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FOODSAVING

At the Crossroad of Social Innovation

Edited by
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Foodsaving in Europe

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Editors

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CHAPTER 1

Introduction—Food Security and Food Waste Reduction: A Social Innovation Approach to Current Social, Environmental, and Political Concerns

Simone Baglioni, Francesca Calò, Paola Garrone, and Mario Molteni

Abstract This chapter presents the research rationale underpinning the book. It addresses the intertwining challenges of food security and surplus food management, discussing recent data and literature. It also presents how social innovation is conceptualized in the book as the

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theoretical framework to analyse partnerships between business and non-profit organisations in managing food surplus. The methodology of the research is also detailed, along with the book structure.

Keywords Food security · Surplus food management · Social innovation Methodology · Book structure

1.1 The Intertwining Challenges of Food Security and Surplus Food Management

Food security has become a salient policy issue at the global level. In low-income countries, the number of people suffering from severe deprivation and lacking access to nutritious food has not diminished at the pace envisaged by international aid and food policy programs. Undernourishment is a reality for about 795 million people in the world according to the Food and Agriculture Organization of the United Nations (hereafter referred to as the FAO) (FAO-IFAD-WFP 2015). At the same time, in high-income countries, global socio-demographic, economic, and political changes have led to the impoverishment of larger proportions of their populations, whose needs are at best barely met by ordinary policy measures and services.

Food security, which is defined by the FAO as a situation when "all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life", is still an issue for part of the European population. The European Federation of Food Banks (FEBA), which includes 265 food banks from 23 European countries, reported that in 2015 it distributed food to 5.7 million EU inhabitants through its partner organisations. More generally, in the same year, the so-called "severe material deprivation", which in many cases means diets containing insufficient proteins, impaired the living conditions of 8.2% of EU citizens (Eurostat's press release 71/2016).

The picture of food insecurity briefly given above is at odds with the available evidence on food waste, a different and (at least in part) independent issue that is acknowledged as a huge worldwide problem. In high-income countries, the amount of edible food wasted on a daily basis due to failures at the production, retail, and consumption stages, has reached an unbearable level. Bridging food security and food waste

questions does not imply any understatement of the food security challenge. The authors of this book share the view that food security is an inherently complex issue which exhibits sizeable differences between high—and low-income countries, and demands a coherent and wide set of strategies if it is to be solved at the global and local levels (FAO-IFAD-WFP 2015; Godfray and Charles 2010). However, this book contributes to the academic and policy debates about food poverty by focusing on one particular lever: surplus food policy and management, a strategy that serves the food security goal while reducing food waste. Surplus food is edible food that is produced, manufactured, retailed, or ready to be served, but which for various reasons is not sold to, or consumed by, its intended customers (Garrone et al. 2014a). Preventing surplus food generation at source whenever possible is clearly urgent from the point of view of resource efficiency. However, when prevention is not technically or economically feasible, surplus food management is a high-priority option (Garrone et al. 2016; Papargyropoulou et al. 2014). It means reusing surplus food in primary markets (e.g. through repackaging or remanufacturing), selling it to customers in secondary markets at discounted prices, or redistributing it to food-insecure people in partnership with non-profit organisations. If surplus food is not recovered for human consumption, it then degrades to food waste and requires recycling or disposal.

A quantitative appraisal of food waste helps in motivating our research, because it highlights the unexploited potential of surplus food management and identifies a gap that should be filled in order to enhance food security. Unfortunately, the available prior studies use different definitions of food waste and do not always illustrate their sources and estimation methodologies sufficiently thoroughly (Garrone et al. 2014a). Only recently, a multi-stakeholder commission has attempted to provide governments with a measurement protocol (http://flwprotocol.org/). The pioneering quantitative study of Gustavsson et al. (2011), which was based on a mass flow model of global food waste and losses, found that food wastage was particularly severe in Europe and North America, with estimates as high as 280–300 kilograms per capita per year. More recently, after collecting data from several European governments and projecting them to the whole region, Stenmarck et al. (2016) reported that the EU population generates between 146 and 200 kilograms per capita of food waste every year. However, and aside from questions arising from the absence of data for many countries, this figure

cannot inform efforts to manage surplus food for food security purposes, because it also includes the parts of discarded commodities and products that are inherently inedible, an amount that reaches 50% of food waste figures for some supply chain stages (Stenmarck et al. 2016). Estimates focusing purely on the edible parts of food waste have returned lower figures, e.g. about 84 kilograms per capita for Italy (Garrone et al. 2015; see Garrone et al. 2014b for further studies). Despite the methodological problems that still affect food waste estimates, the incongruity between these data and food security statistics is a hint that an integrated approach to these two issues could be of significant value, at least in high-income countries.

1.2 Food Recovery as a Social Innovation

Actors from the state, the economy, and the civil society spheres have taken multifaceted action to address the policy and ethical dilemmas related to securing access to nutritious food for all persons, while also avoiding food waste. Among the various options public and private actors have in tackling the issues related to food security is the collection and redistribution of food surplus. Initiatives geared towards the recovery of unsold but still edible food for redistribution to those in need are to be considered forms of social innovation, given that they serve the purpose of meeting unmet social needs while enhancing social assets and capabilities, in line with the definition of social innovation (Sinclair and Baglioni 2014, p. 471). However, they should also be considered socially innovative because they emanate from unusual patterns of interaction and collaboration within a constellation of actors whose interests may sometimes appear divergent. Food business industry operators, for example, prioritise profit maximisation and economic efficiency, while non-profit organisations or charities focus on their impact on the individuals and communities benefiting from their services. Public actors, such as local or national governments, on the other hand, have to pursue the general interest, although they also need to mediate between competing demands and expectations. The innovations we discuss throughout this book involve social actors who have established long-term partnerships based on a mixture of mutual interpersonal trust, professional rigour, and organisational capacity, allowing them to improve life conditions in a given community. Further, they have generally done so while also maintaining their distinctiveness, including their specific priority goals. As we

discuss later in the book, such innovations have occurred in similar ways in all four countries analysed here: France, Germany, Italy, and Spain. Despite remarkable salient socio-economic and political differences, innovations in surplus food recovery have followed a "contamination" path in moving from one community to the next, from one country to another, in a reciprocal way, in an endless motion of policy and action learning mechanisms. This book provides an overview of the "mutual learning mechanisms" that we call social innovations.

1.3 The "*Foodsaving*" Research

Although surplus food recovery cannot be considered the sole and sufficient means by which to reach a situation of food security for all, it remains a significant area of intervention for policy makers to simultaneously reduce both food poverty and food losses. Indeed, several countries are working in this direction,[1] given that regulations encouraging behavioural changes in both citizens and business are pivotal to the realisation of more sustainable food systems, both at global and local levels (Parfitt et al. 2010).

Both civil society actors (i.e. voluntary organisations, social enterprises, social cooperatives, and all various forms of bottom-up movements) and business sector organisations have pivotal roles to play in the recovery, management, and redistribution of surplus food. However, relatively little is known about the contribution of non-profit organisations (NPOs) and the strategic and operational changes occurring in business enterprises. In other words, the social innovation behind the partnerships forged between NPOs and the business sector in this field have scarcely been studied to date; this book therefore provides the first comprehensive analysis of these innovative partnerships and of the positive impact which they may have on food security issues.

The book originates from an international comparative research study entitled "Foodsaving: social innovation applied to food surfeits recovery", which was funded by the Cariplo Foundation, the Lombardy Region, and the EU, and developed through the partnership of three Milan-based universities: Bocconi University, Università Cattolica del Sacro Cuore—ALTIS, and the Politecnico di Milano University. The research lasted from September 2013 until September 2015 and aimed to identify the best practices in terms of governance models, processes, and services implemented in the surplus food recovery chain by the

business sector and non-profit organisations. Innovative experiences in recovering surplus food were studied across five European macro-regions: Lombardy (Italy), Baden-Württemberg (Germany), Catalunya and Madrid (Spain), and Rhöne-Alpes (France). These regions were chosen because they are among the most affluent in Europe, but at the same time, they also contain areas of severe deprivation, including food poverty, that have generated the pioneering socially innovative policy answers discussed in this book.

The three key disciplines of the research are the management of non-profit and social enterprise organisations, operations and supply chain management, and policy analysis. Such a multidisciplinary approach has allowed the investigation of surplus food recovery practices from different viewpoints (public policy and governance, business sector and the non-profit sector), which are brought together in the book.

A multiple case study methodology based on qualitative data collection methods was used to conduct the present research (Yin 2009): 65 case studies were selected through the use of both purposive and snowball sampling (Bryman 2001). These case studies investigated both the business side and the non-profit side of the topic; the business case studies included producers, manufacturers, retailers, and food service companies, while the non-profit case studies included social cooperatives, voluntary organisations, and social enterprises. The case studies were distributed as follows among the four countries: 42 in Italy (22 companies and 20 NPOs), 7 in France (5 business and 2 NPOs), 12 in Spain (5 business and 7 NPOs) and 5 in Germany (all NPOs). Unexplored settings with a number of highly knowledgeable informants were chosen to build theory from the case studies. Semi-structured face-to-face interviews and observation moments were used to explore all the case studies, and the interviews were conducted with supply chain and logistics managers of food manufacturing and retail companies as well as with representatives of non-profit organisations. The interviews were recorded where possible and transcribed to allow cross-coding and thematic analysis (Saldana 2009), taking into account data saturation to ensure research validity.

1.4 Book Structure

The book is divided into three parts, each focusing on one main dimension of the analysis of the organisations and policies involved in surplus food recovery.

Part I deals with food recovery policies in Europe. In this part, Chaps. 2 and 3 analyse the policies which, at both the EU and Member States levels, support or obstruct surplus food recovery, with specific discussions of the relevant regulations and legislation across European countries and, at the EU level, the EU-wide attempts to encourage a behavioural change at individual and business levels in order to reduce food waste and to improve general consumption patterns.

Part II focuses on the best practices among the food industry operators which donate their surplus food to NPOs. Chapter 4 builds a conceptual framework to identify and understand the key-organisational features conducive to food companies donating their surplus food for redistribution to those in need. Developed through four exploratory case study analyses, this theoretical framework points to four key factors: measurement procedures, the organisation of the process, coordination among functions and the donation process configuration. In Chap. 5, this theoretical framework is tested against 23 case studies across three countries (France, Italy, and Spain). The chapter reveals that food business operators with greater redistribution intensity manage surplus food through the use of critical indicators, structured processes, and partnerships with non-profit organisations. Moreover, an in-depth analysis of two cases, one of which is a manufacturer and the other a retailer, is used to illustrate the practical relevance of the model.

Part III focuses on non-profit organisations, and in this section of the book, the authors present different models to analyse the collection, management, and distribution of food surplus across four countries (France, Germany, Italy, and Spain). Chapter 6 develops a conceptual framework which can be used to study the food recovery, management, and redistribution systems in those four countries from the perspective of food charities and non-profit organisations while focusing on the constraints and enablers of NPOs' capacities to manage surplus food recovery and redistribution. Three interrelated dimensions are identified as influencing the process of recovery and distribution of food surplus: relational capital, structural capital, and human capital. Chapter 7 uses 34 case studies of non-profit actions across the four countries to discuss the best practices with regard to surplus food recovery and redistribution, using the different dimensions of the conceptual model for reference. An in-depth description of the collection, management, and redistribution processes is highlighted for the selected organisations, exploring their strengths in relation to the dimensions of the model.

Finally, Chap. 8 connects together all the different actors in food chain recovery, in order to discuss an integrated, multi-actor solution to tackle food recovery problems, before identifying the conclusions and limitations of this work, and suggesting some directions for further research.

Note

1. In 2016, for instance, the French Parliament passed a new law which made surplus food donation a legal obligation for large food retailers. In 2016, the Italian Parliament passed a new law making food donations easier for companies in the food supply chain.

References

Bryman, A. (2001). *Social research methods*. Oxford: Oxford Publishing.

FAO, IFAD, & WFP. (2015). *The state of food insecurity in the world 2015. Meeting the 2015 international hunger targets: Taking stock of uneven progress*. Rome: FAO.

Garrone, P., Melacini, M., & Perego, A. (2014a). Opening the black box of food waste reduction. *Food Policy, 46,* 129–139.

Garrone, P., Melacini, M., & Perego, A. (2014b). Surplus food recovery and donation: The upstream process. *British Food Journal, 116*(9), 1460–1477.

Garrone, P., Melacini, M., & Perego, A. (2015). *Surplus food management against food waste*. Milan: La Fabbrica S.p.A.

Garrone, P., Melacini, M., Perego, A., & Sert, S. (2016). Reducing food waste in food manufacturing companies. *Journal of Cleaner Production, 137,* 1076–1085.

Godfray, H., & Charles, J. (2010). Food security: The challenge of feeding 9 billion people. *Science, 327,* 812–818.

Gustavsson, J., Cederberg, C., & Sonesson, U. (2011). *Global food losses and food waste*. Rome: Food and Agriculture Organization of United Nations.

Papargyropoulou, E., Lozano, R., Steinberger, J. K., Wright, N., & bin Ujang, Z. (2014). The food waste hierarchy as a framework for the management of food surplus and food waste. *Journal of Cleaner Production, 76,* 106–115.

Parfitt, J., Barthel, M., & Macnaughton, S. (2010). Food waste within food supply chains: Quantification and potential for change to 2050. *Philosophical Transaction of the Royal Society B, 365*(1554), 3065–3081.

Saldana, J. (2009). *The coding manual for qualitative researchers*. Los Angeles, CA: SAGE.

Sinclair, S., & Baglioni, S. (2014). Review article: Social innovation and social policy: Promises and risks. *Social Policy and Society, 13*(3), 469–476.

Stenmarck, A., Jensen, C., Quested, T., & Moates, G. (2016). Estimates of European food waste levels. Fusions, European Commission (FP7) research project.

Yin, R. K., (2009). *Case study research: Design and methods.* Los Angeles, CA: Sage.

PART I

Policy-Makers

CHAPTER 2

European Policy for Food Security: The Surplus Food Redistribution Option

Benedetta De Pieri, Tatiana Tallarico, Simone Baglioni, Urszula Lulkievicz, and Elisa Ricciuti

Abstract Food security has become a central issue in international policy debates and academic literature. Although high-income countries have long considered their population sheltered from food insecurity, the recent economic and financial crisis has challenged such assumption and food poverty has become an increasingly relevant policy issue across

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Europe. In this context, food surplus recovery and donation to those in need has emerged as one possible answer to food poverty in affluent societies. Based on academic and grey literature, the chapter illustrates the regulatory framework at European level involved in the reduction of food waste and in the recovery of edible surplus food. It highlights the main strengths and weaknesses of policies at EU level and across Europe and discusses good practices.

Keywords EU policy · Food security policy · Liability · Fiscal policy · Tax benefits · Public administration · Data traceability Governance

2.1 Introduction

Food security is well known as a policy priority in low-income countries (Conceição and Mendoza 2009); however, over the last decade it has also become a salient policy issue in high-income countries where an increasing number of people have problems in accessing safe and nutritious food on a daily basis. Several organisations and public institutions in different European states are registering a general rise in needs from existing, as well as from new, vulnerable groups (IFRC 2013; Eurostat 2015). According to Eurostat, in 2013, 24.5% of the population in the EU-28 countries was at risk of poverty or social exclusion, meaning that these people were living in at least one of the following conditions: being at risk of poverty after social transfers (income poverty), being severely materially deprived, or living in households with very low work intensity (Eurostat 2015). Western countries are facing increasing societal needs in the form of ageing, poverty, and unemployment, aligned with budget pressures and economic and political instability (Ferrara and Missios 2012). Food insecurity often accompanies these situations, as has been shown by the recent increase in food aid requests to charities in many European countries (IFRC 2013; Caritas 2015; Lambie-Mumford and Dowler 2015).

Despite this situation, the specific issue of food security in Europe does not receive the attention it deserves from policy makers. Scholars have highlighted that the link between food and social exclusion needs to be further explored, and that food poverty should be addressed as a specific topic requiring adequate interventions at a policy level (Friel and

Conlon 2004; Riches 2011). Likewise, in order to address food security, a coherent policy framework is required, which includes a complex range of evidence from social, environmental, and economic sources. Food systems should be addressed as a whole using a multi-focus perspective focusing on all stages and constituent parts of the food supply chain (Lang and Barling 2012).

In this context, and considering the complexity of such a multifaceted issue, one relevant policy option to try to reduce food insecurity in high-income societies is food waste prevention. In fact, the contradiction of a wealthy society where food poverty affects part of the population while large quantities of food are wasted every day has become increasingly prominent in both academic and public opinion debates. As has been pointed out by FAO, despite the fact that millions of people suffer from hunger globally, "roughly one-third of the edible parts of food produced for human consumption gets lost or wasted globally, which is about 1.3 billion ton per year" (FAO 2011, p. 4). This wastage also affects European society (BCFN 2012).

Although food recovery cannot be the only way to reach food security, it is a relevant area of intervention for policy makers and has been indicated by many as a political priority as it is able to reduce food poverty and food waste at the same time (Parfitt et al. 2010; Bloom 2010, in: Eng 2011; Finn 2011; FAO 2011; BCFN 2012; Deloitte 2014).

This chapter presents the main policy measures implemented across countries both within and outside Europe, and at the EU level, encouraging or hindering surplus food recovery and redistribution for human consumption.

The next subsection provides a general overview of existing European policy on the issue, identifying the main topics and describing the actors involved in the process. In each of the following four paragraphs, the specific regulation addressing each actor across countries is described.

2.2 Surplus Food Redistribution in Europe: Policy Topics and Actors Involved

Surplus food recovery and redistribution touches a wide range of policy issues, particularly waste-related issues on the one hand, and food poverty and insecurity issues on the other.

A preparatory study on food waste commissioned in 2010 by the European Commission cites surplus food redistribution as a possible

measure to prevent food waste (European Commission 2010). The study identifies three policy recommendations against food waste: data disclosure, including a definition of the reporting requirements and methodologies for calculating food waste quantities; the promotion of data labelling coherence in all the member states to reduce food waste both by households and by retailers; and the design and activation of campaigns promoting behavioural change and awareness among all stakeholders. In order to assess these policy recommendations and to compare them with other options, the study considers a range of indicators including economic, social, and environmental aspects, together with the possibility of integrating the new policies with existing regulations while limiting costs. Although the recovery and redistribution of surplus food is a marginal issue in the study, it is mentioned as one of the potential measures to prevent food waste, and its relation to the selected policy recommendations is observed.

In its investigation of the causes and impacts of food waste, the Barilla Center for Food and Nutrition (BCFN) makes recommendations to reduce the scale and impacts of food waste, such as identifying common definitions, analysing causes, launching new initiatives, identifying political priorities, and promoting cooperation (BCFN 2012, pp. 112–113). The BCFN list also includes the food recovery option, particularly highlighting that the recovery of surplus food should prioritise redistribution to human beings, among other kinds of reuse (such as animal feed or the production of bio-energy). This option is tightly related to the importance of policy interventions fostering food recovery and redistribution, and to the promotion of cooperation among the different stakeholders involved in the food supply chain.

In addition to waste prevention, surplus food redistribution to people in need could be also an important way to tackle food poverty. A recent study on European member states' legislation and practices on food donations commissioned by the European Economic and Social Committee (EESC) analyses the main policy measures in Europe currently being used to incentivise this practice, seen as a crucial support for the most deprived people in national populations, as well as an important tool for the reduction of food waste (Deloitte 2014).

The EESC study recognises five main topics within which existing legislation and practices on food donations can be classified:

- Food use hierarchy: legislation identifies some priorities in the recovery of food, for example suggesting that surplus food should

be destined first for human consumption and secondly for other uses;
- Fiscal instruments: there are fiscal tools that can encourage food donation and food recovery, such as the abandonment of VAT liability, or the use of tax credits;
- Liability legislation: there are measures to limit civil and criminal liability related to food donation;
- Food durability and 'best before' dates: there is a general misunderstanding around the possibility of consuming food at or past these dates and, thus, confusion over whether to donate food that has passed its 'best before' date persists among consumers. This date does not correspond to the physical deterioration of the product, and many products are still edible once they pass it. However, due to the lack of legislation clarifying the possibility of eating and donating food which has passed its 'best before' date, a great amount of edible food is wasted; and
- Other aspects, such as food safety and hygiene, and food waste data management, are relevant in understanding the complexity of the practice and legislation about food donations.

The present chapter analyses the existing European policy on surplus food recovery and redistribution, focusing on the main policy areas outlined above and considering the stakeholders involved in the process, which are also the main targets of the policy interventions: public administrations, food companies, non-profit organisations, and private citizens (Garrone et al. 2014; Gille 2013; Parfitt et al. 2010).

Table 2.1 presents an overview of the most salient food recovery policy interventions at both the European and national levels, according to the types of actor they are aimed at (public administrations, companies, non-profit organisations, individuals, and communities). Public administrations at various levels are the recipients of policies recommending interventions on data collection, traceability, and official food use hierarchies. Food companies in their dual role of producers of food surplus and donors are the recipients of policies aiming at reducing food waste and increasing food surplus donations. Similarly, non-profit organisations partnering with food business operators are also the recipients of policy on food durability and data labels, regulations on traceability and hygiene, and liability issues. Finally, private citizens and communities are the targets of policies and campaigns aimed at strengthening public

Table 2.1 Food-recovery policy interventions by level of government and by policy addressees/targets

Target	*European level*	*Member state level*
Public administration	Data management and traceability Food use hierarchy	Data management food traceability Food use hierarchy
Companies	Food use hierarchy Food durability and 'best before' date Traceability and data management Hygiene and safety	Fiscal instruments Liability legislation Food durability and 'best before' date Hygiene and safety
Non-profit organizations	Food durability and 'best before' dates Traceability and data management The EU's "Food Distribution Programme for the Most Deprived Persons of the Community" (MDP)	Liability legislation
Individuals and communities	Education campaigns and social programs	Education campaigns and social programs

awareness, and raising the involvement of households and the beneficiaries of food waste recovery in the food recovery process.

The next sections discuss each policy in more detail according to the principal recipients, as presented in Table 2.1.

2.2.1 Public Administrations

The recovery of surplus food for a social purpose is a complex issue involving not only several actors along the food supply chain, but also some actors beyond it. Public administrations are among the latter group.

Administrations, both nationally and locally, can play an important role in promoting food recovery and distribution, not only through legislation and regulation, but also through leading by example and promoting collaborations between public and private sector organisations (Finn 2011). As has been suggested by a study on food donations in Europe commissioned by the European Economic and Social Committee, "actors outside the food chain […] can eliminate food donation barriers especially in terms of lack of awareness of the

legislation, by optimizing the food redistribution network and connection public actors, with donors (restaurants, canteens, hotels, supermarkets) and food charities" (Deloitte 2014, p. 44).

Policies targeting public administrations focus mainly on two relevant areas at both the European and the national levels:

- Data management and food traceability; and
- Food use hierarchy.

These are now discussed in turn in the next subsections.

Data Management and Traceability

Any action on food security must be informed by reliable data on food availability and access, along with data on food waste. Therefore, the limited availability of reliable data on food waste is a real problem (European Commission 2010, 2014; BCFN 2012; FAO 2011; Møller 2013). FAO concludes its study on the amount of food waste on the global level by considering that "due to lack of sufficient data, many assumptions on food waste levels at foremost the distribution and consumption levels had to be made. Therefore, the results in this study must be interpreted with great caution" (FAO 2011, p. 15).

At the moment, relevant policy interventions moving towards the promotion of data collection by public administration are yet to become available in Europe. Therefore, different institutions (European Commission 2010; Segre 2014; Møller 2013) have suggested that the European Commission and the EU Member States should encourage the creation of agencies or offices designed to collect and standardise the methodologies for the calculation of the amount of food waste to ensure cross-EU comparability. The availability of comparable data about food waste and food donations could then improve awareness and better address future policies.

According to the Preparatory Study on Food Waste commissioned by the European Commission, "a standardized method for calculation would be important to ensure the comparability and usefulness of data. If introduced as a mandatory requirement, hence necessitating a change to the EUROSTAT legal framework for data collection, the policy option would be enforceable" (European Commission 2010, p. 141). Moreover, this option of standardisation and central data collection would also provide a clearer picture of food waste quantities, sources,

and treatment, thereby allowing the identification and addressing of problem areas in the context of food waste generation and treatment (European Commission 2010).

With regard to food traceability, the regulations which define the standards to be used to trace food through the production and distribution chain are an important tool to collect data about food waste, and in defining responsibilities and planning interventions. Nevertheless, public administration at national and local levels should consider that strict regulation of traceability could obstruct the practice of food donations by increasing the bureaucratic burden, for both profit-driven and non-profit organisations. At the European level, the General Food Law (Regulation EC n.178/2002) lays down the general principles of a common food law for the EU's Member States and allows them to design their own procedures to cover traceability (European Commission 2014). This theme will be further examined below in the section on companies, as they are the main actors responsible for traceability.

Food Use Hierarchy

The adoption of a food use hierarchy policy is considered a valid tool to facilitate food surplus recovery and redistribution to those in need, as it would make donation a compelling option for food business operators. However, although a waste hierarchy does presently exist at the European level, it does not address food waste. In fact, the EU's Waste Framework Directive (Directive 2008/98/EC) recommends waste prevention as the preferred policy business option, followed by reuse, recycling, recovery (including energy recovery), and safe disposal (Cox et al. 2010). However, as this Directive does not refer specifically to food waste, any Member State is free to decide whether to direct local authorities to prioritise food recovery for social purpose or not. The explicit provision of a food waste hierarchy could support local administrations to define economic incentives for food waste reduction and to facilitate donations of surplus food (Deloitte 2014).

An explicit food use hierarchy exists in the USA, where the Department for Agriculture (USDA) and the Environmental Protection Agency (EPA) supply it (Fig. 2.1). In particular, the "Waste not, want not" campaign explains how states or municipalities, as well as private companies dealing with food, can reduce their solid waste by donating surplus food. The food hierarchy provided by the USDA-EPA gives first

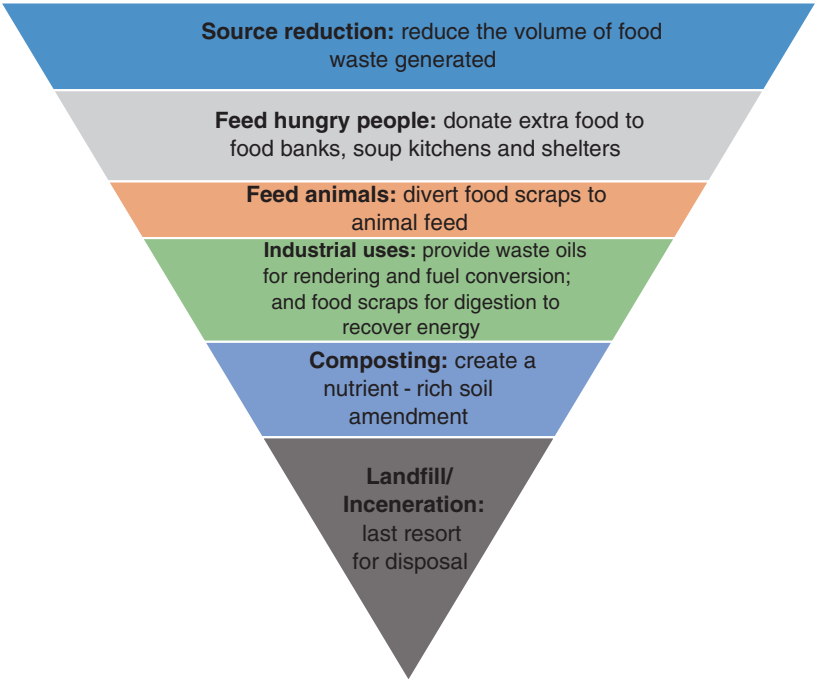

Fig. 2.1 Food recovery hierarchy by EPA (EPA 2012)

place to feeding humans, followed by feeding animals, recycling, and finally composting and landfill (USDA-EPA 1999; EPA 2012).

The impact of a clear food use hierarchy on companies is described in more detail next.

2.2.2 Companies

Companies operating in the food industry are the main players involved in food surplus generation and recovery. For this reason, the majority of policies addressing the issue target the food industry or, more generally, business organisations working at various stages along the food supply chain: production, manufacturing, retail, and food services.

The main policy areas impacting upon companies' roles in food recovery and reuse are

- Food use hierarchy;
- Fiscal instruments;
- Liability legislation;
- Food durability and 'best before' dates;
- Traceability and data management; and
- Hygiene and safety.

Food Use Hierarchy

As was discussed earlier, a clear food use hierarchy promoted by local authorities can be an effective method by which to increase levels of food recovery. Its main targets are companies working in the food supply chain which, in the case of a shared food use hierarchy, could benefit from a clearly set out food recovery procedure and from related economic incentives.

In the USA, the EPA launched a campaign at federal level called "Food recovery challenge" that challenged participants to reduce their food waste. The campaign specified that participating companies had to produce an assessment of their food waste and a three-year strategy to reduce it. To reduce waste, it is suggested that companies follow the "food waste recovery pyramid" set by the EPA, placing feeding humans in the first place after source reduction (BCFN 2012).

Some US states also developed local initiatives to increase the efficacy of the food use hierarchy through the adoption of appropriate incentives for companies. One example is the "Supermarket Recycling Program Certification" in Massachusetts, promoted by the Massachusetts Department of Environmental Protection (MassDEP) (BCFN 2012). In such a programme, supermarkets can receive a voluntary certification for their recycling, including support for their food donations to the needy, the dispatch of food waste, paper, cardboard, plants, and wooden boxes for composting. The MassDEP helps supermarkets to develop their programmes, and companies are motivated not only by receiving positive recognition, but above all by benefitting from regulatory and economic advantages, since waste disposal is a significant operating cost. Therefore, for supermarkets, composting or donating has become a low-cost alternative to disposal. Even though this programme does not identify donation for human consumption as a clear priority over composting, it indirectly promotes the first option as being the most favourable.

Some of the EU's Member States, such as the UK and Belgium, explicitly identify a hierarchy determining how surplus food should be

used, which is as follows: prevention, redistribution to humans, feeding to animals, energy or nutrient recovery through methods such as anaerobic digestion (AD), composting, and finally, land filling (Deloitte 2014). In Belgium, supermarkets are obliged to donate surplus food to food banks in order to obtain the renewal of their environmental permit. The permit requirements mention that supermarkets must offer unsold edible products to at least one food redistribution charity before they are sent to other forms of disposal (Deloitte 2014). In a similar vein, France, as discussed in more detail in this chapter, recently strongly encouraged donations via ad hoc regulation.

However, apart from such positive examples, in most EU countries donating surplus food is still too expensive compared to simply composting it. For instance, in the UK, fiscal incentives make the disposal of food waste via anaerobic digestion more economically viable than redistributing it (Ibidem).

In conclusion, the adoption of a shared, binding food use hierarchy at the European level would be of great support in influencing the Member States to integrate the principles of food waste hierarchy into their national food waste prevention programmes (Deloitte 2014).

Fiscal Instruments

Fiscal instruments (such as taxes and incentives) are discussed here as policy measures that "are used to introduce price signals to consumers and producers and to act as a reminder of the external costs and benefits of goods and/or activities" (OECD 2002, in: Darnton 2009, p. 36). Although fiscal instruments can be used by policy makers to promote (or discourage) pro-environmental behaviour (Darnton 2009), tax legislation related to food recovery appears to be highly controversial, particularly in relation to the national interpretation of European Council Directive 2006/112/EC10 of 28 November 2006 on the common system of value added tax (VAT).

According to this Directive, food donations are taxable: "The taxable amount is the purchase price at the moment of the donation adjusted to the state of those goods at the time when the donation takes place" (Article 74). Most EU Member States do not consider food donors as liable to VAT if certain conditions are fulfilled, mainly by interpreting the Directive so that the value of the donated foods is deemed to be near to zero. However, the Directive remains controversial and "whether or not this is to be considered a VAT exemption is a question of translation and

interpretation of the respective legal texts" in each of the Member States (Deloitte 2014, p. 52). Consequently, depending on the different interpretations across the Member States it may be the case in some countries that donating is more expensive since food nearing its "best before/use by" date is considered as retaining its original commercial value, and donors are therefore liable to VAT, as is the case in Denmark, Spain, and Sweden.

However, VAT exemptions alone do not constitute a guarantee of incentive for food donations, unless they are part of a coherent approach along with other regulations and fiscal instruments. In Italy, for example, although no VAT is due on donated products, food donation is not always the most convenient option for food companies because of other obstructive regulations (next chapter discusses fiscal instruments in the context of the Italian case in more depth, along with the French, German, and Spanish ones).

Another relevant issue related to fiscal instruments is that if the value of donated food which is close to the expiration date is regarded as small or zero, as suggested by the EU Directive presented earlier, food business operators might find it difficult to benefit from tax credits, which represent the other fiscal instrument useful in promoting food surplus redistribution. In fact, in many EU Member States, food donation can be treated as a deductible tax expense which is able to reduce the company's taxable income, as is the case in France and Spain, where donors benefit from tax credits of 60 and 35% respectively of the net book value of donated food. The value of the donated food is equal to its net book value, meaning its original cost minus its depreciation. However, if the net book value of the food products depreciates, and it is estimated to be close to zero because of an approaching or passed expiration date, food donors cannot then benefit from the tax credit (Deloitte 2014).

While the imposition of VAT is indeed a controversial issue due to the legal interpretation of the EC Directive, tax credits have been proved to be the most effective incentive to encourage food donation rather than anaerobic digestion. As a consequence, in order not to nullify the value of a tax credit, VAT may be "abandoned", or "exempted" (Deloitte 2014, p. 25), rather than valuing donated food at zero.

Liability Legislation

Under EU Regulation n.178/2002 (known as the "General Food Law"), food donation is recognised as a "market operation" and food donors as

"food business operators", meaning that all the actors involved in food recovery and distribution must comply with the Regulation concerning liability, traceability, and food health and safety. Therefore, since food sales and donations must follow the same rules, food manufacturers, retailers and non-profit organisations are held responsible for food safety within the limits of their activity (Deloitte 2014). Such a liability, especially when food is close to its "use by" or "best before" date, represents a deterrent for food industry operators so that they may become reluctant to donate in order not to take the risk of being damaged in reputation in the case of food poisoning (Planchenstainer 2012; Deloitte 2014).

The liability issue was addressed in the USA in 1996 by the so-called "Good Samaritan Law", adopted during the Clinton presidency (1993–2001), the first to show an interest in food waste issues (BCFN 2012). The Bill Emerson Good Samaritan Food Donation Act had the explicit purpose of promoting food donation (BCFN 2012; Planchenstainer 2012), by relieving donors from any liability from injuries (Planchenstainer 2012; Schneider 2012), also "in case of food products not meeting all the quality and labelling standards required by Federal and State Law, provided that the receiving charity is informed and able to recondition food" (Committee on Economic and Educational Opportunities 1996, in: Planchenstainer 2012, p. 23). Protection is not limited to food donors, but is also extended to persons, gleaners, and non-profit organisations (Deloitte 2014; Planchenstainer 2012). According to this US law, liability is limited to intended misconduct or gross negligence (Planchenstainer 2012; Schneider 2012); otherwise, donors "do not incur civil or criminal liability for harm resulting from the supply of apparently safe and edible food" (BCFN 2012, p. 115).

Criticism of the Act focused on the status given to public welfare and its favouring of an increased role for the private sector in providing social services (Cohen 2006, in: Planchenstainer 2012). Furthermore, Cohen pointed out that the Act unfairly deprived beneficiaries of the possibility of filing an appeal (Cohen 2006, in: Planchenstainer 2012), even though no food-borne illness related to food donation was reported (Planchenstainer 2012). However, even its critics had to admit the effectiveness of the Regulation in promoting food donations (Cohen 2006; Poppendieck 1998, in: Planchenstainer 2012), and the majority of organisations committed to food recovery recognised its helpfulness in carrying on their mission (Hawkes and Webster 2000, in: Planchenstainer 2012). Finally, the Good Samaritan Act was

accompanied by an increased involvement of citizens in food donation practices through public–private partnerships (USDA and EPA 2009, in: Planchenstainer 2012).

As this book goes on to discuss in detail in this chapter, the only EU country to have passed a law concerning food donation liability is Italy, whose Law n.155 is composed of only one article, which reads: "Non-profit and social utility organizations recognized as such by Law n. 460, 4 December 1997, Art. 10, and amended later, that carry out for charity purposes a free distribution of food products to those in need, have an equal status to that of final consumers, within the bounds of the service provided, in order to meet the required standards of preservation, transport, storage and use of food".

However, some controversy has arisen over such specific legislation for donations of food, as opponents argue that the same legal requirements should apply to anyone who markets food regardless of who the beneficiaries might be, and others worry about a two-tier society in which second class products go to second class people (Schneider 2013).

Despite these criticisms, other European states (such as the UK) are discussing the possibility of replicating the Italian Law, while supporters of a common European approach to the issue ask for a reduction in donor liability, provided that all hygiene standards are met (Deloitte 2014). Not only would this be compatible with the European legal framework, but it would also enhance the capability of volunteers to assist people in need (McGlone et al. 1999, in: Planchenstainer 2012).

Food Durability and the "Best Before" Date

According to EC Regulation n.1169/2011 on food durability and date marking, a food product's "use by" date marks the end of the period during which a product is considered safe for consumption under any storage condition; after this date, the product should not be considered marketable, nor should it be donated. "Best before" or "minimum durability" dates, in contrast, mark the date after which the product remains safe, edible, marketable and thus suitable for donation, although it loses specific qualities. Furthermore, under EC Regulation n.1169/2011, the "best before/use by" date is to be chosen by the food business operator according to the composition of the product.

The European Union has no legislative guidance regarding donation and "best before" dates, leading many countries (e.g. Hungary) to impose barriers on donating food which has passed its "best before"

date. The general misinterpretation and confusion over date marking legislation is, therefore, not only a cause of household food waste (European Commission 2010), but it can also generate barriers to food recovery and distribution (Deloitte 2014).

Belgium provides best practice guidelines on this front, as in 2013 the Belgian Federal Agency for the Safety of the Food Chain (FASFC) published guidelines on the interpretation of foodstuff minimum durability, traceability, and the labelling and storage of food for national food banks and food charities, providing a non-limiting list of foods, which are useful in the assessment of conservation after the date of minimum durability has passed (Ibidem).

Clarifying and standardising current food data labels, together with disseminating the related information to the public and reaching a state of effective data labelling coherence, could actually reduce the negative impact on food waste and food surplus, as empirical evidences prove (European Commission 2010). The creation of EU guidelines to assess the additional lifetime of products in line with the Belgian example to facilitate food surplus redistribution could be an effective incentive for food companies to donate, with the guarantee of avoiding the misuse of food products (Ibidem).

Traceability and Data Management

The EU General Food law requires food business operators to be able to identify from whom and to whom a product has been supplied, and to be in possession of systems and procedures providing information upon request (European Commission 2010). This law does not explicitly compel operators to establish a link between incoming and outgoing products, and does not specify what type of information should be kept by the food business operators, nor does it set the minimum period of time for keeping records. Nonetheless, in order not to incur liability problems, and to avoid creating further bureaucratic burdens, many companies prefer to dismiss food surplus rather than donating it (Deloitte 2014).

A good practice at the national level is the Belgian decree of traceability. In 2003, the Belgian government issued a decree which, although obligating companies to keep records of their incoming and outgoing products, also includes a derogation stating that the list of retailers/manufacturers donating foodstuffs can serve as a record of incoming products, and that the list of food banks and charities can serve as a record for

outgoing products. Such flexibility in traceability has since simplified the bureaucracy of donation (Idem).

Hygiene and Safety

In 2006, the European Commission revised the existing legislation and issued the "Food Hygiene Package", with the overall aim of guaranteeing the highest level of protection of human health and consumers' interests concerning food (Deloitte 2014). The new legal framework consists of four Regulations (Regulation (EC) No. 852/200446; Regulation (EC) No. 853/200447; Regulation (EC) No. 854/200448 and Directive 2004/41/EC49), intended to cover all food business operators including food banks and charity organisations, and addressing all the activities which occur along the food supply chain, together with providing instruments to manage food safety and potential crises.

According to the Package, the primary responsibility for food safety remains with the food business operator, who should guarantee it along the whole supply chain. Food should be stored appropriately, and food business operators should have procedures in place based on the Hazard Analysis Critical Control Point (HACCP) principles and produce guides to help support the correct application of safety and hygiene principles.

The Hygiene Package is not perceived by stakeholders as the main barrier to food donation, as other barriers have arisen during its transposition at the national level; due to their flexibility and the absence of a EU guidance for food business operators, some European countries have interpreted it more rigidly than others, thus creating more difficult conditions for food donation (Deloitte 2014).

The European Commission is planning to include provisions to simplify rules, especially for retailers donating food to food banks and charities (Schneider 2012).

2.2.3 Non-profit Organisations

In most of the pertinent European regulations, no distinction is drawn between profit and non-profit organisations, or between market operations and food donations. For this reason, national legislations can accidentally create barriers to food recovery, mainly by discouraging food donations and enforcing cautious behaviours from the food industry (Schneider 2012). For example, according to the European General Food Law (EC Reg. n.178/2002), food donations are "business

operations", and food donors as well as charities are considered to be "food business operators", functioning at the same level of any other operator in the market. "In other words, a food business operator has to comply with the same rules whether he is selling or donating food. As a consequence, he is responsible for food safety within the limits of his activity" (Deloitte 2014, p. 21).

In actual fact, when legislation on food surplus recovery and redistribution is in place, it is mainly aimed at for-profit organisations, in order to relieve them of the potential bureaucratic and liability burdens that could prevent them from taking part in donation activities. Nonetheless, non-profit organisations are equally important actors in the chain of donations. They manage the collection of surplus food from companies and organise distribution to the needy (Baglioni et al. 2016). Of course, because food recovery and distribution are part of their mission, non-profit organisations do not need to be motivated by legislation; rather, they must have their activities facilitated.

In the next section, an overview of the main areas of legislation directly (or not) affecting the third sector is provided. Non-profit actors' roles and activities in food surplus recovery are discussed in more depth in Chaps. 6 and 7.

Liability Legislation

As was discussed earlier, one of the main barriers to donation lies with companies' liability towards beneficiaries in case of food poisoning, and Italy is the only country in Europe which has removed this hurdle to donations, also affecting the relationship with non-profit organisations. In the next chapter, the Italian liability legislation is described in more detail. With the Italian Good Samaritan Law, the status of food banks and charities is seen as that of a "final consumer" instead of a "business operator". This equivalence relieves charities and social organisations, as well as donors, from the principle of liability arising from food safety and hygiene rules. For example, in the case of food poisoning, food beneficiaries cannot file a lawsuit against the food donor, as the food bank or another non-profit organisation is the final link of the food chain (Planchenstainer 2012; Deloitte 2014).

Food Durability and 'Best Before' Dates

The general misunderstanding of the date information on food labels discussed above also affects the third sector. For that reason, the

guidance on the interpretation of foodstuff minimum durability, traceability, and the labelling and storage of food released in Belgium specifically targets food banks and charities. For example, the Federal Agency for the Safety of the Food Chain (FASFC) recommends that non-profit organisations do not accept foods with shorter conservation dates, such as meat, eggs, and yogurts if their "best before" or "use by" date has passed, and if the conservation of the cold chain is not guaranteed (Deloitte 2014).

The EU's "Food Distribution Programme for the Most Deprived Persons of the Community" (MDP)

Until 2013, an important source of provisions for those organisations working with the most deprived person was the EU's "Food Distribution Programme for the Most Deprived Persons of the Community" (MDP). Established in 1987, it aimed at making public purchasing more efficient by recovering agricultural excess stocks and addressing them as food aid for the most deprived persons of the community, who eventually accounted for over 18 million people by 2010. Nonetheless, to cope with the constant decrease in excess agricultural production, in the mid-1990s the MDP was modified to include market purchases, and during the following years, the programme became a more and more market-oriented system.

Within the period 2011–2012, the rapid depletion of the excess stocks following the reform of the Common Agricultural Policy (PAC) and German litigation against the European Commission to prevent the replacement of the intervention stocks with market purchases led the Council and the European Parliament to close the MDP in 2013 (Frigo 2014).

To fill the gap created by the closure of the MDP, the Fund for European Aid to the Most Deprived (FEAD) was then established, supporting EU countries' actions to provide material assistance to the most deprived among their populations. This includes the provision of food, clothing and other essential items for personal use (European Commission 2014). Nevertheless, since this latest European instrument is entirely based on the public purchase or funding of food or goods, it has no influence on policies related to food donations and the reuse of surplus food; therefore, we do not consider it among the policies promoting food surplus recovery in this book.

2.2.4 Individuals and Communities

Educating the community is an important step to reduce food waste (Finn 2011), and government plays "a pivotal role in changing […] behaviours over time. But it has to find a way of engaging with both individuals and the public, in supporting the development of new social norms and fostering facilitating conditions in a strategic and long-term approach to behaviour change" (DEFRA 2005, p. 1). Nonetheless, interventions should address not only people's knowledge, attitudes, and behaviours, but also the social and material context through which practices are ordered and (re)produced (Evans 2011).

At a policy level, different instruments could be used to influence consumer knowledge and willingness to behave pro-environmentally. Among these, common means are national public education campaigns or, to a lesser extent, social programmes (OECD 2002; FAO 2011).

Awareness campaigns also have an essential role in behavioural change in the field of food recovery (BCFN 2012; European Commission 2010), and they are usually easy to implement because they do not require any changes to legislation (European Commission 2010). Nonetheless, because the EU Member States launch them on a voluntary basis, they are not enforceable and thus may appear to be uncertain. According to, "such campaigns should employ a wide arrange of tools, including policy instruments, infrastructure, and information provision; a targeted approach observing difference between subgroups should be adopted" (DEFRA 2005, p. 3). Cox et al. (2010) add that campaigns and encouragement to participate should not be a "general exhortation to reduce food waste", but should instead identify specific activities, "helping consumers to be good at them and educating about the need to do these things. Consumers may not immediately identify such activities as 'environmental' and other hooks may need to be found" (Cox et al. 2010, p. 214). The education process should include the promotion of public awareness, aiming to get individuals past the fear of liability. In particular with regard to food surplus recovery, individuals should be made aware of the paradox between hunger and food surplus, of the environmental impact of the latter, of the existing ways to donate, and of the products most suitable for donation (Finn 2011).

The European Commission (2010) recognises the effectiveness of awareness campaigns in the field of food waste reduction. Despite the costs to the Member States and the difficulties involved in measuring the

impact of campaigns, they represent a concrete way to create synergies with other policy options, to involve the public, and above all, to contribute to a long-term behaviour change towards food waste reduction (European Commission 2010).

Several governments have recently launched national education campaigns against food waste, such as the "Zu gut für die Tonne" in Germany or the "Réduisons nos déchets" in France (BCFN 2012; European Commission 2010; FAO 2011), which will be detailed in this chapter; Italy is also planning to catch up with these practices by launching its own campaign towards final consumers (Segre 2014).

2.3 Concluding Remarks

Food security has become a salient policy issue in the last two decades not only in low-income countries, but also in high-income ones. While a lack of economic development, or the occurrence of conflicts or natural disasters, can still prevent low-income populations from accessing "sufficient, safe and nutritious food to meet dietary needs and food preferences for an active and healthy life" (FAO 2009, p. 8), high-income countries also meet challenges in ensuring that large portions of their societies have food security. To tackle the issue, a constellation of public and private actors has developed policy tools and organisational capacities to recover surplus food that remains edible but would be destined to be wasted, and to donate it to those in need.

Such a constellation represents a "governance" system of food surplus recovery, or in other words, a mechanism in which public administrations, food industry operators, non-profit organisations, and citizens and communities all cooperate to address unmet food-related needs. In particular, the governance mechanism of food surplus recovery is made up of regulations dealing with hygiene and safety issues, the liability of providers, and fiscal and tax related aspects, as well as of principles such as the food use hierarchy, and practical issues such as food waste data management and traceability.

Although all such actors, policies, and practices when taken together provide an image of a vibrant policy environment, there remain real differences among countries in terms of their relative levels of policy enforcement and governance capacities. Such a differentiated picture renders Europe a geo-political area that is far from having unlocked its potential for food surplus recovery. Some countries present convincing

governance, but as we have discussed through the chapter, only very few EU Member States have put together an effective system of food recovery which combines fiscal incentives for food businesses donations, as well as compelling legislation governing cooperation between food business operators and charities or non-profit organisations in order to tackle food security issues.

At the EU level, there is also scope for improvement as, for example, the adoption of a food use hierarchy on the US model would benefit all countries, and more health-safety fine-tuned legislation may also ease food recovery, as at the moment liability still prevents food donations in some cases (only a few countries, with Italy being the path opener in Europe, have legislated in this regard).

To conclude, Europe offers some good policy examples and some particularly well-organised governance systems, but the continent still suffers from a lack of consistency and a scattered application of norms, with each EU Member State pursuing its own path. In order to increase the impact and meet food security needs, an EU-wide, effective governance is required.

References

Baglioni, S., De Pieri, B., & Tallarico, T. (2016). Surplus food recovery and food aid: The pivotal role of non-profit organisations. Insights from Italy and Germany. *Voluntas: International Journal of Voluntary and Non-Profit Organizations*. doi:10.1007/s11266-016-9746-8.

BCFN. (2012). *Food waste: Causes, impacts and proposals*. Torino: Codice Edizioni.

Bloom, J. (2010). *American wasteland. How America throws away nearly half of its food (and what we can do about it)*. Cambridge, MA: Da Capo Press.

Caritas. (2015). *False Partenze, Rapporto 2014 sulla povertà e l'esclusione sociale in Italia*. Rome: Caritas Italiana.

Cohen, J. A. (2006). Ten years of leftovers with many hungry still left over: A decade of donations under the Bill Emerson Good Samaritan Food Donation Act. *Seattle Journal for Social Justice, 5*(1), 43.

Conceição, P., & Mendoza, R. (2009). Anatomy of the global food crisis. *Third World Quarterly, 30*(6), 1159–1182.

Cox, J., Giorgi, S., Sharp, V., Strange, K., Wilson, D. C., & Blakey, N. (2010). Household waste prevention—A review of evidence. *Waste Management & Research, 28*(3), 193–219. doi:10.1177/0734242X10361506.

Darnton, A. (2009). *Promoting pro-environmental behaviour: Existing evidence to inform better policy making*. London: Department for Environment Food and Rural Affairs.

Department for Environment, Food & Rural Affairs (DEFRA). (2005). *Changing behaviour through policy making*. London: Department for Environment, Food & Rural Affairs.

Deloitte. (2014). *Comparative Study on EU Member States' legislation and practices on food donation*. Final report prepared by Bio By Deloitte for the European Economic and Social Committee, Brussels.

Eng, C. (2011). Watching our waste lines. *Gastronomica, 11*(3), 100–102.

EPA (U.S. Environmental Protection Agency). (2012). *Putting surplus food to good use*. Washington, DC: EPA.

European Commission. (2010). *Preparatory study on food waste across the EU 27*. Brussels: European Communities.

European Commission. (2014). *Food losses and food waste in Europe and European legislation*. Notes from the Netherlands and Sweden.

EUROSTAT. (2015). *Eurostat regional yearbook 2015: A statistical portrait of the EU across the regional spectrum*. Retrieved September 28, 2016, from http://ec.europa.eu/eurostat/documents/3217494/7018888/KS-HA-15-001-EN-N.pdf.

Evans, D. (2011). Blaming the consumer—Once again: The social and material contexts of everyday food waste practices in some English households. *Critical Public Health, 21*(4), 429–440.

FAO. (2009). *The state of food insecurity in the world*. Rome: Food and Agriculture Organization of the United Nations.

FAO. (2011). *Global food losses and food waste—Extent, causes and prevention*. Rome: Food and Agriculture Organization of the United Nations.

Ferrara, I., & Missios, P. (2012). A cross-country study of household waste prevention and recycling: Assessing the effectiveness of policy instruments. *Land Economics, 88*(4), 710–744.

Finn, S. M. (2011). A Public-private initiative to reduce food waste: A framework for local communities. *Graduate Studies Journal of Organizational Dynamics, 1*(1). http://repository.upenn.edu/gsjod/vol1/iss1/3.

Friel, S., & Conlon, C. (2004). *Food poverty and policy*. Dublin: Combat Poverty Agency, Crosscare and the Society of St. Vincent de Paul.

Frigo, A. (2014). *Il lungo percorso dal PEAD al FEAD*. Retrieved November 17, 2014, from http://www.secondowelfare.it/poverta-alimentare/il-lungo-percorso-dal-pead-al-fead.html.

Garrone, P., Melacini, M., & Perego, A. (2014). Opening the black box of food waste reduction. *Food Policy, 46*, 129–139.

Gille, Z. (2013). From risk to waste: Global food waste regimes. *The Sociological Review, 60*(2), 27–46.

Hawkes, C., & Webster, J. (2000). *Too Much and Too Little?: Debates on Surplus Food Redistribution*. London: Sustain.

IFRC. (2013). *Think differently, humanitarian impacts of the economic crisis in Europe*. No. 1260300 10/2013. Geneva: IFRC.

Lambie-Mumford, H., & Dowler, E. (2015). Hunger, food charity and social policy—Challenges faced by the emerging evidence base. *Social Policy and Society, 14*(3), 497–506.

Lang, T., & Barling, D. (2012). Food security and food sustainability: Reformulating the debate. *The Geographical Journal, 178*(4), 313–326.

McGlone, P., Dobson B., Dowler E., & Nelson, M. (1999). *Food projects and how they work*. York: Joseph Rowntree Foundation.

Møller, H. (2013). *Fusions EU: Report on review of (food) waste reporting methodology and practice*.

OECD (Organisation for Economic Co-Operation and Development). (2002). *Towards sustainable household consumption? Trends and policies in OECD Countries*. Paris: OECD.

Parfitt, J., Barthel, M., & Macnaughton, S. (2010). Food waste within food supply chains: Quantification and potential for change to 2050. *Philosophical Transactions of the Royal Society B, 365*, 3065–3081.

Planchenstainer, F. (2012). *"They collected what was left of the scraps": Food surplus as an opportunity and its legal incentives*. The Trento Law and Technology Research Group Research Paper Series Index. http://www.Lawtech.Jus.Unitn.it.

Poppendieck, J. (1998). *Sweet charity?: Emergency food and the end of entitlement*. New York: Viking.

Riches, G. (2011). Thinking and acting outside the charitable food box: Hunger and the right to food in rich societies. *Development in Practice, 21*(4–5), 768–775.

Segré, A. (2014). PINPAS, Piano Nazionale di Prevenzione degli Sprechi Alimentari Le azioni prioritarie per la lotta allo spreco—5 giugno 2014.

Schneider, F. (2012). The evolution of food donation with respect to waste prevention. *Waste Management, 33*(3), 755–763. doi:10.1016/j.wasman.2012.10.025.

Schneider, F. (2013). Review of food waste prevention on an international level. *Waste and Resource Management, 166*(4), 187–203.

USDA, and EPA. (2009). *Waste not, Want not*. Washington DC: United States Department of Agriculture-Environmental Protection Agency.

CHAPTER 3

Public Policy Interventions in Surplus Food Recovery in France, Germany, Italy and Spain

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Abstract This chapter focuses on regulations of food surplus recovery and donation in four countries: Italy, Germany, France and Spain. The chapter draws on academic and grey literature and illustrates regulations expanding from those discussed in Chap. 2. In particular, this chapter investigates fiscal and tax-related incentives, liability, food durability, and campaigns. Food surplus recovery and donation policies, as all policies, are shaped according to given political-administrative specificities of a country, and therefore these policies' effectiveness must be considered in

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connection with their specific contexts. The chapter illustrates the range of policies aiming at strengthening food surplus recovery and redistribution, and their different enforcement capacity.

Keywords Food donation · Fiscal incentives · Liability · Food durability Campaigns · France · Germany · Italy · Spain

3.1 Introduction

Surplus food recovery as a policy field, and in particular its connection with food security and deprivation, has generated innovations which cut across social, economic, financial, fiscal and health issues. As discussed in Chap. 2, such innovations have taken place at both European and nation-state levels, and they have addressed the constellation of public and private actors involved in the "governance" of the food surplus recovery chain.

Chapter 2 traced how policy innovations have been geared towards incentivising surplus food donation by food industry operators (ranging from food producers to retailers) as well as towards easing the work of non-profit organisations active in food donation and redistribution to those in need. It also briefly illustrated how policy action has tried to raise awareness among citizens towards more "environmentally and socially aware" food consumption behaviours.

Obviously, such policies have not happened in a vacuum; on the contrary, they have been shaped by the peculiarity of the political–administrative contexts embedding them. This book's analysis of the four European countries forming the basis of our research (France, Germany, Italy and Spain) reveals differences among them in both the range of innovations promoted and their implementation. In some countries, policy innovation has been limited by pre-existing administrative capacity or by contradictory, pre-existing regulations, while in others, policy makers have embraced the "food surplus recovery" battle with vigour and have even promoted regulations "forcing" business operators to donate food.

In the following sections of the chapter, such policy innovations and their shortcomings are discussed across the four countries, starting by illustrating how policy has addressed food surplus recovery by promoting fiscal and tax-related incentives, before discussing the aspects of liability, food security and durability. The chapter continues by analysing the role

of education campaigns, and finally, the authors present the French context, which, among our four countries, has pushed food surplus recovery beyond volunteerism and philanthropy by making it a legal obligation.

3.2 Fiscal, Tax-Related Incentives

As discussed in Chap. 2, policy innovation in the field of food surplus recovery and redistribution has often embraced the form of fiscal or tax-related advantages for food companies willing to donate their unsold, but still edible, food. In each of the four countries in which the present research took place, governments have regulated in that direction too, although with some differences.

Starting with the Italian case, it is clear that fiscal or tax-related leverage tools do exist, but their effects in fostering donation are sometimes mitigated by bureaucratic hurdles and regulatory contradictions. For example, companies can treat food donations as a deductible expense to reduce their taxable income. As specified by the legislative decree of 14 March 2005, no. 35,[1] donations in kind to entities like Onlus (Italian non-profit organisations with a special fiscal status) are fully deductible for up to 10% of their taxable income, albeit up to a limit of 70,000 euros per year. However, previous regulations established that food donated to charities is considered as a "destroyed" good (that is, a product whose commercial value is equal to zero), to excuse companies from having to pay VAT on the donation (legislative decree no. 460 of 4 December 1997). As a consequence of this regulation, a company can choose to donate surplus food to a non-profit organisation or to destroy it, receiving the same tax exemption in either case. Therefore, for an Italian food business operator there is no particular economic advantage in donating food rather than sending it to landfill or composting (Azzurro 2015).

Moreover, even if companies were attracted by VAT exemptions, traditional Italian bureaucratic hurdles hinder the innovative capacity of new policy. For example, for food donations exceeding 5,164.57 euros, companies must submit a preliminary declaration to the finance police, indicating the exact quantity and type of the donated products. This declaration poses problems to companies donating surplus food because it is often impossible to forecast the exact amounts and types of surplus food which will be generated (Azzurro 2015). To overcome some of these difficulties, a new law against food waste is under discussion in Italy at

the time of writing, which also includes a change in the procedure for VAT exemptions requiring companies to submit a summary of the donations which have occurred at the end of each month, instead of a preliminary declaration.

As in the Italian case, in Germany no VAT has been imposed on food donations since 2012, following a legal dispute between the tax office and a baker who refused to pay tax on the surplus bread that he had been donating. Starting from that court case, the states' (Länder) and the national German finance authorities ruled that donations should be tax exempted, unless a receipt for the donation is issued by the donor (Deloitte 2014). Instead, it is possible to consider donations, both in kind and in cash, as tax-deductible expenses. However, while such a measure is being considered in Italy, the German rules demonstrate a slightly higher willingness to boost food recovery, as the limit for tax deduction is equal to 20% (compared to a 10% threshold in Italy) of the corporation's income or 0.4% of its revenue plus wages and salaries in the relevant year (Deloitte 2014).

France has also operated via fiscal regulation to foster food donation. Its General Tax Code states that companies benefit from a tax reduction of 60% of the donation, with a cap of 0.5% of the company's turnover. If the tax credit is not entirely used during its first year due to the cap limit, it may be extended over the next five years. Moreover, in France the value of donated food is equal to its net book value, which means its original cost minus its depreciation. France has also regulated to try to discourage companies from donating food close to deterioration, and according to sub-national regulation (e.g. the "Rhone's guide pratique et réglementaire pour les entreprises du secteur alimentaire"), if the net book value of the food product depreciates because of its proximity with the expiration date and it is estimated at zero, then food donors can no longer benefit from the 60% tax credit on the value of the donated goods (DRAAF Rhône-Alpes 2015).

The French tax benefit also applies when a company provides the delivery and storage of foods for donation, by considering the service delivery or storage as a gift. Considering how important low transportation costs are for charities involved in surplus food recovery and redistribution, the inclusion of this provision in the fiscal regulation is likely to make the French policy an effective one in fostering food donation.

In Spain, the main fiscal regulation on donations provides tax benefits for donating companies (Law 49/2002), which are calculated yearly, and

are subtracted from the final corporate tax bill. Currently, in Spain, food donors can apply for a corporate tax credit of 35% of the net book value of the donated food (Deloitte 2014). In contrast to Italy, Germany and France, in Spain the donation of goods, including food, is considered as placing them on the market, and the goods are therefore subject to VAT (Deloitte 2014).

3.3 Other Types of Incentives: Liability, Food Security and Durability

One of the issues obstructing food donation by companies is the burden of liability in relation to the donated products, and the dread of misuse by non-profit organisations that makes companies reluctant to donate to avoid the risk of damaging their reputation (Planchenstainer 2012; Deloitte 2014). To counter this potential reluctance to donate, Italy has approved the so-called "Good Samaritan Law" (Law no. 155, 16 July 2003). As introduced in Chap. 2, this law was inspired by a US regulation and considers the non-profit organisations receiving the donation as the final consumers. Therefore, food donors are liable with regard to food safety and hygiene conditions only to food banks, which are not considered "food business operators", but which instead, by a fictio juris, acquire the same status as final consumers. Liability for companies therefore ends in Italy when they deliver food donations to non-profit organisations, preventing any individuals receiving food from banks from being able to file a lawsuit against the food donor. Although companies are not exempted from the obligation of guaranteeing food safety, they receive an extra level of assurance, and provided that food safety is guaranteed in their internal processes, they are not prosecutable in cases of subsequent poisoning or misuse (Deloitte 2014).

Germany and Spain have no specific regulation about food liability, while France has adopted a different approach focusing on preventing food waste, particularly in retailing, rather than easing liability regulation, as will be discussed below in more detail.

Concerning food security issues, in order to reduce the general flexibility of European legislation in the matter, the German government arranged to entirely incorporate the EU General Food Law (cfr. Chap. 2) into its national legislation. The Federal Ministry of Food and Agriculture demonstrated its commitment by issuing a guide explaining

the legal issues surrounding food donations, including food hygiene and safety matters (Deloitte 2014). Therefore, Germany is not only in the process of eliminating the distance between those countries with more rigid national limits based upon European food legislation, but it has also directly acted in helping stakeholders to deal with the latter's flexibility.

While no explicit regulation is provided regarding food durability and date marking in Italy, in Germany it is forbidden to donate food that has passed its "use by" date. However, doing so with goods past their "best before" dates is permitted, if these are clearly marked. Moreover, the product may even still be merchandised, with the company assuming full responsibility. Nonetheless, the ongoing misunderstanding between these two labels remains a cause of food waste, not only within domestic homes but also in many groceries. Indeed, this is the reason why efforts are being made (e.g. by the German Logistic Association) to clarify the difference between "best before" and "use by" dates by raising consumers' awareness that many products remain edible even after their "best before" date has passed (BCFN 2012; Deloitte 2014).

In Spain, there is no specific or general law on food surplus management that includes food donations. There are specific regulations for procedures on waste management (Ley 22/2011, de 28 de julio, de residuos y suelos contaminados), derived from Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste (Waste Framework Directive). Food companies have to follow very specific procedures that might carry extra costs, and have various different alternatives available to choose from. For example, meat residues can be recycled as fertilizer, but cannot be used as animal feed.

The closest to a general approach is the "Guia de pràctiques correctes d'higiene per a l'aprofiatament segur del menjare nel sectors de la restauració I comerçminorista" (Guide to good hygiene practices for the safe use of food in the restaurant and retail sectors), which was published by the Catalan Food Safety Agency in June 2013. This guide includes recommendations and best practices for retailers, restaurants, and non-profit organisations on how to manage and donate food surplus. This guide cannot, however, be considered as a general regulation or a law on food waste. Several companies interviewed in the Foodsaving project have commented that a more effective legislation on donation procedures would be very helpful. They would also welcome the implementation of a law inspired by the Good Samaritan Law.

3.4 Innovation at the Extreme: The French Law of 2016

Among our four countries, and also in a European and international perspective, France stands out for having adopted a compelling regulation fostering food donation. In 2016, France adopted legislation banning supermarkets from destroying unsold food and obliging them instead to donate such food to charities (Loi no. 2016-138 du 11 février 2016). The new law mandates that all unsold but edible food should be donated to charities for immediate distribution to those in need. Food that is considered unsafe for human consumption is to be donated to farms for agricultural purposes.

According to this legislation, supermarkets with a footprint of 400 sq. m. or more are obliged to sign a contract by July of 2016 with one or more charities for food redistribution, and relevant fines and penal consequences are set out in case of non-compliance. This measure de facto establishes a rigid food use hierarchy for French retailers, obligating them to prioritise reuse for human consumption.

This law originates from a campaign initiated by shoppers, anti-poverty advocacy groups and people and associations campaigning against food waste. The campaign and the related petition proposing what later became the law in France were initiated by a young centre-right politician, Mr. Arash Derambarsh, a councillor in the Paris suburb of Courbevoie. He began his campaign by collecting unsold food and handing it out to the needy, before launching an online petition which helped to pave the way for the new law.[2]

In order to address food recovery issues in a systemic manner, the new French law will also introduce an education programme about food waste for schools and businesses, and it also aims to remove the "best before" dates on fresh foods.

Following the success of the French petition, Mr. Derambarsh created a new online petition and circulated it throughout the European Union. His hope was to gather one million signatures from at least seven countries, a level which would be sufficient to launch a "European Citizens' Initiative"—an official appeal to the European Commission to start legislation across the EU to ban food waste at retail (supermarket) level.

However, the French law has met with controversy and some negative reactions already during its discussion. Members of the Gars' pilleurs

(an action group founded in Lyon) issued a statement warning that simply obliging large food retailers to donate unsold food to charities could provide a "false and dangerous idea of a magic solution" to food waste. According to them, the new law would not address the issue of overproduction in the food industry and therefore would not solve the wastage in food distribution chains ("France to force big supermarkets to give unsold food to charities", The Guardian, 22 May 2015).

The Fédération du Commerce et de la Distribution, which represents large supermarkets, criticised the plan too. Jacques Creyssel, the head of the organisation, said that: "The law is wrong in both target and intent, given that the big stores represent only 5% of food waste but have these new obligations (…) They are already the pre-eminent food donors, with more than 4500 stores having signed agreements with aid groups" (BBC News 18 August 2015 http://www.bbc.com/news/magazine-33907737).

Charities mostly welcomed the idea, but also expressed concern about ending up with more food than they would be able to handle. Jacques Bailet, the president of the French Federation of Food Banks (FFBA), commented that there is a risk that charities will not be able to cope: "Our food banks are going to need more staff, more lorries, more refrigerated rooms. But to get all that, we will need money—and money is pretty scarce these days". Olivier Berthe, the president of the Restos du Coeur charity, agrees with his view (Ibid.).

At the same time, French supermarkets feel aggrieved at being portrayed as the biggest food wasters, because the sector claims that only 5% of food waste in France is produced by them (Ibid.). Others point out that of the 7.1 m tonnes of food wasted in France each year, the Ministry of Ecology estimates that 67% is wasted by consumers themselves and another 15% by restaurants, while shops and distributors waste 11% of the total (Ibid.). Thus, the French law goes further than the other European countries' regulatory systems, where supermarkets usually come to voluntary agreements with charities (which may be subject to change and withdrawal, as Chap. 5 discusses), but this national regulation has not been welcomed by all the relevant food business operators.

Moreover, contrary to what happens in Italy and Spain, even before the approval of the new law in France, food donation there was encouraged by fiscal legislation, making it cheaper for food business operators to donate surplus food than to send it to anaerobic digestion. Furthermore, in agreement with the Instruction ministérielle du

14/02/84, Finance Act No. 87/571 of 07/23/87 on the development of sponsorship and article 275.8 of the General Tax Code, no VAT is anticipated on donated food in France.

3.5 Campaigns

Chapter 2 mentioned the use of public education campaigns as another policy tool to promote policy innovation in food recovery. The European Commission has found that campaigns aimed at raising citizens' awareness about food waste, and the possibility of distributing food surplus to those in need, are extremely useful in impact terms (European Commission 2010). Here, we give a brief overview of some campaigns addressing surplus food recovery in Italy, Germany, France and Spain.

In Germany, an important initiative launched by the Federal Ministry of Food and Agriculture in 2012 was the "Too Good for the Bin" ("Zu Gut für Die Tonne") campaign, which aimed to reduce food waste by involving the entire food chain from farm to fork. The campaign particularly addresses consumers, providing them with practical advice concerning how to properly manage and preserve food (Federal Ministry of Food, Agriculture and Consumer Protection 2012). Germany is one of the few countries implementing such a broad education campaign (BCFN 2012; European Commission 2010; FAO 2011).

The French government has launched a national education campaign against food waste called "Réduisons nos déchets" (Let's reduce our waste). This campaign is similar to the German one, as it again addresses consumers and offers practical advice about how to manage food. While no proper national campaign has been launched in France targeting the management of food for children in schools, the new law mentioned earlier has raised hope that such a relevant area for food surplus improvement will be addressed in due course by an ad hoc campaign.

In Spain, a strategy has been promoted by the Ministry of Agriculture since 2013 to raise awareness of food waste among agents in the food chain. The "More food, less waste" strategy seeks "to promote a real change in attitudes, work procedures and management systems in an organised, coordinated and structured way across all agents in the chain" (Magrama 2013). Consistent with EU regulations, the strategy sets the following priority actions: the prevention (of food waste), reuse, recycling and lastly, other types of recovery. Specific areas where action is foreseen are (a) studies to understand the what, how, where and why of

food loss and waste; (b) spreading and promoting good practices and awareness; (c) analysing and reviewing regulatory aspects; (d) collaborating with other agents; and (e) promoting the design and development of new technologies.

In Italy, no national campaign has yet been set up by the government. However, the Pinpas (National Plan for the Prevention of Food Waste) in 2014 established a national day against food waste (5th February) to raise awareness of the problems of food waste and surplus food recovery.

3.6 Concluding Remarks

France, Germany, Italy and Spain offer different models of how surplus food recovery can be promoted and supported by public policy. If we imagine a continuum where on the one hand we place a policy context in which food surplus recovery is made a real political priority, and its enforcement is guaranteed by systematic ad hoc regulation, and on the other hand, we have a policy context where food surplus recovery is hindered either by a lack of, or inadequate regulation, as well as by a set of regulatory frameworks in mutual contrast, then we may see that France lies within the former context, while the rest of our case study countries (Germany, Italy and Spain) are in the space between the two, although none of the three are at the opposite (food surplus recovery obstructive) end of the continuum.

France has made food donation a legal obligation for food business operators, especially at retail level. In contrast, in Germany, Italy and Spain, the food industry is encouraged to donate their surplus food either through offering economic incentives (fiscal and taxation advantages) or by convincing them that donating food to charities is not an action that could expose them to reputational risks (via reassurance measures such as the Italian "Good Samaritan Law"), and that by donating food, companies will actually receive a reputational gain. However, in these latter three countries, the lack of coherence between fiscal regulations, such as the unfortunate mix between VAT exemptions on donated food by virtue of its legal commercial value, and the tax advantages calculated on the commercial value of the donated food, can sometimes create a legal short circuit with the result that wastage appears to be a better economic option than donation. Therefore, donation in such countries relies much more on good will (and still on perceived

economic and reputational advantages) in the food industry, rather than on an enabling policy ecosystem.

In other words, while in Germany, Italy and Spain food surplus recovery is still largely conceived and perceived as an act of philanthropy or altruism, and therefore still primarily depends on the good will of food business operators and on the availability of economic and reputational advantages, in France food surplus donation has already been made a legal obligation. Therefore, in France food security has entered a new policy paradigm compared to the situation in Germany, Italy and Spain; a paradigm which is shaped by the raising of legal rank of the moral disgust at the simultaneous existence of food waste, and hunger or malnutrition.

In all countries, however, as we will see in Chaps. 5 and 6, such policy innovations have been inspired and heavily complemented by a chain of bottom-up, civil society-led actions, which have provided food donation with the organisational, logistic and idealistic capacities it needs to function optimally.

Notes

1. Decreto legislativo 14 marzo 2005, no. 35 Disposizioni urgenti nell'ambito del Piano di azione per lo sviluppo economico, sociale e territoriale http://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legge:2005-03-14;35!vig.
2. The Guardian, "France to force big supermarkets to give unsold food to charities", 22 May 2015.

References

Azzurro. (2015). *La donazione degli alimenti invenduti verso la semplificazione mormativa*. PINPAS, Piano Nazionale di Prevenzione degli Sprechi Alimentari del Ministero dell'Ambiente, della Tutela del Territorio e del Mare c/o Dipartimentodi Scienze e Tecnologie Agro-alimentari, Alma Mater Studiorum, Università di Bologna.

BCFN. (2012). *Food waste: Causes, impacts and proposals*. Turin: Codice Edizioni.

Deloitte. (2014). *Comparative Study on EU Member States' legislation and practices on food donation*. Final report prepared by Bio By Deloitte for the European Economic and Social Committee. Brussels.

DRAAF Rhône-Alpes. (2015). Rhone's guide pratique et réglementaire pour les entreprises du secteur alimentaire. Retrieved from http://draaf.auvergne-rhonealpes.agriculture.gouv.fr/Entreprises-du-secteur-alimentaire.

European Commission. (2010). *Preparatory study on food waste across the EU 27*. Brussels: European Communities.

FAO. (2011). *Global food losses and food waste—extent, causes and prevention*. Rome: Food And Agriculture Organization Of The United Nations.

Planchenstainer, F. (2012). "They collected what was left of the scraps": Food surplus as an opportunity and its legal incentives. The Trento Law and Technology Research Group Research Paper Series Index. http://www.Lawtech.Jus.Unitn.it.

PART II

The Business Sector

CHAPTER 4

Surplus Food Redistribution: A Conceptual Framework

Marco Melacini, Monica Rasini, and Sedef Sert

Abstract Surplus food redistribution through donation to food aid organisations is increasingly recognised as a way to cope both with the social issue of food insecurity and the environmental issue of food waste. Although strategic management literature and sociology one explore the motivation behind donation, the topic is an understudied issue in the literature from the operational process perspective. In fact, the question of why some companies feel able to donate their surplus food to non-profit organisations by reducing food waste while many others do not, remains unanswered. In describing the conducting of four exploratory and ten descriptive cases in food manufacturing companies located in the Lombardy region in Northern Italy, this chapter presents a framework

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to highlight the main factors that allow companies to save surplus food from becoming waste, and to redistribute.

Keywords Supply chain · Recovery · Waste management · Structured process · Surplus food management

4.1 Introduction

This chapter presents a framework highlighting the main factors that allow companies to save surplus food from becoming waste in particular by redistribution of excess food to non-profit organisations.

To this aim, first of all, the extant literature on the causes of surplus food and the main options to manage it was reviewed. The agriculture, manufacturing, retail and food service sectors were included in the literature analysis in order to present an overview of food supply chain in terms of surplus food generation. Then, the literature on the main options available for surplus food management, i.e. prevention, redistribution, recycle, recovery and disposal, was studied.

After that, a surplus food management framework was built by conducting four exploratory and ten descriptive cases in food manufacturing companies located in the Lombardy region in Northern Italy as explained in detail in the article "Reducing food waste in food manufacturing" (Garrone et al. 2016). Questionnaires were prepared based on the literature review by taking into account the main causes and main management channels. The questions were related to the operational processes, the main motivations behind surplus food redistribution for social purposes, and the main enablers of and barriers to the surplus food management. The interviews were conducted with key decision makers, senior or middle managers responsible for surplus food management across their organisations.

The conceptual framework highlights the four main factors as being the measurement procedures, the organisation of the processes, coordination among functions, and the donation process configuration. In particular, the key role played by the adoption of measurement and control systems and the careful design of partnerships with non-profit organisations are found to be relevant.

This chapter is organised as follows: Sect. 4.2 reviews the current literature on the causes of surplus food in agriculture, manufacturing,

distribution and food services; Sect. 4.3 explains the methodology used to conduct the research; Sect. 4.4 presents the main results; and finally, Sect. 4.5 sets out some concluding remarks.

4.2 Surplus Food Management: Literature Review

Even before reaching the final customer, surplus food is generated throughout the whole food supply chain. In the next section, the main contributions in the literature on the main causes of surplus food generation are highlighted, and the management options are presented.

4.2.1 Main Causes of Surplus Food Generation

Agriculture

Agriculture includes cultivation of the soil for the growing of crops and the rearing of animals to provide food as well as other products such as wool, and several causes of surplus food generation exist in this sector. In farming, the ineffectiveness of harvesters to collect all food in the field may prevent edible food to come to the market and be available for the consumption (Griffin et al. 2009). In some cases, the minimum quality standards set by state orders or consumer demand for blemish-free products result in selective harvesting by farmers and thus leaving the small, misshapen or blemished but still edible food in the field (Kantor et al. 1997). Overproduction due to the unpredictable weather conditions or due to agricultural policies can be another reason of surplus food generation in farming (Garrone et al. 2013). In fishing and livestock sectors, ineffective product management especially during the storage is a considerable reason of surplus food generation. Applying unsuitable storage temperatures and storing larger quantities than required increase the possibility of surplus food generation in this segment. Inattentive handling operations also eliminate edible food from the supply chain (Garrone et al. 2013).

Manufacturing

In food manufacturing, the most common reason for surplus food generation is exceeding the internal sell-by date, which is generally defined as one-third of the shelf life of the product (Garrone et al. 2014a). Once the product reaches its internal sell-by date, mainly due to forecasting

errors (Darlington and Rahimifard 2006), the company will not be able to sell the product at full value to its intended customers any longer, but it will remain suitable for human consumption (Garrone et al. 2014a). Other common reasons for surplus food generation in food manufacturing have been identified as processing errors, poor handling or packaging failures involving incorrect labels and damaged boxes (Kantor et al. 1997). Finally, the marketing activities of companies can also create surplus food. For instance, failed introductions for new products may end up generating a great amount of surplus food in the warehouses (Buzby et al. 2011), or promotional activities may increase demand variability and therefore create surplus food (Kaipia et al. 2013).

Distribution

As in the manufacturing stage, the most common reason for surplus food generation is the sell-by date to be exceeded in the distribution stage, e.g. by wholesalers and retailers (Garrone et al. 2014b). In particular, perishable fresh food such as meat, dairy products, fruit and vegetables may exceed their sell-by date but still remain safe for human consumption (Aleksandar and Smaje 2008). The perishable prepared products made in store bakeries usually have shelf lives as short a few days (Kantor et al. 1997). For instance, sandwiches may become slightly stale and therefore less marketable by the following day, even though they are still edible (Aleksandar and Smaje 2008). On the other hand, non-perishable food products such as breakfast cereals, pasta, canned fruits and vegetables can be discarded because of damaged packaging and/or expired shelf dates (Kantor et al. 1997). In some cases, a lack of training may lead operating employees to misapply the procedures for stacking, shelving (Mena et al. 2011) or stock rotation (Griffin et al. 2009), eventually eliminating some edible food from the market. Seasonal products such as Halloween cookies are other streams of surplus food generated by retailers (Kantor et al. 1997). Finally, failed introductions of new products and failed promotions may end up causing a great amount of surplus food in the distribution stage of the food supply chain (Buzby et al. 2011; Kaipia et al. 2013).

Food Service

In food service, the uncertainty arising from the difficulty of predicting the customer demand and the dishes that customers will choose also

creates surplus food (Garrone et al. 2014a). Expanded menu choices make the management of food inventories more difficult and increase the surplus food generated (Kantor et al. 1997). Finally, unexpected fluctuations in food sales due to factors beyond the control of food service operators (such as unexpected weather conditions) can create a huge amount of surplus food (Kantor et al. 1997). According to the experimental studies, the generation of surplus food is significant when food is prepared and served at a buffet, especially if advance reservations are not taken, and planning is based on the past experience (Garrone et al. 2013).

In Table 4.1, the main causes of surplus food generation are summarised based on the food supply chain stage.

Table 4.1 Main causes of surplus food generation in the food supply chain

Food supply chain stage	*Main causes of surplus food generation*
Agriculture	• The ineffectiveness of harvesters (Griffin et al. 2009) • Selective harvesting for products not meeting the market standards (Kantor et al. 1997) • Over production due to the unpredictable weather conditions or due to agricultural policies (Garrone et al. 2013) • Ineffective storage and inattentive handling operations (Garrone et al. 2013)
Manufacturing	• Exceeding the internal sell-by date (Garrone et al. 2014b) • Forecasting errors (Darlington and Rahimfard 2006) • Processing errors, poor handling and packaging failures (Kantor et al. 1997) • Failed new product introductions (Buzby et al. 2011) • Failed product promotions (Kaipia et al. 2013)
Distribution	• Exceeding the internal sell-by date (Garrone et al. 2014b) • Poor handling and packaging failures (Kantor et al. 1997) • Stocking and shelving mistakes (Mena et al. 2011) • Inefficient stock rotation (Griffin et al. 2009) • Failed new product introductions (Buzby et al. 2011) • Failed product promotions (Kaipia et al. 2013)
Food service	• Predicting the influx of customers and the dishes that customer will choose (Garrone et al. 2014a) • Unexpected fluctuations due to the factors beyond the control of food service operators (Kantor et al. 1997)

4.2.2 Options to Manage Surplus Food

This section reviews the main options to manage surplus food (EPA 2013; WRAP 2013; Papargyropoulou et al. 2014).

Prevention: Tackling the Problem at Its Roots

According to the literature, the first strategy suggested is prevention, i.e. reducing at source the volume of surplus food generated. One of the most often-suggested good practices to reduce surplus food generation at source is collaboration between food supply chain actors, for example through high levels of information sharing (Mena et al. 2011; Tupper and Whitehead 2011; Kaipia et al. 2013). The use of responsive demand-planning techniques to reduce forecasting errors and the overproduction of food is also highlighted as a surplus food prevention method by empirical studies (Darlington and Rahimifard 2006; Darlington et al. 2009). Although alternative food supply chains to prevent surplus food and food waste reduction at source deserves a throughout research, this chapter focuses on surplus food management once the surplus food is generated. Therefore, in the remaining part of the chapter, the options to manage surplus food are presented.

Redistribution: Feed People in Need

Even if firms consider all relevant aspects in order to decrease their surplus food generation at source, surplus food will still occur for different reasons (Garrone et al. 2014b). Therefore, the second strategy suggested for surplus food management is reuse, which can be defined as "putting objects back into use so they do not enter waste stream" (Bates and Phillips 1999). In this case, when there is food which is still suitable for human consumption, the donation of that surplus food to a needy population is accepted as a socially prioritised strategy for surplus food management due to the paradox of food insecurity and food waste, illustrated by the facts that a total of 842 million people worldwide were estimated to be suffering from regularly not having access to enough food, while approximately 1.3 billion tons of food per year are wasted globally (Gustavsson et al. 2011; FAO 2013). In fact, many authors have begun to consider surplus food donation to non-profit organisations as a good way to cope with the social issue of food insecurity and the environmental issue of food waste (Tarasuk and Eakin 2005; Thang 2009; Gentilini 2013; Garrone et al. 2014a; Sert et al. 2016).

Recycle

If the food is no longer suitable for human consumption, it should be recycled (EPA 2013; Papargyropoulou et al. 2014). The recycling of food waste can be defined as "reducing the amount of food waste entering the waste stream" (Griffin et al. 2009), as animal feeding and composting (Papargyropoulou et al. 2014). Although in some countries such food is directly disposed of rather than being used as animal food due to legislation controlling prion diseases (Godfray 2010), animal feeding is a frequently used method of food waste management (Griffin et al. 2009; Garrone et al. 2013). Secondly, food scraps from processing can be recycled into soil, either as fertiliser or as compost (Griffin et al. 2009). Compost creates economic value, and the process of composting is generally perceived as environmentally friendly (Schaub and Lonard 1996; Levis et al. 2010).

Recovery

Finally, before the disposal of food waste, it is suggested that energy and other valuable materials are recovered (WRAP 2013). Today, the advancement of existing technologies allows food waste to be processed as an economical source of valuable components and facilitates the recovery of target compounds from food (Galanikis 2012), since food waste from which a number of valuable compounds are derivable has many potential applications across numerous different industries (Galanikis 2012; Mirabella et al. 2014). Pharmaceutical products made from cow's and goat's milk, adhesives and solvents derived from citrus oils are just a few examples of those applications (Kantor et al. 1997). Food waste can also be used for digestion to recover energy (Hall and Howe 2012).

Disposal

Sending valuable materials to landfill, incineration or disposal appears at the bottom of the food waste hierarchy (Papargyropoulou et al. 2014), the food recovery hierarchy (EPA 2013) and the food use hierarchy (WRAP 2013). From the firm point of view, the landfill option is becoming an increasingly expensive route for the management of food waste, since a reduced landfill void causes an increase in disposal charges, together with landfill taxes arising from an increase in pressure on governments to set out "green taxes" (Bates and Phillips 1999). Studies show that a reduction in disposed waste may lead to substantial cost savings for companies (Lundie and Peters 2004; Darlington et al.

2009; Levis et al. 2010), and waste minimisation programs can also help to raise the environmental image of a company on a local, national or international level (Bates and Phillips 1999). In fact, waste minimisation programs aiming to minimise the amount of disposed waste also provide other benefits such as reduced insurance premiums and a reduced likelihood of being prosecuted by regulators (Bates and Phillips 1999).

4.3 Methodology

Although the literature gives an overview of the management options, the use of this information by companies has not yet been analysed, and specifically, the management options chosen by food supply chain companies in response to different causes of surplus food generation have not been studied. To fill this gap, an exploratory case study methodology is applied here (Yin 2003).

Four exploratory case studies were performed, with the companies selected after a discussion with the supply manager and the general director of the Italian Food Bank Association (Fondazione Banco Alimentare Onlus).[1] The companies were selected based on the Food Bank's observations as representing the best and worst cases of surplus food management. Two of the companies have been regular donors for a long time. One donates from time to time, and the other is a company that has recently taken the decision not to donate anymore.

Since surplus food management is considered a sensitive issue by many organisations, it was decided to offer a confidentiality agreement to all the companies interviewed in this study (Table 4.2).

The following questions were given beforehand to the interviewees in order to help guide the conversation:

Table 4.2 Database of exploratory cases

Case	*Main stream products*	*Domestic turnover (mln €)*
C1	Fresh food	220
C2	Frozen food	1100
C3	Ambient food	190
C4	Ambient food	2000

- What are the main causes of surplus food generation in your company?
- How do you manage surplus food? Could you describe the operational process and preferred options?
- In your opinion, what are the key factors to be considered in managing surplus food, once it is generated, in an efficient and effective way? Which factors prevent the degradation of surplus food into food waste?
- What are the internal and external barriers to the redistribution of surplus food for social purposes? And the enablers?

The analysis of the exploratory cases revealed that there are many options with which to manage surplus food, as well as several critical factors which need to be considered (Garrone et al. 2016). Following the exploratory analysis, a descriptive case study methodology was designed, and interviews with 10 manufacturing companies were conducted, as explained in detail in the article "Reducing food waste in food manufacturing" (Garrone et al. 2016). Then, the researchers performed the same analysis with retailers and food service providers, and in different countries. The analysis of those cases can be found in the next chapter.

A semi-structured interview questionnaire was developed in three stages. The first draft was revised by a panel of nine academics and four practitioners operating in food manufacturers and food banks. The first draft was then adapted based on their feedback and piloted in two interviews, after which a few additional questions were added and others adapted.

The final questionnaire covered six key areas, which were as follows:

1. *Contact details and characteristics of the company.* The first section was designed to collect general information about the company being interviewed. The logistics network and planning process for each company were investigated.
2. *Quantitative and qualitative assessment of surplus food generated.* This section involved collecting information relating to the amount of surplus food generated in the companies, and how surplus food is measured.
3. *The main reasons for surplus food generation and main management alternatives.* The reasons for surplus food generation and the

options used to manage surplus food were discussed in the third section.

4. *Surplus food management process.* The fourth section was designed to understand the process of surplus food management. The organisation's internal processes and relationships with third parties were discussed.
5. *Main motivations, constraints and drivers towards surplus food management.* This section's focus was on the redistribution of surplus food for social purposes. The primary motivations, the main internal and external constraints, and the drivers relating to the management and redistribution of surplus food were discussed.
6. *Institutional relations and policy.* The last section was designed to understand the institutional relations involved in surplus food recovery and donation.

Following the exploratory case-by-case analysis and descriptive cross-case analysis, key information was extracted from the interviews and a conceptual framework was built to highlight the drivers of efficient surplus food management and donations. This framework is explained below.

4.4 Surplus Food Management: The Business Perspective

Four key dimensions of the internal enablers of an efficient management of surplus food and food waste were identified to help companies to apply the right management (Fig. 4.1). The following sections introduce these four dimensions.

4.4.1 Measurement Procedures

One critical factor that distinguishes companies in their surplus food management is the measurement of surplus food. While some companies measure surplus food as an important parameter in their management control system, other companies remain relatively unaware of the issue.

Some companies were found to measure surplus food only if the generated amount was extremely large due to extraordinary events such as failed promotions or failed new product introductions (ad hoc *measurements*). In contrast, measuring and monitoring surplus food generation

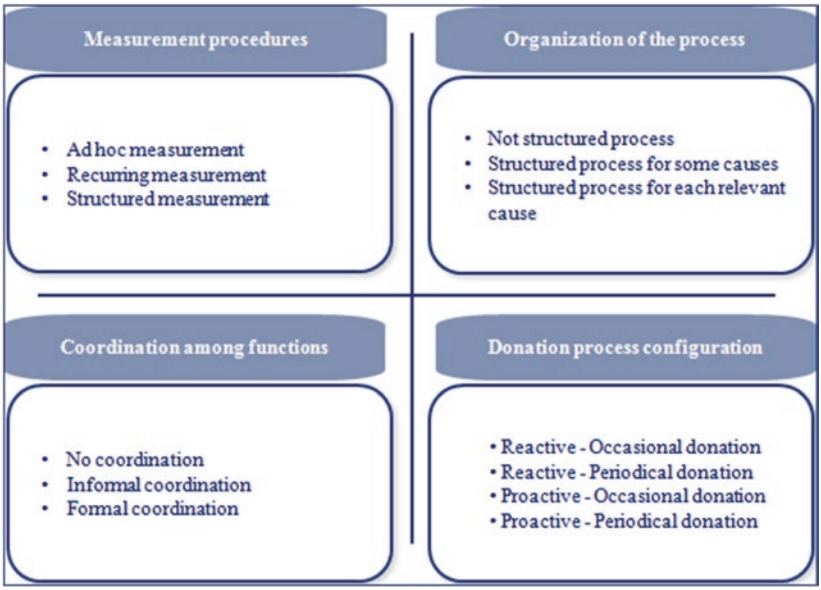

Fig. 4.1 Conceptual framework

regularly through a management control system will make the company aware of surplus food generation in time to facilitate the choice of whether to reuse it internally or redistribute it for sales in secondary markets, marketing activities such as sponsoring events, and/or donation to non-profit organisations.

The surplus food generated by a company may also be measured and monitored regularly, but different corporate functions may monitor and manage different types of surplus food (*periodic—fragmented measurements*). For instance, the marketing function manages commercial returns, while the logistics function monitors products at risk of exceeding their internal sell-by dates.

In a more advanced system, the surplus food measurement indicators should be unified and communicated regularly with all other organisational functions (*periodic—structured measurements*). This may increase the probability of allocating surplus food for human consumption, thus preventing it from becoming waste.

4.4.2 *Organisation of the Process*

For each cause behind surplus food generation, companies have to set up specific procedures for managing the surplus food they have created. The feasibility of different options varies according to the state of the surplus food. First of all, a monitoring date helps in identifying the risk of surplus food generation (*risk identification*). In order to prevent surplus food generation, companies should attempt to sell it in primary markets until this is no longer possible through the normal channels (*compliance with primary markets*). Then, the companies should target secondary markets and try to sell their products at a lower price (*compliance with secondary markets*). The donation option can then be considered as the food is still suitable for human consumption (*compliance with human consumption*). After that point, the food becomes waste and the company can use the waste management methods described previously.

Figure 4.2 shows the potential options available for food manufacturing companies for surplus food management on its y-axis, while the x-axis traces the state of the surplus food. Activating one option or another also depends on the company's overall strategy and its managers' individual motivations. For instance, a company may prefer to donate surplus food for social responsibility reasons, without considering other

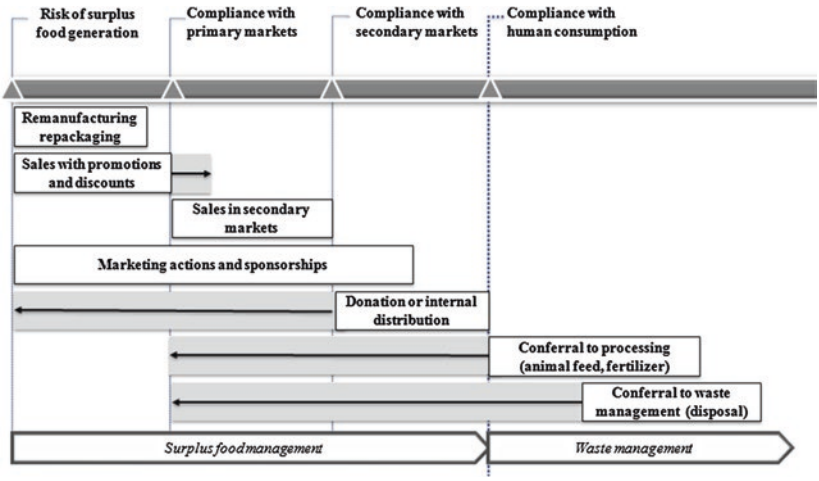

Fig. 4.2 Management process organisation (Garrone et al. 2016)

reuse and redistribution options, and even without waiting until its surplus food passes the threshold for secondary markets. Other companies may prioritise economic efficiency and therefore always follow commercial options until the expiration of any sell-by thresholds.

The options companies must choose from are presented below in more detail.

- *Remanufacturing/repackaging (Remake)*: Depending on the product type and the reason why the surplus food has been generated, companies can opt for remanufacturing in the case of production errors and repackaging in the case of packaging errors. Here, the surplus food is reworked and fed back into the primary market.
- *Sales with promotions and/or discounts*: If the reason for the existence of surplus food is the risk of reaching the internal sell-by date, companies will often attempt to sell the surplus food to customers in the primary market at a price below the standard.
- *Sales in secondary markets*: When the surplus food cannot be sold any longer through primary channels, some companies will then target secondary channels such as retailers specialising in surplus products at discount prices.
- *Marketing actions and sponsorship*: In some cases, companies utilise surplus food by sponsoring specific events or by organising events.
- *Internal distribution*: Companies can also choose to distribute the surplus food products among its employees internally in the organisation. In general, a dedicated area is arranged and the products are "free to take", or products with lower prices are stocked to be available to workers.
- *Donation*: Here, the surplus food is given to a food assistance organisation such as a food bank, food pantry, and soup kitchen, so that it can be redistributed to a population in need.
- *Sale to a processing company*: Depending on the product type, surplus food can sometimes be sold to companies producing animal feed, fertilisers or other goods. In some cases, the company can obtain a small revenue from this channel. Since surplus food is not fit for human consumption, recycling is a way of managing food waste.
- *Conferring with a waste management company*: The final option is conveying the surplus food to third parties for disposal, with or

without energy recovery. At this stage, the surplus food has already become food waste.

If a company lacks procedures based on different causes of surplus food generation, it can be said that its management process is not structured (*not structured*). On the other hand, the company may have a structured approach to some causes of surplus food generation, such as exceeding internal sell-by dates (*structured in some cases*), or may have a structured approach for all kinds of causes of surplus food generation (*structured in all cases*).

4.4.3 Coordination Between Functions

The process of managing surplus food involves various business functions (planning, logistics, commercial, CSR, operating staff, etc.). Companies which have structured their entire surplus food management process have stated that different company functions interact with each other regularly in order to decide how to manage the surplus food. This coordination between different functions can be seen as an indicator of importance being given to surplus food management in a company's organisational structure.

In a company's attempts to manage its surplus food, different company functions may not interact with each other in decision-making, and one function might manage the whole process without the consultation of others *(no coordination*); otherwise, the functions may be in contact through emails, phone calls and informal meetings when deemed necessary for decision-making (*informal coordination*), or the surplus food may be managed through regular meetings involving different functions (*formal coordination*).

4.4.4 Donation Process Configuration

The relationship between companies and non-profit organisations was found to be an important driver that facilitates the decision-making towards making surplus food donations. A company may manage the process proactively or may limit itself to reacting to the levels of demand of non-profit organisations. Likewise, the donation process might be regular or occasional. Consequently, four different configurations were identified.

In the first type of relationship, there is no structured agreement between the company and the non-profit organisation in terms of the type of products to be donated, or their quantity. A non-profit organisation contacts the company to check if any surplus food is available for donation and organises transport (*reactive management—occasional donation*). If there is an agreement between the company and the non-profit organisation about the type of products to be donated, the non-profit organisation contacts the company at an agreed frequency to confirm the collection (*reactive management—periodical donation*). On the other hand, the company may act proactively to manage its surplus food. When the frequency of donation is not established, the company may contact the non-profit organisation about having large quantities of surplus food to be donated (*proactive management—occasional donation*), or the company may define the products to be donated and the relative quantity, together with suggesting a detailed schedule concerning collection (*proactive management—periodical donation*).

4.5 Conclusion

In this chapter, after the literature analysis of the causes of surplus food generation and the possible options to manage it, the surplus food management framework was presented which was designed based on the literature review and the case studies conducted with 14 manufacturing companies located in Northern Italy. The framework focuses on four dimensions: the structured measurement of surplus food, strong coordination between different functions, dedicated management through organised procedures, and partnership with food aid organisations.

Although the framework has been illustrated using a manufacturing perspective, it can also be extended to other supply chain actors such as retailers and food service providers, as well as to organisations operating in different regions. In the next chapter, further information about each dimension will be given, and practical applications will be presented.

Note

1. Food Bank Foundation, founded in 1989, is the entity that nationally coordinates the activities of 21 "food banks" existing in Italy, each established as an independent association in the region.

References

Aleksandar, C., & Smaje, C. (2008). Surplus food redistribution: An analysis of a third sector model. *Resource, Conservation and Recycling, 52*(11), 1290–1298.

Bates, M. P., & Phillips, P. S. (1999). Sustainable waste management in the food and drink industry. *British Food Journal, 101*(8), 580–589.

Buzby, J. C., & Hyman, J. (2011). The value of retail and consumer level fruit and vegetable losses in the United States. *The Journal of Consumer Affairs, 45,* 492–515.

Darlington, R., & Rahimifard, S. (2006). A responsive demand management framework for the minimization of waste in convenience food manufacture. *International Journal of Computer Integrated Manufacturing, 19,* 1–22.

Darlington, R., Staikos, T., & Rahimifard, S. (2009). Analytical methods for waste minimization in the convenience food industry. *Waste Management, 29,* 1274–1281.

EPA. (2013). *Putting surplus food to good use.* United States Environmental Protection Agency.

FAO. (2013). *The state of food insecurity in the world.* Rome, Italy: Food and Agriculture Organization of the United Nations.

Galanikis, C. (2012). Recovery of high added-value components from food wastes: Conventional, emerging technologies and commercialized applications. *Food Science & Technology, 26,* 68–87.

Garrone, P., Melacini, M., & Perego, A. (2013). *Feed the hungry: The potential of surplus food recovery.* Afilan, Italy: Edizioni AngeloGuerini e Associati Spa.

Garrone, P., Melacini, M., & Perego, A. (2014a). Opening the black box of food waste reduction. *Food Policy, 46,* 129–139.

Garrone, P., Melacini, M., & Perego, A. (2014b). Surplus food recovery and donation: The upstream process. *British Food Journal, 116,* 1460–1477.

Garrone, P., Melacini, M., Perego, A., & Sert, S. (2016). Reducing food waste in food manufacturing companies. *Journal of Cleaner Production, 137,* 1076–1085.

Gentilini, U. (2013). *Banking on food: The state of food banks in high-income countries.* Brighton, UK: Institute of Development Studies.

Godfray, H., & Charles, J. (2010). Food security: The challenge of feeding 9 billion people. *Science, 327,* 812–818.

Griffin, M., Sobal, J., & Lyson, T. A. (2009). An analysis of community waste stream. *Agriculture and Human Values, 26,* 67–81.

Gustavsson, J., Cederberg, C., Sonesson, U., Van Otterdijk, R., & Meybeck, A. (2011). Global food losses and food waste. *Food and Agriculture Organization of the United Nations.* Rome, Italy.

Hall, G., & Howe, J. (2012). Energy from waste and the food processing industry. *Process Safety and Environmental Protection, 90,* 203–212.

Kaipia, R., Dukovska-Popovska, I., & Loikkanen, L. (2013). Creating sustainable fresh food supply chains through waste reduction. *International Journal of Physical Distribution & Logistics Management, 43,* 262–276.

Kantor, L., Lipton, K., Manchester, A., & Oliviera, V. (1997). Estimating and addressing America's food losses. *Food Review, 20,* 2–12.

Levis, J. W., Barlaz, M. A., Themelis, N. J., & Ulloa, P., (2010). Assessment of the state of food waste treatment in the United States and Canada. *Waste Management* (article in press).

Lundie, S., & Peters, G. (2004). Life cycle assessment of food waste management options. *Journal of Cleaner Production, 13,* 275–286.

Mena, C., Adenso-Diaz, B., & Yurt, O. (2011). The causes of food waste in the supplier—retailer interface: Evidences from the UK and Spain. *Resources, Conservation and Recycling, 55,* 648–658.

Mirabella, N., Castellani, V., & Sala, S. (2014). Current options for the valorization of food manufacturing waste: A review. *Journal of Cleaner Production, 65,* 28–41.

Papargyropoulou, E., Lozano, R., Steinberger, J. K., & Wright, N. (2014). The food waste hierarchy as a framework for the management of food surplus and food waste. *Journal of Cleaner Production, 76,* 106–115.

Schaub, S. M., & Leonard, J. J. (1996). Composting: An alternative waste management option for food processing industries. *Trends in Food Science & Technology, 7,* 263–268.

Sert, S., Garrone, P., Melacini, M., & Perego, A. (2016). Surplus food redistribution for social purposes: The case of Coop Lombardia. In *Organizing Supply Chain Processes for Sustainable Innovation in the Agri-Food Industry* (pp. 153–173). Emerald Group Publishing Limited.

Tarasuk, V., & Eakin, J. (2005). Food assistance through "surplus" food: Insights from an ethnographic study of food bank work. *Agriculture and Human Values, 22,* 177–186.

Tupper, J., & Whitehead, P. (2011). *Reducing food waste through retail supply chain collaboration*. Oxon, UK: WRAP—Waste & Resources Action Programme.

Thang, H. (2009). Food reclamation as an approach to hunger and waste: A conceptual analysis of the charitable food sector in Toronto. *Journal of Hunger and Poverty,* 1, 1–10.

WRAP. (2013). *Food use hierarchy*. Oxon, UK: WRAP—Waste & Resources Action Programme.

Yin, R. (2003). *Case study research design and methods*. London, UK: Sage.

CHAPTER 5

Surplus Food Redistribution: Best Practices from European Countries

Oriol Forcada, Sedef Sert, Victoria Soldevila, and Francesca Vidali

Abstract This chapter illustrates the practices used by food supply chain companies in surplus food management by using the framework described in Chap. 4. Surplus food measurement procedures, organisation of the surplus food management process, coordination between different company functions for decision-making and donation process

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configurations considering the relationship with non-profit organizations are studied. The empirical setting uses a sample of 23 case studies, including cases from the Lombardy (Italy), Catalonia (Spain) and Rhône-Alpes (France) regions. Empirical evidence from the case studies is then compared and discussed to highlight best practices in surplus food management, specifically donation to non-profit organisations for each supply chain sector. Finally, an in-depth analysis of two cases is used to illustrate the practical relevance of the model.

Keywords Food supply chain · Best practices
Measurement · Coordination · Proactive management

5.1 Introduction

This chapter presents the practices used by food supply chain companies focusing on manufacturing, retail, and food service sectors. The agriculture sector is excluded since its surplus food management practices are mainly driven by European Union laws and regulations, unlike the other food supply chain stages. To this aim, the framework described in the previous chapter is used; surplus food measurement procedures, organisation of the surplus food management process, coordination between different company functions for decision-making and donation process configurations considering the relationship with non-profit organisations are studied.

In the empirical setting, 23 case studies, including cases from the Lombardy (Italy), Catalonia (Spain) and Rhône-Alpes (France) regions, are used. Interviews have been conducted with managers of food manufacturers (12 cases), retailers (7 cases), and food service providers (4 cases). Empirical evidence from the case studies is then compared and discussed to highlight the best practices in surplus food management in particular donation to non-profit organisations for each supply chain sector. Finally, an in-depth analysis of two cases (one manufacturer and one retailer) is used to illustrate the practical relevance of the model.

This chapter is organised as follows: Sect. 5.2 describes the methodology used to conduct the research, Sect. 5.3 discusses the practices and results in the manufacturing stage, and Sect. 5.4 describes the cross-case analysis. Then, Sect. 5.5 discusses the practices and results in the retail stage, Sect. 5.6 describes the cross-case analysis, Sect. 5.7 introduces the

best practices in the food service stage, and then Sect. 5.8 illustrates two in-depth cases. Finally, Sect. 5.9 sets out some concluding remarks.

5.2 Methodology

The interviews described in this chapter were replicated following the questionnaire described in Chap. 4. The companies were selected based on a convenience sample in three countries, Italy, Spain and France, with participants from across the three different stages of the food supply chain, i.e. manufacturing, retail, and food service. The main analysis was conducted in Italy and other evidence from Spain and France was also collected and compared.

Since surplus food management is considered a sensitive issue by many organisations, it was decided to offer a confidentiality agreement to all the companies interviewed (Tables 5.1, 5.2 and 5.3). The interviewees were middle or senior managers with responsibility for surplus food management across their organisations. Most of the time, supply chain managers, corporate social responsibility managers and external relations managers joined in the discussion. Each interview lasted around 2 h and was conducted by three researchers.

Table 5.1 Database for manufacturing companies

Company ID	*Country*	*Product category*	*Domestic turnover (mln €)*
A	Italy	Conserved food products	1,300
B	Italy	Dairy products	14
C	Italy	Confectionery products	320
D	Italy	Confectionery products	1,000
E	Italy	Conserved food products	6
F	Italy	Beverages	300
G	Italy	Dairy products	220
H	Italy	Dairy products	860
I	Italy	Meat products	180
J	Italy	Fresh products	100
K	Spain	Meat products	75
L	Spain	Dairy products	700

5.3 Surplus Food Management: Best Practices in Manufacturing

This section is organised as follows: 12 manufacturing companies, from Italy (10) and Spain (2), were interviewed (see Table 5.1). Companies with different product types were included in order to gain a comprehensive view of surplus food management across different production processes.

In order to understand the mechanisms and dynamics at play in companies, a descriptive case study methodology was selected. The four dimensions proposed by the framework, i.e. measurement procedures, the organisation of the processes, collaboration among functions, and donation process configuration, were analysed and are explained below.

5.3.1 Measurement Procedures

In a structured process aimed at reducing food waste and putting surplus food to better use, the value of the surplus food involved has to be measured by the company management as it represents the starting point for the analysis. Dedicated key performance indicators (KPIs) can both facilitate the prevention at source and support efficient management once surplus food has been generated. Data accuracy and registration as well as the presence of a dedicated budget are revealed to be key indicators of a high level of measurement structure. Two examples are presented below.

Company B is a medium-sized Italian dairy products producer. Its main goods are desserts and yogurt. According to the interviews, the company developed a structured measurement process. Once a product surplus is generated, the status of the product is continuously checked in order to evaluate the alternatives available to the company management. Employees are required to record the destination of each product produced but not sold to the primary market in the company's information technologies (IT) system, allowing Company B not only to track the surplus food it has generated, but also to improve its forecasts and production plans. Thanks to the analytics based on this information, it becomes easier to maintain awareness of the critical products on which the management has to focus. Once the surplus is generated, the company's employees can buy products at a lower price than the market one. After a short period of time, unsold products are donated to NPO.

Moreover, after a few years of experience of surplus food measurement, the company now knows which kinds of products are not preferred by its employees, and those products are directly donated in order to create time flexibility for the recipient non-profit organisation for redistribution. In addition, the stock cost is reduced by the shorter stocking time.

Contrary to the approach of Company B, Company I (an Italian meat producer) does not record its surplus food value regularly in its control system. The amount of surplus food generated therefore is not known by its managers, who also do not know the value of the edible and inedible food they dispose of. Neither key performance indicators nor a dedicated budget for conferral activities is present. Donation is generally implemented when a significant surplus of a single product is generated. The reason behind this implementation lies in the company's perceptions of the cost of donation. In fact, the lack of systematic measurement systems prevents Company I from tracking the level of total surplus food it has generated. Consequently, the company is not aware of the trade-off between donation and disposal. However, the cost of donation can be reduced by aggregating different types of products instead of considering only single types.

The positioning of Company B and Company I in terms of their levels of measurement procedures can be seen in Fig. 5.1. Company B has a structured measurement system, while Company I has an ad hoc measurement system.

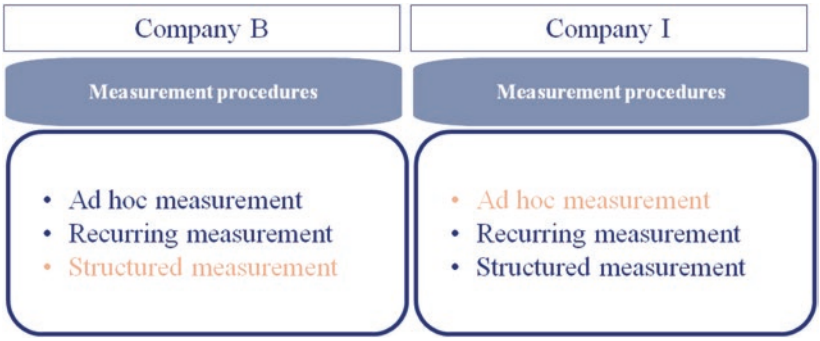

Fig. 5.1 Measurement procedures for Company B and Company I

5.3.2 Organisation of the Process

Exceeding the internal sell-by date, packaging failures, and product returns due to delivery errors are common causes of surplus food generation. Each reason requires different management methods, and the level of process organisation is the dimension that bridges the relevant surplus food generation causes and the structured management of surplus food. Two examples are presented below.

Company C is a multinational one operating in the confectionary market in Italy, whose main cause of surplus food generation is by reaching internal sell-by dates. The remaining shelf life of its products is continuously monitored, and once a product passes the minimum acceptable shelf life defined by the company, an alarm is generated. At that point, the logistics function responsible for the surplus management asks the corporate social responsibility (CSR) function to check if there are requests for sponsorship from employees, as the company allows workers to ask for products to be used in events such as charitable or sporting occasions. If there are no requests or if the surplus is still present, products are conveyed to secondary markets, mostly in foreign contexts. The sale function puts forward and sends the sale proposal to potential buyers. Depending on the product, the sale function knows in advance the maximum period of time for which to wait for answers from secondary markets. If it is no longer possible to sell products in the secondary markets, NPOs are contacted for the purpose of making a donation. If a single NPO cannot handle the amount of surplus food available, other NPOs are involved in order to donate as many of the excess products as possible. When registration system errors occur or the surplus food amount is too small to implement a donation, and the products have exceeded their expiry date, they are then conferred to animal feed producers. For some products, the company separates packaging and food directly before the conferral. Considering shelf life as the most important variable allows Company C to maximise the recovered surplus food for human consumption.

The second most prominent cause of surplus food generation for Company C is the non-compliance of packaging with market standards. In such instances, the process can proceed into two different ways. Once a product contamination risk occurs, a quality check is provided. Analyses are applied to some products of the batch. If they are still edible, depending on the product and on the packaging, they can be stored

to be donated to NPOs, or the products can be remanufactured. Once managers decide among such options, workers are aware of the characteristics they need to consider in order to proceed to donation or remanufacturing.

Company G is a multinational one operating in the dairy market in Italy. All the most common generation causes mentioned so far are also present in Company G. Except for label issues, any other generation cause is initially discussed among the organisation's functions each time it occurs. All destination alternatives are evaluated and ordered to maximise the profits. The decision also takes into account the product and the surplus food amount generated. The process is time consuming and it does not allow prompt conferral action to be taken. On the other hand, the only decision taken in advance is the disposal of surplus food in instances of labelling mistakes, which have only occurred a few times over the last years, so these can be considered a non-relevant issue due to their low incidence of 2% of the total amount of surplus food generated. Even though a pre-defined process for surplus food management is already in place, as it is not related to relevant generation causes, the whole process is not considered to be structured.

The positioning of Company C and Company G in terms of their levels of process organisation is shown in Fig. 5.2. Company C has a structured process for each relevant cause, while Company G does not define any process in advance.

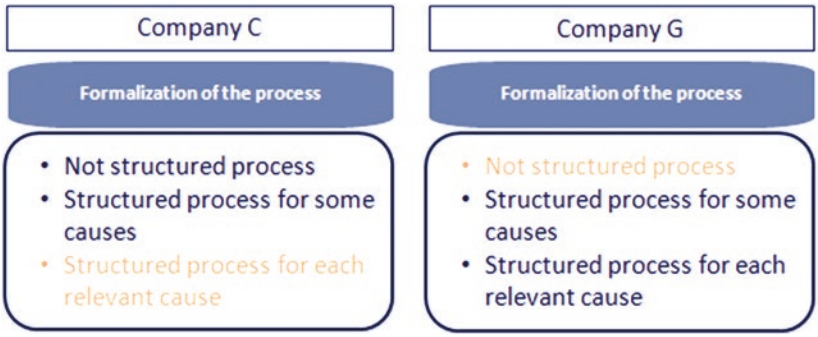

Fig. 5.2 Organization of the process for Company C and Company G

5.3.3 Coordination Among Functions

Besides the logistics that generally oversee waste management and manage surplus food, functions like sales, operation planning, marketing and CSR are often involved. Thus, coordination among such functions plays a pivotal role for surplus food to be saved for human consumption. Two examples are presented below.

Company L is a large manufacturer operating in the milk and dairy products market with several plants in Spain. The company has recently implemented a system of good practices in order to prevent food waste, which includes all the departments involved in food waste management, which are quality, production, logistics, and returns. The quality department plays a crucial role, as the surplus food generated in production or coming from returns goes directly to that department, which then decides on whether the product remains edible for donation purposes. The logistic platform directly donates products that might have packaging issues or might have passed the sell-by date set internally by the firm. The company has undertaken process mapping that allows it to obtain detailed information on where and when the surplus has been generated. With all this information, the company establishes objectives in order to enhance its food waste management procedures. Multidisciplinary working groups have been created among these departments to meet regularly and focus their efforts on how to reduce losses and better adjust the company's production to the market demand.

Company K is a medium-sized company in the meat sector in Spain. The main reason behind its food surplus generation is exceeding the internal sell-by dates set by the company. Company K has a strict protocol that issues warnings when any product passes the internal sell-by date. In this case, only one department is involved in food waste management; logistics is in charge of deciding whether or not the surplus products should be addressed to donations or if they should be transferred to a waste management company. Returns are rarely accepted, but when this happens, logistics again decides what to do by taking into account the distance from the client. There is no protocol of coordination among other departments and logistics in order to reduce food waste. The limited point of view of the logistics function in that, for example, it does not consider the financial, marketing, and CSR aspects of the organisation, and does not allow the company to understand if the decisions taken about surplus food management are maximising the

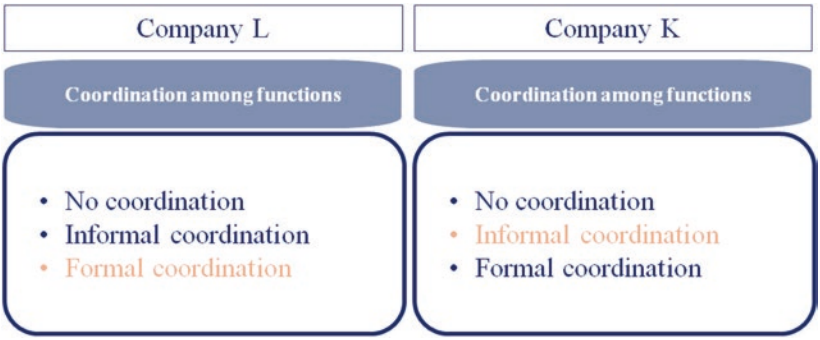

Fig. 5.3 Coordination among functions level for Company L and Company K

benefits or not. At the operative level, instead, there is a huge worker involvement to divert the food surplus generated along the production process to donations, creating a quite informal coordination system (involving emails, phone calls, and personal meetings) between other departments and logistics in order to increase food donations.

The positioning of Company L and Company K in terms of the levels of coordination among their functions can be seen in Fig. 5.3. Company L has a formal coordination system, while Company K adopts informal coordination systems.

5.3.4 Donation Process Configuration

The participation level of the company in its communication with non-profit organisations and the frequency of its donations are the key factors in determining its relationship with non-profit organisations. As explained in Chap. 4, in a structured process, a company contacts food assistance organisations proactively and transfers surplus food on a regular basis depending on the product type, i.e. fresh, ambient, or chilled. Two examples are presented below.

Company J has regularly cooperated with two non-profit organisations for more than 10 years. One of them is a "logistic" food assistance organisation or a food bank, while the other is a "frontline" assistance organisation, i.e. a soup kitchen. The decision over which of these two potential destinations to donate to usually depends on the amount of surplus food generated and on the reception of each non-profit

organisation. The process is initiated by the company in a proactive manner. If a high amount of surplus food is generated, the soup kitchen is unlikely to be able to use all the goods received. The issue here is that there is a risk of avoiding food waste at company level, but then wasting the food at the NPO level since the users at the soup kitchen are fewer compared to those of the larger NPO. Although the decision is made according to quantity, the overall process of donation remains regular for both of the food assistance organisations.

In contrast to Company J, Company H (an Italian producer of dairy products) does not donate regularly to food assistance organisations. When a large amount of unsold products is generated or an NPO makes a request, the company decides whether or not to donate some of its products, at which point each time it organises the entire donation process by contacting the NPO, deciding the time and place of the transfer of food, and preparing the necessary administrative documents. This non-continuous process requires the company to start from the beginning the whole process each time, thus making all these activities costlier and time consuming and preventing efficient implementation.

The positioning of Company J and Company H in terms of their donation process configuration can be seen in Fig. 5.4. Company J manages its donations proactively and periodically while Company H uses a reactive management approach to making occasional donations.

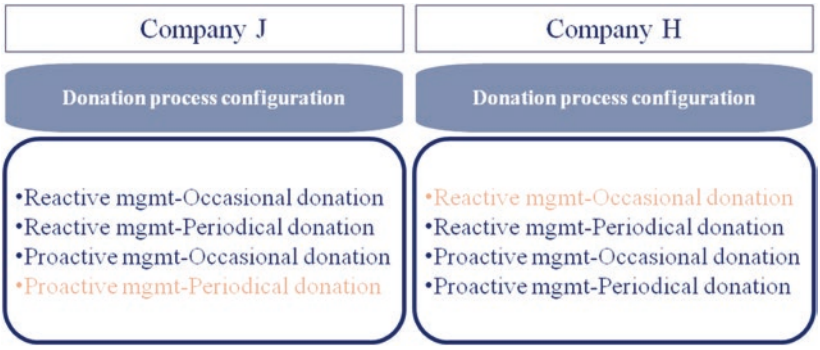

Fig. 5.4 Donation process configuration for Company J and Company H

5.4 Discussion: Manufacturing

The cross-case analysis described in the paper "Reducing food waste in food manufacturing companies" (Garrone et al. 2016) has been performed for each company in relation to all four dimensions of the framework. Three levels are used to categorise the outcome along each dimension (low, medium and high), and this has then been compared to the percentage of surplus food saved for human consumption (Fig. 5.5).

A correlation is evident between the degree of process structuring and the surplus food saved by the company for human consumption; more specifically, when the process is structured, the amount of surplus food prevented from becoming waste is higher. It can therefore be concluded that companies with a structured surplus food management process can recover on average more than 90% of the surplus generated without considering any product differences.

In order to understand the causes of different surplus food donation rates, the barriers perceived by each of the companies have been analysed. Regulation is the main barrier for all the companies, regardless of

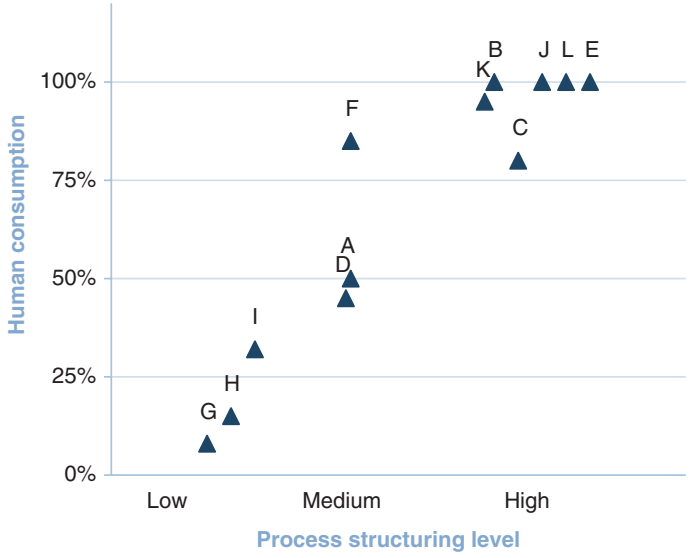

Fig. 5.5 Cross case analysis

their respective levels of process structure. The declaration procedure required to obtain fiscal benefits based on the amount of the donation is complex for the companies operating in Italy and Spain. The bureaucratic documents required by the control agency also require considerable effort on the part of a company's administrative functions in Italy. In addition to this, the strict procedures intended to guarantee hygienic conditions require time for operators to implement and monitor, thus discouraging companies from making donations. Fewer companies revealed concerns about the potential damage to the company brand which the donation of surplus food can create. However, the Italian government has attempted to reduce the perceived risk to image with the approval of the "Good Samaritan Law" in 2003 (for more details of this, see Chaps. 2 and 3 of this book).

5.5 Surplus Food Management: Best Practices in Retail

In this section, the framework created to analyse the food manufacturers described in Chap. 4 was also applied to retailers. The retail stage includes both distribution centres and points of sale (PoS). Distribution centres have similar characteristics with manufacturers in terms of surplus food management, but points of sale have specific features in surplus food management. Therefore, in this section the sole focus will be on points of sale (Table 5.2).

Seven cases, from Italy (4), Spain (2), and France (1), were analysed. The lower number of case studies analysed was due to lower differences

Table 5.2 Database for retail companies

Company ID	*Country*	*Number of PoS*	*Global turnover (mln €)*
M	Italy	1,200	12,700
N	Italy	294	200
O	Italy	1,122	2,500
P	Italy	53	1,000
Q	Spain	350	1,420
R	Spain	1,500	20,160
S	France	10,800	84,000

among the possible processes used to manage products. Examples are given below.

5.5.1 *Measurement Procedures*

The higher complexity which comes with a large product mix, small quantities of different products, and a daily frequency of surplus food generation makes measurement procedures more challenging at the retail stage than the manufacturing one. An example of highly complex measurement procedures is given below (Fig. 5.6).

Company S is a French multinational retailer. In the operational processes of PoS, every morning the products on the retailer's shelves are checked by its employees. Each single product item removed from the shelf is recorded through the use of a barcode reader. Both the product to be disposed of and those to be donated are placed in the same bin and moved to the back of the PoS. Here, the selection process occurs, and the products to be donated are registered. Each month, the NPOs are requested to report the amount they have received in order to verify the correspondence between the two values. All the values which are obtained are then registered in an Excel file and analysed on a weekly basis.

5.5.2 *Organisation of the Process*

Retailers do not have as wide a range of management alternatives open to them as manufacturers do. Store management is more complex due to the high number of products being dealt with and the lower quantity

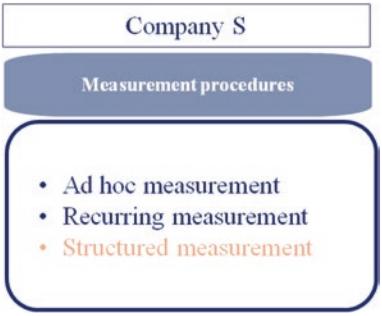

Fig. 5.6 Measurement procedures level for Company S

Fig. 5.7 Organization level for Company N

of surplus generated more frequently. The main reasons for surplus food generation are that products reach their expiry date, and packaging is sometimes damaged, in particular in the case of multipack products. An example of the high level of process organisation is shown below (Fig. 5.7).

Company N belongs to a multinational distribution group and operates in Italy. In the operational processes of PoS, every morning its employees check the expiry dates of products, and the compliance of their packaging both in reference to marketing campaigns and to the integrity of the packs. Those products that do not fit with the required features are withdrawn from the shelves. With regard to expiry dates, the company decided in advance that in order to provide a higher level of service to its customer, it would withdraw products when they reached approximately two shelf life days remaining. All the company's employees know which products can be donated and which cannot. The second category is moved to a compactor for disposal. Products to be donated are stocked in a designated place in the warehouse to be withdrawn the following morning by the NPO. Considering the other two main generation causes, depending on the nature of the problem with the packaging, the product is managed in different ways. If the issue is related to a marketing campaign and the amount of product to be managed is considered large, then products are returned to the distribution centre. Usually, if there are only a few products to be returned, these are donated to NPOs. On the other hand, if the problem is related to damaged packaging, it is checked to verify the quality of the product for donation.

5.5.3 Coordination Among Functions

One of the main differences between manufacturing and retail companies occurs at this dimension. In point of sales, not many functions are involved in the daily recovery process and it is coordinated by the store director; on the other hand, the company's corporate social responsibility function also has an important role to play in setting each store's relationships with non-profit organisations. An example of a high level of coordination is given below (Fig. 5.8).

Company R is a Spanish supermarket chain. Its food supply chain has been designed to prevent any surplus food and food waste with a "just in time" order and delivery strategy. In the distribution process, supermarkets have small local warehouses (in the back of the PoS) to store products with a high rotation rate. The order process is completely automated and occurs daily. Once the order has been placed, the distribution centre prepares it during the night and delivers it in the morning. The surplus food is checked daily by the operators, and the collected surplus food is stocked in a dedicated area and is taken regularly to a non-profit organisation. This process is managed by the PoS manager, and a formal coordination with strict documentation has been designed for operators. The cost of transportation is minimised by collaborating with local non-profit organisations for each supermarket located in one specific area. This collaboration with special certificates allows Company R to obtain tax breaks from their surplus food donations, and their agile process also allows them to provide fresh food like fruit, vegetables, bread, fish, and meat to their beneficiaries that would normally be difficult for a food bank to source.

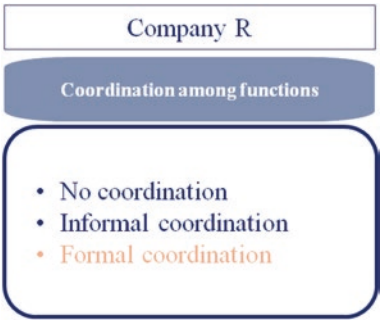

Fig. 5.8 Coordination among functions level for Company R

5.5.4 *Donation Process Configuration*

For retail products, the withdrawal process has to be faster since the products will be closer to their expiration dates. The donation process therefore has to be done almost every day, with lower quantities of products than are involved at the manufacturing stage. Therefore, closer relationships have to be implemented with non-profit organisations. An example of a high level of donation process configuration is given below (Fig. 5.9).

Company M, an Italian retail firm, decided about 10 years ago to donate its surplus food by structuring a partnership with food assistance organisations. First of all, the distance between the NPO and the PoS is considered an important parameter. The NPO should be within a 15-min journey away. Secondly, the capacity of the NPO also has to be coherent with the size of the PoS. If the PoS is large, the capacity of NPO should also be large enough to collect the whole amount of surplus food generated. If the PoS is small, the company prefers contacting small NPOs because of their flexibility. The calendar (in terms of days and hours) of withdrawals is set together with the NPO. At 10 am, after the commercial loading process ends, 3 days per week, the volunteer arrives and receives all the products which are to be donated. Bureaucratic documents are prepared by the retailer's administration, and company operators, and NPO volunteers check them together; once approved, the NPO truck leaves from the PoS.

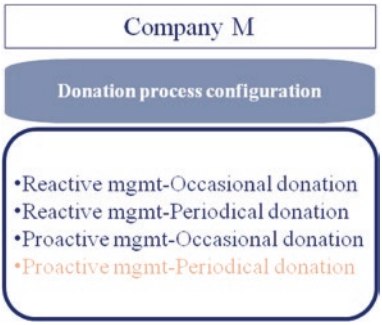

Fig. 5.9 Donation process configuration for Company M

5.6 Discussion: Retail

By using the same method described previously, we now analyse the results obtained from the retailers (Fig. 5.10).

There are fewer destination channels for retailers than those available for manufacturing companies. Recoveries for human consumption channels are limited to donations. For this reason, axis x of the following matrix refers only to donation.

Figure 5.10 also shows the gaps in the donation rate between different levels of the structured process. As the withdrawal process is harder than the manufacturer one, the lack of a well-structured process leads to an almost complete absence of donation.

Company M represents the only outlier among the case studies analysed here. The main reason for its apparently "wrong" positioning is the data used to compute the donation rate by the company, which considers both edible and non-edible food as surplus food. This way, the percentage of food donated seems to be lower than it actually is.

The implementation of donation is more difficult for retail distribution companies because of the characteristics of the surplus food they generate which, firstly, is daily and consists of low amounts of products.

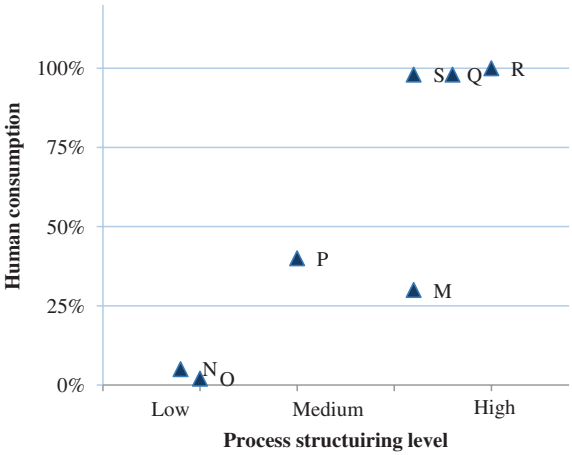

Fig. 5.10 Cross case analysis

This requires both companies and non-profit organisations to act more quickly in the conferral process. As a consequence, activities to implement donation have to be carried out more frequently, and the whole process becomes more expensive than the manufacturing equivalent. In a departure from the manufacturing stage, NPO capacity is considered as a real barrier, in particular for Italian companies. Although the Good Samaritan Law does not exist in Spain, the Spanish companies interviewed here revealed a greater percentage of surplus food donations. This can be explained by the effects of the difficult situation of the Spanish economy and society in recent years. In order to help people, companies are implementing ways to act even if they are not legally protected by the law. This is also possible because of the increasing number of NPOs present in the country (for more details, see Part 3 of this book).

5.7 Surplus Food Management: Best Practices in Food Service

To verify that the framework can also be applied to the food service stage, four companies (3 Italian cases and 1 Spanish case) were analysed (Table 5.3).

In the food service stage, the donation process is widespread, but the service delivery procedures do not allow the determining both of the value of the surplus food generated and the donated percentage. In contrast to the manufacturing and retail stages, in fact, as there are no fiscal advantages to the surplus food donated, most companies do not record the amount of food given to food assistance organisations. An approximation can however be obtained by the reports that NPOs generally create to track surplus food donation.

Table 5.3 Database for food service providers

Company ID	*Country*	*Domestic turnover (mln €)*
T	Italy	0.8
U	Italy	420
v	Italy	88
W	Spain	5.7

A necessary condition for donation at this stage is the presence of a charity or a food bank near the structure. The non-profit organisation is responsible for the daily process of collection and transportation of surplus food. For this reason, the donation cannot be implemented without a good collaboration between the donating company and the NPO.

The management of surplus food concerning hot meals is more complex, and the process of donation can only be carried out in facilities where certain conditions are verified:

- There is a large amount of surplus needing to be managed: if the amount of surplus is low, collection by the NPO would be an extremely costly process;
- A blast chiller needs to be present at the production site;
- Special containers for handling the recovered food must be available.

The use of the blast chiller is required by European regulations and by health and safety standards (HACCP; Regulation (EC) No. 852/2004 and No. 853/2004 of the European Parliament of 29 April 2004). Blast chilling is a process of cooling food that lasts around 90 min. By reducing its temperature, cooked food becomes safe for storage and later consumption. The purchasing cost of a single blast chiller is between 10,000 and 40,000 €, and the operation of the chiller is energy-intensive (approximately 10 kWh). After treatment, the food products must be packaged in suitable boxes and transported by appropriate means. Generally speaking, big cooking sites have all the required equipment to implement donation, while small ones often do not.

It can be concluded that it is easier to apply the framework presented in Chap. 4 to food service, due to the "on-off" nature of the process, so when the company decides to donate the process has to be well structured and regular.

5.8 In-depth Cases

5.8.1 Manufacturing

Company C3 is a multinational one, selling its products all over the world. The product range mainly consists of ambient products that can be stored at room temperature. The company has always been proactive

in proposing social projects to help those in need, such as initiatives that help children or people in difficulty. However, a big change in the donation trend in this case was due to two factors.

The first factor affecting the donation trend is related to the Good Samaritan Law approved in Italy in 2003, which frees companies from liabilities with regard to the products they have donated once they are withdrawn by non-profit organisations. Companies are not legally responsible for the management of their surplus food once it has been collected.

The second factor is related to NPOs' reliability. They realised the importance of being considered well organised, serious, and reliable by the companies with whom they deal. More and more frequently, NPOs organise "open days" at their warehouses to show companies how they work and how they manage the surplus food they receive. In fact, Company C3 participated in these events and started to collaborate with NPOs.

The main cause of surplus food generation for Company C3 is passing the internal sell-by date (90%), as seen in Fig. 5.11, followed by product returns at delivery (6%), unsold product returns (2%), and packaging failures (2%).

Company C3's aim is to recover as much surplus food as possible. For this reason, once all the generation causes were analysed, its managers focused on processes and realised that spending time in surplus food management in advance could enhance the benefits and eventually increase the percentage of food recovered.

All the surplus food generated in local warehouses returns to the central warehouse. Products are checked by the quality control function to ascertain whether or not the product is edible and its packaging fits

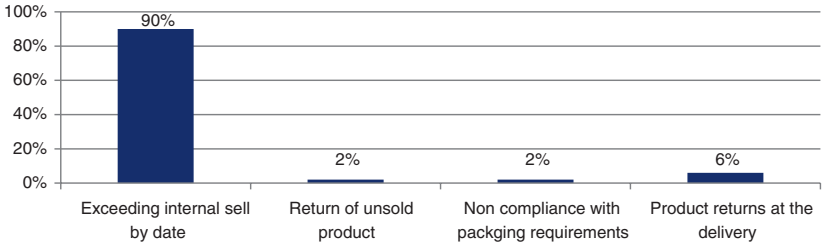

Fig. 5.11 Main reasons of surplus food generation in Company C3

market requirements. If possible, the products are sold in the primary markets. Otherwise, the options of secondary markets and donation are considered.

In order to help managers in their decision-making on surplus food management, top management set the destination channels at the beginning of each year through budgeting. All the involved functions together decide the amount, expressed as a monetary value, to be directed to donation. This means that the company decides the value to be donated to food assistance organisations in advance. This is an important decision, because even if the company could sell all its surplus food to profitable destinations, it renounces some potential profits in favour of its willingness to donate.

Also, the amount of surplus food generated plays an important role in the decision-making process. Generally, when the surplus food generated is a whole batch of goods, it is sold to secondary markets, but when the value is lower than 5000 €, the surplus food is generally donated to NPOs. The company has formalised its surplus food management process in case its products are at risk of passing their internal sell-by dates (Fig. 5.12). Products in stock are monitored constantly. Each week, the supply chain manager and the planning manager meet to analyse both their forecasts and the current stocks. When there is an unexpected mismatch between those values, the finance and marketing functions are also asked to participate to the meeting to decide how to push sales in the primary markets. Based on the budget for discounts and promotions,

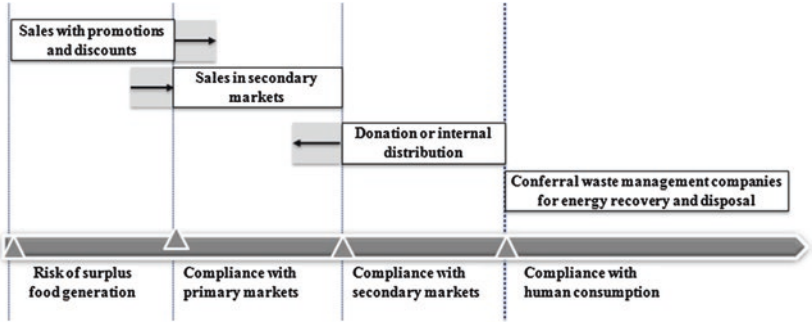

Fig. 5.12 Surplus food management organization of the process in Company C3

surplus food is sold to primary channels. After this process, the marketing function monitors if any surplus food remains; if so, it is proposed to sell it in secondary markets which accept product batches with shorter lifetimes than regular retailers, at a lower price than usual.

As Company C3's products are in demand in the market, 99% of its products could be sold to secondary markets. This way, only a few products would be donated to charities, but as was mentioned before, the company sets an annual budget to donate surplus food. Thanks to this internal choice, 7% of the surplus food is donated to charities. The waste is managed by a waste management company which eventually recovers energy.

The company works with many non-profit organisations; its cooperation with some of them has lasted for more than 15 years. The process is well defined: once the company's internal decision makers decide to donate some products, these are stocked in the warehouse in a separate "donation zone". About once a month, NPOs visit the warehouse to collect all the surplus food. Owing to the budget, donations are constant over time but not very frequent.

The positioning of Company C3 is given in Fig. 5.13. Processes are organised for each cause of generation; all indicators are constantly monitored, and budgeting efforts allow the company to manage its donations in an efficient way. All the functions are involved in periodical meetings, and they are frequently updated about the internal situation.

5.8.2 Retail

Company Q is a Spanish supermarket chain that is mainly present in three regions, with over 300 stores and three main distribution centres in the country. The company represents a good example of how the Spanish retail industry has fought surplus food generation in recent years. While it was common for Company Q to work with the Spanish food bank network in the past few years, these collaborations were limited to donations from the company's warehouses, leaving all PoS food surpluses out. As with any other private company, Q's actions have always been related to profit margin generation. Up until 2011, surplus food prevention or donation had always been perceived as an extra cost in logistics and was therefore unattractive to the company.

However, the global economic crisis from 2008 onwards brought great changes to Spanish society. The retail industry's perspective on

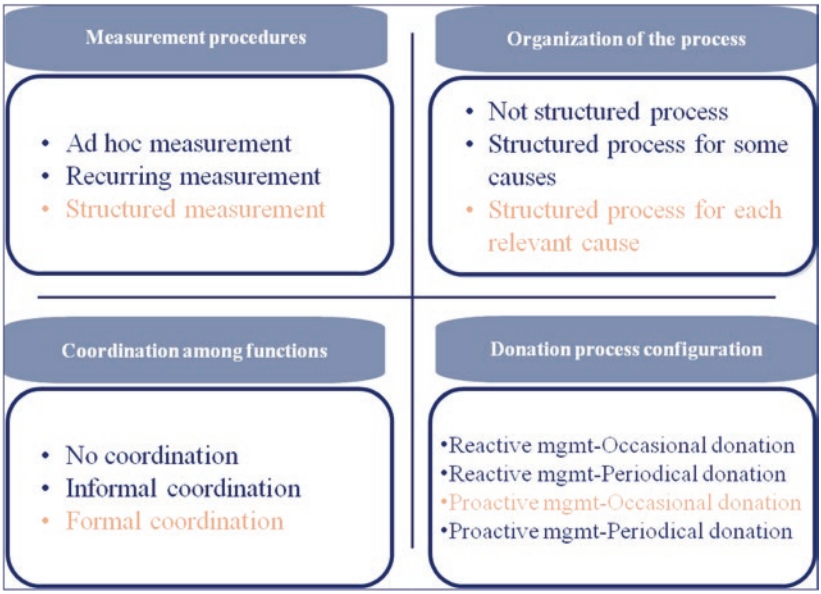

Fig. 5.13 Surplus food management in Company C3

surplus food management accordingly also changed. Before the crisis, most surplus food was generated in the form of new products or fresh products that did not meet the company's sale standards. The crisis changed the origin of surplus food, as fewer new products entered the market and surplus food decreased in the end, although forecasting sales also became harder due to the greater uncertainties faced in the economy. Spanish citizens cut other expenses before saving on food, but cheaper products became more and more attractive with a consequent change in their purchasing habits. The crisis brought an additional problem for retailers which was not present in manufacturing companies, which is that all the leftover food in stores was put in containers outside to be picked up by waste management companies. People started gathering at supermarket entrances, knowing that these "leftovers" would be available for free. After several months, this new trend started attracting complaints from neighbours because on most occasions, the area where the sorting of food took place became dirty, noisy or dangerous due to people in need fighting over food. The tension became apparent when

the media picked up on these new practices, making a response necessary. Public authorities, non-profit organisations and private companies started working on different projects to improve the situation, mostly at the municipal level.

In order to prevent surplus food from being generated, Company Q improved its internal procedures and enhanced its orders and distribution efficiency at the PoS level. In purchasing, the company decentralised the supply of local products by sending them directly to PoS, instead of transporting them to distribution centres to be distributed later. In logistics, PoS started using automated orders based on historical data to optimise product availability while preventing human errors. Other initiatives were related to product preservation in stores; for example, new refrigerated shelves with doors helped cooling products to last longer. However, some levels of food surplus were not preventable. Therefore, Company Q focused on donation as an optimal solution. While historically some donations had been made, the existing barriers made them costly and discouraged the company from making them more frequently. The company therefore started focusing on the existing barriers to donation.

The prior conditions to implementing donations were that the transportation costs had to be minimal, while reputation protection had to be ensured without increasing company costs. In order to achieve both objectives, Company Q began collaborating with provincial food banks, i.e. quite large food assistance organisations. These food banks did not have the capacity to transport and distribute food, but their main advantage was that they worked with many smaller NPOs all over the territory and could ensure certain quality standards among the non-profit organisations receiving surplus food, thus protecting the company from reputational risk.

In 2009, with these objectives, Company Q started to collaborate with a food bank network. The programme aimed at enhancing surplus food recovery directly from stores. Each individual store would be working in collaboration with local non-profit organisations that had previously been authorised by the provincial food bank. Food surplus would be picked up according to the non-profit organisation capacity and needs.

After analysing a pilot test carried out in 2009, it was determined that the key to the success of the programme was the physical proximity between each store's management and local non-profit organisations. Based on this experience, the programme was disseminated to all

the company's fully owned stores (franchise stores were not included). Another key point of the programme was the use Company Q made of publicity. The company decided that it would be appropriate to inform its customers of its solidarity towards people in need through food donations. Today, in order to simplify the concept of donated food, the company declares the number of equivalent meals donated each month (with a food amount per meal equal to 250 g of food). This advertisement helps the company to prevent any negative repercussions from arising in relation to donations, and to improve its corporate image.

Operatively speaking, the procedure that is now used by Company Q-owned stores in association with local non-profit organisations can be described as follows. The surplus food generated daily in each PoS is sorted out by the staff and made ready to be picked up by non-profit organisations in the area. These NPOs have specific schedules with regard to what day and time the pickup has to be carried out. At the pickup, the company creates a delivery note for the non-profit organisation, keeping a copy for itself and registering the amount in its internal software. The non-profit organisation is in charge of delivering the food to their final beneficiaries and keeping track of all the donations made. This information can be requested by the provincial food bank for control purposes.

Twice a year, Company Q communicates to the provincial food bank the amount of food donated by its PoS located in the area and the correspondent monetary value. The food bank controls the information and then certifies these donations and their economic value. At the end of the year, Company Q uses this certification to obtain tax benefits, which on donations in Spain are equal to 35% of the economic value of the donated food.

Structured daily measurement, sound organisation of the processes, formal coordination by means of strict documentation, and proactive relationships with NPOs can be considered as the key success factors of the company in surplus food management (Fig. 5.14).

The programme is considered a success from both the company's and the food banks' perspectives; in the last campaign, the company was able to reach 9.5 million meals, increasing donations every year. However, according to Company Q, some improvements are still possible, such as solving volunteers' seasonality issues. Food surplus and social needs are constant throughout the year, but volunteers' availability tends to

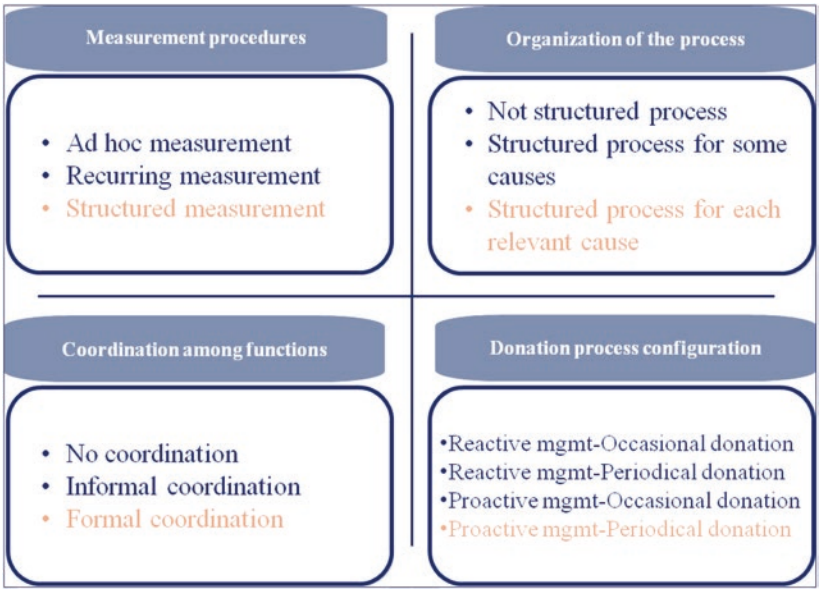

Fig. 5.14 Surplus food management in Company Q

be linked to the school year. Finally, for Spanish companies, VAT is also considered to be a possible area for improvement.

5.9 Conclusion

This chapter has discussed the main practices used in surplus food management in the manufacturing, retail, and service stages of food production and supply. The analysis was carried out using the framework presented in Chap. 4.

No relevant differences were found among the different countries examined in terms of surplus food management processes. However, the cross-case analysis highlighted that different approaches were used by different supply chain actors, i.e. manufacturers, retailers and food service firms. The main reasons for these different approaches are linked to the characteristics of the products and to the number of destination alternatives which are feasible at each stage.

The cross-case analysis demonstrated the existence of a link between the degree to which companies adopt structured processes to manage surplus food and waste reduction, in that those companies which are able to build up a well-organised process recover a higher amount of surplus food.

Building up structured management processes means, first of all, an organisation being aware that surplus food is generated through its own processes. In other words, the company should measure the amount of surplus food it generates, periodically and in a structured way. At the same time, its decision-making systems should be organised to take into account all relevant causes and be formally coordinated. Finally, partnerships with non-profit organisations are necessary to build a formal and regular donation process, and to increase the amount of surplus food which is saved for human consumption.

Future research should be directed to the generalisation of this framework by taking into account even more product differences and a larger number of countries. A robust and comprehensive validation process will increase the value added and spread the usage of this model in facilitating improvements in companies.

Reference

Garrone, P., Melacini, M., Perego, A., & Sert, S. (2016). Reducing food waste in food manufacturing companies. *Journal of Cleaner Production, 137,* 1076–1085.

PART III

The Non-profit Sector

CHAPTER 6

A Model for Analysing Non-profit Organisations in the Food Recovery, Management and Redistribution Chain

Valentina Bramanti, Alessia Coeli, Laura Ferri, Giorgio Fiorentini, and Elisa Ricciuti

Abstract The chapter analyses the food recovery, management and redistribution system from the viewpoint of food charities, and it presents a model to analyse the constraints faced by NPOs as well as the enablers which help them to manage surplus food more efficiently. The model is built combining the literature on both non-profit organisations

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and food recovery management with the empirical evidence from 37 cases of NPOs across four European countries (France, Germany, Italy, and Spain). For each dimension of the model, the cross-case analysis carried out here allowed to identify strengths and weaknesses of the NPOs along the three stages of the food recovery process: collection, management and distribution.

Keywords Intellectual capital · Relational capital · Structural capital Human capital · Non-profit organisations

6.1 Introduction

Food insecurity has been defined as the restricted or uncertain availability of nutritionally adequate and safe food, determined both by limited food production and supply, and by limited accessibility at the household level (Borch and Kjærnes 2016). It is therefore a problem that needs to be addressed at various levels and by different social actors, as it is generated at different stages of the food supply chain. As we have seen in previous chapters, although companies have the economic objective of minimising overproduction in order to make their processes more efficient, the generation of food surplus is unavoidable (Sert et al. 2014), and companies are also increasingly committed to identifying opportunities to extend the life of edible products, in order to reduce the environmental and social impacts of disposal. On the other hand, national and international institutions have introduced policies and regulations which aim to facilitate the redistribution of food to people in need, so that they may generate environmental, social and economic benefits (Midgley 2014). Finally, NPOs have developed initiatives and programmes to provide food assistance to vulnerable people through the redistribution of food surplus (Warshawsky 2010). In this sense, they play an important role within the food security sector, as they represent the connection between donors and the final beneficiaries of surplus food. Thus, they operate for improving the level of accessibility to food, which has often been indicated as the major cause of hunger and poverty. In so doing, they are precious partners for governments and public institutions, as their work fills gaps in the welfare systems.

Although the importance of the role played by NPOs has been widely acknowledged by national and international institutions, there has been a

dearth of studies exploring the characteristics of their interventions and of the food redistribution system. Filling this gap would provide interesting insights to improve the present redistribution model, which is often criticised because of its perceived inefficient operations and narrow outreach (Tarasuk and Eakin 2005). In order to contribute to the advancement of knowledge in this subject field, this chapter proposes a picture of the food recovery, management and redistribution system from the perspective of food charities, and a model with which to analyse the constraints faced, and the enablers which help NPOs to manage surplus food more efficiently.

By conducting an exploratory study among different types of NPOs located in four European regions, the model highlights the importance for NPOs to create intellectual capital. Intellectual capital has been designated by the extant literature as the sum of knowledge which organisations utilise in order to build competitive advantage (Subramaniam and Youndt 2005), and it depends on three dimensions: relational, structural and human capital (Bontis 1998; Roos et al. 1997; Stewart 1997). For each dimension, the cross-case analysis carried out here allowed strengths and weaknesses to be identified along the three stages of the food recovery process: collection, management and distribution.

This chapter is organised as follows: Sects. 6.2, 6.3 and 6.4 review the current literature concerning the role and mission of food charities, their main kinds and features, and the barriers and enablers that affect their daily activities. Section 6.5 explains the objective of the qualitative analysis by introducing the model presented in Sect. 6.8. Sections 6.6 and 6.7 set out the research methodology and the data collection process, respectively.

6.2 The Appearance on the Scene of Non-profit Organisations (NPOs) within the Surplus Foodsurplus Food Recovery, Management and Redistribution Industry

Since the 1960s, the food security sector in wealthy societies has been characterised by the presence of non-profit organisations working in cooperation with governments (Tarasuk and Eakin 2005).

The first type of food charities which filled gaps in government action was those whose assistance focused on income support programmes,

without being directly involved in domestic food assistance (Tarasuk and Eakin 2005). Originally, they were conceived as short-term relief programmes to relieve a temporary emergency situation (Riches 2011). Accordingly, their mission was not to solve the hunger problem linked to economic and social changes, but to tackle it through a sustainable and environmentally friendly model (Riches 2011).

The growing importance of charities in food recovery, management and redistribution over the years has been driven by two main factors:

1. Governmental interventions; and
2. The shift in state–voluntary sector relations.

On the one hand, the growth of food charities was strongly supported by governments through various economic and normative incentives (Loopstra and Tarasuk 2012). For example, between the 1970s and the 1990s, the USA introduced some federal tax incentives in order to promote corporate food donations; among these, the most important were the Tax Reform Act in 1976 and the Good Samaritan Food Donation Act in 1996, which diminished donors' responsibility for the health and safety of products given to food charities (Tarasuk and Eakin 2005; Warshawsky 2010). Moreover, many governments started to provide grants and food donations to food charities (Loopstra and Tarasuk 2012).[1]

On the other hand, the food security sector has been shaped by a general tendency of states' central governments to devolve political management and social service provision to local administrations and non-profit organisations, in order to cut public expenses (Brenner 2004; Warshawsky 2010). As a direct consequence, the role of food charities has changed from offering acute relief to food-insecure populations in the 1960s, to providing long-term food provisions throughout the 1990s and into the new millennium (Trudeau 2008). This change has pushed food charities, and food banks in particular, to become "institutionalised" leading actors within the food security sector. From initial beginnings in the USA and Canada, they spread across Europe, creating strong national and international movements supported by the media and partnerships with national food companies (Riches 2002). Fifty years on from the foundation of the first food bank in America, academics and practitioners have started to take stock of the contribution of food charities to hunger relief, by examining the underlying strengths and weaknesses of the food security sector. Food charities can generate important benefits for corporate donors

(Tarasuk and Eakin 2005; Lorenz 2012); for example, by donating surplus food, companies can avoid paying landfill tipping fees and other costs linked to the alternative disposition of products that for different reasons (such as manufacturing errors, damaged packaging and past expiry dates) can no longer be sold at a profit (Tarasuk and Eakin 2005). Moreover, donations help companies to build a positive corporate image of good corporate citizenship (DeLind 1994; Tarasuk and Eakin 2005; Rock et al. 2009; Lorenz 2012).

At the same time, many new concerns have emerged. Some of these are related to the food supply quantity and quality, which can be unstable and inadequate to meet users' needs, but perhaps the most important is related to the political debate around hunger and poverty and the commitment of the state. The risk underlined by different authors is that the state neglects its obligations by legitimising a welfare system where an ongoing food emergency is entirely left in the hands of food charities to manage (Poppendieck 1998; Riches 2011). Those authors recognise the importance of addressing hunger problems not only from a charity perspective but also with a focus on social justice; indeed, the strong associations between unemployment, financial exclusion, social exclusion and food insecurity are widely accepted (Lightman et al. 2008).

Over time, practitioners, policy makers and the academic community have recognised the importance of addressing hunger needs in a more comprehensive and stable way than simply acting on the contingent food emergency. Hence, from a focus on the emergency situation related to food scarcity, the food security system has evolved to include other aspects such as dignity, nutrition, cost, environmental sustainability, and the social justice of the food production and supply system (Wakefield et al. 2012). As a consequence, food charities have started to experiment with new solutions by including complementary goals to their original mission of providing surplus food.

The next paragraph provides a picture of the main existing food charities types and highlights the features and goals of each of them.

6.3 The Different Types of NPOs Involved in Surplus Food Recovery and Distribution

Drawing on the literature, it is possible to distinguish three main categories of food assistance charities:

1. Organisations that provide food and grocery products for home preparation and consumption, such as food banks, social supermarkets and food pantries;
2. Organisations that serve meals for on-site consumption, which include soup kitchens, social restaurants and social coffee shops;
3. Organisations that provide a vast array of integrated activities (e.g. workshops, medical help and employment programmes), represented by community food centres.

Below, each type of organisation is described in more detail.

Food Banks

Food banks are charitable organisations that take inventory and store products from a warehouse and distribute them to people in need or to charitable human service agencies (e.g. food pantries and soup kitchens), which in turn provide food to people in need (Echevarria et al. 2011; Schneider 2013). Therefore, they can act as intermediate agents connecting donors and beneficiaries. Food banks are often affiliated to national and international networks for knowledge sharing and capacity-building (Gentilini 2013; Schneider 2013). For example, Feeding America is a national network of more than 200 food banks operating in the USA, the District of Columbia and Puerto Rico (Schneider 2013). In Europe, the European Federation of Food Banks was established in 1986 and brings together 256 food banks in 21 European countries (Schneider 2013; FEBA).[2] In 2006, The Global Food Banking Network began operations and currently supports existing and developing food banks and national food bank networks in more than 30 countries (Lorenz 2012; The Global Food Banking Network).[3]

Social Supermarkets

Social supermarkets (SSMs) are non-profit organisations which are similar to grocery stores, but with a social purpose. Besides food poverty, they often pursue various socially oriented goals such as supporting socially disadvantaged groups and the long-term unemployed, preventing food waste and sponsoring charitable activities (Holweg et al. 2010; Holweg and Lienbacher 2011). SSMs sell food and consumer products at low, symbolic prices (approximately from 30 to 70% off regular supermarket prices) to people in or at risk of poverty (Holweg et al. 2010; Holweg and Lienbacher 2011). They usually sell products which are still edible, but are no longer of merchantable or saleable quality, supplied free of

charge by manufacturers and conventional retailers for different reasons such as minor quality deficiencies, surplus production, incorrect labelling, damaged packaging or at close proximity to the expiration date (Holweg et al. 2010; Holweg and Lienbacher 2011). These services are usually provided by volunteers and the employees of employment programmes with the purpose of reintegrating long-term unemployed people back into wider society (Holweg et al. 2010; Holweg and Lienbacher 2011). Access to a social supermarket is limited to people in or at risk of poverty and is controlled by the use of identification cards (Holweg et al. 2010).

Food Pantries

Food pantries are charitable distribution agencies that typically provide households with bags of food and grocery products for home preparation and consumption (Mosley and Tiehen 2004; Echevarria et al. 2011; Gentilini 2013; Schneider 2013). These organisations receive food from food banks or other donors, are usually located in local residential neighbourhoods and rely on the support of local communities (Daponte 2000; Mosley and Tiehen 2004).

Soup Kitchens

Soup kitchens are local organisations serving free hot meals for on-site consumption in identified locations (Mosley and Tiehen 2004; Gentilini 2013). Over the course of the time, they have become not only distributors of food to people in need, but also a meeting point for social interaction among those who usually experience social exclusion and isolation from the rest of society (Weir 2007).

Social Restaurants and Social Coffee Shops

Social restaurants and social coffee shops provide cheap meals and drinks to people at risk of financial and social exclusion. Like soup kitchens, they also act as a place for meeting people and finding new friends; thus, they address a need for socialisation. The main difference when compared to soup kitchens is that the meals they offer are not provided free of charge in order to respect the dignity of the customers and to avoid fostering a culture of dependency (Mulquin et al. 2000; Schneider 2013).

The Community Food Centre

Community food centres (CFCs) are neighbourhood-based physical spaces that use food and activities related to promoting the health

of individuals and communities and to developing community-based strategies to address challenges within the food system (Levkoe and Wakefield 2011). Levkoe and Wakefield (2011) describe the case study of *The Stop Community Food Centre (The Stop CFC)* in Toronto, Canada. This non-profit organisation works to develop a comprehensive approach to address multiple challenges within the food system (Levkoe and Wakefield 2011). *The Stop CFC* evolved from a traditional food bank into a multiservice CFC, driven by social and environmental goals. It maintains its emergency food programmes, but has complemented them with capacity-building, educational and skills training programmes that include community kitchens, community gardens and educational workshops emphasising food-related skills and the reduction of social isolation. *The Stop CFC* also promotes civic engagement programmes that engage its users in advocacy and community development initiatives (Levkoe and Wakefield 2011).

The next paragraph explains the main drivers and difficulties that affect the daily activities of food charities, by presenting a picture of the complex issues that the managers and volunteers of food charities face in order to fulfil their NPO's mission.

6.4 Barriers and Enablers to the Effective Recovery of Food Surplus by NPOs

Previous studies have explored the factors which drive or hinder the capability of food charities to redistribute food surplus effectively and to respond effectively to the needs of disadvantaged people. As discussed in the following paragraphs, the barriers and enablers at play can be grouped into those which are internal and external to the organisation, respectively.

Internal barriers are those strictly related to an organisation's structure and assets, and they can be addressed (or enhanced) by acting on the governance and operations of the NPOs. External barriers arise from the contexts in which non-profit organisations operate and cannot be directly controlled by the organisations themselves.

Internal Barriers

Drawing on the literature, it is possible to identify four main categories of internal barriers:

1. Organisational factors;
2. Communication activities;
3. The instability of the food supply in terms of temporal continuity and the variety of products received; and
4. Logistic infrastructure and processes.

The first category includes elements such as eligibility criteria, the screening process of users, opening times and location. As pointed out by Schneider (2013), a risk of stigmatisation occurs whenever the access to food distribution programmes is restricted through cards or other control mechanisms which aim at identifying eligible needy people. Although such barriers to entry are often necessary to avoid misuse by people who can afford to buy food at market prices, eligibility criteria and screening processes may prevent some people who are in genuine need to ask for food support because they wish to avoid being stigmatised as poor or needy. Stigmatisation is thus a major barrier to food redistribution programmes, as it limits the role of food charities as facilitators of accessibility.

Another barrier within the organisational dimension is represented by the availability and outreach of food charities with regard to their locations. Extant studies have observed that restricted opening times (usually when people are at work), distance from public transportation, a difficult-to-reach location, as well as long queues and waiting times can all discourage or prevent beneficiaries from using food assistance programmes (Loopstra and Tarasuk 2012).

Moving on to the second category, a lack of information may also represent a barrier that hampers an organisation's capability to reach needy people. According to Loopstra and Tarasuk (2012), such people seeking food assistance are often unable to access charitable food programmes as they do not have the necessary information to do so, or do not even know about their existence.

The third category consists of the food supply instability inherent in a system reliant on charitable donations (Tarasuk and Eakin 2003). When foodstuff donations are not made through a structured and systematic process, the availability of food for distribution is limited and highly variable, and the problem of supply has implications for the food that can be given to beneficiaries (Riches 2002; Tarasuk and Eakin 2003). Therefore, NPOs involved in food recovery activities must somehow

establish a certain stability in product donations in order to satisfy the demand for assistance and to meet the needs of their beneficiaries.

The fourth category is related to logistic constraints, due to the need to guarantee food safety (Garrone et al. 2014). This not only concerns the ability of NPOs to collect and manage surplus food according to health and safety standards, but also their ability to appropriately handle donated products and to the availability of adequate logistic infrastructures (e.g. refrigerators, insulated vehicles) and cold chain management processes (Garrone et al. 2014).

External Barriers

External barriers mostly concern the norms and regulations governing food donations. Food safety and complex hygiene regulations hinder corporate donation (Schneider 2013) as companies feel that hygiene cannot be guaranteed once food has left their premises, so this method of food waste prevention is often underused because of concerns about possible legal issues (Schneider 2013). The legal requirements also might affect the quantity of excess food recovered for human consumption. For example, as has been discussed earlier in the book, some countries prohibit companies from offering food products once they have reached their "best before" or "use by" dates, but other countries (e.g. Austria and Germany) allow products to be donated once they have reached the "best before" date (Schneider 2013). Fiscal and economic instruments can also discourage food donation, often making the disposal of food waste more economically convenient than donation.[4]

Internal Enablers

Internal enablers are the key elements that facilitate access to food programmes and the overall effectiveness of charitable organisations. Human resources play a pivotal role in determining the quality of the services and assistance provided by food charity organisations. Food charities usually rely heavily on volunteers, and the literature on the management of NPOs suggests the importance of finding an adequate balance between the presence of volunteers who do the everyday work and the paid staff who run the NPO's strategy and coordinate the various activities (Eisinger 2002; Tarasuk and Eakin 2005).

A survey conducted by Eisinger (2002) among food assistance programmes has shown that those with a higher number of paid staff are better able to acquire food donations, and that the presence of paid

workers is a sign of high organisational effectiveness. However, it has also been found that volunteers play a crucial role for NPOs by doing the labour-intensive work of classifying and distributing donated products, and often by representing the direct link between the organisation and its users (Tarasuk and Eakin 2005).

External Enablers
The main external factors that facilitate the operation of NPOs are:

1. Government policies;
2. Donor benefits and incentives; and
3. The presence of third-party support.

As discussed in Chap. 1, both supranational and national policies play pivotal roles in creating a conducive environment for charitable organisations, for example by ensuring supplies and promoting donations. An example of this is the EU's "Food Distribution programme for the Most Deprived Persons of the Community (MDP)", which has been running since 1987, when a set of rules was adopted for releasing public intervention stocks of agricultural products to Member States in order for them to be used as food aid for the most deprived persons in those communities. Over the years, as discussed in Chap. 2, supranational policy has become an important source of provision for non-profit organisations.

At the national level, norms and regulations can be seen both as external barriers and external drivers. They can act as drivers to the donations of food and grocery products by companies and private donors to food charity and social welfare organisations. In the US, the "Bill Emerson Good Samaritan Food Donation Act", signed in 1996, protects donors from liability when they donate to a non-profit organisation, and from civil and criminal liability if a product that was donated in good faith later causes harm to a beneficiary (Schneider 2013). A similar law known as "La Legge del Buon Samaritano" was approved in Italy in 2003 and encourages donations by reducing donors' responsibility for the health and safety of products given to charitable organisations (Tarasuk and Eakin 2005). There is controversy about such specific legislation for the donations of food, as opponents of this approach argue that the same legal requirements should apply to anyone who markets food, regardless of who the beneficiary might be; concerns have also been expressed about the creation of a two-tier society in which second-class products go to second-class people (Schneider 2013).[5]

The second element listed previously refers to donor benefits. The relationship between firms and food charities might be construed as a win-win situation, because work focusing on the recovery of unsalable foods both helps to counteract food poverty and decreases the amount of waste generation, sparing corporations from having to meet disposal costs and landfill tipping fees (Tarasuk and Eakin 2005; Lorenz 2012). Moreover, companies have the opportunity to enhance their social image and to present themselves as socially responsible (Tarasuk and Eakin 2005; Lorenz 2012).

Finally, the presence of third-party support can provide considerable assistance both to corporate donors and charities (WRAP 2014). From a company perspective, third-party support gives confidence that the surplus food which is donated will be safely handled. For charities, the involvement of a third actor in collection activities helps in building relationships with corporate donors and to expand the sources of food collection (WRAP 2014).

The next section introduces the empirical study which was conducted in order to provide a framework of analysis to help practitioners to understand the leverages which can be used to efficiently run each stage of the food recovery process.

6.5 The Objective of the Analysis

The aim of the present analysis was to find a model which can help NPOs to build a sustainable food recovery, management and distribution system in terms of cost efficiency, social goals and environmental impact. The food recovery, management and redistribution processes are made up of different players with various interests that need to be combined. On the one hand, NPOs are primarily interested in the achievement of their social mission by generating a positive impact on the life conditions of their beneficiaries, while on the other hand, food donors (which are mainly for-profit organisations) need to respect their economic goals and reduce the surplus food they generate to the minimum possible level. Therefore, a good model for the management of surplus food needs to create shared value for all the stakeholders involved. Hence, the present analysis focuses on the key internal and external resources that NPOs can leverage in order to match these different goals. Starting with a review of the existing literature on NPOs and the field of recovery and management of surplus food, and from the empirical evidence provided by 37

case studies across four European countries,[6] the analysis identifies three main constructs—relational, structural and human capital—that include the variables considered as the main strengths and weaknesses in the management of surplus food.

6.6 Research Method

Since the prior research on food surplus in NPOs remains scarce, the present research design follows an exploratory approach (Yin 2003), which is useful in broadening the existing findings and deepening understanding of how an NPO can run the process efficiently.

A qualitative and primary data set of 33 case studies in Lombardy, Italy, was selected. Of the initial NPOs identified as potential participants, twenty agreed to participate in the study in Lombardy. The same methodology was applied to select case studies in France, Germany and Spain. A primary data set of six NPOs was selected in France, of which five agreed to participate. In Germany, nineteen NPOs were selected and five agreed to participate. In Spain, all the seven selected NPOs agreed to be interviewed.

Data collection began in May 2014 and ended in April 2015. Following Yin's (2009, 1984) and Eisenhardt's (1989) suggestions on exploratory–qualitative studies, which include triangulation as a valid research strategy, a multi-method design was adopted for collecting data in the present study using three sources: participant observation, in-depth interviews and archival records. As far as participant observation is concerned, the researchers visited the organisational sites in order to gain a better comprehension of the organisational processes. Data were also collected through in-depth interviews based on semi-structured guidelines lasting on average between 60 and 120 min. In each NPO, the interviews were performed with either the president of the organisation or the person in charge of its operations. Each interview involved at least two researchers to ensure reliability (Eisenhardt 1989). In addition, each interviewer took notes in order to collect additional data regarding impressions and perceptions. The interviews were designed to capture how non-profit organisations manage the process of food collection and distribution, underlining the key resources according to the different phases of the process and the main barriers and enablers. The management of food surplus was divided into three phases: collection, management and distribution. The third source of information was the analysis

of intra-organisational documents such as sustainability reports, research and publications.

The interviews were analysed in accordance with the approach outlined by Strauss and Corbin (1990, 1998), who suggest that outcomes should be clustered into core categories, and should take into account previous research in the process of defining them. Quotes were therefore coded in a detailed in-depth and subdivided matrix spreadsheet. The data analysis included three main steps: within analysis, national cross-case analysis and comparative cross-case analysis. The first step in the data analysis required coding the interviews by going back and forth among the cases to evaluate the answers given, and to identify the most relevant factors in the analysis, also comparing these with what had already been discussed in the literature. To avoid any possible bias resulting from the coding, the manuscripts were not compared until the process was completed. The cross-case analysis aimed to identify the commonalities or differences across the different NPOs for each region considered. Once this process was completed, the researchers compared the results across the different countries in order to identify common and distinctive elements. The final list of variables in the model was therefore based on those found to be recurring across the different cases.

6.7 The Model Resulting from the Analysis

The NPOs included in the study were classified into three groups depending on the characteristics of their distribution model:

1. Logistic organisations, such as food banks, distribute the surplus food they have collected only to other organisations, and act as mediators between donors and other non-profit organisations;
2. Front-line organisations interact directly with beneficiaries, donating the collected food to people in need. Food pantries, soup kitchens, social restaurants and social coffee shops belong to this group; and
3. Hybrid organisations present features of both types described above. They collect food from logistic organisations and private donors and distribute it directly to people in need or to other non-profit organisations based in the area.

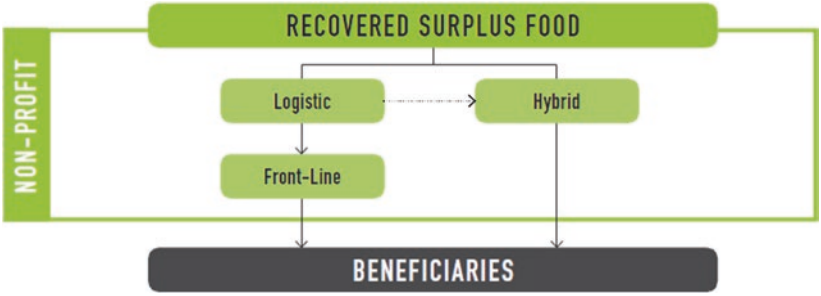

Fig. 6.1 The non-profit foodsaving supply chain

The figure below (Fig. 6.1) shows the relation between the players involved in the collection and distribution of surplus food in the non-profit sector.

This classification was important in understanding the different roles NPOs play in the food recovery and redistribution system, and was useful in exploring the differences which emerged from the study.

The analysis focused on the investigation of the three dimensions of intellectual capital and explored the key MPOs strengths and weaknesses, in order to provide suggestions for the future improvement and development of the food redistribution system. Specifically, the analysis of the cases evidenced that intellectual capital is fundamental to the development of an efficient and effective model to manage food surplus. According to Edvinsson and Malone (1997), intellectual capital is defined as "the possession of knowledge, applied experience, organizational technology, customer relationships and professional skills that provide […] a competitive edge in the market". Hence, the present study's model is built around three interrelated dimensions—relational capital, human capital and structural capital (Bontis 1998; Roos et al. 1997; Stewart 1997)—that the NPO has to balance as efficiently as possible. Given these three dimensions, the cross-case analysis allowed the key strengths and weaknesses that characterise the three stages of the food saving process—collection, management and distribution—to be identified.

The model is shown in Fig. 6.2, and the variables considered are further discussed in the following paragraphs. Specifically, the discussion will highlight the mechanisms and factors which mainly act either as barriers or as drivers to the creation of intellectual capital, which, in turn, enables

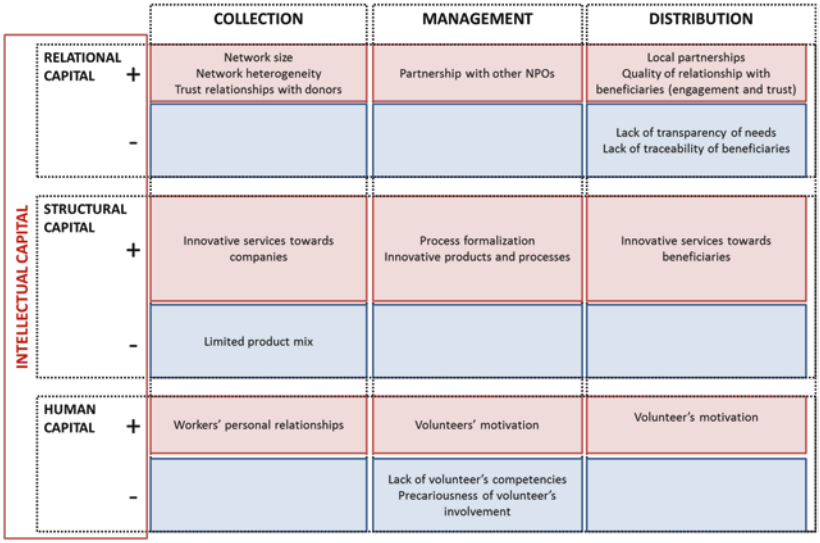

Fig. 6.2 The model of analysis

efficient and effective food surplus management. The chapter briefly presents some examples for each dimension in order to better explain the strengths or weaknesses of the ongoing system. In this chapter describes the cases mentioned in more detail.

The Relational Capital Dimension

Relational capital has been defined as "formal and informal relations that characterize an organisation with its external stakeholders and the perceptions that they hold about it, as well as the exchange of knowledge between the organisation and its external stakeholders" (Bontis 1998; Fletcher et al. 2003; Grasenick and Low 2004). The previous literature presents relational capital as a dimension of a broader concept called social capital (Nahapiet and Goshal 1998; Inkpen and Tsang 2005). The core intuition of relational capital is that valuable resources are derived from a network of formal and informal relationships with external stakeholders (Marr and Roos 2005), which generate a flow of knowledge and support the definition of the organisational identity. In this sense, relational capital represents a crucial resource for NPOs in developing strategic partnerships, raising philanthropic support, and creating a strong

and shared vision within the organisation (King 2004). In the next paragraphs, the variables related to the three stages of the process—collection, management and distribution—are examined.

Collection

The collection stage involves relationships between NPOs and their donors. The collaboration between NPOs and donor companies mainly concerns the recovery of surplus food, but it can also include the donation of facilities and infrastructures (such as computers, software, vehicles and storage space).

Through the observation of the case studies, it became apparent that three variables seemed to positively affect the capacity of NPOs to collect surplus food and to secure the resources needed to carry out their activities:

1. Network size;
2. Network heterogeneity; and
3. Trust relationships between the NPOs and their donors.

The first two variables listed above relate to the structure of the NPOs' networks, while the third refers to the quality of the relationship. Network size and heterogeneity help NPOs to diversify their sources of surplus food, leading to a higher quality and continuity in their collection process. The former variable expresses the number of linkages the NPOs have built with possible donors and mainly affects their capability to collect larger amounts of food (Burt 2000). Their network size depends upon the type and dimension of the organisation, because the larger the network, the more difficult its management becomes. The empirical evidence gathered here shows that food banks tend to have a network of company donors ranging from 16 to 500 in number, while hybrid and front-line organisations have a network ranging from 1 to 20. For example, "Case 22" in Lombardy counts on the support of over 700 companies that donate food, products and services, meaning that it can support 8869 non-profit organisations based in the Lombardy region. As far as the heterogeneity of the network is concerned, this term refers to the diversity of the players in the network (Renzulli et al. 2000), and it contributes to the diversification of the source of provision, for example by enlarging the collaborations to cover products and services which are useful in carrying on the daily activities of the NPOs.

The last variable considered here is "trust relationships with donors". A trust relationship means *"[…] a predilection to assume the best when interpreting another's motives and actions"* (Uzzi 1997, p. 43). Most of the NPOs interviewed underlined the difficulty of getting in touch with potential donor companies, mainly due to the question of trust. As Schneider (2013) points out, food safety and complex hygiene regulations often hinder corporate commitment to donation because companies feel that continuing hygiene standards cannot be guaranteed once food has left their premises (Schneider 2013). Hence, the presence of a third-party's support can play a pivotal role in building trusting relationships between NPOs and companies, as discussed in relation to the Italian Case 8, in this chapter.

Management

The management phase represents the link between the collection and distribution of surplus food. It includes all the daily, internal activities such as the registration and quality control of the food donated, the movement of stock and the internal procedures to be followed. This phase benefits from the ability of NPOs to develop partnerships with other NPOs in order to create a diffused network in which every organisation contributes to a specific activity during the process. The specialisation of partners enables the NPO coordinator to cut costs, to have access to additional resources and to efficiently use the resources available to them. Case 20, described in detail in this chapter, is a local Lombardy association that promotes and coordinates a territorial system of collection, purchasing and distribution of food, and represents a good example of partnerships between different NPOs.

Distribution

The distribution stage involves the relationships between NPOs and final beneficiaries, and covers the variety of distribution models adopted by NPOs to reach their beneficiaries (such as the delivery of food packages to homes in need and the provision of hot meals), and the frequency of the activity and the kind of services offered.

The cross-case analysis has identified two main variables which influence this phase: the "creation of local partnerships" and the "quality of relationships with beneficiaries".

Building a strong network within its territory of operation enables the NPO to go beyond first aid and provide complementary initiatives such as

education programmes and awareness campaigns. Among the investigated cases, good examples of involvement in the local community are represented by Case 15, a hybrid organisation based in the province of Varese, and Case 20 in the province of Lodi, both from Italy, described in this chapter.

Building trusting relationships with beneficiaries can also play a pivotal role in helping NPOs to fulfil their mission and address the problem of food insecurity in a more comprehensive and stable way than simply acting on contingent food emergencies. The improvement of the quality of the relationship between beneficiaries and the NPO can lead to a better understanding of people's needs and enhance the ability of the NPO to answer these needs. Moreover, an environment of mutual cooperation could support the approach of those who would otherwise be hesitant to use food charities. There are various reasons for not using charitable programmes from the perspective of food-insecure families, and the literature based on interviews with charitable organisations' clients mentions feelings of degradation, shame and social exclusion (Tarasuk and Beaton 1999; Tarasuk and Eakin 2005; Loopstra and Tarasuk 2012). Thanks to their distribution model, some NPOs have a better chance of establishing empathy with their beneficiaries. For example, the volunteers at Case 22 who deliver food packages to beneficiaries' homes are always the same people, so over time, the beneficiary is encouraged to establish a trusting relationship with these volunteers. The engagement of beneficiaries in the daily activities of the NPOs can also help to strengthen the creation of a trusting relationship.

Furthermore, the distribution process involves some critical aspects related to the quality of the NPO's relationship with beneficiaries. The first possible weakness is the "lack of transparency on beneficiaries' real needs" on the part of the beneficiary. The majority of organisations face difficulties in understanding the real food needs of the beneficiaries, who are rarely involved in the distribution process. As a consequence, the product offered is often standardised and does not take into account any personal needs. The second weakness is linked to the lack of system traceability of the beneficiaries, which means that it is not possible to control the turnover of beneficiaries, if their beneficiaries are already served by other organisations, and if they succeed in reaching the people who really need food aid.

The Structural Capital Dimension

Structural capital refers to the knowledge institutionalised within organisation processes and to the databases, documents, patents and manuals

that remain in the organisation even after individuals have left (Wright et al. 2001; Youndt et al. 2004; Grasenick and Low 2004; Roos et al. 1997). Structural capital is a term meaning the supportive infrastructure for human resources through the building of a shared organisational culture (Benevene and Cortini 2010).

The variables within this dimension are connected to all those elements linked to internal processes and organisational knowledge that the NPO can leverage in order to "gain a competitive advantage" (Martín-de-Castro 2006).

Collection

At the collection stage, the strength identified by the present study is represented by "innovative services towards companies". This variable refers to the ability of the NPO to offer additional services to donors in order to relieve them of the burden of the management and bureaucracy involved in making donations. The donation of surplus food represents a labour-intensive and time-consuming activity for companies, which are required to set up processes and procedures in order to identify the products that can be donated, and to collect and stock them before the charitable associations can take care of the withdrawal. Finally, they are in charge of all the bureaucracy needed to meet hygiene regulations and all other regulations governing companies' donations. By offering support, NPOs facilitate the donation procedure followed by companies, thus encouraging them to undertake the entire process.

A good example of this facilitation is represented by Case 3, an Italian social cooperative that recovers from donors both edible and inedible food surplus with a process that reduces costs for donors and therefore encourages firms to donate, as is explained in more detail in this chapter. Another example is Case 22, which helps its donors in carrying out all the bureaucracy required in order to benefit from the fiscal incentives related to their donation. The downside of the collection stage is that the NPO needs to have the ability to offer the right product mix to their beneficiaries. The literature highlights that the problem of an unsuitable food mix is related to beneficiaries' negative perceptions of food charities. Empirical research studies of food-insecure families show that food banks users notice that most organisations do not have fresh foods, healthy foods or foods that meet their dietary restrictions (such as restrictions due to medical conditions, ethnic traditions and/or religious beliefs) (Hamelin et al. 2002; Tarasuk and Eakin 2003; Loopstra and Tarasuk 2012).

The NPOs face a difficulty in providing the right food mix to their beneficiaries which is caused by different factors. On the one hand, the food saving system relies heavily on charitable donations, leading to instability in the surplus food supply (Tarasuk and Eakin 2003). When food donations are not made through a structured and systematic process, the availability of food for distribution is likely to be limited and highly variable, and the problem of supply has implications for the food that can be given to beneficiaries (Riches 2002; Tarasuk and Eakin 2003). Therefore, the NPOs involved in food recovery activities need to reach a certain level of stability in the product donations they can expect to receive in order to satisfy the demand for assistance and to meet the needs of their beneficiaries. The fact that some products are donated on a large scale means that donations might exceed the needs of organisations, whereas the acquisition of many other products can mean backbreaking daily work (Schneider 2013). Other logistic constraints are due to the need to guarantee food safety (Garrone et al. 2014). For example, the collection of fresh food requires the availability of a logistic infrastructure and cold chain management processes that represent a cost in terms of human resources training and the purchase of the necessary equipment.

Management

Within the management stage, the present analysis underlined two factors that can help NPOs to efficiently distribute food surplus once collected. The first is process formalisation, which refers to the degree of formalisation of the internal procedures of an organisation. The management of an organisation which is engaged in the collection of donated products must carefully plan its activities. The adoption of procedures according to the different stages of the process enables the NPO to manage its available resources more efficiently, maximising the quantity and the quality of collected surplus food. Case 12, which provides needy people with food packages, is a good example. It registers at both entry and exit the product donated using software that produces a sheet for every beneficiary with their correct diet, as described further in this chapter.

The second strength is the “innovative products and transformation process”, which refers to the ability to protract the life cycle of recovered food. This process mainly concerns fresh food, and it enables the NPO to collect a greater quantity of perishable products and to avoid the risk to waste food being recovered just before its expiration date.

The Spanish social enterprise and the Italian Case 12 are good examples of process innovation. The former collects fruit and vegetables that are unsold either for aesthetic reasons, due to overproduction, or because the fruit is ripe and the consumer will no longer purchase it, while the latter transforms fresh fruit and vegetables into long-life products.

The downsides of these strengths are the "lack of measurement systems" and the "precariousness of the donation". The first element is related to the ability of NPOs to track and monitor the beneficiaries they have reached and their conditions, and the quality and quantity of the donations they have handled. Many of the interviewed NPOs do not have an effective system of measurement of their activities, or of the rate of fulfilment of their mission. The lack of such reliable databases hinders the effectiveness of their activities and ability to undertake a path of long-term strategic planning.

The second drawback concerns the ability of NPOs to schedule their activities. Many of the interviewed NPOs mentioned difficulties related to the fact that they often cannot plan collections in terms of frequency, or the type and amount of food which will be donated. This is linked to the degree of formalisation of the relationships between the NPO and the donor, which often remains informal, especially in the case of small NPOs. The limited possibility of planning makes it harder for NPOs to guarantee the right quantity and the availability of some products to its beneficiaries.

Distribution

As far the distribution process is concerned, the variable identified as a strength is "innovative services towards beneficiaries", which relates to all the innovative practices adopted by the NPOs in dealing with their beneficiaries and an organisation's ability to meet the needs of its beneficiaries in a comprehensive way. For instance, the social supermarket model represents a different way to distribute food to needy people. Here, beneficiaries can buy food and consumer products free of charge or at low, symbolic prices and can choose the products they want from an assortment according to their needs and preferences. This model of distribution helps users to avoid associating food assistance with feelings of degradation, shame or embarrassment (Mulquin et al. 2000). The social supermarkets interviewed in this study which operate in Lombardy, Germany and France exemplify this orientation towards the services offered to beneficiaries. In addition to the features described above, they

offer additional services; for example, a French association offers medical care for children in its distribution centres. Moreover, these centres are seen as a place to meet people.

The Human Capital Dimension

The previous literature defines human capital as *"the tacit or explicit knowledge which people possess, as well as their ability to generate it, which is useful for the mission of the organisation and includes values and attitudes, aptitudes and know-how"* (Martín-de-Castro et al. 2006, pp. 324–337). Therefore, the variables included in this dimension are connected with various characteristics and qualities of human resources such as attitude, competencies, experience and skills, tacit knowledge, and people's innovativeness and talent (Choo and Bontis 2002; Guerrero 2003; Roos and Jacobsen 1999).

Human resources play a pivotal role in food charity organisations, to the extent that the quality of the services and assistance provided mainly depend on human resources rather than on technical or logistical resources (Eisinger 2002; Tarasuk and Eakin 2005). The NPOs belonging to the sample are generally characterised by the significant presence of volunteers, alongside a few paid workers. Usually, paid staff act as coordinators thanks to their continued presence within the organisation, while volunteers perform daily operational activities, and their motivation can represent a source of competitive advantage for charitable organisations. NPOs' workers play a crucial role in constructing the various bonds with the external environments made up of donors, beneficiaries, the other NPOs with which they cooperate, national and local administrators, state institutions and public services, suppliers and public opinion (Anheier 2000). Therefore, human resources affects each of the three stages of the process by contributing to the acquiring of strategic resources, the minimising of operating costs, and to understanding the new requests and needs arising from the situation in which they operate (Benevene and Cortini 2010).

As the relational capital dimension, human capital encompasses some aspects related to the network, but in a perspective that takes into account relationships at the personal and individual levels. Since personal relationships contribute to building the networks NPOs need in order to successfully operate, the relational and human capital dimensions are tightly connected, and the latter can influence and strengthen the former.

Collection

The collection stage of the process presents as a strength "workers' personal relationships", referring to the social relationships of NPOs' volunteers and paid staff. For NPOs, resource acquisition is crucial not only to their growth, but also to their long-term survival; in this context, workers and volunteers' relationships, which are often based on informal and personal ties, can facilitate food collection (Eng et al. 2012). The acquisition of resources through personal networks characterises start-up organisations, which as yet are unable to count on visibility and reputation, as well as small and less structured NPOs based in local neighbourhoods where social ties are strict and people know one another well. Almost all the small NPOs interviewed stressed the importance of personal relationships to reaching their donors, especially small groceries such as bakeries and fruit stores. They also highlighted the importance of being introduced by a respected intermediary, as for example in Case 22, to reach bigger donors.

Personal relationships can also help in the recruitment of human resources. Trust-based relations facilitate volunteers to motivate other people to join the organisation. Moreover, since it is important for a NPO to find people that support its social mission, personal knowledge can be useful in selecting suitable personnel whose motivations are closely aligned with the NPO's mission and goals (Eng et al. 2012).

Thus, personal relationships represent a valuable resource, but in order to be fully exploited, they need to become organisational resources through a formal agreement between the NPO and the donor. In fact, the absence of formalisation can result in a changeable system of donation, as Garrone et al. (2014) observe. The research conducted by Garrone et al. (2014) also highlights that donations often occur as a result of the initiative of individuals who decide to give surplus food generated by their firm to charitable organisations, but often this philanthropic practice ceases because the person directly involved in the process changes jobs or responsibilities (Garrone et al. 2014, p. 1470), leading to a changeable system of donation.

Management

Within the management stage, the cross-case analysis underlined the "volunteers' motivation" as a strength. Volunteers' motivation is critical to ensure their commitment to the organisation over time, so a primary task for NPOs is to motivate the participation of new and continuing

volunteers (Harrison 1995). In fact, volunteering is by definition a precarious activity, since it "[…] involves contribution of time without coercion or remuneration" (Smith 1994). The absence of formal obligations implies that the NPO must not only consider the initial commitment that leads one person to join the organisation, but also their motivation to continue to volunteer (Pearce 1993).

Motivations to start volunteering can be intrinsic or extrinsic. Intrinsic motivations are generally stronger than extrinsic ones, since they reflect an individual's natural inclinations (Millette and Gagné 2008). Non-profit managers can leverage intrinsic motivations in different ways. For example, the previous literature suggests that volunteers' motivation and commitment are linked to the characteristics of the tasks they are required to perform. In particular, Okun and Eisenberg (1992) affirm that volunteers are more satisfied when their tasks vary, while Brown and Zahrly (1989) show that commitment also depends on the chance to learn specific skills rather than make use of general ones. Other variables considered by researchers as positively affecting motivation are the degree of autonomy allowed in doing tasks (Dayley 1986) and the opportunity to develop friendships (Morrisson 2004).

According to these results, volunteers' training plays an important role in determining their commitment and the quality of their work. In fact, several of the NPOs interviewed reported a lack of professional skills among their volunteers. The people who offer their own time to charitable organisations have widely varied professional backgrounds, but some of the activities undertaken by NPOs require specific professional skills (such as handling food safely, driving trucks or working in direct contact with beneficiaries). The issue of training is very important in NPOs, where human capital is developed rather than hired. In fact, it is rare that NPOs select their volunteers according to the specific competencies required; instead, they often simply consider the amount of time that the individual can give and their motivation (Benevene and Cortini 2010). Many of the NPOs interviewed do not offer specific training to their volunteers, but simply show them how to handle their activities. This is common practice especially among the smaller and less structured NPOs. In larger ones, there are some examples of organisations that have understood the importance of investing in human resources, and that are running or planning to run some courses for their volunteers. For example, one French association has realised that the majority of its volunteers do not know how to use a PC or send an email; they therefore began to train their volunteers in order to fill this gap.

Distribution

The ability of volunteers to build personal relationships plays a pivotal role in the distribution process, since establishing a good relationship with users depends on its staff, who represent the connection between the charitable organisation and the users. The establishment of a good relationship between the volunteer and the beneficiary is important for different reasons. First, the volunteer's ability to understand beneficiaries' needs helps the NPO to better fulfil its mission by distributing the right food mix and going beyond first aid by offering complementary services to its beneficiaries. For example, Case 12 prepares food packages according to the cultural characteristics of their beneficiaries or the composition of the family involved (e.g. the presence of children), thanks to their volunteers who get to know the beneficiaries by distributing packages directly to the beneficiaries' homes. The majority of local offices of a Lombard Church association (Cases 14, 15, 16) began to operate by offering food and then expanded their range of activities on the basis of the identified needs of their beneficiaries, which were collected by their volunteers during meetings with potential users.

Some researches show that the chance to establish a good relationship between volunteer and beneficiary is strengthened when the volunteer has personally experienced similar conditions to those of the clients, as they may then be more likely to empathise with them and imagine themselves as users. The same thing happens when helpers are at the same time clients (Lorenz 2012).

The second reason why the establishment of a good relationship between the volunteer and the beneficiary is important, as illustrated in the volunteering literature, is that the emotional attachment of volunteers to beneficiaries can reduce volunteer turnover and strengthen their commitment to the organisation. In fact, the empathy between volunteers and beneficiaries results in enhanced satisfaction with the volunteering experience, which in turn supports a greater effort to serve beneficiaries' best interests (Penner and Finkelstein 1998; Valeau et al. 2013).

6.8 Concluding Remarks

The chapter aimed at presenting a model which summarises the observations derived from the cross-case analysis. In particular, the model highlights the strengths and weaknesses to the present way of operating of

NPOs, which respectively maintain or hinder their ability to simultaneously reach their social objective and remain financially sustainable.

In fact, NPOs perceive a tension between these two objectives, which limits both the opportunities of further development and improvement and the capability to create value among to the entire network of stakeholders.

In order to reach this aim, the chapter started by discussing the role and mission of food charities in the food recovery, management and redistribution chain, so as to highlight the characteristics already investigated in earlier studies. In particular, different types of NPOs have been identified, depending on the activities they manage along the process and the social services they offer to the beneficiaries. Subsequently, the factors which drive or hinder the capability of food charities to redistribute food surplus effectively and thus respond to the needs of disadvantaged people were discussed, considering both those that are internal the organisation (strictly related to organisation's structure and assets) and those that are external (outside the organisational boundaries and in the surrounding context).

Building on this review of the literature, a cross-case analysis of 37 European NPOs has been run and the derived model allowed understanding that NPOs should focus on the development of their relational, structural and human capitals in order to promote the improvement of their business model.

Notes

1. For further discussion, see Chaps. 1 and 2.
2. http://www.eurofoodbank.eu/portail/.
3. http://www.foodbanking.org/gfn/.
4. For more detailed information about this topic, see Chaps. 1 and 2.
5. The topic of regulation is debated in depth in Chap. 1.
6. For a more detailed description of the sample, see the Introduction chapter of this book.

References

Anheier, H. K. (2000). *Managing non-profit organisations: Towards a new approach*. Civil Society Working Papers, Number 1, Centre for Civil Society, LSE, London, January.

Benevene, P., & Cortini, M. (2010). Interaction between structural capital and human capital in Italian NPOs. *Journal of Intellectual Capital, 11*(2), 123–139.

Bontis, N. (1998). Intellectual capital: An exploratory study that develops measures and models. *Management Decision, 36*(2), 63–76.

Borch, A., & Kjærnes, U. (2016). Food security and food insecurity in Europe: An analysis of the academic discourse (1975–2013). *Appetite, 103,* 137–147.

Brenner, N. (2004). *New state spaces: Urban governance and the rescaling of statehood*. Oxford, UK: Oxford University Press.

Brown, E. P., & Zahrly, J. (1989). Nonmonetary rewards for skilled volunteer labour. *Nonprofit and Voluntary Sector Quarterly, 18*(2), 167–177.

Burt, R. S. (2000). The network structure of social capital. *Research in Organizational Behaviour, 22,* 345–423.

Choo, C. W., & Bontis, N. (2002). Knowledge, intellectual capital, and strategy. In C. W. Choo & N. Bontis (Eds.), *The strategic management of intellectual capital and organizational knowledge* (pp. 185–204). New York: Oxford University Press.

Daponte, B. O. (2000). Private versus public relief: Use of food pantries versus food stamps among poor households. *Journal of Nutrition Education, 32,* 72–83.

Dayley, R. C. (1986). Understanding organizational commitment for volunteers: Empirical and managerial implications. *Journal of Voluntary Action Research, 15*(1), 19–31.

DeLind, L. B. (1994). Celebrating hunger in Michigan: A critique of an emergency food program and an alternative for the future. *Agriculture and Human Values, 11,* 58–68.

Echevarria, S., Santos, R., Waxman, E., Engelhard, E., & Del Vecchio, T. (2011). Food banks: Hunger's new staple feeding America. http://www.feedingamerica.org/hunger-in-america/our-research/hungers-new-staple/hungers-new-staple-full-report.pdf.

Edvinsson, L., & Malone, M. (1997). *Intellectual capital: The proven way to establish your company's real value by measuring its hidden brain power*. London: Piatkus.

Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review, 14,* 532–550.

Eisinger, P. (2002). Organizational capacity and organizational effectiveness among street-level food assistance programs. *Nonprofit and Voluntary Sector Quarterly, 31,* 115–130.

Eng, T., Liu, C., & Sekhon, Y. (2012). The role of relationally embedded network ties in resource acquisition of British nonprofit organizations. *Nonprofit and Voluntary Sector Quarterly, 41,* 1092–1115.

Fletcher, A., Guthrie, J., Steane, P., Roos, G., & Pike, S. (2003). Mapping stakeholder perceptions for a third sector organization. *Journal of Intellectual Capital, 4*(4), 505–527.

Garrone, P., Melacini, M., & Perego, A. (2014). Surplus food recovery and donation in Italy: The upstream process. *British Food Journal, 116*(9), 1460–1477.

Gentilini, U. (2013). Banking on food: The state of food banks in high-income countries. IDS Working Papers, No. 415, pp. 1–18.

Grasenick, K., & Low, J. (2004). Shaken, not stirred: Defining and connecting indicators for the measurement and valuation of intangibles. *Journal of Intellectual Capital, 5*(2), 268–281.

Guerrero, I. (2003). How do firms measure their intellectual capital? Defining an empirical model based on firm practices. *International Journal of Management and Decision Making, 4,* 178–193.

Hamelin, A. M., Beadry, M., & Habicht, J. P. (2002). Characterization of household food insecurity in Québec: Food and feelings. *Social Science and Medicine, 54,* 119–132.

Harrison, D. A. (1995). Volunteer motivation and attendance decisions: Competitive theory testing in multiple samples from a homeless shelter. *Journal of Applied Psychology, 80,* 371–385.

Holweg, C., & Lienbacher, E. (2011). Social marketing innovation: New thinking in retailing. *Journal of Nonprofit & Public Sector Marketing, 23*(4), 307–326.

Holweg, C., Lienbacher, E., & Zinn, W. (2010). Social supermarkets-a new challenge in supply chain management and sustainability. *Supply Chain Forum an International Journal, 11*(4).

Inkpen, A. C., & Tsang, E. W. K. (2005). Social capital, networks, and knowledge transfer. *Academy of Management Review, 30*(1), 146–165.

King, N. (2004). Social capital and nonprofit leaders. *Nonprofit Management and Leadership, 14*(4), 471–486.

Levkoe, C. Z., & Wakefield, S. (2011). The community food centre: Creating a space for a just, sustainable, and healthy food system. *Journal of Agriculture, Food System, and Community Development, 2*(1), 249–268.

Lightman, E., Herd, D., & Mitchell, A. (2008). Precarious lives: Work, health and hunger among current and former welfare recipients in Toronto. *Journal of Policy Practice, 7*(4), 242–259.

Loopstra, R., & Tarasuk, V. (2012). The relationship between food banks and household food insecurity among low-income Toronto families. *Canadian Public Policy, 38*(4), 497–514.

Lorenz, S. (2012). Socio-ecological consequences of charitable food assistance in the affluent society: The German Tafel. *International Journal of Sociology and Social policy, 32*(7/8), 386–400.

Marr, B., & Roos, G. (2005). A strategy perspective on intellectual capital. *Perspectives on intellectual capital*, 28–41.

Martín-De-Castro, G., Navas-López, J., López-Sáez, P., & Alama-Salazar, E. (2006). Organizational capital as competitive advantage of the firm. *Journal of Intellectual Capital*, *7*(3), 324–337.

Midgley, J. L. (2014). The logics of surplus food redistribution. *Journal of Environmental Planning and Management*, 1–21.

Millette, V., & Gagné, M. (2008). Designing volunteers' tasks to maximize motivation, satisfaction and performance: The impact of job characteristics on volunteer engagement. *Motivation and Emotion, 32,* 11–22.

Morrisson, D. (2004). New labour, citizenship and the discourse of the third way. In S. Hale, W. Legett, & L. Martell (Eds.), *The third way and beyond: Criticisms, futures, alternatives.* Manchester: Manchester University Press.

Mosly, J., & Tiehen, L. (2004). The food safety net after welfare reform: Use of private and public food assistance in the Kansas City metropolitan area. *Social Service Review, 78,* 267–283.

Mulquin, M. E., Siaens, C., & Wodon, Q. T. (2000). Hungry for food or hungry for love? Learning from a Belgian soup kitchen. *American Journal of Economics and Sociology, 59*(2), 253–265.

Nahapiet, J., & Ghoshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review, 23*(2), 242–266.

Okun, M. A., & Eisenberg, N. (1992). Motives and intent to continue organizational volunteering among residents of a retirement community area. *Journal of Community Psychology, 20,* 183–187.

Pearce, J. (1993). *Volunteers: The organizational behavior of unpaid workers.* New York: Routledge.

Penner, L. A., & Finkelstein, M. A. (1998). Dispositional and structural determinants of volunteerism. *Journal of Personality and Social Psychology, 74,* 525–537.

Poppendieck, J. (1998). Want amid plenty: From hunger to inequality. *Monthly Review, 50,* 125–136.

Renzulli, L. A., Aldrich, H. E., & Moody, J. (2000). Family matters: Gender, networks, and entrepreneurial outcomes. *Social Forces, 79*(2), 523–546.

Riches, G. (2002). Food banks and food security: Welfare reform, human rights and social policy. Lessons from Canada? *Social Policy and Administration, 36,* 648–663.

Riches, G. (2011). Thinking and acting outside the charitable food box: Hunger and the right to food in rich societies. *Development in Practice, 21*(4–5), 768–775.

Roos, G., & Jacobsen, K. (1999). Management in a complex stakeholder organization. *Monash Mt. Eliza Business Review, 2,* 83–93.

Roos, G., Roos, J., Edvinsson, L., & Dragonetti, N. C. (1997). *Intellectual capital—Navigating in the new business landscape.* New York: New York University Press.

Schneider, F. (2013). The evolution of food donation with respect to waste prevention. *Waste Management, 33*(3), 755–763.

Sert, S., Garrone, P., & Melacini, M. (2014). Keeping food alive: Surplus food management. *European Journal of Sustainable Development, 3*(4), 339–346.

Smith, D. H. (1994). Determinants of voluntary association participation and volunteering: A literature review. *Nonprofit and Voluntary Sector Quarterly, 23,* 243–263.

Stewart, T. (1997). *Intellectual capital: The new wealth of organizations.* New York: Doubleday/Currency.

Strauss, A., & Corbin, J. (1990). *Basics of qualitative research.* Newbury Park, CA: Sage.

Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory.* Thousand Oaks, CA: Sage.

Subramaniam, M., & Youndt, M. A. (2005). The influence of intellectual capital on the types of innovative capabilities. *Academy of Management Journal, 48*(3), 450–463.

Tarasuk, V. S., & Beaton, G. H. (1999). Women's dietary intakes in the context of household food insecurity. *The Journal of Nutrition, 129,* 672–679.

Tarasuk, V., & Eakin, J. M. (2003). Charitable food assistance a symbolic gesture: An ethnographic study of food banks in Ontario. *Social Science and Medicine, 56,* 1505–1515.

Tarasuk, V., & Eakin, J. M. (2005). Food assistance through "surplus" food: Insights from an ethnographic study of food bank work. *Agriculture and Human Values, 22,* 177–186.

Trudeau, D. (2008). Junior partner or empowered community? The role of nonprofit social service providers amidst state restructuring in the US. *Journal of Urban Studies, 45*(13), 2805–2827.

Uzzi, B. (1997). Social structure and competition in interfirm networks: The paradox of embeddedness. *Administrative Science Quarterly, 42,* 35–67.

Valeau, P., Mignonac, K., Vandenberghe, C., & Gatignon Turnau, A. L. (2013). A study of the relationships between volunteers' commitments to organizations and beneficiaries and turnover intentions. *Canadian Journal of Behavioural Science, 45,* 85–95.

Wakefield, S., Fleming, J., Klassen, C., & Skinner, A. (2012). *Sweet Charity*, revisited: Organizational responses to food insecurity in Hamilton and Toronto, Canada. *Critical Social Policy, 33*(3), 427–450.

Warshawsky, D. N. (2010). New power relations served here: The growth of food banking in Chicago. *Geoforum, 41*(5), 763–775.

Weir, R. E. (2007). *Class in America: An encyclopedia* (Vol. 3, Q-Z). Westport, CT and London: Greenwood Press.

WRAP. (2014). *Food connection programme, final report*, WRAP, Branbury. http://www.wrap.org.uk/sites/files/wrap/Food%20Connection%20Programme%20Final%20Published%20Report.pdf.

Wright, P. M., Dunford, B. B., & Snell, S. A. (2001). Human resources and the resources-based view of the firm. *Journal of Management, 27*(6), 701–721.

Yin, R. (1984). *Case study research: Design and method*. Beverly Hills, CA: Sage.

Yin, R. K. (2003). *Case study research: Design and methods* (3rd ed.). Thousand Oaks, CA: Sage.

Yin, R. K. (2009). *Case study research: design and methods*. Essential guide to qualitative methods in organizational research. Thousand Oaks: Sage.

Youndt, M. A., Subramaniam, M., & Snell, S. A. (2004). Intellectual capital profiles: An examination of investments and returns. *Journal of Management Studies, 41,* 335–362.

CHAPTER 7

Best Practices in Europe for Developing Food Recovery in Non-profit Organisations

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Abstract The chapter presents good practices in food surplus recovery and redistribution as they emerge from our analysis of 30 case studies of non-profit organizations across Italy, Germany, France, and Spain. The cases are discussed according to dimensions and indicators introduced in Chap. 6. The first part presents organisations standing out for their relational and structural capital capacity, focusing on their relationships with donors and beneficiaries and on their innovative processes. Then, a cross-case approach is adopted to illustrate two peculiar models of organisation: social markets and local networks for food recovery. The presentation of good practices unveils the differences among countries and actors in the collection, management, and distribution models, as well as it allows capturing the impact of such differences on food surplus recovery.

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7.1 Introduction

Chapter 6 explored the enablers and barriers driving or hindering NPOs in the processes of the recovery and redistribution of food, and proposed a model identifying three interrelated dimensions (rational, structural, and human capital) which influence these processes. Relying on this model, this chapter goes on to identify some best practices among the case studies which were interviewed and visited during the project. An in-depth description of the selected organisations' collection, management, and redistribution processes will be presented, highlighting their strengths in relation to the dimensions of the model. All the data presented here were collected and analysed according to the methodology described in Chap. 6.

Sections 7.2–7.5 of this chapter describe two logistic organisations and two hybrid ones which represent best practices particularly with regard to their relational and structural capital. Sections 7.6 and 7.7 focus respectively on social markets and local networks. Section 7.6 presents a cross-case analysis of the social markets visited by the researchers in the four countries considered in the study (France, Germany, Italy, and Spain) to highlight the variance of this organisational model in different contexts and focuses particularly on the German case. Section 7.7 describes three good practices, one in Spain and two in Italy, in the context of creating local networks for surplus food recovery and redistribution involving different public and private actors at the local level.

7.2 Changing Waste into Resources: An Innovative Recovery Process

The first best practice presented here is a logistic organisation which collects and redistributes surplus food through an innovative process of management and quality control allowing the supply of a wide range of fresh and long-life products. This section explores the main strengths and innovative aspects of Case 3, with particular reference to relational and structural capital, as synthesised in Fig. 7.1.

	COLLECTION	MANAGEMENT	DISTRIBUTION
RELATIONAL CAPITAL	• **Network size** • **Network heterogeneity** • **Trust relationships with donors**	• **Partnership with other NPOs**	• **Local partnerships** • Quality relationships with beneficiaries (engagement and trust)
STRUCTURAL CAPITAL	• **Innovation towards companies**	• **Process formalization** • **Innovative products and processes**	• **Innovative services towards beneficiaries**
HUMAN CAPITAL	• Workers personal relationships	• Volunteer's motivation	• Volunteer's motivation

Fig. 7.1 Main strengths of Case 3

Case 3 is a social cooperative "type B", which means an Italian organisation set up by law and aiming to facilitate the work reintegration of disadvantaged people,[1] which has almost 280 employees, more than 80 of whom are disadvantaged people themselves. Its main activity is litter management (plastic, paper, organic waste, building materials, and others), but a specific project was created within the management of organic waste to recover edible food and then to redistribute it to local non-profit organisations. According to formal agreements with points of sales of large retailers, organic waste, including both edible and inedible food, is collected by the organisation's volunteers. These agreements define the frequency of the donations and the collection procedures. Other volunteers are involved in selecting the edible surplus food and in separating it from damaged and out-of-date products. At the end of the process, the surplus food is donated to charities, while food that is not suitable for human consumption goes to farmers for animal feeding.

With regard to structural capital, Case 3 adopted a quite formalised process to manage and select food. Volunteers are responsible for food selection and quality control, while some employees supervise the process, organise the shifts, and manage the donor relationships. The selection occurs in large refrigerating rooms in order to maintain food quality.

Edible food is separated from the rest of the donated materials according to a self-monitoring manual defining which types of food can be recovered and redistributed for human consumption.

As mentioned above, the processes in the management of recovery and redistribution include written agreements both with donors and with receiving organisations. According to the donors' agreements, collection takes place 2 or 3 times a week in the points of sales of the large retailers and 1 or 2 times a week from the local fruit market and local farmers. In cases of extraordinary surplus food generation, the collection may occur more frequently. The distribution to charities occurs on 6 days per week (every day except Sundays), and each organisation receives food on a scheduled day at an agreed time. Some volunteers are in charge of visiting the receiving organisations to verify the use they make of the donated products, particularly in the case of new partnerships.

The economic sustainability of the process comes from different sources. The food recovery and redistribution project in Case 3 is funded through income from the other activities of the cooperative (litter management, gardening, etc.), from foundation grants, and from European funds. The cooperative monitors the economic sustainability of the food recovery and redistribution they carry out as a specific sector of the organisation. The main costs are for labour and transport, though the labour costs are low compared to the great amount of food collected and donated, since the activity involves only three employees working alongside more than 100 volunteers.

The Case 3 organisation also registers and traces the food it has collected and redistributed. During the collection, most products are traced through delivery dockets, and the organisation estimates the amount of collected food at around 3000 tonnes per year. It also uses a traceability system registering exiting food, although a precise track of the donation amounts is not available. One of the managers of the process declared that "The distributed surplus food is registered with a numerical code and the name of the recipient. With this method we are able to trace the food donations—how many donations are destined to each organisation—but there is no record of the precise amount of each donation". Nevertheless, the total number of donations is estimated to be approximately 2700 tonnes per annum, meaning a gap of almost 12% on the total amount of collected food.

A final observation concerning structural capital is that Case 3 also pays particular attention to the relationships it builds with beneficiaries.

The service users of the organisations in receipt of food are in fact involved in the recovery and distribution processes, like the volunteers. They have the double benefit of participating in socialisation activities and receiving a bag of products at the end of each shift.

With regard to relational capital, Case 3 displayed the ability to create relationships with both companies and local non-profit organisations. The wideness of its network can be explained by at least three motivations. Firstly, it is a consequence of the long history of the cooperative, which had been active in its territory for more than 20 years at the time of the interview. Secondly, the organisation is able to "convert" old partners into new donors. In fact, some companies which had been involved in other projects carried out by the cooperative later became involved in its food recovery project. Finally, and most importantly, the innovative model of recovery, selection, and redistribution employed by Case 3 allows it to intercept a wide offering of surplus food from large retailers. In fact, while other logistic organisations rely solely on the generosity of food companies and depend on their willingness to preselect and donate only the edible part of their surplus, the main strength of Case 3 is that it accepts both edible and non-edible food. This makes it easier to obtain donations since retailers do not need to carry out any preliminary selection, a process which is required by other food banks, thus saving on related labour costs. Thanks to this selection process, Case 3 is able to present itself as a "service provider" supporting companies both in waste management and in the development of their social and environmental responsibility.

7.3 Fresh Food Processing: Innovating the Collection and Distribution of Fresh Products

As described in Chap. 6, the ability to innovate processes and to extend the range of donated products to include fruit and vegetables is an important resource for non-profit organisations involved in surplus food recovery, and a relevant dimension particularly in relation to structural capital. The Italian Case 12 represents a notable good practice, since it has developed a project to process fresh food and transform it in long-life products, strengthening its relational capital in terms of network heterogeneity and its structural capital in terms of its management and distribution processes (Fig. 7.2).

	COLLECTION	MANAGEMENT	DISTRIBUTION
RELATIONAL CAPITAL	• Network size • **Network heterogeneity** • Trust relationships with donors	• Partnership with other NPOs	• Local partnerships • Quality relationships with beneficiaries (engagement and trust)
STRUCTURAL CAPITAL	• Innovation towards companies	• **Process formalization** • **Innovative products and processes**	• **Innovative services towards beneficiaries**
HUMAN CAPITAL	• Workers personal relationships	• Volunteer's motivation	• Volunteer's motivation

Fig. 7.2 Main strengths of Case 12

Case 12 is a local voluntary organisation whose mission is the distribution of food to poor families and elderly people, and to other non-profit organisations. It has three employees and about 150 volunteers, and distributes food to 30 local organisations and about 700 families (almost 3000 individuals). The food is mainly distributed in the form of food parcels. Concerning relational capital, Case 12 pays particular attention to the mix of collected products it supplies, in order to provide a rich variety of food which reflects its users' nutritional requirements. As long-life products alone are not sufficient to satisfy the nutritional needs, the association tries to include companies able to donate fruit, vegetables, and dairy products in its network. At the time of the interview, the organisation was able to collect and distribute around 72 tonnes of fruit, vegetables, and dairy products.

As was alluded to above, in order to extend its product mix Case 12 has improved its structural capital by developing an internal laboratory to transform fresh food in long-life products. Fruit and vegetables are processed here, extending their shelf life and allowing their conservation at ambient temperatures. For instance, jam is produced from fresh fruit, and tomato puree from fresh tomatoes. At the time of the interview, the laboratory was only in its first month of life and it has already produced about 244 kg of jam. As one of our interviewees (a volunteer) explained: "At the moment we use donated fresh fruit to produce jam, but we are

going to launch the production of tomato puree and vegetable soups. This will allow us to extend the shelf life of products that cannot be consumed in a short time by organisations we served or by users."

In addition to this innovative process which it now uses to manage fresh products, Case 12 also has a high level of process formalisation. The organisation uses software registering the barcode and the expiring dates of each product. The programme also takes into account some of the characteristics of its beneficiaries, such as their age, sex, disability, and allergies, and composes the most appropriate product mix to be distributed to the beneficiaries in each case. The process is described by the interviewee as follows: "The computer programme elaborates sheets indicating quantity and type of products to be distributed to each family. (…) Once products are added in the food parcel, their exit is registered using the barcode, thus registering the exact amount of the distributed food. (…) When the food parcel is completed, it is labelled with the recipient's name and the date of composition. The computer elaborates for each parcel a delivery note which is consigned to the service user." This method allows the organisation not only to register the exact amount of received and donated food, but also to adapt the donations to its users' specific requirements, an extremely useful function considering the number of members and possible dietary needs.

7.4 A Sustainable Business Model for Surplus Food Recovery

Among the interviews carried out for this research, only one case was encountered which was aiming at economic self-sufficiency: Spanish Case 1S, a social enterprise aiming at economic sustainability by linking the activity of food recovery and distribution to charities to the processing and sale of fresh products. Here, its main strengths concerning its structural capital are highlighted, specifically its innovative processes in the recovery and management of surplus food, and in the formalisation of its processes (Fig. 7.3).

Case 1S was founded in 2014 with three main objectives: to prevent food waste; to give access to a healthy and balanced diet to people at risk of social exclusion; and to create employment programmes addressing people at risk of social exclusion. The organisation aims to create a sustainable production model with both a social and an environmental

	COLLECTION	MANAGEMENT	DISTRIBUTION
RELATIONAL CAPITAL	• Network size • Network heterogeneity • Trust relationships with donors	• Partnership with other NPOs	• Local partnerships • Quality relationships with beneficiaries (engagement and trust)
STRUCTURAL CAPITAL	• **Innovation towards companies**	• **Process formalization** • **Innovative products and processes**	• Innovative services towards beneficiaries
HUMAN CAPITAL	• Workers personal relationships	• Volunteer's motivation	• Volunteer's motivation

Fig. 7.3 Main strengths of Case 1S

impact. The pilot phase involved eight companies and farmers, mainly small producers, and five non-profit organisations, with each one of which serving between 500 and 1000 users.

The project includes a twofold social aspect: on the one hand, it allows the recovery of surplus food and its redistribution to people in need through partner associations, while on the other, it enables the creation of an employment programme involving disadvantaged people in food collection and processing. Moreover, another important objective of the project is to increase the level of professionalisation in non-profit sector organisations dealing with surplus food and food distribution, and to promote the creation of partnerships to maximise their social and environmental impact.

With regard to structural capital, the collection process at Case 1S consists of the recovery of fruit and vegetables which are unmarketable for aesthetic reasons, due to overproduction or because they are too ripe to be sold. These perfectly edible products are collected from farmers. Volunteers or collaborators involved in the employment programme gather the food directly from the field. Afterwards, a large proportion (almost 80%) of the fresh products collected is immediately donated to non-profit partners, while the remaining 20% is processed in order to produce sauces and jams, which are sold under a brand created by the social enterprise, named "im-perfect", and distributed through common

retail channels. The income from sales of these products is supposed to cover the organisation's collection and distribution costs, particularly with regard to labour and transport, to guarantee the economic sustainability of the project.

Although this innovative model aims to be economically, environmentally, and socially sustainable, at the time of interview it was not possible to affirm that the organisation had succeeded in becoming self-sustainable from an economic point of view, as the project had only recently started in 2014 as a start-up. However, this innovative process aims at creating a win-win situation in which surplus food at the same time becomes an important resource to tackle food poverty, to insert disadvantaged people in the work market, albeit temporarily, and to relieve producers of some harvest costs. Case 1S's activity allows producers not to have to harvest their surplus at all, thus saving them the related costs, while at the same time creating an opportunity for companies to develop their social responsibility in a way that is perfectly integrated with their core business.

7.5 More Than Logistics: A Case of Innovative Brokerage Between Companies and Beneficiaries

As was described in Chap. 6, logistic organisations are able to manage relationships with donor companies, and they distribute food mainly to front-line organisations rather than directly to beneficiaries. The Italian organisation represented by Case 22 is presented here as a best practice due to its relational and structural capital, since it has developed a wide and strong network of donors, and promotes innovative collection and distribution processes (Fig. 7.4).

Case 22 is the largest Italian food bank, whose operations are widespread at the national level. It was founded in Milan in 1989 and coordinates a network of local logistic organisations which mainly operate at the regional level. This research interviewed a local branch of the foundation based in Lombardy, which was founded in 1996 (hereafter referred to as "the Lombardy branch"). In 2013, the Lombardy branch distributed about 14,000 tons of food to more than 1300 organisations, thus supporting about 230,000 people in the Lombardy Region. The Lombardy branch relies on more than 600 volunteers working in its warehouse, checking product quality, and running the distribution process.

	COLLECTION	MANAGEMENT	DISTRIBUTION
RELATIONAL CAPITAL	• **Network size** • **Network heterogeneity** • **Trust relationships with donors**	• **Partnership with other NPOs**	• **Local partnerships** • **Quality relationships with beneficiaries (engagement and trust)**
STRUCTURAL CAPITAL	• **Innovation towards companies**	• **Process formalization** • **Innovative products and processes**	• **Innovative services towards beneficiaries**
HUMAN CAPITAL	• Workers personal relationships	• **Volunteer's motivation**	• **Volunteer's motivation**

Fig. 7.4 Main strengths of Case 22

With regard to structural capital, the recovery and distribution processes of the Lombardy branch are fairly formalised and have some innovative features. The donated products are generally transported by the association using its 15 vehicles, except when occasionally the donors deliver the surplus food directly to the organisation's warehouse. After being registered on the management software used by the organisation, the products are sorted and organised according to their type and shelf life.

The redistribution process is strictly monitored, as the Lombardy branch only distributes products to other non-profit organisations and not to individuals. The receiving organisations submit a formal request to receive food donations and, if eligible, sign a formal agreement. Volunteers are in charge of the verification process, checking the applicant organisations with respect to their administrative, logistic, and hygienic requirements. Furthermore, each organisation has to demonstrate that the distribution of food is related to its mission and that products are donated for free. The Lombardy branch also verifies the nature and number of its beneficiaries, in order to establish what kind of support the organisation needs in terms of the frequency of aid, the amount of food, and the types of products needed. The food is distributed according to a distribution schedule: each charity collects their food from

the Lombardy branch's central warehouse on a prearranged day (usually every 40 days).

This distribution model allows the distribution of long-life products such as rice, pasta, and canned goods, but is also revealed to be quite problematic for fresh products. For this reason, the organisation created an innovative project to preserve and distribute fresh products such as fruits, vegetables, dairy products, and hot meals. Launched in 2006, the project (here codified as Case 8) allows connections between local retailers or food services with small and medium non-profit organisations nearby. Enabling encounters between local actors, the project collects fresh products, and redistributes them in a very short time. This project constitutes a significant innovation both towards donor companies and beneficiaries. On the one hand, front-line local organisations generally have limited logistic and networking abilities and are often not necessarily recognised as trustworthy partners by companies. On the other hand, companies are rarely able to, or interested in, accurately verifying the reliability of each small organisation asking for donations. Since this situation often hinders the donation process, the intermediation of a large and well-known food bank like the Lombardy branch is a very important resource. The Lombardy branch is in charge of the administrative procedures, while local organisations take the surplus food from supermarkets and canteens and redistribute it locally within a few hours. In instances when local organisations are not equipped to transport hot meals or great quantities of fruit and bread, the Lombardy branch also arranges collections using its own vans and volunteers. This project specifically allows the recovery of fresh products needing to be redistributed in a short time, thus ensuring a supply of donated fruit, vegetable, and dairy products from supermarkets and hot meals from canteens. In 2013, 212 tonnes of fruit and bread and more than 352,000 hot meals were recovered from canteens in Lombardy and more than 1000 tonnes of food were recovered by supermarkets. These products were distributed to 120 local organisations.

This strength of its structural capital also enables the enhancement of the Lombardy branch's relational capital. In fact, the Siticibo project promotes the creation of local partnerships between local front-line organisations and companies that would otherwise not be able to relate to one another. Relying on its own reputation, the Lombardy branch is able to engage local point of sales or food services (such as company and school canteens) in partnerships with nearby non-profit organisations.

The reliability of the Lombardy branch is an advantage for the companies involved, and the proximity of the small organisations assures short transportation times, thus ensuring the maintenance of product quality.

In examining its relational capital, it is clear that as the Lombardy branch collaborates with more than 500 companies, it can therefore count on a large range of supply channels including firms in the manufacturing industry, the retail sector, and food services, in addition to food donated by private individuals and European aid. This large network is managed through a well-organised group of volunteers who are in charge of managing the relationships with companies. These volunteers work with two main objectives: to acquire new donors and to reinforce existing partnerships. They contact companies working in the food sector which are based in Lombardy in order to enlarge the network of donors and to enrich the mix of donated products. The manager interviewed revealed that "This new way to manage the relationship with donors started in 2011. Since then, we registered an increase of +9% on the total amount of collected products—including those from private citizens and European aids—but if we evaluate the increase in companies' donations, it is even greater."

The Lombardy branch also represents an interesting case due to its ability to manage human capital. As described above, volunteers are a very important resource in many activities, but it is worth noting that they not only contribute to manual labour, but also to a number of crucial activities such as managing relationships with donors, partner organisations, and local institutions, as well as organising fundraising activities. On the one hand, the association tries to capitalise on the expertise of volunteers so as to engage them and to invest trust in them through many activities, while on the other hand, it also provides various training opportunities to support them in their everyday work and enhance their commitment.

7.6 Social Markets: A User-Oriented Service

As was mentioned in Chap. 6, an organisation's ability to innovate the services it provides to its beneficiaries is an indicator of their high structural capital. As most non-profit organisations dealing with surplus food redistribution aim not only at providing food but also at satisfying users' nutritional requirements and supporting their social reintegration, the composition and quality of their services are an important component of their activity.

In this respect, the model adopted by the so-called social markets is of interest. As mentioned in Chap. 5, these organisations provide food to be prepared and consumed at home (as food pantries do), but instead of giving users a pre-packed bag or parcel, they act like a normal supermarket where customers can choose the products. Generally, social supermarkets receive products that are still consumable for free, even if they are no longer of merchantable or saleable quality, from supermarkets and food processors, and then distribute them to their service users.

Among the interviews carried out in this research, different types of social markets were encountered in the four European countries considered, with different organisational structures. For instance, some social markets requested an economic contribution directly from their users, while others give out all their products for free. Also, the distribution methods varied across the different countries: in the Spanish and French cases, for example, users were not asked to pay with money, but they received some "points" which they could use to receive products. In other markets, purchases have explicit economic value expressed by a real price, which can be paid by the users themselves (as in some of the German cases) or by the organisations or social services representing the users (as in the Italian case).

With regard to structural capital, the distribution processes differ widely in the cases observed. In the Spanish case and one of the French cases, the spaces are more similar to warehouses than to markets, as users arrive on a scheduled day at an agreed time to receive the food products and are supported by a volunteer to assemble their "bag". In the German, Italian, and some French cases, however, the social market runs exactly like a normal market; there is a generic timetable, and users arrive when they need food, at any time, with possible restrictions according to the number of family members or a maximum purchase limit. In this second model, the users act exactly like common consumers, choosing the products from displays on shelves and paying for them at the cash register, with money in the German model, or using points or pre-payed cards in Italy and France.

The German case (Case 1G) is described here in detail to highlight how this case has developed its structural and relational capital to provide user-oriented services (Fig. 7.5). The social markets interviewed are part of a national organisation that has more than 900 local agencies in Germany, which run about 3000 distribution points. It was founded in Berlin in 1993 using the model of the American food banks, with the

	COLLECTION	MANAGEMENT	DISTRIBUTION
RELATIONAL CAPITAL	• Network size • Network heterogeneity • Trust relationships with donors	• Partnership with other NPOs	• Local partnerships • **Quality relationships with beneficiaries (engagement and trust)**
STRUCTURAL CAPITAL	• Innovation towards companies	• Process formalization • **Innovative products and processes**	• **Innovative services towards beneficiaries**
HUMAN CAPITAL	• Workers personal relationships	• Volunteer's motivation	• Volunteer's motivation

Fig. 7.5 Main strengths of Case 1G

specific intent to recover surplus food from companies and to redistribute it to the most deprived. In 2013, the organisation involved about 50,000 volunteers and supported more than 1.5 million people across the country, with typical beneficiaries including old age pensioners, asylum seekers, the recipients of social subsidies, single parents, and people in other deprived categories.

The organisation has a federal structure, as the head office in Berlin has logistical, administrative, and institutional functions while the local agencies distribute food to users or to other local organisations. The federation advises the local distribution points, looks for sponsors and large-scale donors, manages large donations at the national level, and is in charge of lobbying and public relations. Each local agency can be either a directly run local agency of the federation, or led by another non-profit organisation which is allowed to use the Case 1G name. To become a member of the federation and to run a local distribution point, a group of local volunteers or a local non-profit organisation must agree to adhere to the eight main principles of the organisation, which include the recovery of surplus food, the involvement of volunteers, the apolitical and non-confessional nature of the organisation, the regulations governing the use of the name of Case 1G, and make a formal request to the

federation to do so. Each local branch of Case 1G differs from the others in terms of its dimensions, activities, and financial resources. Some local agencies work as logistic organisations, and others operate as distribution points, structured as social markets or food pantries. Three distribution points running like social markets and located in medium-sized cities (with between 34,000 and 120,000 inhabitants) were interviewed for this research. These local branches of Case 1G mainly collect surplus food from local retailers and, to a lesser extent, from donations by private citizens. The donated products are organised on market shelves and are sold to the clients.

In these organisations, users are conceived more as actual consumers or clients than as mere "beneficiaries" and are accordingly asked to pay a small contribution for each product they choose. The contribution usually corresponds to 10–30% of the full market price, though some products can be donated in cases of particular abundance, or in compliance with the internal decisions of the single local association. The users' contribution is a disputed issue within the organisation (von Normann 2009), as was observed during the interviews. In the region in which this research's interviews were conducted, most of the Case 1G branches ask users to pay a small contribution, generally 2 or 3 euros, for a food hamper, but some managers and volunteers believe that this is an additional burden for the users. On the contrary, others think that charging small amounts of money for the items chosen is a way to help users to understand the importance of the products, avoiding situations of misuse or wastage. Moreover, the small contributions paid can also be an instrument to educate the users in healthier nutritional habits. Indeed, the prices are sometimes determined according to the products' nutritional value, as a Case 1G manager explained: "The prices are determined by paying attention to the requirements of a balanced nutrition: for this reason, chocolate, and sweets are a bit more expensive in our shop, while salad is free, and fruit and vegetables have a very low price."

The distribution model of these German social markets reveals a high level of attention to users' needs. In fact, the requests for contributions and the possibility of choosing products are seen by Case 1G's operators as a matter of personal dignity and as a means to make users feel responsible for the products they receive. This is, on the one hand, a way to reduce potential waste by ensuring that the users do not receive products they cannot or will not consume due to dietary or cultural requirements,

while on the other hand, it allows the organisation to satisfy not only costumers' needs but also their preferences, reducing potential feelings of self-stigmatisation.

Finally, an important observation in some of the interviewed German social markets was that they also provide support to users' need for socialisation by offering them spaces to sit, drink, meet up with, and talk to other customers. These spaces, which are only available in the larger Case 1G branches, allow people to experience normal socialisation activities to help them to feel part of a community and to reduce their isolation (Baglioni et al. 2016). This aspect led some contributors to highlight that, thanks to these social markets, the users not only relieve the burden on their household budget, but find "an opportunity for participating in a social setting, for not being alone, and for taking part in joint activities" (Lorenz 2012, p. 390).

7.7 Local Networks Against Food Waste: Partnerships Between Non-profit and Public Actors

Relationships with local public actors can be an important element in enhancing the relational capital of organisations. Three particularly interesting cases of local networks were encountered in this research; one in Spain, and two in Italy, where relational capital is highly developed and private and public actors were involved at different levels in the recovery and redistribution of surplus food (Fig. 7.6).

Spanish Case 2S is a local initiative which is able to catalyse encounters between local private and public actors. It was launched as a public initiative by the municipality and involves many local private partners in pursuing its aim of promoting the creation of a local food supply chain which collects surplus food from retailers and distributes it to local non-profit organisations. At the time of the interview, it connected about 15 donor companies, 2 non-profit organisations in charge of the collection and selection of the products, 15 non-profit organisations in charge of the redistribution, the regional agency for public health, and the regional agency for waste. The project was launched in August 2012 and in its first two years of activity up until September 2014, it was able to collect and redistribute 370 tonnes of fresh products and to support approximately 890 families via its partner organisations. The project recovers fresh products from supermarkets (vegetables form 40% of the collected

	COLLECTION	MANAGEMENT	DISTRIBUTION
RELATIONAL CAPITAL	• **Network size** • **Network heterogeneity** • Trust relationships with donors	• **Partnership with other NPOs**	• **Local partnerships** • **Quality relationships with beneficiaries (engagement and trust)**
STRUCTURAL CAPITAL	• Innovation towards companies	• Process formalization • Innovative products and processes	• Innovative services towards beneficiaries
HUMAN CAPITAL	• Workers personal relationships	• Volunteer's motivation	• Volunteer's motivation

Fig. 7.6 Main strengths of the local networks against food waste

food, with 23% being fruit and 4% dairy products). Collections take place every morning from Monday to Saturday and the food is distributed in the afternoon, thus preserving the quality of the fresh products.

Although this project adopts a traditional model for recovery and redistribution similar to those of the traditional food banks described in Chap. 6, the innovative aspect lies in its ability to develop huge relational capital involving public actors not only as partners but as promoters of the initiative. The support of public institutions also brings financial resources and the possibility of creating a network among the different actors already active in the territory.

A second relevant example of a local network, Italian Case 1, is a second-level association involving 16 local partners including local non-profit organisations, the municipality, health services, and schools. In this case, the municipality was one of the founders in 2014 together with some local non-profit organisations working to alleviate poverty and social exclusion. The innovative aspect of this organisation is the fact that not all the actors involved with it are directly engaged in the recovery and distribution processes. Significant importance and emphasis are also placed on educational aspects, and community awareness and involvement.

At the time of the interview, the association was in its first year of life, but had already been able to involve important local actors in the

project. Its main aim is to support the families in need by providing food. Therefore, the project involves local storekeepers, retailers, and food companies (producers, manufacturers, and food services) which donate surplus food, and also non-profit organisations and parishes in charge of the redistribution of food to their users. The non-profit organisations involved in the project distribute food, including food hampers and hot meals, to about 4000 users every year within nine small and medium-sized municipalities (eight of which have under 10,000 inhabitants and the other has 17,000 inhabitants).

A second aim of the project is to raise awareness of food waste and poverty. Therefore, the association also involves local schools, which organise public collections of food and education initiatives, as well as local civil society organisations and an ethical purchasing group[2] committed to diffusing awareness of the issue.

The collection and distribution processes are run so that food products are collected from business partners as well as from private donations, and are distributed through the partnering non-profit organisations. The association aims to create a local "supply chain" gathering local business, non-profit, and institutional actors in order to provide "daily bread" to the disadvantaged. Each partner involved in the food collection has a different role, and the association is permanently open to any new partnerships and collaborations, as it wishes to enlarge its network and to raise its impact.

Although the redistribution process follows quite traditional procedures, in that the food is mainly distributed on scheduled days through food parcels, this organisation has been able to develop relational capital. The involvement of different actors and the support it receives from the municipality enables the association to pursue both an educational and a social role in the community, addressing not only service users but also other citizens, who are engaged in educational initiatives and public food collections.

Another example of a local network is Italian Case 20, another association founded in 2014, whose members include local entities in the form of non-profit organisations and local institutions, such as the municipality and the province. The main aim of the project is to collect food from local retailers and redistribute it to poor families and to non-profit organisations. The mission of the organisation is not only to tackle food poverty, but also to undertake wide interventions in order to achieve the social reintegration of service users, by combining food

aid with assistance in house and job searches. The project supports more than 50 local organisations (including a soup kitchen, food pantries, and shelters) and about 300 private families. At the moment of the interview, almost 30 volunteers were engaged in the organisation, and six people were employed as social workers.

In order to better support its users' social reintegration, the association also offers the chance for some of them to collaborate as volunteers in the project. According to the interviewed manager of the organisation, "One homeless person helps the association in the recording of the products in our computer system. Fifteen boys from a local shelter supported by the association are volunteering in our centre in 4 h shifts in groups of four. Another four ladies, receiving the food parcels, also work as volunteers. Five people volunteer in the association 5 h a week in return for a financial support from the municipality." Although the interviewee noticed that the coordination of volunteers who come from difficult social and economic backgrounds is often demanding and demands specific care, he is convinced that the organisation is a valuable resource for users' social reintegration.

These cases of local networks show that the collaboration between private non-profit actors and local authorities can be a precious resource in enhancing the relational capital of initiatives for food recovery and redistribution. In fact, the common features of these networks are their abilities to bring together varied networks of actors including donor companies and organisations, to strengthen their bonds with local communities, and to engage in trusted relationships with their beneficiaries (Fig. 7.6).

7.8 Concluding Remarks

Drawing on the model presented in Chap. 6, some of the best practices identified are described in this chapter, highlighting the selected organisations' ability to develop their relational, structural, and human capital. These best practices show how some organisations have been able to tackle some of the main barriers hindering traditional non-profit organisations involved in surplus food recovery and redistribution, particularly by innovating in their recovery and redistribution processes and strengthening their networks.

In terms of structural capital, the cases described here show that some organisations are able to go beyond some of the main internal barriers

presented in Chap. 6. For instance, innovations in the processes of food supply, management, and redistribution allow some organisations to distribute a wide range of products, including fresh meals, fruit, and vegetables, and thus to meet the dietary requirements of their beneficiaries. Moreover, some innovations in the management of processes towards beneficiaries, such as their involvement as consumers or clients in social markets, or as volunteers in some recovery and redistribution processes, confront the problem of potential stigmatisation and the marginalisation of users.

Concerning relational capital, this chapter has presented some cases in which organisations have been able to develop their network size and heterogeneity with regard to both donors and beneficiaries. As highlighted in the best practices described here, organisations which are able to develop their relational capital always rely on trustworthy relationships with donors, which is often achieved through the involvement of a large logistic organisation, as observed in Case 3, or the Lombardy branch (Case 22), or in some local authorities, such as with the local networks in Sect. 7.7.

Some of the best practices described in this chapter, i.e. the local networks, the Spanish Case 2S, and Case 12, were interviewed only a few months after their foundation. This on the one hand reveals the great vitality of the third sector in creating new solutions to tackle food waste. On the other hand, it is also worth noticing that further research is required to fully assess the ability of these projects to be sustainable in the long term from both an economic and an organisational point of view.

Notes

1. According to Law 381 from 1991, disadvantaged people are those affected by physical or psychological disability, drug or alcohol addicts, and detainees.
2. An "ethical purchasing group" (*Gruppo di acquisto solidale*) is an Italian system of the collective purchase of goods. In these organisations, a group of people cooperates in order to buy food and other commonly used goods directly from producers at a price that is fair to both parties and with particular attention to environmental and ethical aspects (Forno and Graziano 2016).

References

Baglioni, S., De Pieri, B., & Tallarico, T. (2016). Surplus food recovery and food aid: The pivotal role of non-profit organisations. Insights from Italy and Germany. *Voluntas: International Journal of Voluntary and Non-Profit Organizations*. doi: 10.1007/s11266-016-9746-8.

Forno, F., & Graziano, P. (2016). *Il consumo critico*. Bologna: Il Mulino.

Lorenz, S. (2012). Socio-ecological consequences of charitable food assistance in the affluent society: The German Tafel. *International Journal of Sociology and Social Policy, 32*(7/8), 386–400.

Von Normann, K. (2009). Ernährungsarmut und „Tafelarbeit" in Deutschland. Distributionspolitische Hintergründe und nonprofit-basierte Lösungsstrategien. In S. Selke (Ed.), *Tafeln in Deutschland. Aspekte einer sozialen Bewegung zwischen Nahrungsmittelumverteilung und Armutsintervention*. Wiesbaden: VS Verlag für Sozialwissenschaften.

CHAPTER 8

Conclusion

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Abstract This chapter combines into a cross-themes discussion the findings from previous chapters. Conclusions and limitations of the research are detailed considering the different disciplines used to study businesses, non-profit organisations, and policies. It highlights the contribution that the project gives to international knowledge on the issue of surplus food.

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Finally, using the lenses of social innovation, it outlines avenues for a future research agenda.

Keywords Social innovation · Efficient partnerships · Research agenda Research limitations

8.1 Introduction

In recent years, new economic, environmental, and social challenges have affected Western economies, highlighting the necessity of pursuing sustainable development and of achieving better coordination between the business sector, non-profit organisations, and public sectors. The food sector is a field in which several instances of unsustainable production and consumption patterns combine to raise new social, economic, and environmental issues. In order to deal with these problems, significant modifications have to be made to the sector's governance and operation. For example, a recent International Exposition (Expo 2015) aimed to link food with sustainability by trying to develop a better system of food production and consumption, in the hope of achieving a more sensitive and empowered society. In this context, the Foodsaving research has aimed at understanding how it is possible to use surplus food recovery and redistribution as a means of addressing both the societal need for food security in a more inclusive and ethical society, and the environmental and resource efficiency issue represented by food waste.

The project adopted an interdisciplinary approach, using different disciplines to study businesses, non-profit organisations, and policies, focusing on issues such as the management of surplus food along the food supply chain, the implications for corporate social responsibility, the strategic management of non-profit organisations, and the effectiveness and appropriateness of strategies, policies, and regulatory contexts. Through this multidisciplinary approach, the project contributed to the international knowledge on the issue of surplus food. This study mainly followed an inductive approach based on case studies in exploring the topic, using the lens of social innovation. Theory was allowed to emerge from the data and was considered a valuable starting point. However, conscious of the perceived limitations inherent in theory-building from case studies rather than using hypothesis testing, we chose unexplored and unusual settings which could be regarded as revelatory, with a number

of highly knowledgeable informants. Therefore, the study's conclusions and suggestions for future research in terms of policy development, business strategies, non-profit organisational growth, and social innovation between profit and non-profit organisations emerged and are now discussed in this chapter.

8.2 Policy and Food Surplus

Chapters 2 and 3 presented the regulatory framework addressing surplus food recovery and redistribution in Europe, with a particular focus on the four countries considered by the Foodsaving Project. Although economic crisis and the general economic adjustment have brought the problem of food poverty back onto the agenda even in affluent societies, the authors of this study have described how the recovery and distribution of surplus food are mainly promoted by private actors in the context of incomplete and often inconsistent public regulation. The development of new solutions to recover surplus food, in fact, is often promoted by civil society organisations or by private companies, who are acting despite a lack of systematic policies and coherent incentives (Baglioni et al. 2016).

Different kinds of policies are addressing the various actors involved in the food recovery and redistribution processes. Fiscal and tax-related incentives are the most commonly adopted policy interventions adopted in the analysed countries. All four of the regions analysed here have embraced some kind of fiscal or tax-related incentives, which particularly address donating companies and receiving organisations (see Chap. 3). In some cases, such as in France, these policies are encouraging for companies, while in other contexts, such as the Italian one, they are less clear and coherent, and require a more systematic approach to increase their effectiveness and limit the bureaucratic burden which is currently hindering donations.

Another relevant area of policy field concerns durability and "best before" dates. Many countries lack specific regulations, allowing the donation of products after the "best before" date has passed, creating uncertainty which hinders donations. Even if some best practices are available at the European level (see Chap. 2), more uniform regulation on food duration and labels is needed to increase the amount of donations and reduce food waste (Deloitte 2014).

A third important field of policy relates to liability legislation. Specific regulations concerning liability in the case of surplus food donations are a thorny field, since they are essential to limiting cases of misconduct or negligence, but should also not hinder the process of donation. At the time of this study, the only European country to have passed a law concerning food donation liability is Italy, as described in Chap. 3. Other European states are discussing the possibility of passing similar liability legislation, and a request for a reduction in donor liability, provided that all hygiene standards are met, is also required at the European level (EC 2014).

This study provides a general framework of the existing policies addressing the processes of surplus food recovery and redistribution. As has been mentioned earlier, this framework is fragmentary, and very often the private actors involved in the process (i.e. non-profit organisations and donor companies) operate in a context in which they are unable to successfully encourage the recovery of surplus food for human consumption. This research is only the first step in the investigation of policy frameworks which are hindering or fostering surplus food recovery. Future research should carry out an evaluation of the existing policies, particularly focusing on those countries where specific policies have been implemented to attempt to foster surplus food recovery. Policy evaluation could be an important instrument in understanding which contextual factors enable the creation of a favourable environment for food recovery and redistribution processes, and which kinds of policy interventions actually encourage the proliferation of best practices in this field. Moreover, specific policies at the local level should be identified and evaluated, in order to increase knowledge sharing that could impact on the better management of food surplus along the entire chain.

8.3 The Business Sector

The issue of food waste generated throughout the food supply chain is critical not only for the economy, the environment, and society in general, but it also means inefficiencies in companies' use of resources and operational processes. On the other hand, there is a trade-off between the ability to serve an uncertain demand and the ability to prevent any generation of excess food. Curbing surplus food at source may not be technically or economically feasible beyond a certain level. Therefore,

once generated, it is vital that this excess output is managed efficiently and effectively.

The food use hierarchy already prioritises the redistribution of surplus food for social purposes. However, the implementation of this criterion may follow different routes, especially considering the different production processes and different stages of the food supply chain which are involved. Therefore, in the conceptual framework presented in this book, the surplus food management processes were mapped across supply chain stages and companies. At the same time, it was necessary to identify the critical factors that can improve those management processes and increase the surplus food saved for human consumption, as they may vary across sectors and countries. Therefore, a multi-country and multi-industry research design was appropriate to this study's objectives.

The results show that the design and implementation of structured surplus food management systems include the need for periodic and structured measurement of surplus food, formal coordination between the different company functions for management, and a structured process within the organisation depending on the different causes of the surplus food generation. A higher degree of adoption of these systems in organisations' operational processes would increase the amount of surplus food which could be saved for human consumption.

On the other hand, operational efficiency is not the only factor to be taken into consideration in surplus food management decision making. Other than making internal management as efficient as possible, close partnerships between companies and food aid organisations is necessary to be able to effectively redistribute surplus food for social purposes. Donation activities should become part of the daily process of the companies if the social perspective is to be prioritised.

Future research should be directed to extending the empirical setting in order to understand whether the present study's results can be generalised to other geographic areas. Moreover, it is necessary to identify the potential of industries other than food with regard to the recovery and donation of surplus products and resources that would otherwise be wasted. Finally, these authors look forward to a regular and harmonised collection of information about surplus food and food waste in European and other high-income countries. These data can provide future research with a suitable empirical infrastructure for econometric hypothesis testing.

8.4 Non-profit Organisations

NPOs play an important role in the surplus food system as they represent the link between the firms which produce surplus food and the beneficiaries in need. This role has relentlessly grown within the food recovery sector, with NPOs managing redistribution systems, leading to innovative solutions aimed at facilitating not only the availability of food, but also to the promotion of inclusion for people in need. Accordingly, new types of NPOs dedicated to collecting and redistributing food supplies have emerged, such as food banks, social supermarkets, food pantries, soup kitchens, social restaurants, and social coffee shops, and community food centres. This trend suggests a certain level of dynamism within the NPO and food recovery sectors, and also indicates further opportunities for future development. However, NPOs are often criticised for their perceived inefficiencies, their common lack of capability to provide long-term support, and the low quality of their services, which call for a better understanding of the effectiveness of these organisations.

The model discussed in Chap. 6 was developed thanks to the within- and across- case analysis which included the observation of 37 NPOs active in the food recovery, management and redistribution sector. In other words, the model summarised the strengths and weaknesses which emerged in the interviews and questionnaires with the managers of the NPOs, thus highlighting areas of possible advancement. The final aim was to design a model to support NPOs in the continuous improvement of their ways of working, and the enhancement of their ability to create shared value for all the stakeholders involved in the surplus food collection, management, and redistribution sector.

The definition of the model began with the observation that the enabling or hindering factors in the case analysis mainly referred to intellectual capital, including elements linked to relational, structural, and human capitals. As far as relational capital is concerned, the model highlighted that the network of relationships with donor firms and other NPOs is particularly important in the food collection and management phases. At the distribution level, the observed cases highlighted that their main concern relates to the lack of transparency of the actual living conditions of their beneficiaries, which makes the identification of the needs which they are aiming to serve all the more difficult. Moreover, the NPOs underlined that they have difficulties in understanding what

impact their work generates on the beneficiaries and society in general, since they lack widely shared measurement tools and methods. Moving on to consider structural capital, this study's findings underline that there is a growing engagement of NPOs in innovation with regard to the services offered both to donors and to beneficiaries. Of particular interest are ideas on how to support donors in the administration process to lighten the burden of bureaucracy and how to extend the value chain including the processing of collected food in order to prolong its life and identify new redistribution opportunities. A limitation here is the limited product mix that NPOs are able to offer due to the usually narrow network of firms with which they work, which often limits the collection of food to certain categories of products. Again, the NPOs underlined the absence of measurement systems to control the food collection and distribution processes, and to monitor the efficiency and effectiveness of those processes.

Finally, the model also considers human capital. Here, the literature review suggested that NPOs are mainly able to operate thanks to the motivation and availability of volunteers who run most of their operations, and make it possible for the NPOs to conduct their activities. However, the analysis also observed a general lack of competencies among volunteers, which reduces the efficiency and effectiveness of the activity, and noted that it is difficult to improve NPOs' processes and to expand their activities while relying on people who do not have formal relationships with the NPOs, since their involvement is often precarious and based on voluntary participation.

In the light of the above-mentioned findings and model, it seems reasonable to identify some directions for future theoretical and practical advancement. First, future studies should investigate the social impact determined by NPOs' activities in the food surplus collection, management and redistribution sector. Although a general acknowledgement of the important role NPOs play has now been established, no quantitative evidence is available with regard to what their activities generate in terms of capability to collect surplus food, in turn generating a positive impact on waste reduction and food recovery, or their capability to respond to the need for food security in society. In this sense, the theoretical development should explore what variables contribute to determining the social impact of the activity and what KPIs could be useful in quantifying NPOs' output and the outcomes they achieve. Second, there is a

growing need to explore the role of volunteers in comparison with that of employees, in order to identify the strengths and weaknesses which affect NPOs' effectiveness. Third, future development should investigate new collaboration opportunities between NPOs and business sector organisations. The cases here have evidenced a general trend of NPOs to innovate in their processes, extending the scope of their activity. In this sense, innovation is an important field of study for the future advancement of the topic at hand. Again, the role of the network of relationships with different subjects operating in the same territory has emerged as an important dimension of relational capital, which supports NPOs in strengthening their ability to respond to societal needs. However, limited attention has so far been dedicated to the investigation of how this territorial network works.

8.5 Social Innovation for Improving Food Recovery

Partnerships between non-profit organisations and business actors emerged as a fundamental trait in all cases of social innovation in improving food recovery. The collaboration between NPOs and donor companies mainly relates to the recovery of surplus food, but it can also involve in-kind contributions such as the donation of facilities or infrastructure (computers, software, vehicles, storage spaces, etc.).

As a conclusion of this collaborative research path, four main variables were considered most relevant in affecting a periodical partnership between the two sectors, namely: network size, heterogeneity, trust, and proactive management. The first two variables relate to the structure of the profit–non-profit network; the third refers to the quality of the relationship; and the fourth is inherent in the business management attitudes both of NPOs and their business partners. Network size and heterogeneity help NPOs to diversify their sources of surplus food supplies, leading to a higher quality and continuity in the collection process. If non-profit organisations are structured to manage diversified and large networks, the possibility of periodical donations is supported. However, most of the NPOs interviewed underlined the difficulty of getting in touch with potential donor companies, mainly due to questions of trust, competency and even different languages being spoken. Hence, the presence of a third party's support can play a pivotal role in building trust-based relationships between NPOs and companies, and in fostering proactive donation in the business sector. In a structured process, in fact, companies

should contact non-profit organisations and transfer surplus food on a regular basis, depending on the product type. A proactive approach to management may act as broker for innovation in this model. Only closer collaboration with NPOs in terms of continuity, and the quality and ease of the relationship, can support the identification of the potentially innovative ways donated products might be used, to extend their lifespans and reduce the bureaucratic process of donation. Only through a continuous process will it become possible to reduce the expense and time required for the implementation of a social innovative food chain.

It is therefore important to structure an entire process which is able to support periodical donations by companies, and a structured collection of the goods by NPOs. This innovative process should also be incentivised by the development of policies that foster donations by companies and that are careful not to overload NPOs with goods that they cannot distribute. This debate is lively in contexts such as France, where recent laws support companies (in this case, supermarkets) to get rid of surplus food, donating through voluntary contracts to NPOs, but without a system of incentives which, at the same time, might help NPOs to manage the high volumes of surplus food they receive.

Future research should more deeply explore the key roles and factors in developing this relationship and the characteristics of the management both of NPOs and businesses that could foster the value chain assuming, for example, a role for brokerage. Social network analysis could be used in understanding the necessary roles and relationships in order to inform policy makers on how to support the key positions in this kind of network. It will be important to develop indexes for measuring the effectiveness and efficiency of the partnerships, and which can collect data exploring the variables affecting the process, in the context of implementing an evaluation process. Moreover, future research should explore what kinds of services are developed alongside food donation in order to understand how to strengthen synergic relationships.

Finally, the results which have emerged from this research study open up possible integrations with other research disciplines and theoretical constructs, such as those relating to the sharing economy. Experiences of food sharing have been traced in many countries. These experiences have in common the specific advantage of creating added value for all their stakeholders. On the community side, they offer a social experience to individuals and foster community building initiatives by connecting people through a common platform (a technological platform which

represents a virtual place of contact and a place where everybody can contribute to a certain extent and according to their own possibilities). On the other hand, food-sharing experiences can also increase the efficiency of the recovery and redistribution process of surplus food by easily connecting companies with beneficiaries through user-friendly, customised devices such as web apps. The rate of success and the implications of food-sharing experiences can be studied through a wider lens, as a phenomenon which involves the transformation of our society, and more specifically the transforming role of the public, profit and non-profit sectors, the blurred boundaries between them, and the contributions of citizens and individuals as social activists in developing innovative tools for the common good.

References

Baglioni, S., De Pieri, B., & Tallarico, T. (2016). Surplus food recovery and food aid: The pivotal role of non-profit organisations. Insights from Italy and Germany. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, Online first, pp. 1–21. doi: 10.1007/s11266-016-9746-8.

Deloitte. (2014). *Comparative study on EU Member States' legislation and practices on food donation*. Final Report Prepared by Bio By Deloitte for the European Economic and Social Committee. Brussels.

European Commission. (2014). *Food losses and food waste in Europe and European legislation*. Notes from the Netherlands and Sweden.

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DOI 10.1007/978-3-319-56555-2