakery industry written by a market research institute describes returns as one of the bakery industry's business trends:

> *Thrift Stores Sell Retailers' Returns* - Bakers taking back goods that haven't been sold by retailers by a prescribed freshness date is an accepted practice in the fresh-baked goods industry. While many bakers discard the returns, some operate retail thrift stores and sell the returned product at discounted prices. (First Research Industry Profile, 2014, p. 7)

Again, returns might appear to be the exact translation for Retouren in this case. Still, returns were considered as an inappropriate term. The connotation attached to returns seemed confusable or even pejorative. In order to resolve this issue, several bakeries in the US (2 in total), Canada (1), Australia (1) and the UK (3) were contacted by phone and e-mail. Furthermore, one language expert was consulted. Despite all these efforts, no clear solution could be provided. The terms suggested varied from "pigs waste", "pigs treats", "write-offs" or just simply "waste". Some bakeries did not suggest a term at all – they argued that no such specific term existed. Ultimately, with both the client and the supervisor of this thesis, the term *excessive inventory* was agreed to since this term's connotation is considered more appropriate.

2.2.3 Types of food waste

As afore-mentioned, food waste and loss can occur at different stages at the food value chain. At the distribution and marketing stage, food waste or loss can occur "in the form of edible food discarded because it is non-compliant with aesthetic quality standards or is not sold before 'best before' and 'use-by' dates" (Lipinski et al., 2013, p. 4). In other words, food waste at this stage include edible products that are (1) sorted out due to quality, (2) expired before being purchased or (3) spilled or damaged in the market (p. 4).

Food waste can further be divided into avoidable, possibly avoidable and unavoidable categories (Parfitt et al., 2010, p. 3077). Beretta, Stoessel, Baier and Hellweg (2013) define these three categories as the following (p. 764):

Avoidable losses	▪ refer to food and drink thrown away because they are no longer wanted, e.g. because they perished or exceeded their date of expiry ▪ most avoidable losses are composed of material that was, at some point prior to disposal, edible, even though a proportion is not edible at the time of disposal due to deterioration (e.g. rotting, decomposition)
Possibly avoidable losses	▪ refer to food and drink that some people eat and others do not (e.g. apple peels), or ▪ can be eaten when prepared in one way but not in another (e.g. potato or pumpkin skins), or ▪ are sorted out due to specific quality criteria (e.g. bent carrots)
Unavoidable losses	▪ comprise waste arising from food and drink preparation that is not, and has not been, edible under normal circumstances; this includes apple cores, banana skin, tea leaves, coffee grounds, and inedible slaughter waste ▪ additionally, harvesting, storage, transportation, and processing losses that are not avoidable with best available technologies and reasonable extra costs are also classified as unavoidable

Figure 6. Food waste categories. Adapted from "Quantifying food losses and the potential for reduction in Switzerland", by Beretta et al., 2013, p. 764

2.2.4 Food waste figures in regard to the (Swiss) bakery industry

Primarily, it should be noted that food offered at Hug's stores includes both bread, pastries and related products such as sandwiches or salads. In regard to food waste, the distinction between different types of food is considered rather relevant since

throwing away a sandwich that contains meat exerts a different impact in comparison to throwing away 'plain' bakery items (without fillings for instance). According to the World Wide Fund (WWF), losses consisting of meat products harm the environment the most (2012, p. 7). The FAO (2013a, p. 58) states that "meat has high impacts in terms of land occupation and carbon footprint, making it a major environmental hotspot". Furthermore, "growing a tomato (13 litres of water) is much less water intensive than producing a beefsteak (7,000 litres of water)" (FAO, 2013b, p. 17).

As mentioned in chapter 1, one-third of the food bought is thrown away – globally as well as in Switzerland. Based on data compiled by the FAO's study (2011), "cereals comprise the largest share of global food loss and waste by caloric content – 53 percent" (Lipinski et al., 2013, p. 6). According to Beretta et al. (2013, p. 766), the Swiss consumption per year of bread wheat (breads and pastries) at the retail level amounts to 392,322 tonnes. Almost half of the common wheat in Switzerland is lost (WWF, 2014, p. 3). However, only 5% of this food is wasted at the retail level, whilst 45% is wasted at the household level (Beretta, 2012, p. 9). According to Beretta et al. (2013, p. 764), the food value chain is defined as "the system of organizations, people, and activities involved in moving food from its producer (usually the farmer) to the consumer". Along this chain, food waste can occur at the agricultural, post-harvest, processing, distribution and consumption level. In high-income countries, most food losses occur at the retail and consumer levels. In comparison, food losses in low-income countries mostly occur at the storage, transport and processing levels (FAO, 2015, p. 10). In regard to measuring the amount of food wasted, WWF (2014, p. 10) refers to a value chain of bread wheat with stages, as depicted in figure 7 on the following page:

(I) the *agricultural production* of bread wheat,
(II) the *grain distribution* through collection points and grain dealers,
(III) the *processing*, which includes both the processing of grain of wheat to flour in milling plants and the production of bread in bakeries,
(IV) the *sale* of finished products in retail and bakery chains, and ultimately
(V) the *consumption*, which includes consumption at home and outside homes

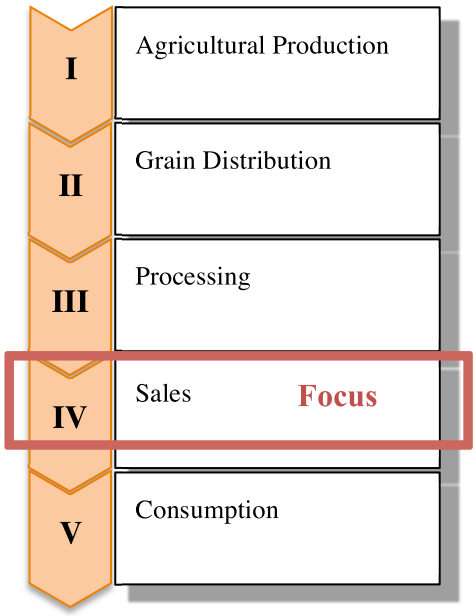

Figure 7. Value chain of bread wheat. Adapted from "Lebensmittelverluste bei Fleisch, Gemüse und Brot: Schätzungen und Handlungsansätze für die Schweiz", by WWF, 2014, p. 10

It can be said that less than 1% of avoidable bread wheat losses occur at the first stage of production (WWF, 2014, p. 11). Losses are measured in units of energy [kcal], and not weight [kg] where 100% stands for the initial amount of energy at the beginning of the value chain. Ultimately, as confirmed by Beretta, only 3% are lost at the retail level whilst 13% are lost at the processing and 21% are lost at the consumption level.

2.2.5 Causes for food waste

This chapter aims at outlying causes why food waste occurs with a particular focus on the retail level and, therefore, excessive inventory. Generally, food waste is caused by a number of reasons. These might include over-purchasing, poor preparation, inadequate storage or excessive serving sizes (Bagherzadeh, Inamur, & Jeong, 2014, p. 8). Furthermore, causes of food waste are common to both the household and the food service sectors and involve "a range of issues including portion size, labelling, packaging, storage, awareness, preferences, planning and socio-economic factors" (Monier et al., 2010, p. 30). Furthermore, the WWF (2012, p. 5) argues that the reason for half of the food wasted in Switzerland is that products are not consumed in a timely manner or expire their best-before. The other half of the food wasted is caused by quality norms or eating preferences. Beretta (2012, p. 28)

adds that one of the key causes for food waste in Switzerland lies in excess production or supply. As already mentioned in this thesis, food waste occurs at different stages of the food value chain, which is often referred to as process stages from "farm to fork". The following figure 8 by Monier et al. (2010) compares key causes of food waste in different sectors, including the retail sector.

	Manufacturing & Processing	Wholesale & Retail		Food Service and Restaurants			Households
		Distribution & Wholesale	Retail	Hospitality industry	Schools	Hospitals	
Awareness				●	●	●	●
Knowledge			●	●	●	●	●
Attitudes				●	●		●
Preferences					●	●	●
Portion size			●	●	●	●	●
Planning				●	●	●	●
Storage		●	●				●
Socio-economic factors							●
Labelling			●	●	●		●
Packaging	●	●	●				●
Handling		●	●				
Stock management		●	●				
Logistics	●			●	●	●	
Product quality requirements	●		●				
Technical malfunctions	●						

Figure 8. Key causes of food waste and impacted sectors. Adapted from "Final report - preparatory study on food waste across EU 27", by Monier et al., 2010, p. 31

It shows that at the retail level, knowledge, portion size, storage, labeling, packaging, handling, stock management and product quality requirements are amongst the key causes of food waste in European countries.Stock management for instance implies difficulties anticipating demand. These difficulties may result in overstocking and affect most product groups. Seasonal foods (Christmas cakes or Easter eggs for example) are particularly sensitive to this due to their short shelf life" (Monier et al., 2010, p. 37). Furthermore, food waste occurs due to a lack of incentives for higher accuracy in stock management. This exists due to "take-back provisions in contracts with suppliers and low cost of discarding food" (Monier et al., 2010, p. 10). Additionally, Monier et al. (2010) argue the following:

> Marketing strategies (two for one deals, for example) often promote food nearing the end of its edible life, addressing overstocking problems. However, this may shift some of the food waste from Retail level to Households, where sufficient time to safely consume the product is lacking. (p. 37)

With reference to marketing standards, food waste occurs since aesthetic issues or packaging defects cause some products to be rejected, although neither food quality or safety is affected.

In Germany, a study identifying key causes and prevention strategies for food waste in Nordrhein-Westfalen summarized the following seven key causes across products (Göbel, 2012, p. ix):

(1) determination of process- and market-related standards and quality requirements,
(2) legislation, particularly for food safety guarantees,
(3) market conventions, which include constant product availability, variety and freshness, (e.g. full shelves at all times)
(4) human errors,
(5) technical malfunctions,
(6) logistics and
(7) cultural influences

The best-before date ("Mindesthaltbarkeitsdatum" [MHD]) is mentioned as a distinct requirement of market-related standards (1) since it represents an issue still under political debate. Unlike the use-by date, the best-before date provides information on the point in time at which the product's quality characteristics are still guaranteed by the supplier. Products therefore might still be eaten after this date, but do not look, feel or taste the same as when they were bought. The use-by date, on the other hand, is used for food products that are perishable and pose danger to consumers' health. Food product dates are therefore "intended to provide consumers with information regarding the freshness and safety of foods" (Lipinski et al., 2013, p. 22).

The issue with best-before dates arises from the fact that producers sometimes label their products with a shorter best-before date in order to protect themselves from image damages (Göbel, 2012, p. 36). However, the different dates confuse consumers "about how long it is safe for them to store food and when they should dispose of uneaten items" (Lipinski et al., 2013, p. 22). Lipinski et al. (2013, p. 23) define and differentiate the terms in the following way as shown in figure 9.

Type of date	Definition
Sell-by or Display until	Tells the store how long to display the product.
Best-if-used-by or Best before	Recommends the date by when to consume the product in order to experience peak flavor and quality. It does not pertain to the safety of the product.
Use-by	The last date recommended for the use of the product from a food safety perspective.

Figure 9. Definition of food product dates. Adapted from "Reducing food loss and waste" by Lipinski et al., 2013, p. 23

Referring back to Göbel's study and with reference to cultural influences (7), the study describes that todays' society accepts to throwing away food, unlike the society from 50 years ago. Furthermore, consumers expect their food to be constantly available, fresh and with the longest possible best-before date (p. 41). Or, as described by the FAO, one of the most important causes for food waste at the consumer level in industrialized, 'rich' countries is the fact that "people simply can afford to waste food" (FAO, 2011, p. 14). Cultural influences might further be compared to Monier et al.'s 'socio-economic factors' (figure 8). Socio-economic factor include examples such as single person households being more wasteful due to the lack of opportunity for sharing food or young people wasting more food due to the lack of experience in meal-planning or lack of concern (Monier et al., 2010, p. 36). Furthermore, Göbel's (2012) study also examined causes of food waste in German bakeries. Key causes for food waste at the bakeries' stores (retail level) include the following (p. 28):

(1) Loss of quality:
- deviations from product specifications/requirements
- short-dated freshness of bread and other baked goods

(2) Excess inventory (referred to as 'Warenüberhang')
- product availability until closing time
- buying behavior and, consequently, purchase quantity difficult to estimate and calculate

Deviations from product specifications (1) imply for instance that consumers will not buy and accept bread or buns that are too flat, too small, and too dark and so forth. Furthermore, the "ultra-freshness" of bakery products is another major cause of food

waste since consumers demand the products to be fresh as long as possible and at all times. Another study conducted in Germany summarizes the following categorization for causes of food waste:

Technical malfunctions	defective batches, production losses, labelling mistakes, etc.
Damages and deterioration	at transportation, packaging, storage, etc.
Quality assurance	internal quality criteria, (retention) samples, sorted products etc.
Excess production	Excess inventory (‘Retouren’), planning errors, fluctuating demand

Figure 10. Categorization of food waste causes. Adapted from “Ermittlung der weggeworfenen Lebensmittelmengen und Vorschläge zur Verminderung der Wegwerfrate bei Lebensmitteln in Deutschland”, by Kranert et al, 2012, p. 25

With regard to Switzerland, Millere (2015) concludes that one of the key causes for food waste in Swiss bakeries at the retail level is the constant struggle of offering a full range of products at all times during the sales day. As already mentioned, bakeries are brought under this pressure in order to stay ahead of competition or prevent customers from defecting to competition. Another reason mentioned by Millere (2015) is management’s misjudgments in planning appropriate production volume or purchasing quantities. Particularly the rapid change of weather is a significant factor influencing the purchase order quantity (Millere, 2015, p. 50). However, when planning the amount to be produced or ordered, Millere mentions other “human” factors such as bad concentration, stress, negligence or lack of interest, lack of information, lack of knowledge and lack of education. Overall, Millere’s study summarizes the following factors causing waste at the retail level in Swiss bakeries (Millere, 2015, p. 54):

- fastidious and spoiled customers,
- little appreciation for baked goods,
- lack of knowledge,
- employees’ lack of concentration, stress, negligence or disinterest,
- incorrect planning of production volume/purchasing quantity, or
- rapid change of weather and lack of possibility to change orders

The cause of excess inventory lies also in requirements and standards imposed by both the government and customers. Furthermore, the issue of the products' freshness and their corresponding perishableness presents great challenges for reducing excessive inventory.

Additionally, Kranert et al. (2012, p. 217) argue that current social conditions and developments support food waste. The following examples include:

- excess supply of food, constant availability
- increasing mobility, flexibility and acceleration of daily life
- socio-demographic changes (more single-households, urbanism, social disparities)
- alienation of food production leads to lack of appreciation for food (particularly for people born after 1950 who have not experienced food shortages)
- loss of product characteristic (no awareness of origin)
- loss of social and emotional connection (loss of family traditions, recipes)

Bakeries must therefore be conscious of the current socio-demographic changes and their meaning for costumer behavior towards food waste.

In conclusion, causes from food waste range from socio-demographic factors, customer and employee behavior to quality standards, legislation and technical malfunctions. Causes for excessive inventory vary from incorrect planning, rapid weather changes to constant product availability, loss of quality or customers' and employees' lack of interest and knowledge. Identifying these causes is the first important step in reducing and preventing excessive inventory. As a second step in reducing food waste, the next chapter elaborates on disposal and recovery options for food waste.

2.2.6 Disposal and recovery options

As described in chapter 1, this bachelor thesis focuses on strategies on how to reduce excessive inventory. Excessive inventory can be reduced (1) ex ante, before it incurs and (2) ex post, after it incurred. The former focuses on avoidance and prevention strategies (as described in the following chapter 2.2.7) whilst the latter focuses on disposal and recovery options (as described in this chapter). These options are considered relevant since they lead to considerable cost reductions. Additionally, they provide opportunities to reuse excessive inventory for further production and thusly to make profit.

According to Bagherzadeh et al. (2014, p. 10), disposal refers to the end-of-life treatment of food waste with no valorization. The Swiss Federal Office for the Environment (FOEN) describes that in Switzerland, the most popular method for generally disposing waste is recycling. Furthermore, another important method is the energetic recovery of waste in municipal solid waste incineration plants (MSW) or other forms of incineration. Other waste disposal methods include chemical-physical or biological treatment and landfill. Overall, the FOEN argues that "waste should undergo material recycling or thermal treatment. If this is not possible for technical reasons, or it is not economically viable, the waste is deposited in a landfill following suitable treatment" (FOEN, 2015, para. 1). Ultimately, food waste can be considered as *biogenic waste* which is waste of plant, animal or microbial origin (VVEA, 2015, Art. 3d). In regard to waste disposal methods, the Swiss regulation *Verordnung über die Vermeidung und die Entsorgung von Abfällen* (VVEA) describes the following terms relevant for disposing food waste:

Composting plants	▪ Waste plants in which biogenic waste is decomposed with air supply (aerobic)
Fermentation plants	▪ Waste plants in which biogenic waste is decomposed without air supply (anaerobic)
Landfills	▪ Waste plants in which waste is deposited in a controlled manner
Thermal treatment	▪ Treatment of waste with high temperature in order to destroy environmentally hazardous substances

Figure 11. Definition of waste disposal methods. Adapted from "Verordnung über die Vermeidung und die Entsorgung von Abfällen (Abfallverordnung)", p. 1, §1.3

In Switzerland, a postulate was submitted in 2012 suggesting that the Swiss Federal Council should impose an obligation for restaurants and shopping centers to adequately dispose food waste (Chevalley, 2012, p. 4). This postulate was encouraged by France's decision in 2012 to oblige the biggest producers of food waste, restaurants and shopping centers, to adequately dispose food waste. The recovery of food waste may happen through several options as shown in figure 12.

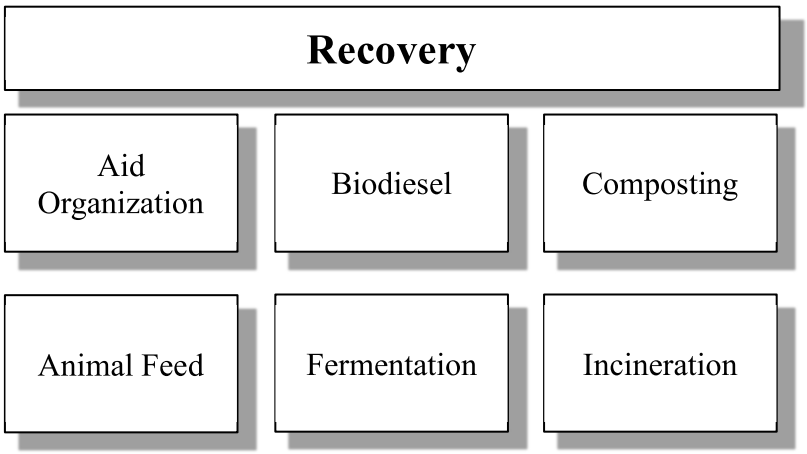

Figure 12. Food waste recovery options. Adapted from "Nahrungsmittelverluste", by Chevalley, I., 2012, p. 9

According to the WWF (2012), the most ecologically sound methods of disposing food waste are animal feed and fermentation, since most of the food can be used for the production of both materials and energy. Animal feed might perform best since materials are used more directly and efficiently in comparison to fermentation. Furthermore, both animal feed and fermentation lead to lower CO_2 emissions compared to incineration and composting. Composting does not use the biomass' full energy potential whereas incineration does not lead to closed material cycles. For consumers, ultimately, the WWF suggests that food waste shall not be drained into wastewater, since its processing requires additional energy (2012, pp. 7–9). In July 2011, a feed ban was enforced in Switzerland which prohibits animal feeding of food waste containing animal products (Jakob, 2011, para. 1). Since then, Beretta et al. (as cited in Chevalley, 2012, p. 10) estimate that of all the food waste generated in the Swiss retail business,

- 43% is fed to animals,
- 43% is fermented,
- 11% is composted,
- 2-3% (mainly butcher's wastages) is incinerated and
- <1% is processed into biodiesel

In Germany, according to Göbel (2012, p. 91), most of the food industry's food waste is processed in biological treatment plants. Examples for biological treatment plants include biogas plants where part of biogenic residues ("Reststoffe") is converted into biogas. Beretta (2012, p. 38) further divides the different recovery options for (food) waste into three levels of recovery, as shown in figure 13.

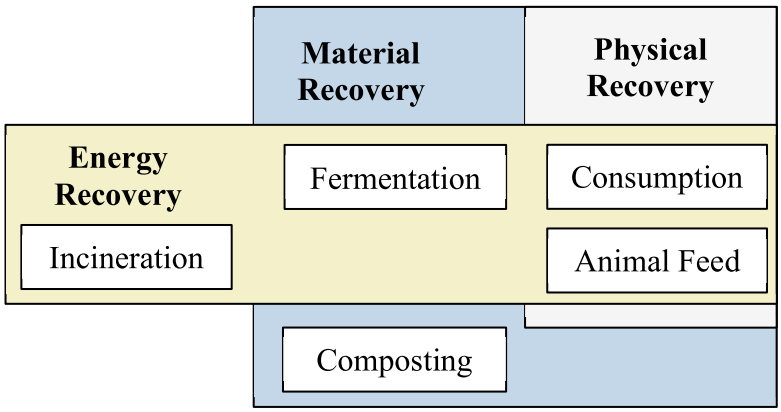

Figure 13. The three levels of food waste recovery. Adapted from "Nahrungsmittelverluste und Vermeidungsstrategien in der Schweiz", by Beretta, C., 2012, p. 38

In figure 13, Beretta shows that energy is recovered in Switzerland when food waste is transformed into 1) electricity by incineration, 2) biogas by fermentation and 3) material by consumption or animal feed. Furthermore, material recovery implies that food waste can be reused as fertilizer in agriculture for growing plants whereas the physical recovery further includes consumption or animal feed. Ultimately, Beretta (2012, p. 26) mentions that disposal and recovery options include the 1) reuse (e.g. bread processed into breadcrumbs), 2) processing (e.g. production of dog bones, cosmetics) and 3) sewerage of food waste.

In regard to food waste in bakeries, Beretta et al. (2013, p. 770) explain that the amount of food waste depends on the bakery's size, location and variety of

products. Accordingly, losses in major branches at a city bakery with 20 to 30 branches are estimated at 5% whilst in smaller branches losses can amount to 20%. Thereof, "1.6% are reused in their own production (e.g. as bread crumbs) and 0.4% are donated (…) the remaining 6% are fed to livestock". Methods for reusing bread is described by a study conducted in Austria as the following (Schneider & Scherhaufer, 2009):

> Einwandfreies und der unmittelbaren Berührung durch den Käufer nicht zugänglich gewesenes oder einwandfreies originalverpacktes Brot kann als getrocknetes Restbrot, in einem geeigneten Verfahren entsprechend zerkleinert, bis zu 3 %, jedoch bei Pumpernickel, Simonsbrot, Schrotbrot und Vollkornbrot bis zu 10 %, des Gesamtgewichtes der Mahl- und Schälprodukte zugesetzt werden. (p. 32)

Depending on the type of product, bread (as part of excessive inventory) can therefore be processed by drying or being mixed with water for further production of new, fresh bread. Another method mentioned by Schneider and Scherhaufer (2009, p. 48) includes the production of pregelatinized flour ("Quellmehl"), which is a complex procedure of recovering excessive inventory and not discussed in this thesis.

In regard to traditional bakeries, most unsold products are either consumed by the staff or reused, whilst only 1% of the volume of sales are fed to animals (p. 770). Furthermore, the most significant losses can be attributed anew to customers, where 30-50% of the bakery products bought are lost – either due to excess supply or other (freshness) preferences (Beretta, 2012, p. 66).

At Hug's branches, excessive inventory is divided into perishable and non-perishable products. Perishable products such as pastries are placed into garbage bags or boxes. This "waste" is brought back to Hug's headquarters, compressed first and then forwarded to an incineration plant. Non-perishable products such as bread are also brought back to Hug's headquarters and then sold to farmers who process the products to animal feed. An agreement is made which requires farmers to use the products for animal feed only. In one of their branches, Hug is currently collaborating with Caritas, a social institution. Caritas collects excessive inventory twice a week directly at the branch. The products include bread, buns and pastries

and must not be perishable. Another project currently supported by Hug is carried out by volunteer cooks who collect bread (from the previous day) for special regional dinners to bring people together.

Ultimately, Hug employees are granted 30% discount on daily (fresh) products; however, they are not allowed to take excessive inventory home for free. More detailed data and figures on excessive inventory incurring at Hug is discussed in chapter 3.2.1.

2.2.7 Prevention and reduction strategies on an overall level

This chapter discusses prevention and reduction strategies for combating food waste. In a first step, it elaborates on reduction strategies of food waste at an overall level. In a second step, it focuses on strategies for the retail level. Specific reduction and prevention strategies for the bakery industry follow in the next chapter.

On a global level, the framework for disposal or recovery options for food waste most cited is the FAO's food wastage pyramid (2013), as illustrated in figure 14. The pyramid shows the most to the least environmentally friendly categories of food waste reduction strategies (p. 13):

(1) **Reduce:** includes adjusting the supply-demand balance in order to primarily avoid using natural resources
(2) **Reuse:** includes the donation of food to charities or animal feed
(3) **Recycle / Recover:** includes by-product recycling, anaerobic digestion, combustion or incineration which entails recovering energy and nutrients
(4) **Landfill:** pollutes soil and water and causes emission of gases

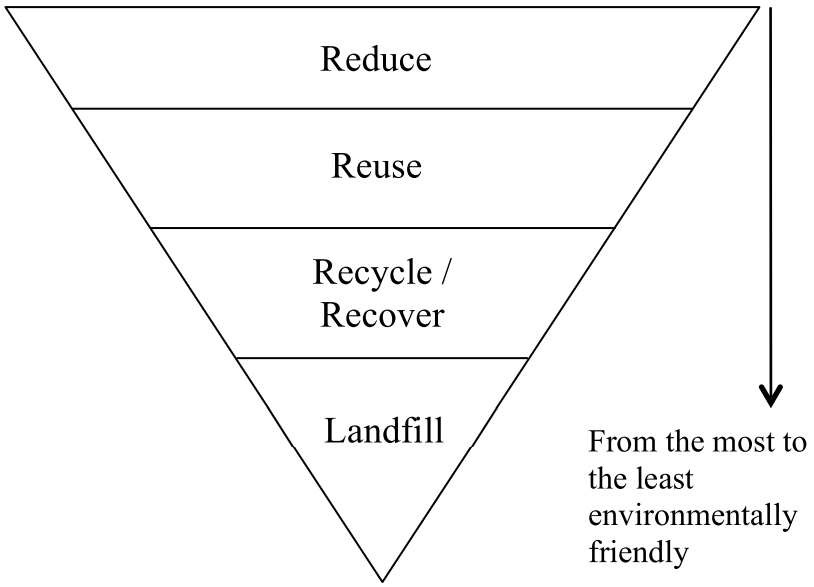

Figure 14. Food wastage pyramid. Adapted from "Food Waste Toolkit", by FAO, 2013b, p. 12

An example of by-product or co-product recycling (3) is explained by the Food Waste Reduction Alliance (2014, p. 17). A by-product (and hence not 'waste') might be trimmings from vegetables or fruits that can still be sold or donated to farmers. A similar framework of food waste reduction strategies is further provided by both the

Waste Framework Directive by the European Commission or the United States Environmental Protection Agency (EPA), as depicted in figure 15. The EPA's so-called 'food recovery hierarchy' is more detailed and "prioritizes actions organizations can take to prevent and divert wasted food" (EPA, 2015, para. 1). Accordingly, the highest levels of the hierarchy represent the best ways to prevent and divert food waste because they create the most benefits for the environment, society and the economy. For each hierarchy level, the EPA endorses recommendations for both individuals and businesses to reduce food waste. Furthermore, they offer tools and toolkits for assessing wasted food. The tools range from guides for conducting food waste assessments to direct calculators for food waste.

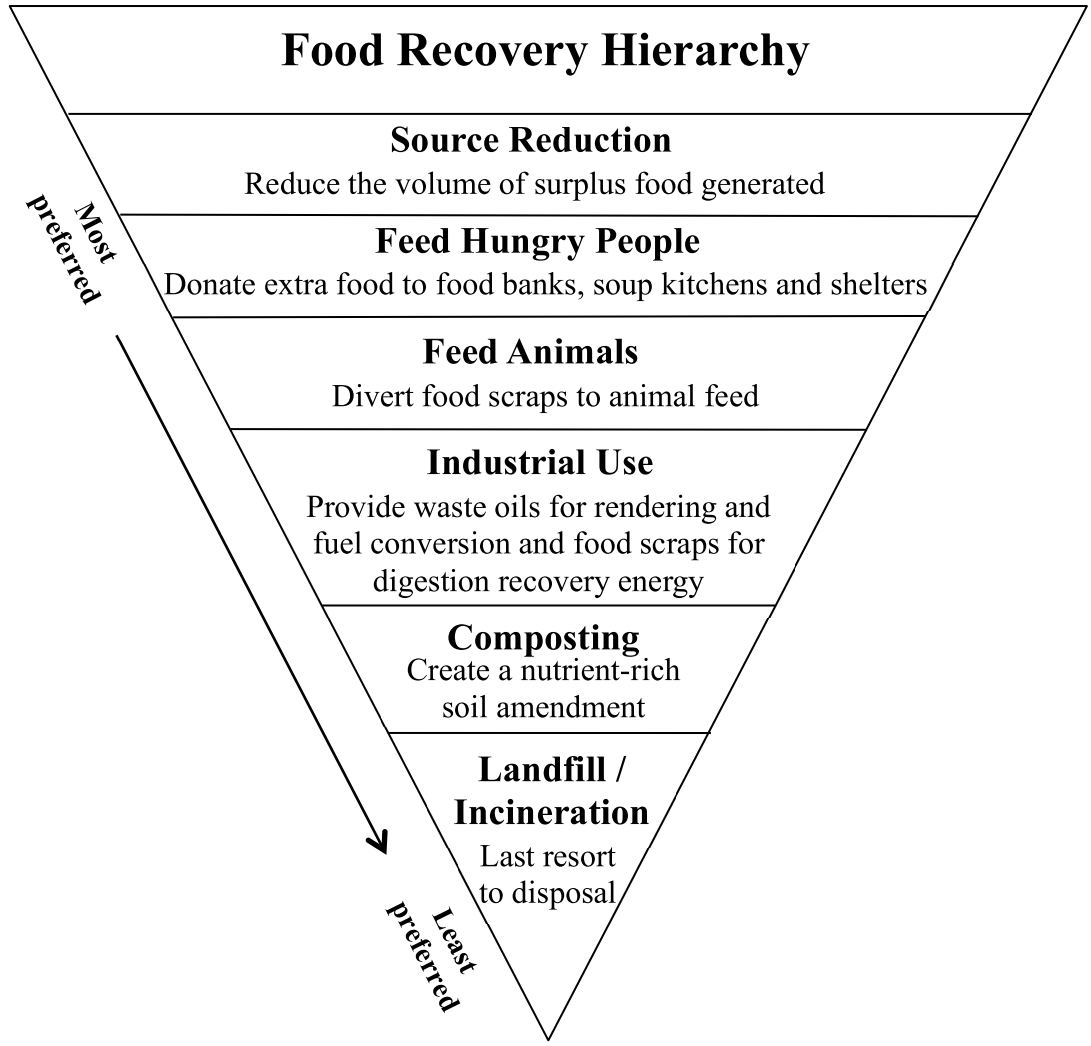

Figure 15. Food recovery hierarchy. Adapted from "Food Recovery Hierarchy", by United States Environmental Protection Agency [EPA], 2015, para. 1

A report written by a collaborative effort of different American institutions analyzing food waste in selected US industries considered EPA's food recovery hierarchy as an "aspirational guide for efforts to minimize waste" where "not all waste diversion methods will be appropriate in every situation" (Business for Social Responsibility [BSR], 2014, p. 9). According to a survey conducted by BSR, "retail and wholesale respondents reported donating or recycling 42.4 percent of food waste; composting and donation are the most common diversion methods" (2014, p. 10). However, it is mentioned that diversion methods differ from company to company and cannot give a complete picture of the entire industry. Of the total food waste generated in 2014, the 10 respondents (retailers) of the survey indicated that 13.2% was donated, 29.2% recycled and 57.6% disposed. The report further indicated that food waste diversion (from one hierarchy level to another) is rather difficult due to the significant management and logistical challenges the retailers face with different departments and locations. Furthermore, although packaged goods might be more suitable for donation, they are more difficult to recycle, since most recyclers require the packaging to be removed (BSR, 2014, p. 14).

As partly discussed in the previous chapter, the Swiss Federal Office for the Environment (FOEN) argues that almost all biogenic waste (food waste) can be composted or fermented which both lead to the production of energy (the production of electricity in Switzerland). For ecological and social reasons, however; it is considered more sensible to primarily avoid food waste. If this is not possible, the following actions are recommended in the following order (FOEN, 2013, para. 12):

(1) donate the food not needed,
(2) feed animals,
(3) ferment for biogas production,
(4) compost and then
(5) incinerate

Beretta (2012, p. 39) also recommends the exact same order. With reference to the retail industry, Alexander and Smaje (2008, p. 1290) describe another 'normative' waste hierarchy for retail product disposal as shown in figure 16.

Rank	Option
1	Sell to customer
2	Sell to customer at a reduced price
3	Use in staff restaurant
4	Sell to staff
5	Donate to charities for human consumption
6	Donate to farms, zoos, animal sanctuaries, etc.
7	Dispose to landfill

Figure 16. Normative hierarchy for retail product disposal. Adapted from "Surplus retail food redistribution: An analysis of a third sector model" by Alexander & Smaje, 2008, p. 1295

On an overall level, Monier et al. (2010) identified several instruments used by different organizations and initiatives for preventing and reducing food waste. The instruments utilized included "awareness campaigns, informational tools, training programs, logistical improvements, waste measurement activities, research programmes, regulatory instruments, food redistribution programmes and the development of industrial uses for food waste" (p. 90). They further concluded that "it appears that food waste prevention is not yet well-established, and building awareness and triggering simple behaviour changes is an important first step to undertake" (p. 90).

With regard to reduction strategies of food waste, Lipinski et al. (p. 2) recommend the following:

(1) develop a food loss and waste measurement protocol,
(2) set food loss and waste reduction targets, and
(3) accelerate and support collaborative initiatives to reduce food loss and waste

With regard to developing a waste measurement protocol, the Food Waste Reduction Alliance (FWRA, 2014) recommends to explore the root causes of the food waste. This implies to define whether the waste was caused by a "result of policies, processes, practices or customary behaviors, or some other driver", as well as defining a corresponding waste baseline (FWRA, 2014, pp. 8–9). With reference to waste reduction targets, the BSR (2011, p. 6) describes for instance that Wal-Mart has set a goal to reduce food waste in its stores in emerging markets by 15 percent and by 10 percent in other markets by 2015.

As mentioned in chapter 2.2.5, a considerable amount of causes for food waste exist. As described by Göbel (2012), causes for food waste vary from market-related

standards and quality requirements to human errors and cultural influences. The following sections link the main causes of food waste with their corresponding prevention strategies.

Market-related standards and quality requirements. The FAO (2011, p. 11) explains that high 'appearance quality standards' from supermarkets for fresh products lead to food waste. Supermarkets are therefore convinced that consumers will not "buy food which has the 'wrong' weight, size or appearance". However, as supermarket consumer surveys show, "consumers are willing to buy heterogeneous produce as long as the taste is not affected". The FAO (2011) recommends the following:

> Consumers have the power to influence the quality standards. This could be done by questioning them and offering them a broader quality range of products in the retail stores (…) [and] develop markets for 'sub-standard' products. Both commercial and charity organizations could arrange for the collection and sale or use of discarded 'sub-standard' products that are still safe and of good taste and nutritional value. (pp. 11–12)

Furthermore, according to a report conducted for the Government Office for Science in London (Foresight, 2011, p. 19), food that is deemed as "non-premium quality" can also be redistributed. Göbel (2012, p. 51) further recommends that so-called 'secondary markets' can be created where products from the previous day can be sold.

Human errors. In order to prevent human errors such as lack of interest or lack of education with regard to food waste, the BSR (2011) suggests that organizations should provide trainings and education programs for the staff. Companies should therefore invest "heavily in the sharing, replication, and consistent implementation of best practices across its footprint" (BSR, 2011, p. 6). According to Betz et al.'s study on the Swiss food service industry (2015, p. 224), "it is important to increase their awareness of the issue, e.g. by rewarding staff taking effective measures to achieve food waste reduction". Sharing best practices, however, should not be limited to

staff. Consumer education might also be part of not only the government's, but also the organization's responsibility.

Cultural influences. As previously described in chapter 2.2.5, abundance and consumer attitudes lead to food waste (FAO, 2011, p. 14). Food waste at the consumer level should be regarded as an issue at the retail level as well since offering a reduced price on products for instance shifts the propensity to waste food from the organization to the consumer. Hence, not only schools and public initiatives should raise public awareness on this matter, but also organizations can change people's attitudes towards the current massive food waste. In order to combat food waste, the BSR (2011) recommends areas of action to reduce food waste along the value chain. At the sales and marketing level, companies can encourage "less wasteful behavior through promotions and awareness campaigns" (p. 5). Instead of "buy one, get one free", Tesco launched a "buy one, get one free later" campaign in 2010. With regard to consumers, Betz et al. (2015, p. 225) recommend the following:

- sensitization of customers to the field of food waste and the causes of food waste (e.g. using posters)
- increasing tolerance of customers towards sustainability measures through communication
- survey of reasons for food waste using feedback sheets (and subsequent implementation of appropriate actions)

A study conducted by WWF also suggests that sensitization of the customer should be combined with a reduction of the product range (2012, p. 13). Furthermore, retailers should point out the significance of the best-before date to customers. In Switzerland, WWF suggests the collaboration with aid organizations such as "Tischlein Deck Dich", "Schweizer Tafel" or "Caritas" (as described in Appendix D). Ultimately, the study suggests that retailers should participate in finding innovative solutions within the industry on how to recover products from different quality classes (p. 13). This chapter discussed prevention and reduction strategies of food waste at an overall level. The following chapter will focus on the bakery industry and discusses prevention and reduction strategies for excessive inventory.

2.2.8 Prevention and reduction strategies on the bakery industry level

Preventing and reducing excessive inventory provides considerable challenges. As mentioned in chapter 1, bakeries should (1) sell products in a manner that is both customer-oriented, socially and environmentally responsible, (2) comply with required regulations, and (3) pursue a sound internal and external communication strategy. Fulfilling all of these three criteria is a difficult and complex task. In regard with prevention and reduction strategies on the bakery level, important sources to mention include reports and workshop documents compiled by the *Fachhochschule Münster* and its corresponding collaboration with the German *Institut für Nachhaltige Ernährung und Ernährungswirtschaft* (iSuN). The iSuN confirms Göbel's (2012) investigated causes for food waste such as internal processes, the market situation, customer expectations and quality requirements (iSuN, 2015b, p. 84). The following sections describe two major causes for excessive inventory and their corresponding reduction and prevention strategies.

Excess production/supply. One of bakeries' most frequently mentioned issue when trying to reduce excessive inventory is caused by excess supply. The problem of balancing supply and demand consists of two extremes. On the one hand, if the quantity of the products offered in the stores is low, excessive inventory rates can be kept low as well. However, this strategy implies that customers (particularly in the evening hours) cannot be adequately served, which in turn leads to a loss of profits. On the other hand, if the quantity of the products offered in the stores is too high, the excess supply created leads to a high rate of excessive inventory and, hence, a loss of profits again. The goal, therefore, is to find the middle between the two extremes (iSuN, n.d., p. 6). Furthermore, the iSuN suggests two strategies in order to optimize the ordering process. Primarily, the iSuN (2015a) describes orders as the following:

> Mit der Bestellung wird sowohl auf die unterschiedlichen Wünsche der Kundschaft als auch auf Rahmenbedingungen des Verkaufs (Marktsituation, Wetter, Veranstaltungen, Feiertage) reagiert. (…) Wichtig ist es, die MitarbeiterInnen für das Thema zu sensibilisieren und ihnen ihre wichtige Funktion an der Schnittstelle zwischen Produktion und Konsumption bewusst zu machen. (p. 9)

Firstly, therefore, the suggestions imply that weather forecasts ought to be a crucial source of information for orders. Secondly, selected employees need to be sensitized on the topic of both food waste and excessive inventory.
In order to avoid excess supply or production, Göbel (2012, p. 49) recommends to redefine the ordering process in order to implement weather-dependency. Employees should thusly be given the possibility to create and adapt orders several times throughout the day in order to constantly adapt the supply. Furthermore, an online platform can be set up in order for customers to create orders themselves to ensure product availability and adequate volume calculations (Göbel, 2012, p. 51).

Quality requirements. As described by the Waste and Resources Action Programme (Wrap, 2008, p. 144), one of the major reasons why bread and pastries are thrown away is due to the consumers' quality expectations of the product. In their study, they show that one of the most common reasons for disposing bread for the respondents included (1) the past 'best before date', (2) that it looked bad or moldy or that (3) it simply tasted bad. Consequently, Wrap suggests in another study that "at the heart of the strategy is communication: Educating consumers about bread and bakery waste issue in a vivid and compelling way; Encouraging interest and thoughtfulness" (2011, p. 90). With reference to these minimum product quality requirements, Monier et al. (2010, p. 37) suggest that promotional strategies might help to reduce this type of food waste. They describe that "the sale of different qualities of fresh produce at different price levels can help maximize their use (Premium, regular and economy level onions for example, based on size and condition)" (p. 37). Ultimately, prevention and reduction strategies for all causes of excessive inventory require a systematic procedure. The most important suggestions for a systematic procedure made by the iSuN (2015a, p. 9) are as follows:

- the topic "loss reduction of bread and pastries" should be included in the company's goals
- employees should accept more responsibility: build teams
- analyze and measure current structures of operations and processes
- determine (and communicate) goals and relevant key figures
- implement continuous improvement process

In order to successfully prevent and reduce food waste, the external and internal communication of a company addressing this issue is of high significance. Chapter 2.2.9 thus addresses communication strategies towards customers and employees. Concrete recommendations based on this chapter will be discussed in chapter 7.

2.2.9 Communication

The communication of products' social and ecological advantages requires establishing credibility since customers can not directly perceive these advantages when the products are bought. Baumast and Pape (2013, p. 324) describe that one of the tasks of 'sustainability marketing' includes establishing a corporate identity that is credible. Sustainability marketing is defined as planning, coordinating, implementing and controlling of activities in order to avoid or/and reduce ecological and social problems, where CSR plays a crucial role. Baumast and Pape (p. 325) explain that, in this context, CSR describes the company's direct contact with its stakeholders for reasons other than profit. Bhattacharya and Sen (2004, p. 9) argue that consumers belong to key stakeholders most susceptible to CSR initiatives. With regard to food waste, Kranert et al. (2012, p. 281) argue that high readiness for communication is essential for a joint and constructive implementation of reduction strategies. Openness towards the provision of experience, knowledge and information is required at this point. In figure 17 on the following page, Kranert et al. (2012) thus suggest the following actions with regard to communication strategies.

Incentives/ Motivation	• initiate (innovation) platforms for food waste prevention • give out awards • create databases/open source on best practices; certifications
Raising Awareness	• create (professional) training programs • ensure continuing education • draft workshops • create guidelines and manuals
Funding programs	• initiate development of logistic tools
Legislative / Regulatory Instruments	• implement best-before date education • separate waste measurements
Voluntary Instruments	• issue declaration of commitment • create special promotions for best-before dates • donate food products

Figure 17. Recommendations of actions ordered by instruments. Adapted from "Ermittlung der weggeworfenen Lebensmittelmengen und Vorschläge zur Verminderung der Wegwerfrate bei Lebensmitteln in Deutschland" by Kranert et al., 2012, p. 284

With reference to the current status of food waste initiatives and campaigns, the FAO (2013b) describes the following:

> Many public and private actors have started campaigning against food waste with growing success, governments have partnered with civil society to launch campaigns to reduce food waste and reuse food when waste wasn't avoidable, and multiple events such as public banquets have been organized all over Europe to raise awareness among businesses, governments and the public on the levels of food wastage internationally, as well as showcase the positive solutions to the issue. (p. 21)

Firstly, in regard to communication strategies against food waste in Switzerland, the Federal Office for Agriculture (FOAG, 2014, para. 1) designed campaigns in order to sensitize the Swiss population. These campaigns include exhibitions („Wasting Food. That's stupid"), as well as brochures distributed to teachers who should explain and pass them along to students. Furthermore, several committees and groups were set up by the FOAG in order to draw up reduction strategies at the federal level.

Generally, Monier et al. (2010) explain that the extent of food waste makes two sorts of prevention strategies necessary, "those that implicate producers and retailers in helping prevent household food waste by incentivizing the creation and promotion of waste resistant products and those aiming at consumer behavior change through educational tools and campaigns" (p. 30). Foresight (2011, pp. 7–8) recommends for instance that campaigns should "highlight the extent of waste and the financial benefits of reducing it". The following sections describe communication channels towards consumers. As mentioned in chapter 2.2.8, not only consumers, but also employees are crucial in order for bakeries to successfully reduce excessive inventory. The second section thus describes communication channels towards employees. Important sources worth mentioning include the iSuN (2015a; 2015b) studies and their supplement materials on reduction strategies of food waste in bakeries.

Consumers. Reducing excessive inventory is part of reducing food waste on an overall level. With reference to the bakery industry, organizations such as Wrap (Waste and Resources Action Programme) in the UK recommend that communication strategies should specifically target consumers. Hence, consumers might be given tips on how to store bread and thus reduce waste also at the individual level. Wrap (2011, p. 91) recommends the following:

- Clearly communicate optimum, in-home storage guidance and how long bread will actually last if it is stored correctly.
- Bust freezer "myths" e.g. that bread doesn't taste as good once it's been defrosted. Facilitate and encourage freezing bread at home, and correct defrosting, for example through use of the snowflake logo, with suitable text, to show that the product can be frozen and providing clear freezing instructions i.e. "freeze as soon as possible" and "use within three months".
- Improve consumer understanding of what "best before" dates mean and, ideally, make the food date labeling clear and visible, for example, by disguising the "display until" date as a number of bakery brands now do.

The iSuN (2015a, pp. 7–8) suggests that the communication with the customer can be realized through several platforms:

(1) Either by direct contact in the stores:

- in sales conversation
- on a display (cash desk/ info board)
- by printing items
- on the packaging (paper bag/band around bread)
- flyers, posters, post cards, stickers
- shop window label
- promotions

(2) Using other media frequently used:

- customer magazine
- webpage
- e-mail
- Facebook
- by participating in public activities/campaigns
- sponsoring and supporting NGOs

The content of these measures should sensitize customers by attracting attention for the issue of food waste, including data and facts on (1) the origin of food waste and loss, its (2) ecological, economic and social impacts, and (3) counteractive measures to reduce the losses of bread or pastries (p. 18). These counteractive measures are either already implemented internally or are additional, specific recommendations as course of actions for consumers. Bakeries could display recipes for re-using bread for instance.

In their final study, iSuN (2015b) surveyed customers of bakeries on – amongst others – (1) their expectations of the variety of goods expected dependent on shopping hours until shop closure, (2) fresh quality of bakery products, (3) disposal and (4) recovery of bread at home and ultimately (5) willingness to support prevention strategies. The significance of the survey results is explained as follows:

> Es gilt die Schnittstelle ‚Angebot und Nachfrage' besser zu verstehen, indem Erwartungen der Verbraucher hinsichtlich Verfügbarkeit, Qualität und Preis ausgelotet und ihr Einkaufsverhalten bei Brot und Backwaren analysiert werden. Die Identifizierung der Rolle von Verbrauchern bei dem Thema Lebensmittelverschwendung sind ebenso wie ihre Informations- und Kommunikationsbedarfe Themen der Befragungen'. (p. 58)

When designing both communication and reduction strategies, including the customer is therefore of high importance. Customers' awareness, attitude and knowledge towards food waste need to be identified and assessed.

Explicit significant results from 497 customers surveyed implied the following (iSuN, 2015b):

- After 6 p.m., only 28.6% demanded full shelves whereof these full shelves did not have to include the total morning or lunch offerings. (p. 71)
- 52.9% required information on correctly storing bread and other bakery products in order to support reduction or prevention strategies. (p. 80)
- 75.9% find it sensible to donate excessive inventory to people – human consumption of excessive inventory thus takes highest priority. (p. 82)

The study further suggests that research is required with regard to customers' demands on product mix breadth and width (iSuN, 2015b, p. 71). Göbel (2012, p. 49) also recommends to communicate on the product mix breadth and width as well as the recovery and recycling of food waste (excessive inventory). Furthermore, it is suggested that the quality requirements for the products should be addressed. This implies that the procedure for using or even selling products that may not comply with certain requirements but are still edible should be communicated. Ultimately, the study conducted by iSuN (2015b) summarized important issues to be addressed by bakeries for their communication with their customers (p. 84):

1. The potential for Point of Sales (PoS) in consulting is not yet fully exploited.
2. Need for information exists with regard to the storage of bread and bakery products.
3. There is a current lack of knowledge on freshness, shelf life and authentic taste.
4. The topic of rework should be explained.
5. The question remains whether it is meaningful for consumers to have "communication in the last hours" ("Kommunikation der letzten Stunde"). [This implies informing customers (e.g. by using posters) on discounts of products after 5.p.m.]

It is important to note that the results of the surveys need to be taken into consideration with caution. Customers from Hug might express different opinions on the issues explained in these sections. Hence, customers might still demand a broad

range and variety of products even after 6 p.m. or would not like to be informed on how to store their bread at home. Nevertheless, the results still give valuable inputs and insights on what bakeries can implement into their communication strategy towards costumers.

Employees. Generally, as mentioned in the previous chapters, human errors are one of the causes of food waste and might include employees' lack of interest or lack of education about food waste. Göbel (2012), Kranert et al. (2010) and iSuN (2015a) stress the importance of the employees for food waste reduction strategies. Firstly, employees should understand why reducing food waste is important and relevant as well as be motivated to become directly involved. The iSuN (2015a, p. 10) suggests the following in order to let employees actively contribute:

- integration of teams into process optimization
- information and sensitization through posters, bulletins, information material
- vocational training
- implement corporate work suggestions schemes in which employees are asked to suggest ways in which the work they do or the way their organization operates can be improved and receive a gift or cash reward for useful suggestions

Additionally, Schneider and Scherhaufer (2009, p. 62) argue that observations and developments of excessive inventory are crucial for effective reduction strategies. Bakeries thus might hold frequent (e.g. weekly) meetings and professional trainings in order to create awareness.

This chapter described communication as a particular prevention and reduction strategy for excessive inventory. Another distinct prevention strategy implies that bakeries draw inspiration from best-practices either from both the bakery and the overall food industry. The next chapter thus describes food waste initiatives at the regional, national and international level.

2.2.10 Food waste initiatives

The previous chapters outlined ways and measures to reduce or prevent food waste and excessive inventory. Preventive measures might range from scientific papers, political acts, technical products and social initiatives (food distribution programs) (Kranert et al., 2012, p. 26). A distinct way for combating food waste therefore be brought about with initiatives; either at the regional, national or international level. It is worth mentioning that the number and variety of initiatives is immense. It is thus easy to be overwhelmed by the variety and types of initiatives, campaigns or organizations.

Monert et al. (2010) for instance identified and analyzed 106 initiatives related to a variety of sectors, "with 39% of the initiatives identified launched in 2009 and awareness campaigns and informational tools being the predominant measure employed" (p. 90). They further used EPAs food waste recovery hierarchy (as described in chapter 2.2.7) to assess the initiatives' effectiveness. However, Appendix D attempts to outline the most relevant and important ones for not only the bakery industry, but also this bachelor thesis' client. For further inspiration or interest, Göbel (2012, pp. 131–139), Monier et al. (2010, pp. 95–104), and Lipinski et al. (2013, pp. 31–32) provide more examples of initiatives and best practices from diverse food industries.

Initiatives can be divided into different levels; namely global, national and regional. Correspondingly, in a first step, Appendix D describes initiatives on these three levels with descriptions extracted directly from their reports or particularly Lipinski et al. (2013, pp. 31–32). Explicit recommendations for initiatives and detailed best practices examples are discussed in chapter 7. In a second step, the concept of food banking is explained and food banks and charities are described.

One distinct form of reduction strategies or initiatives against both food waste and excessive inventory includes the collaboration of individuals or businesses with 'food banks' and charities. Switzerland is member of the European Federation of Food Banks (FEBA [Féderation Européenne des Banques Alimentaires]). The functions of food banks is described by FEBA (2016) as follows:

> Food banks recover food, all year round, from growers, processors, retail stores, caterers, most of which would otherwise be wasted, as well as from

> European and national food aid programs. They also collect food donations from individuals. They transport, sort, and store products in their warehouses, in compliance with hygiene and security standards. They redistribute the food to partner charitable institutions which support people in need (food parcels, meals, soups, social grocery stores. (para. 1)

Figure 17 illustrates these descriptions as follows:

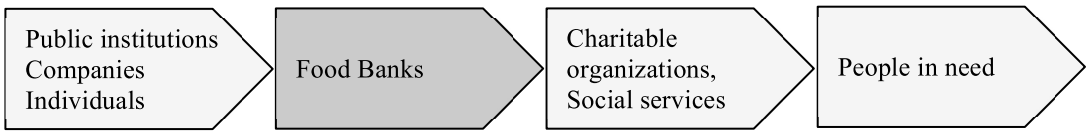

Figure 18. Food banks. Adapted from "How food banks work?" by FEBA, 2016, para. 1

In Switzerland, several charitable organizations exist which collect food waste. Appendix D describes relevant charities and food banks for Hug.

Prior chapters (including this chapter) investigated causes for food waste and excessive inventory and their corresponding prevention and reduction strategies. However, implementing these prevention and reduction strategies is a task not to be taken lightly. Bakeries face multiple challenges and barriers if they decide to implement measures to combat food waste. These barriers often hinder bakeries to tackle the issue of food waste altogether. The next chapter thus briefly discusses main barriers bakeries are faced with when attempting to reduce excessive inventory.

2.2.11 Barriers to reduce food waste

The following sections selected companies' barriers for donating or recycling food since these measures were most frequently mentioned and were considered crucial for reducing food waste.

Food donation. According to a study conducted by the Food Waste Reduction Alliance (2014, p. 13), "more than three-quarters (77%) of respondents indicated that there are barriers, either internal or external, that prevent their company from donating more 'unsalable' food". In their article on reducing food loss and waste, Lipinski et al. (2013) address the issue of food redistribution. Food redistribution implies "voluntarily giving away food that otherwise would be lost or wasted to

recipients such as food banks, which then redistribute the food to those who need it" (Lipinski et al., 2013, p. 12). Food redistribution, however, is subject to transportation and legal obstacles. In order to facilitate increased food redistribution, they suggest that charities or non-profits might run adequate retrieval services in order to make redistribution easier for donors. Furthermore, they mention the so-called "Good Samaritan" laws such as the Bill Emerson Good Samaritan Act in the United States, enacted in 1996. The law "protects food donors from civil and criminal liability if the product they redistributed in good faith to a charitable organization later causes harm to the needy recipient" (Lipinski et al., 2013, p.13).

Alexander and Smaje's (2008) study analyses food donation by large retailers. One of their conclusion implies that "tensions exist between waste minimisation and brand control" (Alexander and Smaje, 2008, p. 1290). Food donated might be sold in 'grey markets' and used past use-by date and thus damaging the goods' brand (2008, p. 1297). Furthermore, the food donated often might not imply a healthy diet. Food provided by charities might therefore comprise 'luxury items' "and/or prepared food and puddings, which acts as dietary supplements, rather than fresh food" (Alexander and Smaje, 2008, p. 1291). Although donating food is ecologically sound, it thus might not address the issue of food poverty – which refers to a healthy diet rather than lack of food.

Ultimately, the BSR (2014, p. 10) concludes that "transportation constraints, liability concerns, and insufficient storage space were the most commonly cited barriers to food donation".

Recycling. One of the most considerable barriers to reduce food waste is cost. For most retailers (and bakeries) it is simply cheaper not to sort out food or produce a by-product since personnel cost are higher than disposal cost (iSuN, 2015b, p. 42).
A study conducted by BSR (2014, p. 16) concludes that "92 percent indicated that there are barriers to food waste recycling" whilst "the most frequently cited obstacles to food recycling were transportation constraints and an insufficient number of recycling options" (p. 10). Furthermore, they describe the following:

> Specific barriers mentioned for food recycling include the limited availability of organic recycling facilities, difficulty making the business case for cost effectiveness when compared to disposal (especially with low landfill tipping

> fees in certain areas of the country), distance between stores and recycling facilities (leading to a high cost of transport), sanitation and space constraints related to food storage, and the high cost of on-site solutions like digesters. (p. 13)

Ultimately, Göbel (2012, p.42) describes that companies act fundamentally as economic actors; however, they signal a willingness to support the reduction of food waste. Yet, due to special conditions of the food market (drop in prices, regulations), they see only few possibilities for actions and are waiting for a market reorientation.

Chapter 2.2 discussed various concept in regard to food waste, ranging from definitions, types and causes to disposal, recovery and reduction strategies. The next chapter describes the research context to this bachelor thesis, namely the bakery industry and this thesis' client.

3. Research Context

This chapter provides a brief overview of the Swiss bakery industry as well as the client of this bachelor thesis, Hug Retail AG. The research context aims at setting the scene for this thesis and providing more detailed data and figures on excessive inventory incurred at Hug.

3.1 The Swiss Bakery Industry

The bakery industry is an important sector for the Swiss economy not only because they provide nourishment to millions of customers on a daily basis, but also because they generate over 2.2 bio in revenues annually, and employ over 30,000 people, as shown in figure 19.

3,200 (approximately)	Points of sale of the Swiss bakery industry are providing the Swiss population with bread and bakery products
1,5 million	Customer contacts per day at the points of sales (SBC approximations)
30,000	Places of employment are directly or indirectly connected to bakery industry
4,000	Students in production or sales are currently in training
2,2 billion CHF	corresponds to the annual turnover's amount of the bakery industry

Figure 19. Key facts and figures with regard to the bakery industry. Adapted from "Branchenspiegel 2014: Für das Bäckerei-Konditorei-Confiserie-Gewerbe", by Schweizerischer Bäcker-Confiseurmeister-Verband [SBC], 2015, p. 26

In Switzerland, most bakeries sell both bakery and confectionary products, hence most of the bakeries are named *Bäckerei-Confiserie*. Additionally, a difference is further made between pastry cooks ('Konditor/in') and confectioners ('Confiseur/in'). Pastry cooks bake cakes, pies and pastries whilst confectioners further produce chocolate, pralines and marzipan (Berufsberatung, 2015, para. 1). It is worth mentioning that in this thesis, a bakery or the bakery industry is thus also referring to the *Bäckerei-Konditorei-Confiserie* industry. It is worth mentioning that a distinct feature of the Swiss (and also German) bakery industry concern the points of sales of bakery products. Bakery products are not solely sold in traditional bakeries anymore. Food retailing ('Lebensmitteleinzelhandel [LEH]') and gas stations are fierce competitors for traditional bakeries as well.

3.1.1 History of the Swiss bakery industry

In the 16th century, bread was considered as main food in Switzerland, particularly for the poorer population. Furthermore, bread also had important religious and cultural connotations (Abt, 2013, para. 4). Today, however, the Swiss Federal Organization for Agriculture (FOAG) estimated in 2010 that both the daily and annual consumption of bread and bakery products declined due to the decreased available amount of wheat and simultaneous increase in population (p. 1). Compared to the daily bread consumption of 700g to 950g in the 16th century, the figure decreased to 135g per person in 2013 (Abt, 2013, para. 5).

Furthermore, before the First World War, the acquisition, storage and utilization of grain was regulated by the Swiss Confederation. Bread wheat was bought from farmers at a set price and sold at the cost price. Simultaneously, the Swiss Confederation regulated the stockpile for times of crisis and supervised imports. In July 2001, the Confederation withdrew from the Swiss grain trade and transferred the stockpile to private organizations (SBI, 2014b, p. 1). Today, most of the grain for producing bread is still grown in Switzerland, whilst only little is imported from abroad. In 2014, 81 956 hectares of bread grain were grown, thereof 76 225 of wheat, 1933 of rye and 3558 of spelt (SBI, 2014a, p. 3). According to the association *Schweizerische Brotinformation* (SBI), globally and also in Switzerland, wheat is the main type of (bread) grain that is being harvested (2014a, p. 1). Half of the grain harvested is bread wheat, whilst the other half is used for feed grain. Next to wheat, considerable amounts of spelt, rye and barley are cultivated in Switzerland. According to SBI (2014a, p. 3), 379 509 tons of grains were produced in Switzerland for human consumption, whilst 583 348 tons were cultivated for animal feed.

Today, according to the *Schweizerischer Bäcker-Confiseurmeister-Verband* (SBC), the Swiss market in this industry is structured with a clear domination of Migros (respectively Jowa) and Coop. The amount of bakeries that produce is decreasing annually by 3%, which translates into 50 bakeries closing down due to the lack of successors or other reasons (SBC, 2014, p. 6). Bakeries' structural changes of dividing production and sales/retail is considered as another trend or market feature.

3.1.2 Bakery industry lifecycle and the cost of baking bread

Figure 20 shows Beretta's (2012, p. 64) modeling of the bakery industry lifecycle. According to his modeling, grain is first harvested, traded and then stored. Subsequently, grain is assorted and milled to be processed into flour. In bakeries, the flour is processed into bakery products which are either sold to other bakeries, retailers, wholesalers or gastronomies. Beretta further mentions that his modeling only shows the flour needed for baked goods, and no other ingredients such as butter, oil, sugar, eggs and so forth (p. 64).

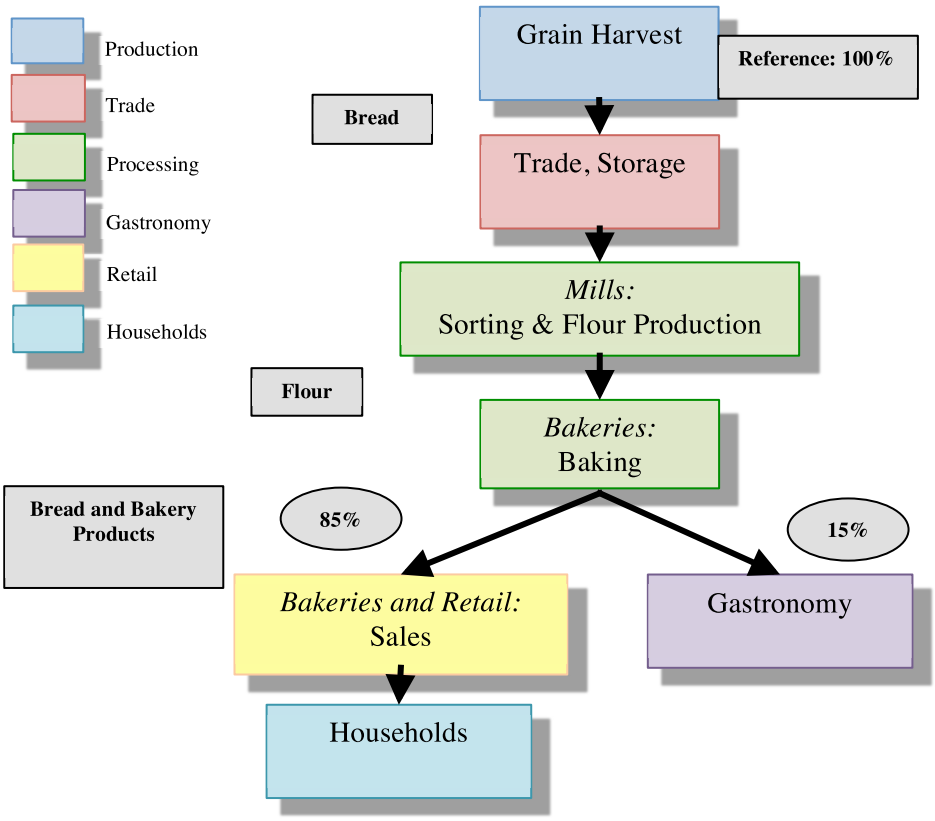

Figure 20. Simplified life cycle of bread grain, flour and bakery products. Adapted from "Nahrungsmittelverluste und Vermeidungsstrategien in der Schweiz", Beretta, C., 2012, p. 64

The SBC (2014, p. 9) compiles the average cost a bakery runs in order to produce bread. Figure 21 on the following page thus shows the composition of the average price for bread. The figure demonstrates that raw material costs are relatively low in comparison to the overall price. Salaries account for the most considerable cost in comparison to raw material costs. The average cost (or loss) for excessive inventory amounts to 7% of the total average cost for producing bread.

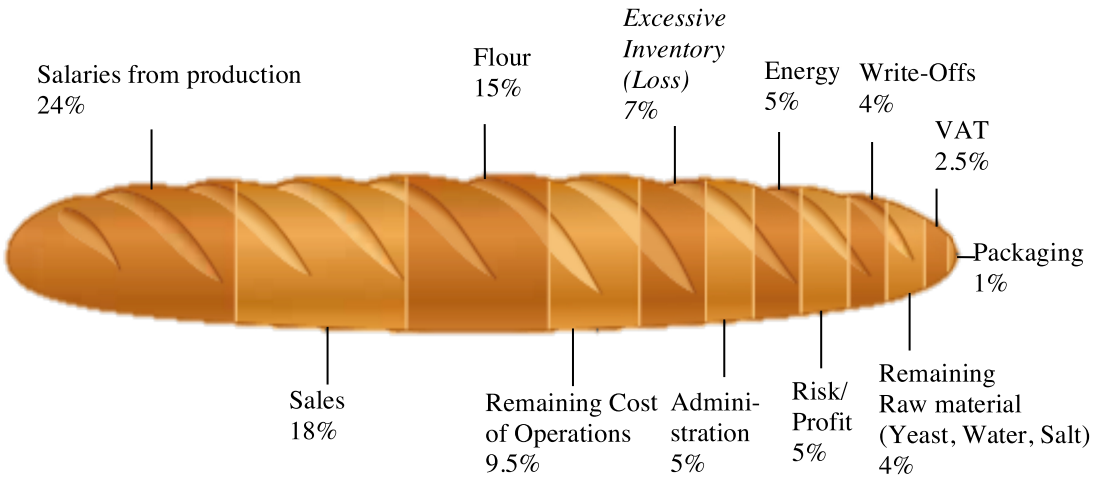

Figure 21. Price composition of bread in an average bakery. Adapted from "Branchenspiegel 2014: Für das Bäckerei-Konditorei-Confiserie-Gewerbe", by SBC, 2014, p. 9

3.2 Hug Gruppe AG

Hug is operating in the Swiss bakery industry. Hug Retail AG is one of three subsidiaries of Hug Gruppe AG (Hug Group). In 2015, the company has been called Bäckerei Konditorei Hug AG and was renamed as Hug Gruppe AG, subsequently divided into three separate entities:

(1) production and distribution (Hug Bäckerei AG),
(2) retail (Hug Retail AG) and
(3) gastronomy (Wirzhaus AG).

Hug Bäckerei AG produces fresh and frozen products for both its own branches and other external clients (who might also include competitors such as Migros). Since its foundation in 1877, the company has been managed by Family Hug, now by Paul Hug in the 5th generation (Bäckerei Hug, 2015, para. 1–5).

Hug Retail AG offers consumers convenience products such as (1) bread, (2) buns ('Kleinbrote'), (3) snacks – such as sandwiches, tarts ('Wähen') salads and soups, (3) dessert and (4) pastries ('Süssgebäck'). Furthermore, Hug Retail AG owns nine branches throughout Central Switzerland (Lucerne [3 branches in total], Horw, Stans, Rotkreuz, Zug) and Zurich area (Wiedikon, Affoltern am Albis). Two

additional locations in the Zurich area are secured whilst several other locations are currently being planned. Hug Retail AG's competitors do not only include other local bakeries situated close to their stores. Although Bachmann is considered as being a main competitor, Coop, Migros, Aldi and Lidl as well as gas station shops in general are considered as competitors. Hug Retail AG's structure refers to a *Bäckerei-Konditorei-Confiserie* whilst certain branches include a café. Most point of sales, however, are considered mainly as bakeries, since they offer fewer products (smaller variety) in comparison to a traditional *Konditorei* or *Confiserie*. The following table 1 depicts key facts and figures for all of Hug's nine branches as a total as well as for its branch at the Lucerne train station since it represents one of the most profitable branches.

Table 1. Key facts and figures Hug Retail AG

Customer contact	**all branches (9 in total)**	**Lucerne train station**
Day	4,000 (approximately)	1,035
Month	119,728	31'492
Year	1,436,736	377'910
Employees	74	15
Annual turnover [CHF]	9,961,571	2,094,818

As a small and medium enterprise (SME) and a family-owned business, Hug differs considerably from large enterprises. According to Hartmann (2011, pp. 311–312), SMEs (in the food industry) tend to be "internally financed, limited with respect to financial, personal and time resources, strongly embedded in the local community, based on personal relationships characterized by a high flexibility and less formal structures". Hartmann further argues that this might also be the reason SMEs are more active with respect to CSR activities.

3.2.1 Data on excessive inventory incurred at Hug

Beretta (2012, p. 68), Millere (2015, p. 51), Monier et al. (2010, p. 77) and Göbel (2012, p. 31) quantify food waste produced at bakeries either in kilograms or percentages. However, distinct figures or data on excessive inventory are not directly interpreted. Millere (2015) distinguishes between measurements of bakery food waste at the inventory, production and retail level. Beretta (2012) and Göbel (2012) measure bakery waste along its key causes and the value chain of bread.

At Hug, excessive inventory is primarily not measured in kilograms but as number of items and percentage of total sales (turnover) in reference to sales prices. At Hug's branches, excessive inventory is measured and registered daily by using cash register systems. When analyzing tables and figures in this chapter, particular attention needs to be paid on the focus of investigation. Excessive inventory might not only be measured in number of items, kilograms, percentages and monetary values, but also in CO_2 emissions or – in other words – carbon and material footprints. In terms of carbon footprints, therefore, high excessive inventory rates of sandwiches containing meat are considered worse than high excessive inventory rates of buns. Figure 22 shows that buns are thrown away most in terms of units. However, although this number is considerably higher than the number of units of bread, profits lost (in CHF) from bread is higher.

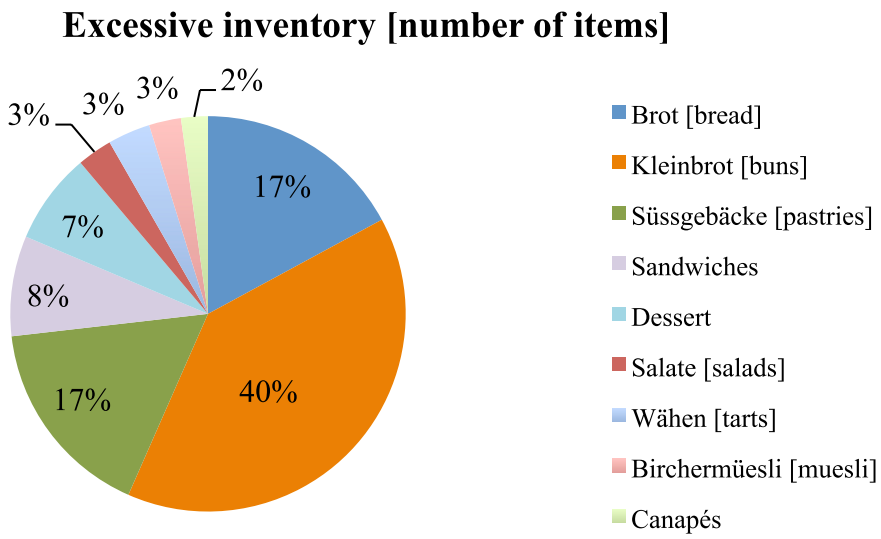

Figure 22. Excessive inventory at Hug in number of units, July to October 2015

Table 2 shows additional calculations in kilograms [kg] and Swiss Francs [CHF] in order to compare the figures with other bakeries. The table shows that from July to October 2015, 9,531 tonnes of excessive inventory incurred at Hug's branches (a total of nine), which amounts to a loss of annual sales of CHF 179,379. Data used for the figures and tables in this chapter were provided directly by Hug.

Table 2. Excessive inventory at Hug, July to October 2015

Kategorie [category]	[kg]	[CHF]	Excessive inventory [units]	Excessive inventory [% sales volume]
Brot [bread]	4,368.43	41,353.60	10,431	15.2
Kleinbrot [buns]	1570.50	31,857.80	22,783	7.7
Süssgebäcke [pastries]	869.88	22,340.00	9,571	10.0
Sandwiches	744.51	26,550.40	4,728	6.2
Dessert	652.95	20,754.40	4,308	18.7
Salate [salads]	359.40	11,401.40	1,650	8.6
Wähen [tarts]	468.00	11,455.70	2,008	12.0
Birchermüesli [muesli]	358.37	7,821.70	1,511	6.0
Canapés	139.04	5,843.60	1,264	10.3
TOTAL	9,531.07	179,378.60	58,254	9.2

In comparison with table 2, figure 23 on the following page shows excessive inventory rates that not only includes convenience products produced by Hug. The rates further include other products sold in 2015 at Hug's points of sales such as chocolate, drinks, and so forth – products produced by other retailers. Hug branches that are more remotely located produce more excessive inventory compared to branches at highly frequented locations. One of the most likely explanations for this low rate is the increased amount of customers entering the branches. At Lucerne train station, the rate for excessive inventory is lower which makes the branch more profitable than branches with higher rates.

Constant low rates for specific products might indicate the products' popularity. Hug makes use of this information by implementing a so-called ABC-analysis. The ABC-analysis can be considered as a form of a Pareto analysis in which the items are grouped into three categories (A, B, and C) in order of their estimated importance. 'A' items are very important, 'B' items are important, 'C' items are marginally important. A items show low rates of excessive inventory on a constant basis. Analogously, it is suggested that A items should stay on the shelves longer (e.g. until evening hours) whilst C items are allowed to run out.

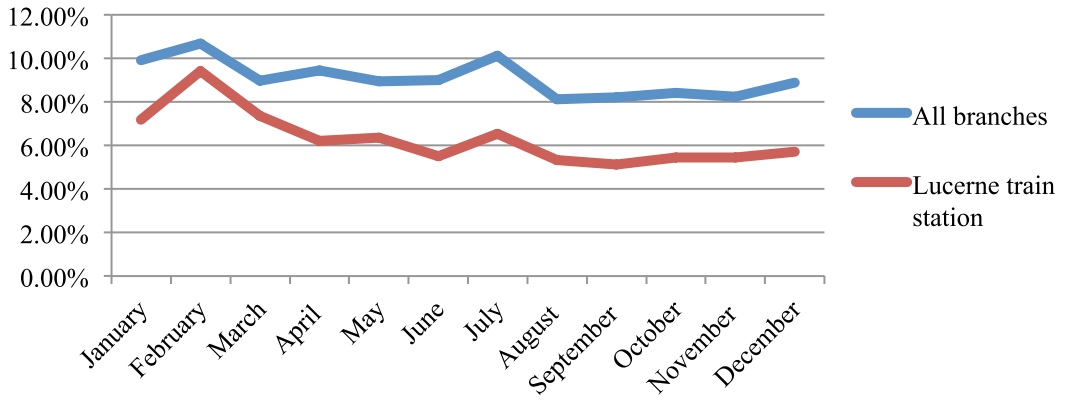

Figure 23. Excessive inventory rates at Hug in 2015

It is worth mentioning that since the beginning of 2016, Hug merged "breakages" ("Bruch") as explained in chapter 2.2.2 into the measurements of excessive inventory.

Appendix E depicts further data on excessive inventory incurred at Hug from July to October 2015. The table was filtered in terms of excessive inventory as percentages since it gives a solid indicator for the product's sales performance. Correspondingly, the table shows the two highest, the median and the two lowest values, since it only intends to give an overview on the overall category's performance. Ultimately, Appendix E further shows the sales price and excessive inventory as number of units. The names of the sales articles were not further translated.

4. Methodology

This chapter describes the methodological procedure applied. In a first step, the choice of the qualitative approach is outlined. In a second step, the empirical design is discussed, which includes the description of both the interview technique and procedure. In a final step, the data analysis method is briefly defined. Concerning the research design, a literature review was primarily conducted in order to narrow down the focus and derive the research questions. Consequently, the objectives of the thesis were defined. Secondly, a theoretical foundation was built in order to gain understanding and insights on the different concepts and definitions related to food waste and CSR. Thirdly, additional insights on key matters related to food waste

were provided. Both the theoretical foundation and the insights gained build the groundwork for the empirical analysis, which includes the conduct of interviews. As a next step, the data gathered from the empirical analysis was then evaluated. Furthermore, the results of both the empirical analysis and the literature review were compared. As a last step, necessary conclusions to answer the research question as well as to give recommendations. The overall research process applied to this thesis is illustrated by figure 24.

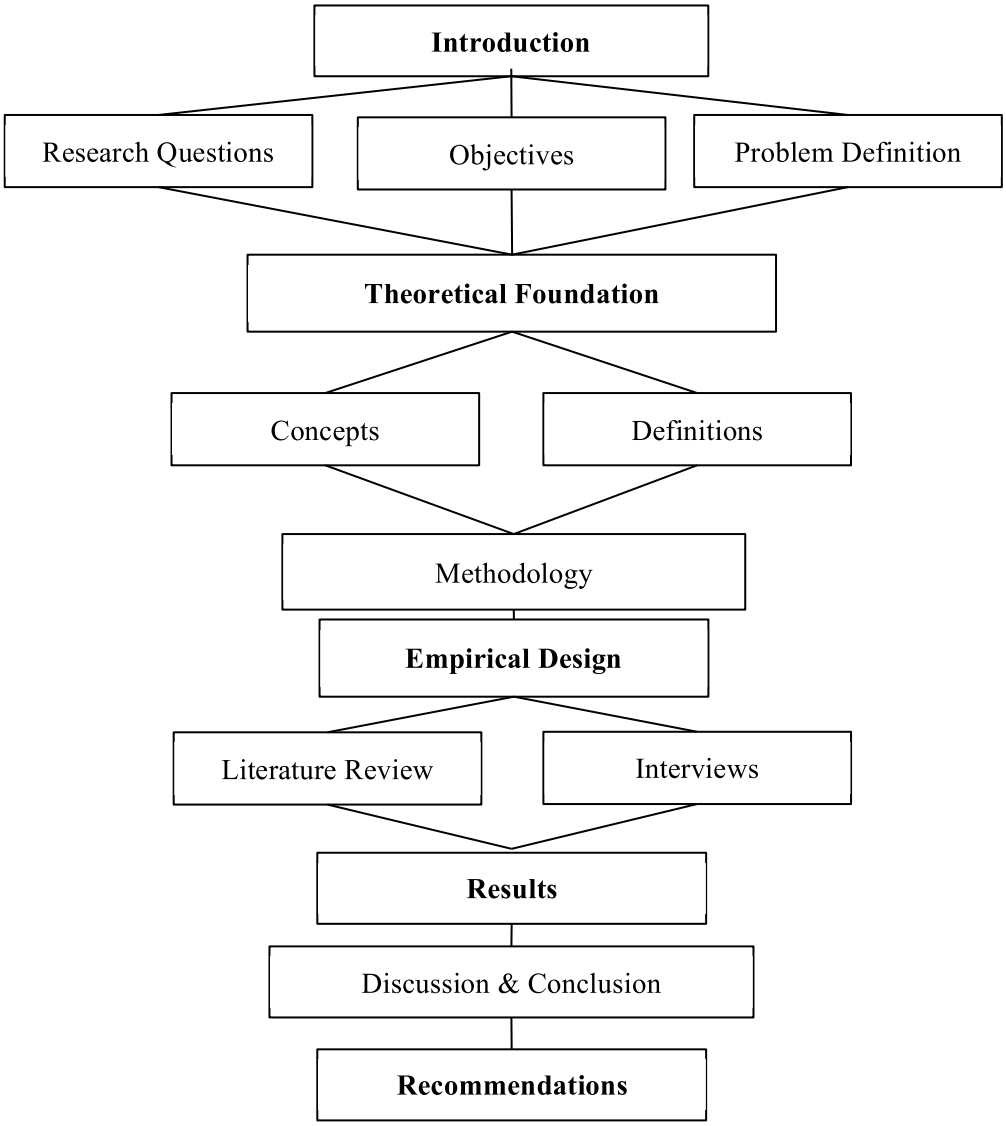

Figure 24. Research design

4.1 Qualitative Approach

Studies on food waste frequently include the quantitative collection and evaluation of data, which might further include statistical techniques. This thesis, however, is not quantitatively collecting data on food waste. In other words, statistical data on the amount of excess inventory at Hug's stores is evaluated but not collected directly. In order to explain and seek answers on why excess inventory is caused and how it can be reduced – rather than focusing on its mere amount – another research method is preferred. The qualitative approach, according to Silverman (2000, p. 1), presents the most suitable method for explaining people's behavior. Furthermore, Rubin and Rubin (2005, pp. 2–3) argue that qualitative interviewing comprises questions which require the interviewee to give reasons, experiences and explanations. Denzin and Lincoln (2011, p. 8) point out that "qualitative researchers stress the socially constructed nature of reality (…) they seek answers to questions *how* social experience is created" whereas "quantitative studies emphasize the measurement and analysis of causal relationships between variables" (p. 8). However, one needs to keep in mind that qualitative research methods are subject to criticism. Qualitative research is primarily criticized for the soundness of results or the extent of "subjective involvement" of the researcher (Davies, 2007, p. 243). Silverman (2000, p. 2) argues that "quantitative research simply objectively reports reality, whereas qualitative research is influenced by the researcher's political values". Silverman (2000, p. 9) further notes the issues of reliability and validity. Reliability is a measure of methodological consistency and is sign of the accuracy as well as the thoroughness of the researcher (Davies, 2007, p. 241). In other words, reliability allows authors to reach the same conclusion through the application of specified conditions and procedures. Validity, on the other hand, ensures that the right questions are being asked (Flick, 2006, p. 371). Hence, valid results are correct and represent the reality. In order to confirm the quality of qualitative research designs, the credibility and transferability of the results have to be guaranteed (Trochim, 2006a, para. 2–3).

4.2 Empirical Design

The following sections describe the empirical design drawn for this thesis, which is primarily comprised of the literature review and the qualitative interviews, as depicted in figure 24. In a first step, the literature review conducted is discussed briefly in this section. Results gathered in this thesis will further be obtained by conducting qualitative interviews. In a second step, therefore, the semi-structured interview approach including the interview procedure are explained, followed by the derivation of the strategic sample. In a last step, the data analysis will be discussed in chapter 4.5.

4.2.1 Literature review

According to Hart (2001, p. 1), a "thorough critical evaluation of existing research often leads to new insights by synthesizing previously unconnected ideas". For this thesis at hand, a literature review was thus carried out as a primary step in order to build both the theoretical foundation as well as conceptualization on food waste and CSR. Literature on definitions and related concepts was considered first in order to gain a further understanding on the key terms used in the corresponding research field. Furthermore, as Hart (2001, p. 3) suggests, a search of the literature will (1) help avoiding mistakes made by previous research, (2) prevent duplicating previous work or (3) filling the gaps in existing research. Ultimately, the literature review gives an overview of the current situation of food waste and its connection to CSR.

4.2.2 Semi-structured interviews

Apart from conducting a literature review, this thesis will be based on qualitative interviews. Trochim (2006b, para. 1) stresses that "interviews are among the most challenging and rewarding forms of measurement". Qu and Dumay (2011, p. 239) add that "conducting qualitative research interviews is not a trivial enterprise". Both Qu and Dumay (2011) and Rubin and Rubin (2005) emphasize that great skills in listening, note taking and sufficient preparation are necessary in order for qualitative interviews to be successful.

Davies (2007) describes semi-structured reflective interviews as a distinct research technique. The aim is not to "invite simple yes/no answers" but "to stimulate reflection and exploration" (p. 29). Furthermore, Davies argues this method

is suitable to explore "people's perspectives on the subject chosen" (p. 29). Flick (2006) describes three types of elements included in semi-structured interviews:

> *Open questions* (…) may be answered on the basis of the knowledge that the interviewee has immediately at hand. Additionally, *theory-driven, (...) questions* are asked. These are oriented to the scientific literature about the topic (…) The third type of questions – *confronted questions* – respond to the theories and relations the interviewee has presented up to that point in order to critically re-examine these notions in the light of competing alternatives". (p. 156)

The literature review conducted beforehand thus builds the necessary foundation for the semi-structured interviews. Correspondingly, the literature review should provide enough expertise to ensure the interview's adequate level of depth. Ultimately, Qu and Dumay (2011, p. 246) argue that "the semi-structured interview enjoys its popularity because it is flexible, accessible and intelligible and, more important, capable of disclosing important and often hidden facets of human and organizational behavior". On the one hand, this technique allows interviewers to lead interviewees in a consistent and systematic manner. On the other hand, it provides the researcher with certain flexibility in order to "modify the style, pace and ordering of questions to evoke the fullest responses from the interviewee" (p. 246). This thesis considers the semi-structured interview approach as the most suitable in order to address the causes and implementation methods for people's behavior in reducing excessive inventory.

The following section on the interview procedure will describe how semi-structured interviews are conducted within the framework of this thesis.

4.2.3 Interview procedure

Interviews for this thesis were divided into three stages: a clear beginning, middle and end, as suggested by Davies (2007, p. 160). Furthermore, Rubin and Rubin (2005, p. 157) add that "interviews normally begin with broad questions that are relatively easy to answer from the interviewees' experience and that do not box the interviewee into particular responses". Furthermore, Qu and Dumay (2011, p. 250) suggest that the interviewee should be briefed about the context of the situation, including an explanation about the purpose of the interview. Interviewees might further be asked whether they had any questions before starting the interview. The introductory questions are then followed by main questions in order to elicit the interviewees' description on what they suggest or do to reduce excess inventory. Furthermore, main questions are asked in order to gain other related information needed to answer the research questions (Qu & Dumay, 2011, p. 156).

Another type of set of questions used in qualitative interviews are follow-up questions and so-called "probes" or probing questions. Follow-up questions allow researchers to get "more depth and understanding about an idea, a concept (…) or an issue" (p. 173). In other words, both follow-up and probing questions invite the interviewee to elaborate on unanswered or partially answered questions or missing information. Detail types of probes used for the interviews can be found in Appendix A, summarized by figure 29.

Ultimately, interviews should end with closing questions. At this point, the interviewer might ask interviewees whether they had any outstanding questions. The following figure 25 provides an overview on types of questions used throughout the interview whilst the detailed interview outline can also be found in Appendix A.

Types of questions	Purpose of questions	Some examples
1. Introducing questions	To kick start the conversation and move to the main interview	▪ Can you tell me about… ▪ Do you remember an occasion when…
2. Follow-up questions	To direct questioning to what has just been said	▪ Nodding, "mm" ▪ Repeating significant words
3. Probing questions	To draw out more complete narratives	▪ Could you say something more about that? ▪ Can you give a more detailed description of what happened? ▪ Do you have further examples of this?
4. Specifying questions	To develop more precise descriptions from general statements	▪ What did you think then?
5. Silence	To allow pauses, so that the interviewees have ample time to associate and reflect, and break the silence themselves with significant information	
6. Interpreting questions	Similar to some forms of probing questions, to rephrase an interviewee's answer to clarify and interpret rather than to explore new information	▪ You then mean that… ▪ Is it correct that you feel that… ▪ Does the expression [...] cover what you have just expressed?
7. Throw away questions	To serve a variety of purposes, i.e. to relax the subject when sensitive areas have been breached	▪ Oh, I forgot to ask you…

Figure 25. Typology of questions. Adapted from "The qualitative research interview", by Qu and Dumay, 2011, p. 249

4.3 Strategic Sample

This section aims at describing the choice of the strategic sample chosen for this thesis. Trochim (2006c) defines sampling as the following:

> Sampling is the process of selecting units (e.g., people, organizations) from a population of interest so that by studying the sample we may fairly generalize our results back to the population from which they were chosen. (para. 1)

A strategic sample therefore represents participants selected for this thesis. Since not all participants selected might be available for an interview; however, the *empirical* sample then consists of the final group of interviewees, as described in the following chapter. Furthermore, Trochim (2006d) describes different types of sampling. Firstly, he distinguishes between "nonprobability" and "probability" sampling where "nonprobability sampling does not involve random selection and probability sampling does" (para. 1). The random selection of participants is not suitable for this thesis since participants need to comply with predefined criteria, as shown in figure 26. As a result, nonprobability sampling is chosen as the type of sampling method applied in this thesis. Furthermore, a distinct type of nonprobability sampling is referred to as "purposive sampling". According to Trochim (2006d), as the term implies, purposive sampling indicates a sample that is chosen with a purpose in mind. Groups of people are predefined and not randomly chosen. In other words, unlike "accidental" or "convenience" sampling, purposive sampling does not just choose the sample by "simply by asking for volunteers" (2006d, para. 3). Davies (2007, p. 57) states that purposive sampling "invites the researcher to identify and target individuals who are believed to be 'typical' of the population being studied". As afore-mentioned, predefined criteria need to be established for nonprobability sampling, thus also for purposive sampling.

Criteria	**Description**
Corporation context	▪ Swiss bakeries with a minimum of 6 branches located in the German-speaking area of Switzerland ▪ Products offered are similar to Hug's products (bread, buns, pastries, and so forth)
Experience	▪ Participants have gained sound experience and knowledge in the bakery industry ▪ Participants have experience with both the issue of food waste and excessive inventory

Figure 26. Pre-defined criteria for the strategic sample

Davies (2007, p. 29) suggests that semi-structured interviews might involve a sample ranging between six and twenty. Due to time constraints, this thesis chooses the strategic sample size of six. For choosing the interview partners, the pre-defined criteria are summarized in figure 26.

According to Rubin and Rubin (2005, p. 65), participants should be experienced and knowledgeable. Furthermore, researchers should ensure that participants are "individuals who reflect a variety of perspectives" (p. 67). This thesis' strategic sample thus includes mainly companies currently operating in the Swiss bakery industry. Furthermore, in order to gain different points of view, two consultants of Swiss non-profit organizations combating food waste are taken into account as well. Davies (2007, pp. 54–55) emphasizes that a sample should be appropriate to research objectives as well as available in the context of time or resource constraints.

4.4 Empirical Sample

The empirical sample consisted of 10 interviewees. The strategic sample initially comprised an amount of six interviewees. However, as this thesis' progressed rather expeditiously, interviewees recommended in previous interviews by other interviewees could be contacted and interviewed correspondingly. Most importantly, the results obtained by the additional interviews were considered valuable rather than redundant.

Overall, 7 out of 10 interviewees of the empirical sample were currently positioned as chief executive officers (CEO) whilst simultaneously being either a member of the Board of Directors, the owner or the founder of the company.

Two out of ten interviewees were currently not employed or operating solely in the bakery industry. Yet, they were members of organizations whose mission includes finding solutions for preventing and reducing food waste. Additionally, both interviewees were knowledgeable about the bakery industry hence considered suitable for the sample. Ultimately, for achieving a high level of diversity as well as obtaining different viewpoints, these two interviewees were thusly included in the empirical sample.

In comparison to the strategic sample, however, the empirical sample included certain limitations. Firstly, no female interviewees could be included. This stemmed from the fact that women were currently (1) not positioned as CEOs or similar positions or (2) were not recommended by their companies in being experts or representatives in excessive inventory or food waste. Secondly, the empirical sample included interviewees which were not previously selected. 17 potential interview partners declined giving an interview on the matter due to either time and capacity issues or disinterest. Hence, 2 out of 10 interviewees (Nr. 3 and 5) only had

an amount of five branches in total, compared to a minimum requirement of six. Figure 27 shows the final empirical sample with the interviewees' main characteristics. These include (1) the region the company operates in, (2) the amount of branches, (3) daily customer contacts covering all branches, (4) the interviewee's position within the company, and the (5) company's number of employees. It was assumed that the difference in daily customer contacts, the amount of branches and amount of employees might underline differences in interviewees' answers.

No.	Region	Branches	Customer contacts	Position	Employees
1	Zurich Oberland	18	1,000* 1 branch	CEO, board member	500
2	Chur	9	5,000	CEO	170
3	Zug	5	2,500	CEO, Owner	45
4	Zurich	9	5,000	CEO	140
5	Berne	5	8,000	CEO	140
6	Switzerland	-	-	Vice President	-
7	Switzerland	-	-	Board member	-
8	Zurich Unterland	10	10,000	CEO	300
9	Aargau/ Zurich area	11	4,700	Sales manager	120
10	Zurich City	8	3,000	Operations Manager	60

Figure 27. Empirical sample

4.5 Data Analysis

As afore-mentioned, this thesis' data was obtained by conducting a literature review and interviews. The following sections will briefly describe how the data analysis was carried out.

4.5.1 Content analysis

The conduct of interviews is followed by transcriptions using transcription symbols. Transcriptions symbols are used to capture interviews' notions which do not appear in normal writing and would otherwise be lost. Transcribing the interviews is then followed by a content analysis. Weber (1990, p. 5) states that content analysis "classifies textual material, reducing it to more relevant, manageable bits of data". Furthermore, Krippendorff (2013) describes content analysis as the following:

> Content analysis is potentially one of the most important research technique in the social sciences. The content analysis views data not as physical events but as texts, images, and expressions that are created to be seen, read, interpreted, and acted on for their meanings, and must therefore be analyzed with such uses in mind. (p. xii)

Content analysis further implies that categories need to be established. Mayring (2000, p. 3) distinguishes between an inductive and a deductive category application. For this thesis, categories are developed mainly deductively. Trochim (2006e) described this approach as the following:

> Deductive reasoning works from the more general to the more specific. Sometimes this is informally called a "top-down" approach. We might begin with thinking up a *theory* about our topic of interest. (..) This ultimately leads us to be able to test the hypotheses with specific data - a *confirmation* (or not) of our original theories. (para. 1)

Consequently, the interview transcripts were carefully analyzed by building categories informed by theory. The transcripts were thus coded and interviewees' statements were assigned to the corresponding category. However, additional categories discovered throughout the analysis were not omitted but added to the results as either additional categories or findings.

This chapter described the methodological procedure applied. The next chapter will discuss the results obtained by the interviews. Direct citations are marked with the interview number and the corresponding line numbers of the transcript (e.g. 2, 334–336).

5. Results

5.2 Category Analysis

The following seven main categories and subcategories were defined for the interview analysis as described in chapter 4.5.1: (1) measurement, (2) motivation, (3) recovery and disposal, (4) optimization, (5) causes and barriers, (6) communication and (7) stakeholder roles. The categories' results are summarized in the following sections. The corresponding table with the codes can be found in Appendix C whilst the results' summary is presented in table 3 in the end of this chapter.

5.2.1 Measurement

The first category aimed at comparing bakeries' different approaches of defining, measuring and analyzing excessive inventory. It further included comparisons on what interviewees thought of their own and an "optimal" excessive inventory rate.

Firstly, all bakeries use a cash register system to register excessive inventory. Secondly, interviewees referred to excessive inventory as products not sold during the day or exceeding the best-before date. Apart from interviewee 6 and 7, all interviewees mentioned measuring and analyzing excessive inventory on either a daily and (or) monthly basis. Data on excessive inventory is then compared with data from the previous week, either being shown directly on the cash register or on printed lists. Additionally, 9 out of 10 interviewees measured excessive inventory in units or Swiss francs whilst the final figure was measured in percent against the quantity ordered. Only one interviewee has recently began measuring in kilograms, arguing that it gives a much more accurate figure in regard to CO_2 balances and food waste. Furthermore, interviewees mentioned conducting ABC-analyses. Interviewees also counted 'breakages' as part of excessive inventory whilst making no differentiation between fresh, daily products and other retail products (such as soft drinks, yogurts, and so forth). Additionally, only interviewee 9 presented concrete key data and figures on excel sheets during the interview. Most interviewees stressed the point that excessive inventory rates differ significantly between remote and highly frequented locations, leading to a difference up to 10% between branches. Interviewee 1, 4, 5, 8 and 9 mentioned that an optimal rate of excessive inventory

ranges from 3 to 5 percent. However, the rate depends strongly on the type of product and the store's location.

5.2.2 Motivation

The second category aimed at comparing interviewees' motivation for reducing or optimizing excessive inventory or combating food waste in general. All interviewees described economic, ecological and ethical aspects of decreasing food waste. This implied that reducing food waste simultaneously decreases costs and is thusly desirable from every perspective. Additionally, all interviewees emphasized the importance of acknowledging and saving resources – economic, human or environmental – taking into account the efforts of the entire food value chain. Interviewee 1 explains:

> Wir arbeiten mit Lebensmitteln zusammen, wir sind tagtäglich viel mehr in Kontakt damit als ein Konsument oder jemand der im Dienstleistungssektor tätig ist, wir sehen was es braucht bis das, was an den Tag gelegt wird, was der Kunde dann kaufen kann. Und wir reden auch sehr viel mit den Urproduzenten, dem Müller, mit den Bauern, mit den Eier- oder Fleischlieferanten. Und wir sehen wie die arbeiten müssen und welche Leistung sie erbringen müssen. (1, 17–23)

Other interviewees described that it "hurts" to waste in general or that people in Switzerland are simply spoiled and "are doing too well". Interviewee 5 points out that decreasing food waste has always been an issue for bakeries and other food companies; however, the issue of food waste has been considered as a recent "hype" and made consumers generally more aware and sensitized. Ultimately, interviewees 2 and 5 emphasize that they do not want to be regarded as "saints" if they tackle the issue of food waste; a concept which might refer to the fear of greenwashing. Interviewee 5 explains:

> Wir wollen uns nicht aufspielen als absolute Gutmenschen und wir haben auch Sachen, die wir vernachlässigen, das ist so. Da müssen wir uns auch nicht den Heiligenschein aufsetzen. Und das andere ist, wir wollen nicht mit dem Finger auf die Kunden zeigen. (5, 489–592)

5.2.3 Recovery and disposal

The third category aimed at describing bakeries' approaches and strategies on how to reduce excessive inventory ex post. This included interviewees' descriptions on where excessive inventory is disposed or how it is recovered after it incurred. Descriptions on recycling methods as well as organizations known by interviewees in regard to food waste engagement are therefore also taken into account.

With reference to *rework*, interviewees 1 to 5, 8 and 10 produce breadcrumbs and/or *Schraps*. Interviewee 9 avoids producing breadcrumbs arguing the production process included too much risk in regard to regulations. Other examples of rework included fillings (or "masses"), by-products for the bakery's café/restaurant, Zwieback or "meltings" (e.g. chocolate). Furthermore, concrete examples were given such as baked potatoes re-used in bread, as described by interviewee 9 or buns from the previous day topped with cheese and warmed up mentioned by interviewee 10. Generally, all interviewees agree that rework does not imply a degradation or quality impairment but rather a revaluation or improvement of the product's quality. Interviewee 1 argued for instance that recovered products often represent an ecological alternative to chemical binders. Interviewee 6 states that excessive inventory simply consists of "paid semi-finished products". Yet, other interviewees mention that rework or recycling requires both time and cost efforts and tightened regulations impedes the production of rework.

With reference to the food recovery hierarchy described in chapter 2.2.7, interviewees 2, 5 and 8 explicitly support that incineration should always be the last resort and thusly avoided. At the second stage ("feed hungry people") – after the first stage of reduction – interviewees 1 and 5 describe that excessive inventory is firstly sold to employees. Employees have the possibility to pay a fixed fee per box (e.g. CHF 3) to be filled with any products not sold at the end of the sales day. Employees working at production sites mostly receive these products (excessive inventory) for free. Donation or aid agencies mentioned by interviewees included Caritas, Pfarrer Sieber, orphanages, children's home, children hospitals, and refugee centers, Tischlein Deck Dich or Schweizer Tafel. In regard to other organizations, most interviewees collaborated with Ässbar (an organization described in more detail in Appendix D). Interviewees not in collaboration with Ässbar or Tischlein Deck Dich argued they would like to engage in a partnership. However, logistics or the fact that

these organizations simply already have enough food supplies impede these partnerships. Interviewee 8 further described the collaboration with “Öbu”. Overall, all interviewees were rather open to collaborating with aid organizations and would extend their network if it were not for logistical challenges and transportation restrictions. Interviewee 2 states for example:

> Darum ist in X. ein wenig das Problem, dass wir gerne völlig offen wären, um mit anderen Unternehmen zusammenzuarbeiten. Aber entweder gibt es sie hier nicht, oder sie werden so mit Backwaren zugedeckt, dass sie sie einfach nicht brauchen. Darum, wenn z.B. so Organisationen wie Tischlein Deck Dich oder so Geschichten wären für uns super interessant, gibt es bei uns aber nicht. (2, 428–432)

Other examples for collaborations include engaging in other projects such as “von Gestern” (a student initiative) or collaborating directly with students of universities (such as “Hochschule der Künste Zürich”). Another recovery option explicitly mentioned by interviewee 2, 3 and 5 was the implementation of a similar concept as offered by Ässbar. Bakeries could therefore sell their products from the previous day under different names or branding. Interviewee 2 for instance opened its own branch with “M. from the previous day”:

> Und nachher kommt unsere M. vom Vortag Schiene. Wir haben eine eigene Schiene, wo wir nicht schnell verderbliche Artikel – das bedeutet Brötchen, Brot, Nussgipfel, Mandelgipfel, eigentlich alles wo Sie keine Bauchschmerzen bekommen, wenn es einen Tag lang herumgestanden ist – nachher nochmals 2 Tage in einer speziellen Verpackung in einer einzelnen Filiale von uns zum ganz ganz günstigen Preis weiterverkaufen. Also wenn Sie so ein bisschen das Thema Ässbar, wo Sie sicher kennen, (…) – wir haben das 2010 bei uns eingeführt. (2, 283–290)

All interviewees familiar with this concept emphasized the importance of a clear distinction between fresh, daily products and products from the previous day. Additionally, 8 out of 10 interviewees were members of United Against Waste (UAW), an organization described in Appendix D. The remaining two interviewees

were aware of the organization's existence. Members were using recipes for recovering excessive inventory collected by UAW for instance.

Additionally, all interviewees knew "Too Good To Go" – an organization described in Appendix D – but none of them intended to collaborate now or in the near future. Interviewees agree that the underlying idea has potential; however, interviewee 9 for instance argues that the concept is "too aggressive".

Referring back to the food recovery hierarchy, interviewees' descriptions on the third stage ("feed animals") included forwarding excessive inventory to farmers – ranging from horse, cow, cattle, goat, pig or even vegetable farmers. In regard to the fourth ("industrial use") and sixth and last stage ("landfill/incineration"), 6 out of 8 bakeries disposed excessive inventory partly at biogas plants, after recovering or forwarding it to employees, aid agencies or farmers and before forwarding it to incineration plants. The two remaining interviewees working in the bakery industry (4 and 7) were forwarding excessive inventory directly to incineration plants, after recovering or forwarding it to employees, aid agencies or farmers. Interestingly, none of the interviewees described composting (stage 5) excessive inventory. However; this might be due to the interview's lack of proper follow-up questions in regard to composting.

5.2.4 Optimization

The fourth category aimed at describing bakeries' approaches and strategies on how to reduce excessive inventory ex ante. Unlike the previous category, therefore, this category includes descriptions on bakeries' strategies to avoid or prevent excessive inventory before it incurs. Optimization strategies in regard to communication are discussed in the following chapter 5.2.6.

Firstly, interviewee 2 and 5 stress the point that excessive inventory should primarily not incur at all. According to interviewee 2, the entire ordering and production system is to be set up in order to avoid all types of excessive inventory. Hence, prevention rather than reduction is emphasized. Interviewee 4 states that bakeries might also focus on producing products with a longer durability.

Secondly, interviewee 1 and 5 argued that retail products with a long durability should never exceed their use-by date; the sales team would otherwise do their job insufficiently. Products that do not sell well should thusly be removed from the product range in general.

Thirdly, in regard to the product range (or product mix and breadth), interviewees maintain that not all products have to be available at all hours. Interviewee 5 stresses the definition of a "key range of products" which defines products' availability at certain hours. Examples include croissants and buns offered mainly in the mornings whilst certain types of bread must be available in the evenings. Interviewee 4 exemplifies that types of bread should then vary between whole grain and white bread instead of offering only three kinds of white bread. Interviewees are convinced that customers accept that full shelves do not indicate that all products necessarily have to be available at late hours. Furthermore, interviewees point out that the product range is to be reduced in general in regard to food waste. Interviewee 8 adds that a reduced product range leads to economies of scale; another opportunity for increasing profits.

Fourthly, interviewees mention that short distances between branches bring significant advantages particularly in terms of logistics. If distances are short between branches and the production site, the products' freshness can better be ensured. Simultaneously, potential excessive inventory can be moved from one branch to the other. Different opening hours might support this concept – one branch closes one hour earlier or later in order to forward or sell excessive inventory from other branches. Interviewee 5 explains:

> Nachher kommt noch dazu – das ist auch noch Struktur – wir haben einen Laden, der Stärkste, der viel länger offen hat als die anderen. Also währenddessen – heute ist ein gutes Beispiel – heute schliesst um 15 Uhr der eine Laden, um 17 Uhr schliessen andere Filialen, und die Filiale am Bahnhof schliesst erst um 21 Uhr. D.h. der Chauffeur geht eigentlich um 17 Uhr bei den anderen Filialen vorbei, nimmt alle Tagesprodukte (...) bringt das dann alles in den Bahnhof. (5, 387–395)

Fifthly, interviewees point out the significance of a flexible ordering process and corresponding smart technologies in cash register systems. Flexible ordering processes imply that branch managers might order twice a day depending on customers' demands on that day. These fast and flexible ordering process then depend on the capacities and flexibilities of the production site. Interviewee 4 states that smart cash register softwares or even smart phone applications bring

considerable opportunities for reducing excessive inventory. Interviewee 3 argued that sophisticated software reduces subjectivity and correspondingly improves objectivity when ordering. Overall, interviewees believe strongly in the technological advancement in the field. Interviewee 4 states:

> Die Lösung kann vermutlich nur über – der Computer kann das irgendwie machen. Der Mensch ist zu blöd um das Ganze zu organisieren. Vielleicht erfinden wir irgendwann eine App, wo uns automatisch ausrechnet, wie viel wir brauchen. (4, 398–401)

Additionally, 7 out of 8 interviewees operating in the bakery industry described that ordering was executed by their branch managers. Only one interviewee described that ordering was executed in a centralized manner by management directly. Furthermore, branch managers are responsible for deciding when and which deals on products are to be offered (e.g. reduced price, three for two, etc.). Sixthly, interviewees emphasize the importance of companies' collaboration within the bakery industry to tackle the issue of food waste. Experiences, knowledge and best-practices can be shared and implemented accordingly without compromising competitiveness. Interviewee 4 describes that inputs can be given in order to change perspectives and how to do things differently. Furthermore, interviewee 6 suggests that as soon as leaders in the industry set an example, others might follow.

Seventhly, particularly interviewees 6, 7 and 10 emphasize that excessive inventory is strongly linked with product innovation. If a product is innovative and appealing, customer demand would increase and in turn lead to the reduction of excessive inventory. Interviewees pointed out that bakeries might simply have to close earlier when they are sold out; customers would have to come back and ensure they get their products. Interviewees 6 and 7 argue that bakeries need to offer 'creative' and extraordinary products that will not be thrown away by either the bakery or the customers at home. In other words, these products would simply be "too good to be thrown away". Interviewee 7 even argues that the lack of customer demand may often stem from the fact that customers have the impression that bakeries offer "standard" or "dull" products.

Interviewee 9 thus argues that they stopped offering "standard" breads such as the "Tessinerbrot" since Coop or Migros also offer this type of bread at a much

lower price. Bakeries should therefore try to distinguish themselves clearly from retailers. Furthermore, interviewee 9 mentions that self-service station concepts (as seen in Germany) are on the rise. Bakeries shall then not fear losing customers that might not accept the change of direction with regard to product innovation and the product range. Interviewee 10 describes the following:

> Wir haben jetzt von unseren beiden Nussgipfeln den Hefeteig Gipfel gestrichen, jetzt haben wir noch den Blätterteig Gipfel. Dann kam ein Herr rein gestern und nur weil er diesen Gipfel nicht bekommen hat, ist er halb beleidigt rausgelaufen. Sie [die Bäckereien] müssen sich lösen von diesen Zwängen, dass ein (Mensch) wenn wir das nicht mehr haben, durchaus nicht mehr kommen kann. Er bringt ihnen nicht die Zukunft. (10, 95–100)

Interviewee 10 further adds that the new and younger generation would lead the example and represents new opportunities and possibilities for growth. Interviewee 8 suggests that products might also be prized higher in order for customers to realize both the economic, social and ecological value of bread.

Ultimately, according to interviewees, optimizing or reducing excessive inventory begins directly at educating both elderly and particularly younger customers. Customers need to be sensitized (early) on the social, economic and ecological consequences of food waste. Bakeries might therefore engage in sensitizing campaigns or activities such as offering cooking classes with children. Additionally, interviewee 2 and 3 explain that sensitizing customers should already start in school. Generally, interviewees also believe that the media plays an important role in sensitizing customers. Interviewee 2 emphasized that newspapers should cover the issue of food waste or inform consumers about possible solutions. In conclusion, since bread is considered a rather important and traditional food in Switzerland, bakeries have a significant influence on consumers if they decide to sensitize consumers step by step.

5.2.5 Causes and barriers

The fifth category aimed at describing causes for excessive inventory in bakeries. Furthermore, it included descriptions on barriers of particular measures to combat both food waste and excessive inventory.

First and foremost, all interviewees described the customer as one of the most essential reasons why excessive inventory incurs. One of the most considerable reasons relates to customers' expectation of full shelves at all times. Furthermore, interviewees stressed the point that food or particularly bread is not perceived as valuable to customers. Customers are thus not willing to pay a higher price or they throw away products which do not meet their expectations. In regard to customers' quality requirements, interviewee 1 states that customers would not accept or buy products that do not taste or "look" good enough. This in turn either leads to products being thrown away directly at the bakery or at consumers' homes.

Additionally, customers expect bread or buns to be fresh. If freshness cannot be ensured, customers are not willing to buy the products. Interviewee 1 further argues that this perception is positively correlated with Switzerland's increasing living standards. Customers are therefore not willing to accept products not meeting their expectations particularly since they can also afford throwing products away. According to interviewee 3, customers' demand for full shelves at all times has been indirectly shaped by big retailers that offer a considerable variety of products until closure. Interviewee 2 sees society's lack of sensitization therefore as the main problem. Additionally, interviewees argue that customers are simply not willing to compromise. Apart from customers, another reason for excessive inventory described by interviewees relates to the product range to be covered by bakeries. Bakeries nowadays not only offer bread, but also salads and sandwiches. Interviewee 1, 6 and 10 mention that it is rather difficult to further cover the needs of both carnivore, vegetarian and even vegan customers for all these products. Interviewee 4 states:

> Oder dann haben Sie wieder neue Produkte; Sie können nicht einfach plötzlich sagen 'Schinken Sandwich machen wir jetzt nicht mehr, jetzt machen wir nur noch das Tofu'. Sondern ein Schinkensandwich müssen Sie

> auch haben, das Tofu Sandwich auch. Und das wird ja immer mehr, immer breiter. Es wird immer schwieriger allen gerecht zu werden.
> (4, 440–446)

Customers, according to interviewee 1, have thus become increasingly complex. Consequently, interviewees stress the difficulties of planning and forecasting accurately. Interviewees particularly mention the influence of weather changes in regard to excessive inventory. Sudden changes in weather disrupt the planned demand forecast and lead to excess supplies. Excess supplies are further created by excess or the lack of demand on holidays or other events that may sharply increase or decrease customer demands. Demand volatility was therefore described as one of the most considerable reasons for excessive inventory.

In regard to food recovery (a measure to decrease excessive inventory ex post), interviewees described legislative, cost or time issues that hinder recovering more of excessive inventory. Interviewee 1 for instance argues that regulations or current quality management practices which require product traceability make "rework" increasingly difficult. Bakeries would thus save cost and time if they throw the products away rather than recover them. Customer would further not pay for the additional costs incurred by bakeries if they recycled more. Interviewee 3 and 4 argue that customers might also perceive recovered products as being undesirable.

With regard to food donation (another measure to decrease excessive inventory ex post), interviewees explained that the cost of efficient logistics hinder entering new partnerships with aid organizations. Remote locations of stores are not as attractive to these organizations compared to locations in the city. Furthermore, interviewees argue that the risk is too high to ensure the products' food safety regulations along the cold chain. The lack of control is therefore considered as another barrier to donating excessive inventory.

Ultimately, 9 out of 10 interviewee argue that the main reasons or barriers are rather internal than external. Interviewee 9 describes:

> Ich denke, eine Barriere kann die Herkunft sein. Wenn man nur immer in der Branche ist, und sagt 'wir haben das immer so gemacht'. Dass man neue Technologien und Ansätze verwehrt. (9, 208–210)

Interviewee 6 described that employees' lack of motivation or knowledge may also be a reason why excessive inventory incurs. Interviewee 8 adds that the dilemma or the conflict of different demands between upper management, branch managers, employees, customers and 'nature' as such complicate the issue further. Additionally, interviewees argue that bakeries might also struggle with innovation. The effort of developing and innovating new products might be too great or management might has become "too lazy" to change the company's existing processes and structures.

5.2.6 Communication

The sixth category aimed at describing how the commitment for reducing food waste can be communicated internally and externally. One of the subcategories therefore focuses on the communication strategies towards customers whilst the second discusses how the bakery's commitment is or should be communicated towards employees. This category thus includes descriptions on training programs or meetings conducted with employees.

Customers. Interviewees argued that information on food waste should be passed on to customers as subtly as possible and never in a penetrative manner. Dictating or lecturing might only annoy, discourage or alienate customers from tackling the issue themselves. Yet, once any form of communication on the bakery's engagement in regard to food waste has been established, it should be subsequently and continuously repeated. Furthermore, interviewee 2 emphasized that one should not regard bakeries as "saints" if they decide to inform customers on what bakeries do with excessive inventory. In sales conversations or dialogues with customers, according to interviewee 1, it is rather important that employees (sales assistants) offer customers alternative products consciously if their product is not available when they enter the store. Sales assistants should further explain the concept of recovered products and their advantages in order for customers not to feel deceived. Interviewee 2 explains:

> [Rework] Das ist für uns ein bisschen zu Englisch gewesen. Wir pushen das auch nicht. Weil, die Schwierigkeit ist ja immer – wir müssen unsere Kunden ja irgendwie an gewisse Themen heranführen. Und wenn wir zu stark

> hineinschiessen, indem dass wir sagen ‘ok, schau, das ist jetzt eine Käsewähe wo noch 50% Altbrot drin hat’, dann wird das nicht funktionieren. Und darum ist es mehr das Thema, dass wir so Sachen nicht zu stark mit so Hintergründen aufladen sondern einfach einmal ‘es ist gut, es schmeckt gut, ich habe das gerne’ und dann sukzessive nachher die Kommunikation im Nachhinein, aus was es eigentlich besteht. (2, 164–172)

In regard to communication channels, interviewee 2 actively informed customers on their Facebook and web page on how excessive inventory is being recovered or disposed. Interviewee 3 and 9 described that after 5 p.m., the logo of United Against Waste is displayed on the cash register particularly as a helping tool for sales assistants to explain to customers why certain products are no longer available at certain hours. Interviewee 3 stated that customers should think about the issue of food waste “silently” rather than being directly told what to do. The bakery’s philosophy should be explained subtly and not being “forced” upon customers. Additionally, interviewee 10 distributed Ässbar flyers in their stores.

Overall, 3 out of 8 bakeries actively communicated with customers how they deal with food waste and excessive inventory. The remaining 5 interviewees (who have not yet established active communication channels towards customers) want to avoid being regarded as “saints” or a “know-it-all” or simply feel that they are not ready yet to display any information.

Interviewee 8 distributed brochures, flyers and posters and had recently started an information campaign on the bakery’s general sustainability engagement. Additionally, interviewee 8 repeatedly incorporated articles on excessive inventory in the customer magazine and maintains that showing pictures rather than long texts is key. However, no information was provided online yet. Only interviewee 2 provided information online as well. Interviewee 8 further argued that it is important to communicate with customers on the issue in any way – if bakeries remain silent on the issue, customers might think that bakeries hide certain information from them.

Interviewee 7 points out that communication towards customers strongly depends on the bakery’s philosophy, marketing position and strategy in order to avoid greenwashing. Communicating directly on food waste might be inappropriate for some bakeries whilst being suitable for others. Communication strategies should therefore also be tailored to the bakery’s target customers.

Ultimately, the media plays a vital role in communicating and informing customers about the consequences of food waste. Furthermore, the media can further suggest or recommend best practices for both companies and customers on how to reduce food waste. Interviewees thus stress the importance of both the government and the media in regard to sensitizing society and consumers.

Employees. Firstly, interviewees stressed the importance of not only sensitizing customers, but also employees. Employees need to understand and live the bakery's philosophy or attitude towards food waste and excessive inventory. Thus, interviewee 5 emphasized the significance of written mission statements and employee regulations with specific sections on excessive inventory:

> [Retouren] das erkläre ich jedem neuen Mitarbeiter und jeder neuen Mitarbeiterin, das ist auch im Personalreglement. Wir erklären es, damit sie es sich vorstellen können; dann sagen viele 'ah, das habe ich gar nicht gewusst'. Das sind unsere Botschafter. Genau die, die im Laden sind, die werden angesprochen. (5, 581–584)

Secondly, all interviewees described established training programs for employees. These programs should educate employees for instance on customer complexity, accurate weather and vacation planning forecasts or directly on excessive inventory. Interviewee 2 emphasizes that only branch managers should be educated specifically on excessive inventory since educating all employees requires too much time or cost efforts. Branch managers should then pass on the knowledge to their employees. Not only costumers but also employees could extract information from the bakery's Facebook page or website. Furthermore, magazines from organizations such as Richemont ("panissimo") might provide additional valuable information on excessive inventory to educate employees.

Interviewee 3 explains that branch managers should receive regular notifications with inputs and insights on the product range or also on excessive inventory levels. Interviewee 9 adds that it is crucial to support branch managers and not to "punish" them if excessive inventory levels are too high or too low. Management should provide branch managers with enough data, information and inputs on what to sell more or less.

5.2.7 Stakeholder roles

The seventh and last category aimed at describing how the main three stakeholders mentioned by interviewees affect or influence the bakery's efforts to reduce food waste and excessive inventory. The first subcategory focuses on customers', the second on employees' and the third on management's role in combating food waste and excessive inventory. The fourth subcategory discusses specific characteristics of the bakery industry and how these characteristics and players affect the bakery's decisions.

Customers. Firstly, as afore-mentioned, customers play a key role in reducing excessive inventory. Interviewees emphasized that customers are not yet ready to compromise their needs or understand the issue of food waste properly. Interviewee 2 states:

> Es wäre ja schön, wenn man ohne Rücksicht und Kompromisse leben könnte, können wir aber nicht, wollen wir vielleicht auch gar nicht.
> (2, 37–39)

Furthermore, the need for customers to fundamentally shift their thinking and attitude towards food waste has been stressed by all interviewees. Customer complaints sent by e-mail exemplified one way on how customers react if certain products are no longer available. Bakeries perceived this behavior as proof that customers are not ready or willing to renounce on product preferences. Furthermore, interviewee 3, 4 and 6 point out that customers are further not knowledgeable on the meaning of best-before dates or what to do with bread left-overs. Ultimately, interviewees argued that customers should take on more responsibility themselves as well if food waste is to be reduced.

Employees. Firstly, interviewee 2 emphasized the importance of employees' general motivation towards reducing or optimizing excessive inventory. Interviewee 5 maintains that employees are regarded as ambassadors or messengers towards customers and should represent the company's philosophy or interest towards excessive inventory. Secondly, employees' personal motivation and time efforts

when ordering for instance is a crucial step in optimizing excessive inventory. Interviewee 10 explains that employees often fear change or other constraints with reference to management's decisions on excessive inventory. Furthermore, interviewee 10 exemplifies:

> Gleichzeitig haben Sie aber auch die Mitarbeiterseite, wo 'ja, aber wenn wir dieses Brot nicht mehr haben, dann kommt doch die Frau X, die kommt das doch immer am Samstag holen'. Das ist immer mit extremen Ängsten und Zwängen verbunden. (10, 103–106)

Additionally, employees should be willing to accept responsibility when ordering; they are the ones to decide when to implement deals such as 50% reductions on products for instance. Furthermore, they decide which products should or should not be offered to customers if they do not meet the quality requirements (e.g. too dark, too small, etc.). Thirdly, interviewee 4 explains that excessive inventory can only be measured accurately if employees enter data continuously and correctly. Employees require enough knowledge and expertise for ordering or generally making decisions on the matter.

Ultimately, interviewees further understood that high pressure is exerted on employees in regard to excessive inventory. Excessive inventory can either be too high or too low and employees need to take responsibility either way. They constantly find themselves in a dilemma between the demands of customers and management.

Management. Firstly, interviewees describe that it is the management's main responsibility to set and implement the company's strategy as well as being the role model for employees in regard to excessive inventory. Interviewee 8 argues:

> Die interne Hürde Widerstand gegen alles Neue, das hat jeder der Betriebe, (…) es ist immer anstrengend um irgendetwas zu machen. Und wenn ich nichts mache, dann macht niemand etwas. (8, 188–191)

Interviewee 5 maintains that management should thus define and truly "live" the bakery's philosophy. Interviewee 8 argues that a top-down approach is necessary

where CEOs should personally be interested in making progress whilst raising awareness and inspiring employees. This in turn would motivate employees and even make jobs more attractive. Interviewee 9 explains that empowering employees in regard to the ordering process is thus rather crucial:

> Befähigen, dass sie [Mitarbeiter] das (…) umsetzen. Ich denke, auch eine gewisse Fehlerkultur, dass man das akzeptiert. Das man nicht autoritär ist in diesem Sinne sondern ihnen auch die Verantwortung gibt und sagt 'du darfst bestellen, d.h. du bist auch verantwortlich dafür wenn du zu viel hast, aber ich unterstütze dich, wenn etwas falsch läuft'. (9, 226–231)

Interviewee 9 therefore argues that a constructive criticism culture should be established. Secondly, management should further be open to both innovation e.g. discovering new ways of product recovery. Ultimately, interviewee 8 emphasized that is it crucial that management is continuously tackling the issue and should not stop sensitizing and educating both employees and customers. Interviewee 9 adds that management represents a vital support and coach function, providing employees with necessary check-lists and other inputs.

Bakery industry. Overall, all interviewees described that competition within the industry is fierce. Interviewees explained that particularly retailers have profound influence on bakeries and consumers. Bakeries consider not only other bakeries but also gas stations as strong competitors. Most interviewees described that bakeries thus find themselves under high competitive pressure particularly due to retailers' low price offers. Furthermore, interviewees argued that retailers are partly responsible for the high number of closure of bakery shops. Bakeries need to compete by offering longer opening hours as well as diversifying their product range. Interviewee 6 explains that bakeries are no longer simply in the bread but rather in the take-away business. Additionally, interviewees agree that salaries within the bakery industry are rather low. Employees' motivation to engage themselves in regard to food waste might thus be correspondingly lower. Ultimately, complex customers with increasing demands and expectations for freshness challenge both bakeries and retailers. Interviewee 7 argues that bakeries should stop viewing themselves as "victims":

> Anstatt sich als Opfer darzustellen, 'die dummen Detailhändler nehmen uns die Kunden weg', können sich die Bäckereien neu erfinden, innovieren, und selber auch dann einen Schritt weitergehen, um Kunden zurückzugewinnen, damit das Bäckereigewerbe nicht so ausstirbt, wie es heutzutage ist oder stattfindet. (7, 255–259)

Bakeries should therefore innovate and distinguish themselves clearly from retailers by offering high quality, hand-crafted, traditional as well as new and innovative products. Ultimately, table 3 summarizes this chapters' interview results.

Table 3. Interview results summarized

Category	Results
Measurement	• use of cash register system for daily measuring excessive inventory • measurements predominantly in number of units against quantity ordered or percentages against total sales volume • comparison of weekly and monthly excessive inventory rates as input for ordering • high rates of excessive inventory for remote locations compared to low rates in highly frequented locations (leading to considerable differences)
Motivation	• reducing excessive inventory decreases costs and is desirable from both economic and ethical perspective • "hurts" to waste food • interviewees are against the notion of being regarded as 'saints' • appreciation for efforts made by entire value chain
Recovery and disposal	• example for rework: schraps, breadcrumbs, "masses", "fillings, by-products for café/restaurant, Zwieback, re-use baked potatoes, buns with topped cheese • rework leads to quality revaluation, not degradation • recovered products are paid semi-finished products • interviewees would extend their network if it were not for logistical challenges and transportation restrictions • collaboration with United Against Waste • Ässbar concept ("M from previous day") • allowing employees to take excessive inventory home (either for free or paying a fixed fee per box) • forwarding excessive inventory to farmers, biogas and incineration plants

Optimization	• excessive inventory should primarily not incur at all • retail products with a long durability should never exceed their use-by date • definition of a "key range of products" and the reduction of product range leads to the reduction of excessive inventory • short distances and differences in opening hours between branches bring significant advantages particularly in terms of logistics. • importance of a fast and flexible ordering process • technological advancement in the field particularly with regard to cash register systems are crucial • collaboration within bakery industry is essential since experiences, knowledge and best-practices can be shared and implemented accordingly without compromising competitiveness • excessive inventory is strongly linked with product innovation (offer innovative, diversified, not standard products) • reducing excessive inventory begins directly at educating both elderly and particularly younger costumers • media and the government play important role in sensitizing customers
Causes and barriers	• customer as one of the most essential reasons why excessive inventory incurs: – customers' expectation of freshness and full shelves at all times – devaluation of food and bread – complex demands (vegan, vegetarian, etc.) – demand volatility (spontaneous shopping) • rapid change of weather • rework is costly • cost of efficient logistics hinder entering new partnerships with aid organizations • risk is too high to ensure the products' food safety regulations along the cold chain • main reasons or barriers are rather internal than external • bakeries struggle with innovation
Communication	***Customers*** • communication should be as subtly as possible and never in a penetrative manner • subsequent and continuous repetition • sales assistants should offer customers alternative products consciously if their product is not available when they enter the store • explain the concept of recovered products and their advantages in order for customers not to feel deceived • communication channels mentioned:

	– Facebook and web page – United Against Waste logo on cash register display after 5 p.m. – Ässbar flyers – posters, customer magazines, brochures • communication towards customers strongly depends on the bakery's philosophy, marketing position and strategy in order to avoid greenwashing • media plays a vital role in communicating and informing customers about consequences of food waste ***Employees*** • employees need to understand and live the bakery's philosophy or attitude towards food waste and excessive inventory • importance of written mission statements and employee regulation with regard to excessive inventory • training programs (weather and vacation planning forecasts or directly on excessive inventory) • branch managers should pass on the knowledge to their employees • branch managers should receive regular notifications with inputs and insights on the product range or also on excessive inventory levels
Stakeholder roles	***Customers*** • customers are not yet ready to compromise their needs or understand the issue of food waste properly • customer complaints sent by e-mail • customers are not knowledgeable on the meaning of best-before dates or what to do with bread left-overs • customers should take on more responsibility themselves as well if food waste is to be reduced ***Employees*** • employees are regarded as ambassadors or messengers towards customers and should represent the company's philosophy or interest towards excessive inventory • employees' personal motivation and time efforts when ordering is crucial • employees often fear change or other constraints with reference to management's decisions on excessive inventory • importance of entering data continuously and correctly • high pressure is exerted on employees in regard to excessive inventory ***Management*** • it is management's main responsibility to set and implement the company's strategy as well as being the

	role model for employees in regard to excessive inventory • top-down approach is necessary where CEOs should personally be interested in making progress whilst raising awareness and inspiring employees • establish constructive criticism culture and be open to innovation • management should continuously tackle the issue and not stop sensitizing and educating both employees and customers • management represents a vital support and coach function, providing employees with necessary check-lists and other inputs ***Bakery Industry*** • competition within the industry is fierce (gas stations, retailers) • retailers have profound influence on bakeries and consumers • bakeries need to compete by offering longer opening hours as well as diversifying their product range • no longer simply in the bread but rather in the take-away business • complex customers with increasing demands and expectations for freshness challenge both bakeries and retailers • bakeries should stop viewing themselves as "victims"; they should innovate and distinguish themselves clearly from retailers by offering high quality, hand-crafted, traditional as well as new and innovative products

This chapter discussed results obtained from the ten qualitative expert interviews. The next chapter draws on additional findings gained by other approaches.

5.3 Further findings

Next to the categories afore-mentioned, additional insights could be gained. The following sections describe findings emerged from a workshop, personal conversations with branch managers from Hug and results from another bachelor thesis conducted at Hug. These findings are described and displayed in the digressions in the grey boxes.

***Digression 1**:*

Personal Conversations with Hug Branch Managers

Two branch managers employed at Hug were asked to give insights on Hug's processes and structures with regard to excessive inventory. The conversations took place in a rather informal setting whilst the questions asked were based on the interview outline. The results are summarized as follows:

Branch manager A / May 30, 2016.

- Targets for excessive inventory rates differ among branches. Rates are acceptable depending on sales turnover and the location of the branch (e.g. 5% for branch in Lucerne, 4 % in Horw, etc.).
- A defined product range might entail the issue that customers would buy the "freshly baked" products rather than the products available in the shelves.
- The weather, upcoming events near the location, university schedules and vacation are factors to be considered when ordering.
- Empirical figures ("Erfahrungszahlen") are data and information which provide comparisons of orders from previous and penultimate week.
- Spoiled customers (society) are one of main reasons for excessive inventory.
- Personally supports the idea of collaborating with aid organizations. Furthermore, branch manager B would be ready and willing to undergo training, sensitize other employees and customers.
- Points out that combating food waste can be a considerable advantage for a successful marketing and positioning strategy.

Branch manager B / May 3, 2016.

- If excessive inventory is too high or too low, management asks for clarification and possible reasons (e.g. too few customers, special events, etc.). Branch managers as well as sales assistants need to report on highly elevated figures.
- In regard to excessive inventory, data and numbers are summarized and distributed on lists towards branch managers weekly with comments noted by management.
- Branch managers receive specific leadership or cash register training programs.
- The "Info-Buch" is considered as important communication tool. Furthermore, "Arbeits-Checklisten" are local helping tools used in the stores. They include information on the "obligatory product range". However, specific details on excessive inventory including guidelines for offering deals (50%, 3 for 2) are not provided.
- Excessive inventory is displayed on the cash register only in monetary terms and not in percentages. Sales assistants therefore do not know directly whether they exceeded the target rate of 5% (in this branch) or not.
- Educated and knowledgeable employees are crucial for reducing excessive inventory. Experienced employees have a "good feeling" for the local needs and customer demands of the store which is essential for ordering.
- Personally supports the idea of collaborating with Tischlein Deck Dich, Caritas, children's home, senior residences, or people in need. Yet, strong regulations in regard to the cold chain are outlined.
- Customers expect product availability in the evening: society with customers that accept throwing away goods. Essentially, the bakery cannot afford losing customers.
- Agrees that management has a coaching function where support is ensured. However, a lack of time is prevailing.

***Digression 2**:*

Discussion Results Bachelor Thesis R.G.

May 4, 2016. Another student is currently also working on a bachelor thesis for Hug, focusing on Hug's marketing positioning. The thesis includes, among others, an online survey with 520 participants. A part of results gained suggest the following:

- 71.73% think that freshness is the most important aspect of a bakery
- 93.66% inform themselves directly in the bakery stores rather than online
- 78.57% decide spontaneously what product they feel like buying

Firstly, these results may show that customers at Hug place high importance on freshness. This might support the reason why customers expect products to be fresh and might not compromise on this quality standard. Only 7.31% of the survey participants think it is important for a bakery to offer products with a longer durability. Secondly, knowledgeable employees who talk to customers directly are rather crucial in order to inform customers properly. In regard with excessive inventory, employees thus might play a vital role in sensitizing customers. Thirdly, customers buying products spontaneously makes ordering and planning adequately more challenging. This might further explain why branch managers cannot often order the same quantity as the week before since customers might not show up due to any specific reason. Ultimately, 12 participants remarked in the specific commentary section that they would like to know more about vegan products. This might be an example for the increasing customer complexity, as afore-mentioned by interviewees.

***Digression 3**:*

Workshop United Against Waste

May 12, 2016. A workshop organized by United Against Waste was attended at which also 5 out of 10 interviewees were present. The workshop included presentations, discussions and questions and answer sessions. The following additional insights were gained:

- Customers do not seem to know when food is still edible or not. Their knowledge and education should be improved.
- Correct and continuous measurement of excessive inventory is strongly influenced by employees.
- Reduction strategies for minimizing food waste were recommended:
    - Create a lean range of products after 5 p.m., focus more on whole grain, spelt or sourdough
    - Collaborate with Ässbar or other aid organizations
    - Incorporate employees (training programs, projects)
    - Sensitize customers (brochures, competitions, recipes)
    - Discuss portion size (slicing bread, freezing possibilities)
- Communication strategies in regard with marketing possibilities:
    - Use cash register display particularly for customer sensitization
    - Use customer cards with points for United Against Waste
    - Offer customers 'information terminals' (monitors) for providing interactive data on food waste
- Other aspects of sustainability were discussed (recyclable bags, boxes, bread bags, take-away coffee cups).

6. Discussion & Conclusion

This bachelor thesis aimed at designing solutions for minimizing or optimizing excessive inventory. Furthermore, it investigated external and internal communication strategies for bakeries in regard to reducing excessive inventory. The focus of this bachelor thesis was placed solely on the retail and not the production level. This chapter discusses the insights gained from the theoretical background, literature review and interviews. Concrete recommendations are drawn in chapter 7.

Primarily, the results obtained by the interviews positively correlated with the results obtained from the theoretical background and the literature review. Interviewees confirmed particularly the outcomes from studies conducted by Göbel (2012), Kranert et al. (2012) and Monier et al. (2010), ranging from causes for food waste or barriers for reducing food waste. Nevertheless, additional insights were highlighted by interviewees.

Categories (1) to (6) were created beforehand in a deductive manner whilst category (7) ('stakeholder roles') emerged inductively from the interviews. This implied that the influence of stakeholders such as customers, employees and management was repeatedly mentioned and described. Particularly the importance of management's and employees' personal motivation in regard to excessive inventory might be underestimated throughout literature. Firstly, management has a vital and distinct role in leading and explaining to employees why it is important to reduce food waste. Secondly, employees are key players in sensitizing customers by explaining the bakery's philosophy, offering product alternatives or engage in any other form of sales conversation in regard to food waste. Sales assistants are the ones to confront customers and are often not ready or willing to accept changes when it comes to handling difficult and angry customers. Thirdly, employees need to understand the importance of entering data correctly and continuously. Employees therefore need to be motivated and engaged which might even lead to lower fluctuation rates due to the fact that they can identify themselves clearly with the bakery's values. Interviewees further argued that engaging in the matter of food waste can ultimately make jobs and thusly the employer more attractive.

In addition, the aspect of product innovation did not seem to prevail in literature. In order to reduce food waste, Beretta (2012, p. 106) suggests briefly that

bakeries need to distinguish themselves clearly from other retailers and wholesalers by being innovative, original and offering unique, fresh and/or handcrafted products. Ultimately, the lack of appreciation for food of today's consumers represented another concern repeatedly raised by interviewees. Interviewees felt that sensitizing customers by raising awareness is not a task to be taken lightly. However, interviewees and Hug's interviewed branch managers further argued that not only bakeries, but also the media and the government play an important role in educating customers on this issue. The media was considered as crucial intermediary in throwing light on the problem.

The United Nations (UN) estimate that today's population is most likely to rise to around eight billion by 2030 and to probably over nine billion by 2050 (Foresight, 2011, p. 50). Already, "science has demonstrated that we are on an unsustainable path, and that urgent and united action is required to correct this" (UNEP, 2015, p. iii). Feeding an increasing population whilst combating poverty and worldwide hunger thus makes food waste ethically, socially and environmentally questionable. McCarthy and Marshall (2015, p. 349) argue that the "importance of social sustainability practices should not be underestimated especially as advances in technology and globalisation have increased the risk of exposure by non-governmental organisations (NGOs), consumer or activist groups".

This bachelor thesis outlined that food waste challenges the responsibility of companies, including bakeries such as Hug, to act socially responsibly. Implementing waste reduction measures will reduce pressure on resources required for food production and lower greenhouse gas emissions. Furthermore, this bachelor thesis showed that companies, particularly bakeries, also gain economically by reducing costs if they reduce food waste.

Projects and food waste reduction measures as part of corporate social responsibility (CSR) has particularly gained importance within Switzerland's bakery industry. Bread is food of high cultural and traditional significance in Switzerland. As a bakery, Hug might thus have the power to considerably influence consumers' attitude towards food waste. Bakeries can sensitize consumers by shifting consumers' values and calling for higher appreciation of food (iSuN, 2015, p. 9).

Food waste is a challenge on the international, national, organizational and individual level. Kanning (2013, p. 37) argues that sustainable development can only

be tackled in a participative process. Hug can actively engage in achieving the Sustainable Development Goals (SDGs) set by the UN. If Hug decides to implement food waste reduction measures, it might lead to a positive domino effect by inspiring not only other companies operating within the food industry, but also its consumers. Meyer (2014, p. 140) stresses the point that small and medium enterprises (SMEs) shall no longer close their eyes in front of future challenges such as climate change or resource availabilities.

Ultimately, bakeries need to be aware of current behavior of nowadays society. The acceptance of throwing away food in Switzerland exemplifies its increased living standards. Companies (particularly bakeries) need to ensure their competitiveness whilst simultaneously collaborating with other companies in order to find sustainable solutions. Bakeries therefore must recognize the importance of collaborating with all stakeholders, ranging from customers, competitors to the government and the media.

The results gained and discussed in the previous chapters give insights on what bakeries might do in order to minimize excessive inventory. Concrete recommendations based on these results are described in the following chapter and build the last and most essential part of this bachelor thesis.

7. Recommendations

This chapter is based on this bachelor thesis' discussed results and conclusions. It still focuses particularly on the retail level; however, implications for the production level are considered as well since both levels build part of the bread value chain and are closely connected.

In a first step, figure 28 illustrates methods for disposing and recovering excessive inventory.

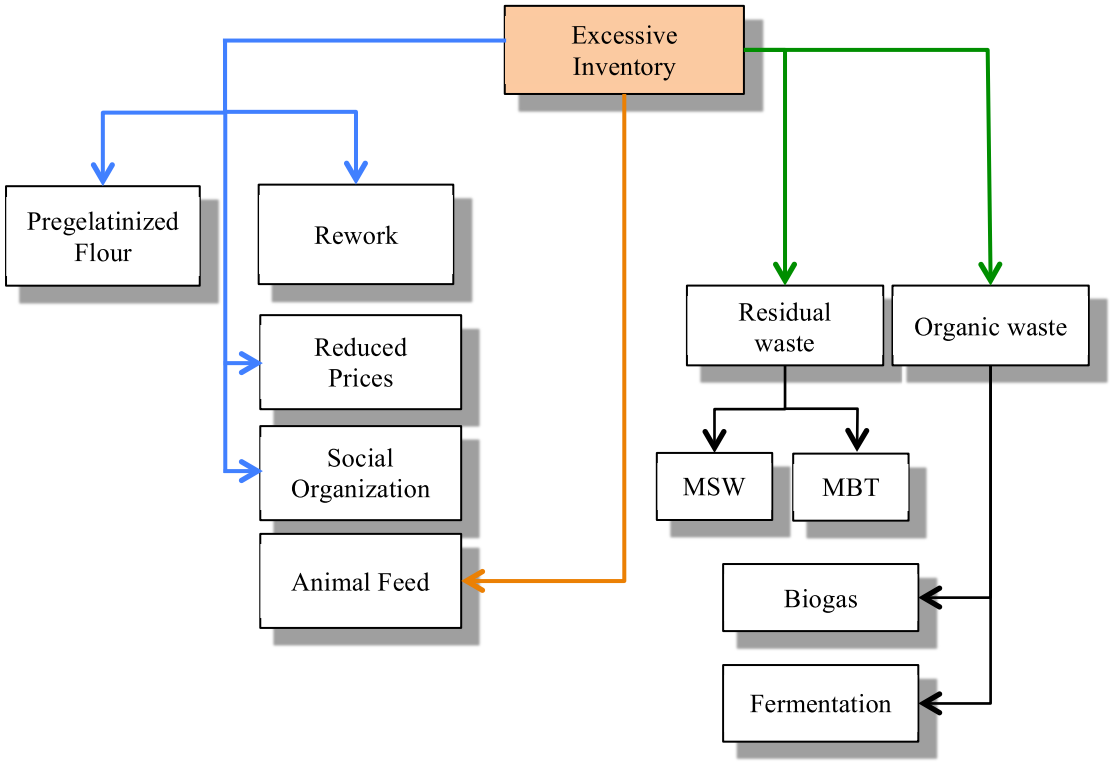

Figure 28. Diagram showing recovery and disposal options. Adapted from "Aufkommen und Verwertung ehemaliger Lebensmittel –am Beispiel von Brot und Gebäck", by Schneider and Scherhaufer, 2009, p. 31

The figure shows that excessive inventory can be disposed:

1) as residual waste in municipal solid waste incineration (MSW) and mechanical-biological waste treatment plants (MBT), or
2) as organic waste in biogas or fermentation plants

Excessive inventory that is processed into pregelatinized flour ("Quellmehl") is an additional recovery option not discussed in this thesis.

In a second step, derived recommendations from chapter 2.2.7, 2.2.8 as well as from interview results and further findings are described in table 4. Table 4 mainly discusses reduction options, focusing on the first stage of the FAO's food wastage hierarchy ("Reduce") which implies preventing and avoiding excessive inventory before it incurs (ex ante). Subsequently, table 5 gives an overview on both recover and disposal options (ex post), based on the food wastage hierarchy. Specific recommendations for both external and internal communications are outlined in table 6 and 7, based on results gained from the literature review and the interviews.

The chapter is therefore structured as follows:

1. Prevention and reduction strategies (ex ante) Table 4
2. Recover and disposal options (ex post) Table 5
3. Communication strategies (external) Table 6
4. Communication strategies (internal) Table 7

Table 4. Prevention and reduction strategies (ex ante)

Approach	Description
Targets / Philosophy	Waste measurements protocols with clear targets on excessive inventory rates should be defined and developed. Furthermore, Hug should closely align its engagement with food waste with its current or future marketing strategy and positioning. Both the management and employees should identify with a mission of reducing food waste (s. "Awareness Campaigns" table 6). Ultimately, management should realize that tackling food waste does not only engage in CSR, but also leads to considerable cost reductions.
Action Plans	Clear action and target plans should be optimized and designed for single specific actors (CEO, sales manager, branch manager, sales assistants), (s. material iSuN, 2015b). Action plans might be inspired by a vast collection of other regional, national or international initiatives and campaigns (s. chapter 2.2.10).

Reduced Prices	Products that do not meet quality requirements (e.g. too small, odd shape, etc.) can be offered at a 50% discount. However, offering "3 for 2" or "50% off" deals for excessive inventory at late hours are not recommended since it might shift food waste from the bakery to consumers or attracts undesirable customer behavior. Deals such as "buy one get one free later" are preferred. Ultimately, products should rather be clearly viewed as both fresh and daily or from the previous day (s. "Ässbar concept" in table 4).
Collaboration	Collaboration with organizations such as United Against Waste is recommended since knowledge and expertise on the issue of food waste can be shared and fostered collaboratively. Additionally, a future partnership with Ässbar is feasible in locations or branches near Zurich. Collaboration and partnerships should further be sought with the government and the media, as described in table 5. Ultimately, collaboration with industry-specific organizations such as Pistor and Richemont can be fostered since they offer further training programs and sensitization for employees. *Example:* Interviewee 5 describes that a joint communication strategy with another bakery is currently being established which enables forwarding excessive inventory to competitor branches.
Product range	A key product range is to be defined and delegated to sales assistants. However, sales assistants should be given the possibility to deviate if necessary in case of excess supply of other products. Customers should then be informed why certain products are no longer available. ABC analyses are recommended in order to define leader products and simultaneously eliminate worst sellers. Reducing the product range as much as possible is further recommended. Ultimately, the product range is closely linked to product innovation.

Product innovation	Products offered by bakeries should clearly distinguish themselves from products offered by retailers and wholesalers. Bakeries might innovate with both fresh products and products from the previous day. Primarily, product innovation should aim at creating customer demand where products are allowed to be sold out before closure. Customers are then asked to either order in advance or simply make sure to enter the store earlier. *Examples*: ▪ Cakes might also be sold in a frozen state ▪ Develop both traditional and new recipes (e.g. bread can include potato flour used from potato salads, buns from previous day can be topped with cheese)
Product size and durability	Products can be offered in smaller sizes, particularly bread, sandwiches or pastries. Bread might even also be offered in sliced portions (bread loaves or halves). Reduced portions respond to current demographic changes such as the increasing portion of elderly people and single households within society. Furthermore, the development of products (particularly bread) with longer durability should be encouraged.
Goods presentation / rotation	Sales floors and areas should offer and rotate different product groups at different hours. In the morning, croissants and buns might therefore be offered on a spot first before being replaced by bread and sandwiches in the afternoon. Furthermore, generally presenting and arranging goods clearly in front of customers might seem simple but is rather crucial and effective. *Example:* German bakeries implemented the concept of self-service stations.
Opening hours	Adapting opening hours (e.g. one branch closes earlier than the other) of smaller, more remotely located branches creates the possibility to shift excessive inventory from one branch to the other.

Cash register system	Optimizing the cash register system and software particularly in regard to the ordering process creates great opportunities of reducing excessive inventory. Instead of creating tedious and unclear excel sheets, smart software saves both time and costs by presenting key information rapidly and efficiently. Furthermore, it compares data between branches and facilitates seeking for information on best and worst sellers.
Ordering process	Ordering should be as flexible and adaptable as possible. Branch managers or other experienced sales assistants should be given the possibility to adapt orders also late in the afternoon. *Examples:* · Create possibility to provide branch managers with daily weather forecasts, linking the cash register to local weather stations · Display excessive inventory rates on the cash register display directly for branch managers · Branch managers might also be given a tablet for ordering

Table 5. Recover and disposal options (ex post)

Approach	Description
"Ässbar" concept	Instead of offering reduced price deals for customers, bakeries can establish an additional branch selling products from the previous day. However, products need to be distinguishable by using different branding or different packaging.
Donation	The second stage of the food wastage pyramid suggests that increased amounts of excessive inventory should firstly be donated to social organizations. Organizations include: Tischlein Deck Dich, Schweizer Tafel, Caritas, orphanages, children's home, (children) hospitals, refugee centers, senior residences and universities (further descriptions in Appendix D). Next to regular discounts on fresh products, employees

	can take excessive inventory home at a discount of 50%.
Animal feed	The second stage of the food wastage pyramid suggests that increased amounts of excessive inventory should be forwarded to farmers (horse, cow, cattle, goat, pig, and vegetables), zoos and animal sanctuaries.
Recycle	The third stage of the food wastage pyramid suggests that residual and organic waste are clearly separated. Throughout the sales day, part of excessive inventory should be thrown in separate bio-waste containers.
Reuse	The third stage of the food wastage pyramid suggests that pastries or other bakery products can be re-used in Hug's cafés as by-products (e.g. cake next to coffees). Additionally, new innovative recipes and ingredients can be implemented particularly with buns or bread from the previous day (s. "Product innovation", table 3)
Rework	The third stage of the food wastage pyramid suggests that excessive inventory can be processed into other products for upgrading their quality or freshness. Products might include breadcrumbs ('Paniermehl'), 'Pumpernickel', 'Simonsbrot', 'Schrotbrot', 'Zwieback' and so forth. Furthermore, excessive inventory can further be reused in 'meltings' (e.g. chocolate) or any other types of fillings ('Nussgipfel').
Biogas	The fourth stage of the food wastage pyramid suggests that excessive inventory should be forwarded to biogas plants rather than incineration plants since they are the least preferred method of disposing excessive inventory from both economic and environmental perspective. Ultimately, fermentation and composting can then also be put into comparison in terms of economic and environmental costs.

Table 6. Communication strategies (external)

Approach	Description
Customer orders	Customers should be actively informed on the possibility to order in advance. Furthermore, smart phone applications might even be developed in order to facilitate spontaneous orders made by customers by ensuring that the products they want can be set aside beforehand. This not only ensures customer satisfaction, but also saves time for sales assistants. *Example:* Bakeries can decide to offer discounts on early orders (e.g. 5%).
Awareness campaigns	Bakeries can sensitize customers by launching awareness campaigns. These campaigns may include the following elements: 1. Inform customers online on engagement of bakery in regard to excessive inventory *Example:* Social media (e.g. Facebook) can have a rather positive effect in both informing, sensitizing and making positive publicity 2. Inform customers in customer magazines on a subtle but frequent basis 3. Provide brochures on food waste (s. material foodwaste.ch, United Against Waste) · Brochures often further provide guidance on food storage and preparation to consumers · Highlight that customers can save money by reducing food waste · Inform customers actively on how to store bread (e.g. bread bags) · Technologically advanced solutions might include providing an "information terminal" (monitors and displays) set up in the store for customers to browse 4. Provide brochures on the bakery's engagement and/or

refer customers to the website with description on how they bakery is handling excessive inventory

- Interviewee 5 suggests that the term ‘sustainability’ should be neglected in order for customers to perceive that information is authentic and does not appear to be greenwashing

5. Provide costumers with recipes how to reuse bread or buns
6. Inform customers on food date labeling practices, explain the difference between best-before and use-by dates
7. Explain to customers the concept of rework
   - Interviewee 2 suggests not using the term “rework” due to potential negative connotations; try to outline the advantages in order to prevent perception of greenwashing
8. Conduct further surveys estimating how customers perceive the issue of food waste
   - Surveys can simultaneously be used for controlling the bakery’s marketing positioning (how it is being perceived by customers) (see survey iSuN, 2015, p. iiv)
   - Surveys can help in finding out the root causes of food waste and are thusly crucial for understanding customers
9. Offer cooking or baking classes with both children and adults
10. Offer coupon deals (such as “Brotpass”) for buying excessive inventory
    - Customers receive United Against Waste stamps or points for buying products after 5 p.m. or offering customer cards for buying excessive inventory, etc. Side effect: These customer cards can then be used for getting customer contact details.

	▪ Show logo of United Against Waste on cash register display after 5 p.m. 11. Channels summarized: • customer magazine • webpage, e-mail • Facebook • by participating in public activities/campaigns • sponsoring and supporting NGOs • in sales conversation • on a display (cash desk/ info board) • by printing items • on the packaging (paper bag/band around bread) • flyers, posters, post cards, stickers • shop window label • promotions
Government	Bakeries can seek support and partnerships with their local community. *Examples:* ▪ Provide brochures on national campaigns (e.g. Swiss campaign "Wasting, that's stupid") ▪ Organize guest lectures in schools and kindergartens (on what the bakery is doing with excessive inventory and how kids can reuse bread)
Media	The media is a key player in sensitizing both customers and employees. However, media attention is attracted passively rather than actively. If bakeries decide to engage in the combat against food waste, the media's interest might be attracted without any additional effort.

Table 7. Communication strategies (internal)

Approach	Description
Awareness campaigns	The approach used to sensitize customers can also be applied similarly to sensitize employees. The bakery's website or the brochures afore-mentioned can help in raising employees' awareness. Analogously, employees need to identify with the bakery's (new) mission or philosophy. Particularly the management needs to actively motivate and engage employees to be part of this mission. Employees' personal motivation and interest is key especially since they are the ones to communicate directly with consumers. Employees should therefore be informed adequately on what management expects from them (e.g. signed mission statements, check-lists, etc.). (s. "Workshops"). *Examples:* · Interviewee 5 requires employees to return excessive inventory in the way it was delivered (not damaged, halved, etc.) in order to cultivate the appreciation for food and the efforts of entire food value chain · United Against Waste activities include so-called "trend vacations" where members visit bakeries in other countries for further inspiration
Contest	Employees might be engaged in participating in contests and competitions. *Examples:* · Reward branches with the lowest excessive inventory rate · Employees can win a prize if they guess correctly on how many lead products were sold · Reward the best idea or suggestion produced by employees

Workshops / Training programs	Employees should participate in workshops and training programs not only to be sensitized themselves, but also to gain knowledge on how to sensitize customers. Employees should be trained in explaining and offering customers product alternatives or why the bakery engages in combating food waste. *Examples:* · Workshops can include role plays simulating the daily dilemma between management, sales assistants, customers and the 'environment' (see material from iSuN, 2015) · Videos are powerful tools in sensitizing employees (e.g. Taste the Waste or Foodwaste = Money Waste)
Check-Lists	Employees should be given clear statements and check-lists or folders with specific information on excessive inventory. These folders might further include regular inputs from management on current developments and analysis of excessive inventory. *Example:* Implement a list with "Golden Rules" (s. material from iSuN, 2015)

This chapter described recommendations for Hug on how to reduce excessive inventory and on how to communicate this engagement towards both customers and employees. Appendix D and material provided by iSuN (2015a, 2015b) give further inputs (such as excel sheets and check-lists) based on these recommendations.

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Appendix A: Interview Outline

Einstiegsfragen

1. Könnten Sie sich kurz vorstellen und erläutern, durch was sich Ihr Unternehmen auszeichnet?
2. Wie definieren und messen Sie Retouren?
3. Was sind Ihre Motivationsgründe für die Reduktion von Retouren?
4. Könnten Sie spontan sagen, was am Abend bei Ihnen in der Filiale am meisten übrig bleibt?

I. Themenbereich: Generelle Informationen

5. Generelle Informationen über die Grösse Ihres Unternehmens um Daten vergleichen und Annahmen über die Industrie machen zu können (ungefähre Angaben):
    a) Anzahl Filialen
    b) Anzahl Mitarbeiter
    c) Kundenkontakte pro Tag über alle Filialen gesehen

II. Themenbereich: Entsorgung und Recycling

6. Wie entsorgen Sie Ihre Lebensmittelabfälle in Ihren Filialen?
    - Gibt es spezielle Trennungsmethoden?
    - Setzen Sie viel Wert auf Recycling?
7. Könnten Sie beschreiben, ob und wie/warum Sie eine der unten aufgeführten Methoden anwenden?
    - Kompostieren, Vergären, Verbrennen, Verfüttern, Spenden, Verarbeiten (Biodiesel), Abwasserentsorgung
    - oder andere?

III. Themenbereich: Gründe für Retouren

8. Was sind die Gründe für hohe oder niedrige Retourenquoten bei Ihren Filialen?
9. Wie analysieren Sie die Entwicklung von Retouren?
10. Gibt es so etwas wie eine optimale Retourenquote?
    - Gibt es Unterschiede zwischen Ihren Filialen?

IV. Themenbereich: Barrieren

11. Was sind Ihre internen oder externen Gründe
    - generell gegen die Bekämpfung von Lebensmittelabfällen
    - für oder gegen das (vermehrte) Spenden von Lebensmitteln, die Sie nicht mehr verkaufen können? (Beispiele: Haftungsbedingungen, Rechtsvorschriften, insuffiziente Kühltechnik, Transportmöglichkeiten, etc.)
12. Arbeiten Sie mit Spende Organisationen zusammen?
    - Wenn ja: welche?
    - Wenn nein: welche würden Sie gerne unterstützen?
13. Welche Barrieren hindern Sie generell daran, Retouren zu minimieren?

V. Themenbereich: Reduktionsstrategien

14. Welche Informationen, Workshops, Organisationen oder Initiativen kennen Sie zum Thema Food Waste oder Retouren spezifisch?
15. Wie würden Sie Ihr Engagement nach aussen vermitteln?

Transcription Symbols

(…)	Pause, more dots indicate longer break
–	Dashes indicate self interruption
[ ]	Brackets indicate explaining words
( )	Empty parentheses indicate that transcriber could not identify what was said
<CO>	Code for analysis of categories
word	Italics indicate transcribers' comments

Type of probe	Examples
Continuation	▪ Mmm hmm. So… ▪ Then what? ▪ And..? ▪ Please continue.
Elaboration	▪ Such as? ▪ Could you give me an example? ▪ Can you say more about that please? ▪ That sounds interesting, what can you tell me about…?
Attention	▪ Okay, I understand. ▪ That is interesting. ▪ Okay, I see. ▪ Uh-hu
Clarification	▪ Can you run that by me again, I could not follow? ▪ What do you mean exactly when saying…? ▪ So, did I understand correctly that…?
Steering	▪ Let us go back to what you said before about.. ▪ Sorry, I distracted you with that question; you were talking about… ▪ You said that…Let us go back to that.
Sequence	▪ Could you tell me what happened step by step? ▪ When did that happen?
Evidence	▪ How did you find that out? ▪ How do you know?
Slant	▪ How did you feel about that? ▪ Did that/the person make you angry?

Figure 29. Types of probes. Adapted from „Qualitative interviewing: The art of hearing data" by Rubin and Rubin, pp. 164–171, Thousand Oaks, Calif.: Sage Publications.

Appendix B: Cover Letter Interviews

Hochschule Luzern – Wirtschaft Bachelor of Science in Business Administration
International Management & Economics

Bachelor Arbeit:

Implementing Corporate Social Responsibility:
Reducing Excessive Inventory at Hug Retail AG

Ausgangslage
In der Schweiz wird rund ein Drittel der Lebensmittel weggeworfen. Ein Vergleich des WWFs zeigt, dass diese Abfälle rund 85% der Schweizer Landwirtschaftsfläche benötigen – dies wiederum entspricht der Fläche des Kanton Zürichs. 150% der Schweizer Bevölkerung könnten ernährt werden, wenn diese Lebensmittelabfälle vermieden werden.
Lebensmittelabfälle entstehen auch in Bäckereien. Eine besondere Form bilden dabei die Retouren, welche als erhebliche Herausforderungen für Geschäfts- und Verkaufsleiter angesehen werden. Hohe Retourenquoten sind nicht nur ein teures Unterfangen, sondern tragen beträchtliche soziale und ökologische Problematiken mit sich. Die soziale Verantwortung (Corporate Social Responsibility) der Bäckereien steht dabei vermehrt im Zentrum.

Ziele
Das erste Ziel dieser Bachelorarbeit ist es, Reduktions- und Präventionsstrategien für Retouren in Bäckereien auszuarbeiten. Der Fokus liegt dabei bei den Verkaufs- und nicht den Produktionsstellen. Das zweite Ziel besteht dann darin, diese Strategien nach innen (bspw. Mitarbeiter) und nach aussen (bspw. Kunden) zu kommunizieren.

Methodik
Vorgängig erfolgte eine Literaturauswertung zum Thema Food Waste auf globaler Ebene und auf Ebene der Schweizer Bäckerei Industrie. Als nächster Schritt werden Interviews mit sorgfältig ausgewählten Unternehmen geführt, deren Resultate zusammen mit der Literaturauswertung zum Erreichen der Forschungsziele dienen.

Zeitraum
Die Interviews werden zwischen Anfang März bis Ende April 2016 durchgeführt. Eine geschätzte Dauer von ungefähr 30 bis 60 Minuten kann erwartet werden.

Student	Sibylle Landolt International Management & Economics Programme Weidstrasse 5 6312 Steinhausen
Auftraggeberin	Dr. Claudia Astrachan Hochschule Luzern Wirtschaft Zentralstrasse 9 6002 Luzern

Appendix C: Categories Content Analysis

Code: Category	Definition	Examples
<EX.M>: Measurement	▪ how excessive inventory is defined within the company ▪ how excessive inventory is measured ▪ rates of excessive inventory ▪ how the development of excessive inventory is analyzed	"Der Computer nimmt uns die Arbeit ab sozusagen. Wir haben ein Tool wo wir sehen wie viel produziert ist und wie viel das verkauft (worden) ist" (4, 56–58)
<MOT>: Motivation	▪ motivation for reducing or optimizing excessive inventory ▪ motivation for combating food waste	"(..) wir sehen was es braucht bis das, was an den Tag gelegt wird, was der Kunde dann kaufen kann. Und wir reden auch sehr viel mit den Urproduzenten" (1, 18–21)
<RD>: Recovery and Disposal	▪ strategies to minimize excessive inventory ex post ▪ types of options implemented to recover excessive inventory ▪ description of recycling methods ▪ ways to dispose excessive inventory and other forms of forms of food waste ▪ organizations known by the interviewee in regard to food waste engagement	"Der zweite Teil ist, wir haben verschiedene Produkte entwickelt, wo wir Produkte vom Vortag gewinnbringend wiederverwerten können" (2, 134–136)
<OPT>: Optimization	▪ strategies to minimize excessive inventory ex ante ○ strategies to optimize or reduce excessive inventory ○ strategies to prevent or avoid excessive inventory	"Wir haben eine Regelung wo wir eigentlich klar definieren, welche Produkte ausgehen dürfen und sollen und welche Produkte bis Ladenschluss noch da sein müssen" (5, 62–65)
<RB>: Causes and Barriers	▪ reasons and causes for excessive inventory ▪ barriers of particular measures to combat food waste and excessive inventory	"Was passiert, wie denkt der Konsument, oder das Verkaufsverhalten, das ist natürlich sehr schwierig" (1, 296–298)
C: Communication	▪ how the commitment for reducing food waste can be communicated internally and externally	–
<C.C>: Communication with Customers	▪ how commitment is or should be communicated from the company towards customers	"Unsere Kunden wissen zum grossen Teil gar nicht was wir machen" (5, 535–536)
<C.E>: Communication with employees	▪ how commitment is or should be communicated from the company towards employees ▪ mentioning of training programs, meetings	"Und wir probieren auch, unsere Webseite eigentlich so aufzubauen, dass Kunden dort vertieft Infos abholen können. Das ist auch eine Hilfestellung für unsere Mitarbeiter" (2, 467–469)

S: Stakeholder Roles	▪ how certain stakeholder affect or influence the company's efforts to reduce food waste and excessive inventory	–
<S.C>: Customer	▪ descriptions on customers' role in combating food waste and excessive inventory ▪ how customers (should) act and react	"(..) diesen Schritt zu machen aber auch der Hauptpunkt liegt natürlich beim Konsumenten, weil es muss ein Umdenken stattfinden" (2, 116–117)
<S.E>: Employees	▪ descriptions on employees' role in combating food waste and excessive inventory ▪ how employees (should) act and react	"(..) ist halt immer noch die Frage, wie engagiert ist dann diese gute Dame, oder der gute Herr. Also d.h., Lust, Unlust um sich intensiv mit dieser Thematik auseinanderzusetzen" (2, 214–216)
<S.M>: Management	▪ descriptions on the management's role in combating food waste and excessive inventory	"Und wenn ich nichts mache, dann macht niemand etwas" (8, 191)
<S.B>: Bakery Industry	▪ specific characteristics of bakery industry ▪ how characteristics and players within the bakery industry affect the company's decisions	"unsere Welt verändert sich extrem schnell, extrem stark, so dass Handwerk rutscht ein wenig an den Rand" (2, 19–20)

Appendix D: Food Waste Initiatives

Initiative or Organization,	Level	Description
SAVE FOOD, (Germany)	Global	SAVE FOOD is a global initiative on food loss and waste reduction, is led by FAO and Messe Düsseldorf, a leading trade fair organizer. Since 2011, it has worked with donors, development agencies, financial institutions and the private sector (particularly the food packaging industry) to develop and implement a program to reduce food loss and waste. The program rests on four pillars: 1) awareness raising; 2) collaboration with like-minded initiatives; 3) policy, strategy, and program development; and 4) support to food supply chain actors and organizations involved in food loss and waste reduction. For more information, visit http://www.save-food.org and http://www.fao.org/save-food.
Think.Eat.Save campaign	Global	Think.Eat.Save is a campaign of the SAVE FOOD initiative led by UNEP, FAO, and Messe Düsseldorf. The campaign seeks to galvanize widespread global, regional, and national actions to reduce food waste, and specifically targets food wasted by consumers, retailers, and the hospitality industry. The Think.Eat.Save website is a portal showcasing inspiring ideas and solutions, and a one-stop shop for news and resources on reducing food waste. For more information, visit http://www.thinkeatsave.org.
FoRWaRd	Global	FORWARD – Food Recovery and Waste Reduction – is a two-years transnational project co-funded by the European Commission under the Lifelong Learning Programme. Its main aim is the reduction of food waste and the promotion of unsold food recollection in favour of charities, thanks to training and use of ICT resources. The main outcome is an innovative platform hosting the three main results of the project: • A free online training course for food supplier and charities focused on the reduction of food waste and methods to recovery and redistribute it. • An educational game simulating the process of recovery of food waste and the relationship between food suppliers and charities A user-friendly brokering platform to allow the natural matching of demand and supply of food waste. Any user, all over the world, can search or publish a donation announcement and find a counterpart, so to favour the creation of contacts and networks between food producers/sellers and organisations able to organise the recovery, such as Food Banks and other Charities. For more information, visit http://www.foodrecoveryproject.eu/downloads
FUSIONS	Regional	FUSIONS (Food Use for Social Innovation by Optimising Waste Prevention Strategies) aims to reduce food waste in Europe. It is a four-year project running from 2012 to 2016, funded by the European Commission. FUSIONS has 21 project partners from 13 countries, including universities, research institutes, consumer organizations, and businesses. FUSIONS aims to support the European Commission target of a 50 percent reduction in food waste and the Roadmap toward a Resource Efficient Europe. For more information, visit http://www.eu-fusions.org.
WRAP UK (United Kingdom)	National	Established as a not-for-profit company in 2000, WRAP is backed by United Kingdom government funding from Defra (Department for the Environment, Food and Rural Affairs), the Scottish Government, the Welsh Government, and the Northern Ireland Executive. WRAP UK helps people recycle more and waste less, both at home and at work, which are practices that offer economic as well as environmental benefits. For more information, visit wrap.org.uk.

Initiatives and Organizations in Switzerland	
"Wasting Food. That's Stupid!", (Switzerland)	*Stakeholder dialogue:* representatives of several Swiss federal offices held talks with key players of the food supply chain and non-governmental organizations. The dialogue partners were asked to assess the food waste situation in Switzerland and especially in their own sphere of influence, to estimate the potential for reduction and to express their view on the role the state has to play in this field. *Awareness raising:* In addition school classes were invited to guided tours in order to reach out to future consumers. Booklets handed out during the exhibition are also distributed to companies and teachers to achieve a multiplier effect. The exhibition succeeded in attracting considerable public and media attention. Food waste is today a well-known and much debated topic in Switzerland. For more information, visit http://www.blw.admin.ch/themen/01803/index.html?lang=de
Foodways Consulting	Foodways consulting is the umbrella group enhancing projects such as foodwaste.ch, United Against Waste, Lean Path, Ateliers Bollwerkstadt and Our Common Food. The organization focuses on realizing innovative projects on reducing food waste. For more information, visit http://www.foodways.ch
foodwaste.ch	As partners of SAVE FOOD and FUSIONS, foodwaste.ch was founded in 2012 as a platform for sensitizing people on the topic of food waste by organizing exhibitions or conferences and issuing material. For more information, visit http://www.foodwaste.ch
United Against Waste (UAW)	UAW's vision is to reduce food waste on both the consumer and business level. It raises awareness and develops practical and innovative solutions for the reduction of food waste at all stages of the value chain. It further enables networking of stakeholders and the dissemination of solutions. United Against Waste is built as an effective contact and cooperation partner for the issue of food waste in the out-of-home consumption. For more information, visit http://www.united-against-waste.ch

Food Banks / Charities	
Schweizer Tafel	The "Schweizer Tafel" helps distributing (excess) food in Switzerland for underprivileged and needy people. In 11 regions, they collect the food directly from wholesalers, retailers and producers. For more information, visit http://www.schweizertafel.ch
Caritas Switerland	Caritas Switzerland helps people in need in Switzerland and worldwide in more than 40 countries. The aid agency is a member of the international Caritas network. This consists of 165 organizations worldwide, which are active in more than two hundred countries. In Switzerland, Caritas Switzerland works closely with the Regional Caritas Organizations. For more information, visit http://www.caritas.ch
Tischlein Deck Dich	„Tischlein deck dich" saves food from disposal and distributes it to people in need in Switzerland. Per week, they reach around 15,800 people. In Lucerne, there are currently 5 discharge points. For more information, visit http://www.tischlein.ch
Äss-bar	In collaboration with several bakeries, the „Äss-bar" sells bakery products from the day before at their stores at a substantially reduced price. For more information, visit http://www.aess-bar.ch
Too Good To Go	"Too Good To Go" is a concept established in Denmark, Norway, Germany and the UK – soon to be implemented in Switzerland as well. People can download their app, find and order food that would be wasted from restaurants, cafes and bakeries around them. The food is then collected in the designated time window. The consumer shows the order confirmation and simply grabs the food. For more information, visit http://toogoodtogo.co.uk

Appendix E: Data on Excessive Inventory at Hug

Kategorie [category]	Artikel [sales article]	Ladenverkaufspreis [sales price]	Retouren [excessive inventory]	Retouren [excessive inventory]
	Beschreibung [description]	CHF	Stk [number of units]	%
Brot [bread]	Parisette 200 g	2.80	445	55.90
	Roggen Huusbrot 450 g	4.70	672	26.76
	Tessinerbrot 300 g	2.80	583	15.37
	St. Galler Ruchbrot 500 g	3.30	308	8.13
	Pain Paillasse dunkel 400 g	4.20	143	1.60
Kleinbrot [buns]	Maisbrötli 85 g	1.50	982	16.37
	Roggen Huusbrötli 90 g	1.50	1'117	14.88
	Mutschli 60 g	1.00	1'607	10.03
	Laugenbuttergipfel 45 g	1.40	2'029	6.34
	Buttergipfel 45 g	1.40	2'044	2.65
Süssgebäcke [pastries]	Konfigipfel 90 g	2.20	639	30.81
	Apfelstrudel 100 g	2.40	525	16.06
	Vanillestange 100 g	2.20	207	12.28
	Aprikosenbögli 80 g	2.80	310	6.04
	Schoggimaisbrötli 115 g	2.10	1'217	5.64
Sandwiches	Pain Paillasse mit Salami 140 g	5.90	603	14.75
	Wrap, Schinken 150 g	6.90	280	11.48
	Ciabatta mit Tomaten-Mozzarella 200 g	4.90	361	7.38
	Silserli mit Schinken 100 g	4.10	214	3.12
	Weggli mit Fleischkäse 120 g	4.20	321	3.04
Dessert	Ananas Royaltorte 110 g Stück	4.60	404	49.15
	Kirschtorte 18 cm	29.00	9	45.00
	Cremeschnitte 125 g	3.50	940	20.63
	Sachertorte 130 g Stück	4.60	158	10.84
	Himbeerquarkcreme 170 g	4.90	257	6.58
Salat [salad]	Salat Gemischt 210 g	6.50	397	17.96
	Salat Griechisch 220 g	6.90	259	11.36
	Salat Thon	6.90	254	8.33
	Salat Poulet-Curry 230 g	7.50	130	4.98
	Salat Fitness	7.90	172	4.56

Appendix F: Declaration of Sole Authorship

I hereby confirm that I have completed this bachelor's thesis, *"Implementing Corporate Social Responsibility: Reducing Excessive Inventory at Hug Retail AG"* independently and without the help of third parties, that all my sources and all the literature employed for this purpose have been duly documented, that I will duly respect the claim to confidentiality of the person(s) who have commissioned this thesis, and that I will observe the relevant copyright provisions of the Lucerne University of Applied Sciences and Arts.

Signed: 

Date: 21.06.2016