



Università
Ca' Foscari
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UNIVERSITÄT GRAZ
UNIVERSITY OF GRAZ



Master's Degree
in Environmental Science
DM 270/2004

Final Thesis

**Key factors for sustaining social
innovations that promote food waste
reduction.**

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Academic Year

2001 / 2002

Abstract

Food waste is one of the main sustainability issues faced by humanity. Food waste has far-reaching consequences, impacting not only social, environmental, and economic factors, but also ethical and humanitarian considerations. At present, roughly one-third of all the food produced is wasted. Furthermore, the food waste generation is likely to be exacerbated by the expected increase in human population. Academics acknowledged that technological solutions alone will not solve food waste generation problem and therefore changes in social behavior are also necessary. Social innovations could drive the needed changes in social behavior to tackle the food waste generation problem. Therefore, this thesis analyzes two main topics, namely, 1) Personal drivers that motivate people to start or work with social innovations initiatives that aim at reducing food waste; 2) Key factors that allow these social innovations initiatives to persist in time. To accomplish these goals, the methodology of the thesis is the following:

- i. A literature review about factors that facilitate sustaining social innovations.
- ii. Semi-structured interviews with 10 persons who have leading roles in established social innovations initiatives focused on reducing food waste generation, identifying personal motivators to participate in the initiative, and perceptions on key factors for social innovation's initiative sustainment.
- iii. Compare data collected by a directed content analysis against the six-factors framework from Murray et al., (2010) ("business model" factor, "governance model" factor, "source of finance" factor, "network & communication model" factor, "staffing model" factor, and "development plan for operational systems" factor).

The results show how the main personal drivers that motivate people to start or work with social innovations initiatives are related to personal factors, for example, background as a volunteer, and altruistic job-related factors as the sense of contribution to a big problem. On the other hand, regarding the main factors for sustaining a social innovation initiative, network & communication model and source of finance turned out to be the most frequently mentioned factors that enable the sustainment of social innovations initiatives according to the interviewed people. The interviewees considered all the six factors equally important for the sustainment of social innovation's initiatives, and with few exceptions, most of these factors were considered and implemented since the beginning.

Regarding the Murray et al., (2010) framework with six-factors to sustain organizations that carry out social innovations, there are common characteristics among the organizations interviewed, for example, the most preferred business model types are either social enterprises or non-profit organizations. Regarding the business model factor, interviewees mentioned having low hierarchy and democratic models that allows to create a collaborative environment. For the source of finance factor, interviewees mentioned that proactivity and flexibility are key aspects to find as many sources as possible. For the factor network and communication model, interviewees mentioned that it is important to include all actors and stakeholders, and use tools like social media and a website for communications, to reach as many stakeholders and citizens as possible. For the staffing model factor, interviewees mentioned the importance of working with volunteers but also having a professional team for developing their activities. And finally, for the development plan for operational systems factors, interviewees commonly mentioned having a proper reporting system to interested parts that also allows having credibility and increasing public support.

Acknowledgments

Without the following people, finishing this thesis would not have been possible:

- My tutors, Dr. Animesh Gain who introduce me in the topic of social innovation, Prof. Roberto Pastres and Prof. Renata Sõukand, for their help when I needed the guidance for complete the research, also for the continuous and kind support and very valuable comments that allows the development of this thesis.
- The admin unit for the Joint Master's Degree, for their guidance and support regarding the administrative procedures for the thesis submission.
- The interviewees of the different social initiatives that participates in the study, for believing and working on sustainable causes that inspire student like me, and for making the time to support and advance science with their valuable perceptions.
- To my family for believing in me and teaching with example the importance of overcoming challenges, work hard and modesty.

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1. Introduction

2022 was a year of unprecedented hunger (WFP, 2022), and in a world where millions suffer from hunger and malnutrition, food waste (FW) generation was still one of the biggest problems (FAO, 2021; Vlaholias-West et al., 2018). The FAO (2019, p. 4) defines food loss as “the decrease in the quantity or quality of food resulting from decisions and actions by food suppliers in the chain, excluding retail, food service providers, and consumers”; and FW as “the decrease in the quantity or quality of food resulting from decisions and actions by retailers, food services, and consumers.” According to the Food Waste Index Report (UNEP, 2021), approximately 931 million tons of FW were generated globally in 2019. FW is ethically and socially wrong as millions of people are living in extreme poverty. Deloitte (2021) estimated that the volume of wasted food can feed more than 2,400 million malnourished people every year. Furthermore, FW also has tremendous economic and environmental impacts (Caldeira et al., 2019; Cellura et al., 2012; Huang et al., 2020; Scherhauser et al., 2018), food loss and waste means an economic loss of USD 936 billion (WRAP, 2021) and accounts for 8-10 % of global Greenhouse Gas (GHG) emissions (Mbow et al., 2019, p.200). If FW emissions were counted as the emissions of a country, FW would be ranked third larger emitter behind US and China (Climate Watch, 2019; WRAP, 2021). Therefore, FW generation is a problem that should be dealt urgently. However, none of the Nationally Determined Contributions to the Paris Agreement mention FW (and only 11 mention Food Loss) (WWF, 2020).

Studies have shown that different innovation typologies could have a high potential to reduce and prevent FW (Aramyan et al., 2020; Canali et al., 2014, 2016). Specifically, social innovations (SI) are increasingly considered as providers to possible solutions to different societal and environmental problems that require changes in social practices (Davies & McGeever, 2022; Howaldt et al., 2017). Furthermore, SI can attract the public efficiently as they create new linkages and rearrange networks among different stakeholders, which triggers relations among them (Lombardi & Costantino, 2021). SI can also promote sustainable benefits and social equality (Marchesi & Tweed, 2021). However, despite all the benefits that SI bring, not much attention has been given to the opportunities that social innovations initiatives (SII) have to reduce FW (Zhao et al., 2022). The EU Fusion project report is the first attempt to highlight the role that SI can play in reducing FW (Zhao et al., 2022). Though, the project only focuses on the stimulation of SI for FW reduction through policies, and many open questions remain that academics should address (FUSIONS, 2016). For these reasons, it is important to support the understanding of SII as a powerful tool for more sustainable food production and consumption.

Critically, SII usually are born and die very soon, as they cannot sustain themselves over time. In their book, Murray et al. (2010) described the distinct stages of SI's organizations, from planning to systemic changes. In the sustaining stage, the authors mention six critical factors for sustaining a SI. These factors are: i) a business model to make the activities of organization's successful, ii) a governance models to determine strategic aspects that shape the organizations' work, iii) sources of finance to start organizations' activities and to sustaining them in the long term, iv) network and communication model to have proper connections and communication channels with organizations' stakeholders, v) a staffing model to identify the adequate number of people involved in organizations' initiatives and roles, vi) a development plan for operational systems to reach organizations' objectives.

Even though, Murray et al. (2010) listed specific factors for sustaining organizations that carry out social innovations, others analyzed this problem from different perspectives. For example, Battistella et al.

(2021) analyzed how social start-ups can develop and reach scalability while avoiding failure, and Howaldt et al. (2017) developed a normative framework to facilitate SI development, focusing on policymakers and civil society. Besides these papers, nothing else has been said about personal drivers that motivate people to start or work in SII working on reducing FW, nor specifically an analysis that could support SII that promote FW reduction. Therefore, the approach of this thesis is to assess the following:

- To identify personal drivers that motivate people to start or work with SII that aim at reducing food waste.
- Identify if all the factors mentioned by Murray et al. (2010) are applied by the SII interviewed and what level of importance is given by them.
- Identify characteristics of the application of the factors mentioned by Murray et al. (2010) to sustain SI among different European initiatives for food waste reduction.
- To support research that can help the sustaining organizations that carry out SI for FW reduction.

2. Literature review

2.1 Food waste concept

One of the issues that make it difficult to address the food waste problem is that the FW definition is not commonly accepted (Lebersorger & Schneider, 2011). For that reason, sometimes food waste and food loss refer to the same thing, which creates difficulties in different aspects such as assessing the amount of food waste produced, creating appropriate strategies, and comparing food waste production between different countries (Monier et al., 2010).

To define food waste, the researchers needed to mention food definition. Food is defined as “any substance whether processed, semi-processed or raw, intended for human consumption, with animal or plant origin (FAO, 2013a, p. 22). This includes drinks and water used in the processing, preparation, or treatment (European Parliament and Council, 2002).

In a literature review, Chauhan et al. (2021) identified five categories of definitions for food waste. The first considers food loss as a subdivision of food waste (Harvey et al., 2019) and the same backward (Muriana, 2017). At the same time, some establish a differentiation between the two concepts suggesting that food losses are generated in the first stages of food supply chain from production to processing, and food waste is generated in the last stages of food supply chain which are more related to consumption (Priefer et al., 2016); the second category is focused on the intended destination of the food, Beretta et al. (2013) and Redlingshöfer et al. (2017) considers food waste as the food that it was intended to be consumed by humans, others consider food waste as any wastage of food in the entire food supply chain even if it were not considered for human consumption (Griffin et al., 2009); the third category focuses on the condition of food and quality (Porter et al., 2018); the fourth category is focused on food use, while Parfitt et al. (2010) considers any food used in not planned intentions as food waste, and others like Bellemare et al. (2017) considers that the food used in productive things as animal feed must not be considered waste; the fifth category focuses on the use of surplus food that defines if it is considered food waste (Hartikainen et al., 2018), some defines food waste also considering the food that is sent to landfill without considering farm losses (Rethink Food Waste, 2016), and others dispute that the farm losses that are used to their own crops or for productive means as animal feed and improving fertilization can be disregarded (Dusoruth et al., 2018).

The FAO (2019) defines food loss and food waste in the following way: “Food loss is the decrease in the quantity or quality of food resulting from decisions and actions by food suppliers in the chain, excluding retail, food service providers, and consumers. FW is the decrease in the quantity or quality of food resulting from decisions and actions by retailers, food services, and consumers.” Considering the FAO (2019) definition, this thesis will consider this definition and focus on FW reduction.

Another important definition is surplus food, which is any edible product humans have not consumed due to different factors, mainly socio-economic reasons such as aesthetics, food close to the expiration date, damage in the packing, and others (Mourad, 2016).

2.2 Food waste problem

According to Poore & Nemecek (2018), Secondi et al. (2019), and the IPCC (2019), the Food Supply Chain generates 26% of the greenhouse gas emissions. From that percentage, 24% can be attributed to food

loss and food waste 15% and 9% respectively. It is estimated that food loss and waste generate 8-10 % of global greenhouse gas emissions (Mbow et al., 2019, p.200). If we compare the emissions from food loss and waste with the countries' emissions, would be ranked third larger emitter, only behind US and China (WRAP, 2021).

Moreover, of the total amount of FW produced, 61% comes from households (568 million tons), 26% from food services (242 million tons), and 13% from retail (121 million tons) (UNEP, 2021). It is estimated that FW will increase dramatically in the next 25 years because of economic growth and the increase in the world population, projected to reach 9.7 billion in 2050 and a further increase to 11.2 billion by 2100 (Chen et al., 2017).

2.2.1 Impacts of food waste

FW represents a huge environmental problem because when we discard it, all the resources used in production, processing, transportation, and storage are also wasted (FAO, 2013b; House of Lords, 2014; Kummu et al., 2012). Besides this, when decomposing in a landfill under anaerobic conditions, the food waste generates methane, whose positive radiative forcing as GHG is 21 times higher than that of CO₂ (Iacovidou et al., 2013). FW is also a big concern because it is estimated a 60% increase in food demand by 2050, which poses significant pressure on the environment and natural resources (Chauhan et al., 2021).

FW is responsible for 25% of all water consumption in agriculture (Searchinger et al., 2019), which means 6% of all water used and 30% of cropland use (FAO, 2021). In Europe, 20% of food production is wasted, costing 143 billion euros annually (IPES, 2019). This situation creates a social dilemma and a food paradox because 821.6 million people are undernourished (FAO, 2022), while in high-income countries, millions of tons of perfectly edible food are wasted every year (Kummu et al., 2012), as explained by the EU FUSIONS project, in Europe a total of 88 million tons of food is wasted every year (Stenmark et al., 2016).

FW is also an economic problem, as stated by some authors, the yearly economic loss is about 1000 billion dollars (Segrè & Azurro, 2016), environmental costs of 700 billion, and social costs of 900 billion USD per year (FAO, 2014). Other authors estimated that reducing 20-50 % of the FW in consumption would signify a global savings of 120 to 300 billion dollars every year by 2030 (Wrap, 2015).

In the EU (including Great Britain by the time of the assessment), an estimated 88 million tons of food are wasted every year, the equivalent to 20% of the total food produced in the world (Stenmark et al., 2016) and meaning an economic loss of 130 billion euros (Eurostat, 2022). Surprisingly, half of this FW (47 million tons) is generated in households alone, and 70% if includes households, food services, and retail (WWF, 2020). However, in the last decade, Europe has put efforts in place to reduce FW and currently implemented initiatives like the EU "Farm to fork strategy" and the European Platform on Food Losses and Food Waste (European Commission, 2022). Some countries have implemented programs like the UK's Waste and Resources Action Program (WRAP), different campaigns to increase public awareness, programs that promote food redistribution activities to charities, and others, showing that progress is happening (WRAP, 2022; WWF, 2020).

2.2.2 Systematizing the problem

FW can be associated with different causes, such as exceeding or misunderstanding the “best before” and “use by date” labels (Garrone et al., 2014a, 2014b; Halloran et al., 2014); lack of planning in food acquisition, poor financial education in food consumption; poor knowledge in food characteristics and proper storage (Garrone et al., 2014a, 2014b; Moomaw et al., 2012); the effect and failure of promotions or introduction of new products; packaging characteristics and packaging failures (Garrone et al., 2014a, 2014b; Williams et al., 2012); and behavioral factors of consumers (FAO, 2011) for example, preparing more food than needed, serving big portions size, uncertainty about food safety and consumers preferences (Senanayake et al., 2019).

Food waste and loss are different in developed and developing countries. While in developing countries, food is discarded at earlier stages of the food supply chain due to inefficiencies in operations (environmental factors, poor technics, lack of equipment, transport, and improper storing practices), in developed countries, the food is discarded in later stages, especially in the consumer stage where more than 40% of the food loss and waste is produced (FAO, 2011). This was also estimated in other studies, like the EU FUSIONS project (Östergren et al., 2014) in 2012, with an estimation of 52% of the total food waste, and if also considered the processing stage, this percentage rises to 72% (Caldeira et al., 2019; Stenmark et al., 2016). Other estimates of the food waste generated at the consumption level are 35% (Xue et al., 2017) and 42% (Flanagan et al., 2019). In retail and wholesale, the amount of FW is usually much lower, accounting only for 17% of food lost and wasted (Stenmark et al., 2016). Nonetheless, these previous mentioned estimates are considered low, and the actual food wasted recorded in this stage is at least +30% according to Cicatiello et al. (2017) and +44% according to Eriksson et al. (2012). Even though this stage produces less food waste than consumption, it is the third largest source.

Furthermore, in high-income countries, the food loss and waste are most significant than in developing countries, for example in the EU and North America, the food loss average is 280-300 kg per capita/year, while in developing country regions, the average is 120-170 kg per capita/year (Papargyropoulou et al., 2014). For that reason, is essential to address FW in the later stages of the food supply chain, especially in developed countries.

The issue of FW is embedded in high-income societies as there are systemic characteristics that favor FW. Some of these characteristics are food policies that are favorable to big corporations that only look for profit maximization (institutional); personal attitudes towards aesthetic conditions of fruits and vegetables (cultural); and others related to current business models and processes in the food system (technical and material). Those characteristics create “lock-in” mechanisms that favor food loss and food waste production (Messner et al., 2021).

In a literature review conducted by Chauhan et al. (2021), food loss and food waste generation were classified into two main streams to understand their generation. One stream of the literature focuses on aspects of the food supply chain that contribute to food loss and waste generation, like attitudes (Beausang et al., 2017; Janousek et al., 2018; Peira et al., 2018), improper management of perishable food (Rijkema et al., 2014; Zhu et al., 2017), aesthetic of food (de Hooge et al., 2018; Devin & Richards, 2018) agreements between providers and consumers (Eriksson et al., 2017; Ghosh & Eriksson, 2019), breakdowns in the supply chain (Teller et al., 2018; Yang et al., 2017), deficient packaging (Goossens et al., 2019; Wohner et al., 2020), and demanding standards (Gillman et al., 2019; Hermsdorf et al., 2017;

McKenzie et al., 2017). While the second stream focuses on factors that contribute to a high amount of food waste and loss, for example, long or poor transportation routes, shortage of skilled workers, improper packaging, deterioration due to improper handling, failures in quality controls, inappropriate harvest techniques, extended supply chains, lack of proper storage and preservation techniques, poor regulations, poor technical skills, and lack of innovations (Sedlmeier et al., 2019; Simms et al., 2020; Wu & Huang, 2018).

2.3 International efforts to tackle the food waste problem

The UN, in SDG 12 “ensure sustainable consumption and production patterns,” established the specific objective 12.3, which aims to reduce FW by 50%. This reduction on FW will significate also reducing food production by 20-30% (Arneth et al., 2022).

The European Union in 2020 launched the “Farm to fork strategy” that established targets for different stages of the supply chain from production to consumption to improve sustainability in the food system (European Commission, 2020). The target is to reduce the FW produced at retail and consumer levels by 50% by 2030. The commission addresses different issues contributing to food waste, such as date-marking misunderstanding, consumer research, amount of food waste identification, possible ways of avoiding food waste investigation, action coordination between states, and giving recommendations to different actors. (European Commission, 2020).

Although several countries follow the UN guidelines and are committed to the SDGs, there is a concern about the real chance to reduce FW (Lombardi & Costantino, 2020). Some countries of the EU implemented bottom-up activities focusing on interactions of different stakeholders to form adequate networks to cooperate and develop projects to share information and knowledge (Ghinoi et al., 2020). These are very similar to grassroots social innovations, so it is suggested that SI can be considered as an alternative to introducing more sustainable models in the food supply chain (Lombardi & Costantino, 2020) and to contribute to the transition toward a more sustainable society (Eichler & Schwarz, 2019; Jaeger-Erben et al., 2015).

2.4 Solutions for food waste

The different activities that can be implemented to reduce food waste and food loss can be many. For example demand control focused on forecasting production from monitoring data over the years (C. C. de Moraes et al., 2020; Steen et al., 2018); education activities that aims to change stakeholders’ behaviour (N. V. Moraes et al., 2021b); policy implementation to enforce reducing FW; storage activities to extend shelf life of products by improving management and storage (Lefadola et al., 2018); donation of surplus food to charities or people in need; reuse practices that reduces the cost of recycling (Kostecka et al., 2018). In the service sector, different measures can be implemented, like changes in the portions and plates size, a menu with defective vegetables, and others (Bharucha, 2018; Cristóbal et al., 2018; Lagorio et al., 2018).

Other studies have addressed the FW problem and identified different solutions, as explained by (Chauhan et al., 2021) in their literature review, classifying them into operational, behavioral, and policy-related strategies. Operational strategies are the most developed subject in the literature, analyzing different aspects of food production. Studies regarding policy strategies focus non-binding initiatives, economic incentives, increasing general awareness, and establishing specific targets and strategies for

food loss and food waste reduction (Chalak et al., 2018); in this regard, some authors argue that FW reduction should not focus only on fiscal measures (Chalak et al., 2018) and should be addressed by companies for environmental and social aspects (Derqui et al., 2016). Regarding the behavioral strategies for food loss and food waste reduction, few authors focus on relate behaviour with FW. Some authors highlighted the importance of food recycling among different stakeholders (Mak et al., 2018), while others, like Peira et al. (2018), suggest educational programs to promote better behavior toward food waste.

The behaviour strategies can benefit from new trends, as in recent years, where the food system is changing towards more sustainable patterns and practices, which creates a significant economic opportunity as consumers' expectations evolve and demand sustainable products, driving major changes in the food supply chain (Cane & Parra, 2020).

In the same perspective, SIs can be considered a feasible option to reduce FW and contribute to changes in social patterns and behaviours by raising awareness and creating new networks between businesses, public institutions, and citizens.

2.5 Social innovation as a response to social and environmental problems

Over the last two decades, society has faced several economic and social changes. The debate on SI is now stronger and is proposed as an alternative to meet new social needs (Lombardi & Costantino, 2020) as many actors recognize that technological innovations are not able by themselves to provide successful solutions to the challenges that society is facing (Howaldt et al., 2017). For that reason, in the last years, national and international institutions have created proper conditions to encourage the development of these innovations, for example, new institutions focused on social initiatives and innovations, protected areas for niche developments, and social accelerators (Peters et al., 2004).

Although many countries have started to act towards reducing FW, many of these actions are more focused on technological innovations (Cammarelle et al., 2021), marketing, and logistics instead of working on social activities that ultimately can contribute to changes in societal practices (Lombardi & Costantino, 2020).

Nevertheless, SIs are considered possible solutions to different societal and environmental problems, as many of those problems, such as unemployment, the weakening of the social security system, and FW, cannot be beaten without changing social practices (Howaldt et al., 2017). Another advantage of social innovation is the high probability of being accepted because it rearranges networks between different stakeholders and triggers relations between them (Lombardi & Costantino, 2021). It is argued that SIs can lead to systemic changes following three stages: 1) challenging the established practices; 2) Creating alternative social practices; 3) stabilizing and replicating the social practice (Jaeger-Erben et al., 2015).

SIs capacity to create systemic change was also corroborated by Rehfeld et al. (2017), where it was mentioned that SI could drive the creation of institutions and changes in behavior when it is spread in society due to replication by others and leading to social learning. The study of Rehfeld et al. (2017) also mentioned that a SI spread when more people support it enough to build an organization and expand through partnerships with other organizations from different sectors; then, social learning is reached when people engage in new practices and finally reaches society in general (Rehfeld et al., 2017). For Howaldt et al. (2014, 2017), change happens when the SI is replicated and distributed in different fields.

Furthermore, SI can allow people with low resources to create new opportunities to fulfill their needs competently, accomplish different objectives especially related to social and environmental fields, and develop skills, self-sufficiency, and self-determination (Dodman et al., 2017; Manzini, 2015). SI objective is to allow people to have the power and capability to address their social needs while encouraging their capacity to innovate and act toward specific problems (Howaldt et al., 2017).

According to Howaldt et al. (2017), some issues of SI's development are related to social innovation's concept and institutionalization development. There is no shared concept of SI and a proper differentiation with social entrepreneurship or technological innovation, and no comprehensive social innovation policy.

Nevertheless, some authors and international institutions have defined SI. One of the most common definitions of SI is the creation of new, replicable solutions that can be sustained to address societal needs and deal with systemic societal problems (Aksoy et al., 2019; Battistella et al., 2021; de Wit et al., 2017; Mulgan et al., 2007; van Wijk et al., 2019).

Tjörnbo & McGowan (2022) defined social innovation as “any initiative (product, process, program, project, or platform) that challenges and, over time, contributes to changing the defining routines, resource, and authority flows or beliefs of the broader social system in which it is introduced” (Tjörnbo & McGowan, 2022, p. 2).

Other illustrations of SI consider new initiatives not controlled by the market with cross-sector collaborations and civil engagement, with the objective of enhancing capabilities and fair use of the resources (Murray et al., 2010; The Young Foundation, 2012). If those initiatives are disseminated, the social structure can change, which means changes in “social institutions, cultural patterns, and social practices” (Howaldt et al., 2017; Pel et al., 2020).

Moulaert & MacCallum (2019) describes SI as “locally grounded initiatives that promote inclusion and change societies for the better by meeting basic needs, creating new forms of social relations, and collectively empowering communities.

Other authors also consider social entrepreneurship an important tool to treat social problems, encourage social transformation, and sustain new social values (OECD, 2010; Peredo & McLean, 2006). The main difference between SI and social entrepreneurship is that in SIs, it is not necessary to make profits (Westley & Antadze, 2010), and in SIs, more sectors are involved, which is translated into lasting impacts (Phills, 2008).

2.5.1 Impacts of social innovation

Many researchers acknowledge that SIs are essential to promote sustainable benefits and social equality in different practices because they align personal interests with environmental and social welfare (Marchesi & Tweed, 2021).

SIs can have different impacts, from raising awareness (which is very important in the first stages up to the implementation of the innovation) to the formation of institutions that influence behavior (usually helpful to sustain SIs) (Ecker et al., 2017). It is worth mentioning that SIs that lead to institutional change are connected and compatible with the norms and institutions of the environment where they are developed (Howaldt et al., 2017).

Furthermore, to create effective changes in the system, it is necessary to engage enough population (Chatfield & Reddick, 2015) and different factors must be aligned, including other complementary innovations to help changes in practices, institutions, and norms, creating pressures on the system challenging established practices and addressing expectations. Besides this, SI needs adequate policies, and at the same time, these innovations creating new ideas can guide policymakers to provide more new ideas (Howaldt et al., 2017). This is explained by Olsson et al. (2017) as scaling “up, out and deep”, which means to diffuse in a specific field but also to influence other related fields of the system and influence people’s behaviour, values, and habits.

Social innovations can have impacts at three societal levels, a micro level where the target are vulnerable groups not properly attended by the state or market (BEPA, 2010), in this level, individuals are key in the situation even though they have little control on the context (Howaldt et al., 2017); a meso level where societal challenges are addressed by novel networks between different stakeholders, in this level the established practices and institutions are challenged, and these new networks address part of the problem to be solved and the difference between economic and social activities is not clear (BEPA, 2010; Howaldt et al., 2017); and lastly, the macro level where social learning and capacity to act by the different members of society contribute to a systemic change, this requires significant and sustained actions by different actors that conduct to linked actions which lead to planned and unplanned outcomes (BEPA, 2010; Howaldt et al., 2017).

2.5.2 Social innovation and technology

SIs have been deeply influenced by the evolution and adoption of technology (Certomà & Corsini, 2021). SI appeared before the creation of technologies to connect people (Kohler & Chesbrough, 2019; Mulgan et al., 2007; Presenza et al., 2021), and it is evident that digital platforms changed how people react to social problems (Kolk & Ciulli, 2020). Consequently, new technologies can help to develop and implement SI activities and knowledge diffusion, even though it can also be considered a barrier (Howaldt et al., 2017).

The main effect of technology in the food supply chain is to create new alliances and networks between different organizations and stakeholders (Bocken et al., 2014; Lozano, 2018), and to allow the spread of many initiatives like food surplus redistribution (Ghisellini & Ulgiati, 2020) which is a main field addressed by platforms (Nambisan & Sawhney, 2017).

Different social initiatives have been created since web platforms and mobile applications were spread in society. For example, some social initiatives connect potential food donors with charities, connect restaurants with customers to sell unsold food at a low price, and others connect people with retails and restaurants to exchange food before being wasted (Kera & Sulaiman, 2014; Schanes & Stagl, 2019). Other platforms like “WRAP” and “Zu gut für die tonne” also provide information on how to avoid food waste, and other mobile applications help to reduce food waste by helping people to plan consumption and use food efficiently (Farr-Wharton et al., 2014).

2.6 Social innovation as solutions for food waste

SIs focused on reducing FW are usually designed for the last stages of the food supply chain (Lombardi & Costantino, 2021), which means retail & wholesale and consumption & service stages.

The different methodologies to avoid food waste can be categorized into prevention and minimization methods. Prevention methods are implemented before the food is produced, bought, or prepared, and minimization methods are implemented after the food has been produced, bought, or prepared. (N. V. Moraes et al., 2021b).

Using the work of Papargyropoulou et al. (2014) about the hierarchy of activities to reduce food losses and waste, it is established that the most preferred activity to reduce food waste is prevention and is where the stakeholders must focus the majority of the activities to keep food suitable for consumption by improving logistics and management or influence consumers practices (Garrone et al., 2014a; Papargyropoulou et al., 2014). The second preferred activity is food rescue or food redistribution. Food redistribution focuses on surplus food that is used strictly for human consumption (Garrone et al., 2014a; Mourad, 2016); The third preferred methodology is food re-usage as animal feed; then in order of preference, there are material recycling, nutrient recovery as in composting, energy recovery as incineration or biofuel production, and lastly the food disposal.

It is also important to mention that FW is not easy to prevent in all the stages of the supply chain due to many specific factors related to the characteristics of each of those stages (Garrone et al., 2014a; Priefer et al., 2016).

The SIs related to food waste avoidance were studied and inventoried by the EU FUSIONS project (EU FUSIONS, 2016b), they inventoried 110 SIs across 16 countries, including UK, and they also gave four recommendations for policymakers in order to facilitate the development of such activities. These recommendations are “creating a favorable EU and national legislative framework; developing tools to identify appropriate funding; building and expanding an FS social innovation network; encouraging dialogue around FW reduction and redistribution” (EU FUSIONS, 2016a, p. 4,5).

To understand the different types of social activities related to food waste avoidance Lombardi & Costantino (2021) categorized SI to reduce food waste into three big categories: actions preventing food from becoming surplus food (prevention), actions preventing surplus food from becoming food waste (human reuse), and actions preventing food waste from becoming food loss (animal reuse, material recycling, nutrient recovery, energy recovery).

In the prevention stage, according to the FUSIONS project, awareness campaigns can be considered social innovations if they involve people’s direct participation (Lombardi & Costantino 2021). Awareness campaigns are considered to have a big impact (Reynolds et al., 2019), for example, the Love food hate waste campaign (Reynolds et al., 2019) and the Stop Wasting Food movement (Yamakawa et al., 2017).

In human reuse stage, the activities are divided into social businesses and consumer levels. The activities related to social businesses include surplus food retailers, value-added preparation, and surplus food service; on the other hand, the activities related to the consumer level are food sharing (for money, for the community, and charities), dumpster diving and gleaning (Lombardi & Costantino, 2021).

Following the work of Lombardi & Costantino (2021) and the EU FUSIONS project, the traditional food banks are not considered SIs, whereas innovative ways of redistributing food that includes people involvement are (Michellini et al., 2018).

This thesis is focused on the first two categories of the work of Lombardi & Costantino (2021), prevention and human reuse, with specific activities that reach consumers. The categories of the SIs that are analyzed in this thesis are:

Table 1. Definitions of the activities performed by social innovations extracted from Lombardi & Costantino, (2021)

Awareness campaigns:	Activities that focus on raising awareness involving different stakeholders
Surplus food retailers:	Sells recovered food to consumers in shops at a reduced price. Value added preparation initiatives uses surplus food as raw materials to make new products like jams, juices, etc.
Surplus food service:	Includes activities that uses surplus food as a source to create value or prepare meals through surplus cafes, and events like public meals.
Food sharing for money:	Organizations that use a platform to sell food from retailers or producers at discounted price.
Food sharing for community:	Organizations that use a platform to share food between consumers of a community, or between surplus food producers and consumers. This category includes community fridges if they are open to all.
Food sharing for charity:	Organizations that use platforms to link between surplus food producers to charities

2.7 Relevant studies about social innovation implementation

Howaldt et al. (2014, 2017) developed a normative framework to facilitate SI development, focusing on policymakers and civil society (Haskell et al., 2021), their work focuses on five dimensions.

The first dimension is the significance of a conceptually solid conception and understanding of SI, explaining the distinct but varied characteristics and their relationship to social change (Howaldt & Hochgerner, 2017). The second dimension, related to “social needs and challenges,” addresses the part SI plays in answering social problems; this part changes with different factors such as time, context, and social levels (Millard et al., 2017). The third dimension concerns about resources, capabilities, and constraints; resources not only refer to economics, yet financial resources are considered critical to initiate and scale up a SI (Dhondt et al., 2017); resources also refer to values that are socially and politically created (Hultman et al., 2021), and the human resources, which are considered the most important category (Dhondt et al., 2017); capabilities means the capacity to move resources at different organizational levels (Dhondt et al., 2017); and constraints are related to deficiencies of the factors mentioned in resources and capabilities (Dhondt et al., 2017). The fourth dimension is governance, networks and actors where it helps to describe different set of actors and governance models; the later are related to the “decision making, leadership and ownership, often relating to policymaking, self-regulation, and co-creation” (Butzin & Terstriep, 2017). The fifth dimension is processes dynamics and explains how social innovation can help to change people’s behaviour and create new institutions through imitation scaling and social learning (Rehfeld et al., 2017).

In another study, Murray et al. (2010) described the process of SI in six stages, including the sustaining stage, where it is mentioned that to sustain a SI, it must have a business model, a governance model, a source of finance, a network and communication model, a staffing model, and a development plan for

operational systems. In this thesis, the analysis is focused on the sustaining stage as it is considered a critical point for implementing social initiatives as many of the social initiatives that are developing novel social practices usually do not survive. Therefore, it is important to understand how SIs established in the field have succeeded.

2.7.1 Factors to sustain social innovation according to Murray et al. (2010)

In the work of Murray et al. (2010) it was described 6 factors for sustaining SIs and gave examples of the characteristics of different social initiatives running around the world. This research builds on those factors as this is one of the only research projects that mentions specifically a list of factors that are key for sustaining SIs. Some of the factors are interrelated, for example, the business model can influence the other five by determining the general characteristics of the organization or initiative, the network and communication model can influence source of finance by gaining public recognition and legitimacy, the governance model can influence the development plan for operational system by determining how the organization works and the vision. The six factors can be described as follow:

Business model

To sustain any activity without government support, it is necessary to apply a proper business model that allows the organization to retain value or generate income to cover costs. Those business models can be very diverse, from providing services to more complex, for example, intellectual property and others (Murray et al., 2010).

Business models are not limited to organizations that have as a main goal the creation of profits (for-profit organization). They also can be applied in organizations that aims to solve social problems using funds or grants (not-for-profit organizations) and organizations that aim to solve social problems while generating revenue but reinvesting them in their activities (social enterprises) (Yunus et al., 2010).

One important model that is gaining recognition in society is sustainable business models. Sustainable business models share three common elements (Evans et al., 2017; Hart et al., 2003): value creation that is balanced in social, economic, and environmental issues, which results in providing new value proposals and capture to improve sustainability and social justice; the recognizing of different actors and stakeholders that are involved in the development of the different activities (Evans et al., 2017); and lastly novel forms of reporting equally social, economic and environmental impacts generated by the company (Boons & Lüdeke-Freund, 2013). A social business model differs from a traditional business model in three things. First, the value proposition considers not solely customers but includes all stakeholders. Second, the social benefits are established considering the entire ecosystem which results in the social profit equation, and lastly, the main objective is not economic revenues or maximizing profit but to recover investments and capital (Yunus et al., 2010).

Governance model

The governance of an organization is not related to the day-to-day activities of running an organization. Instead is the system that “ensures the overall direction, effectiveness, supervision, and accountability of an organization” (Cornforth, 2003). It defines strategic decisions like organizational structures, principles and values, mission statements, codes of conduct, and others. It can include monitoring systems to ensure compliance with the items already mentioned and policies and regulations while addressing the requirements of different stakeholders (Schöning et al., 2012). There are different types of governance

models, and the most common is boards in different types and ways (simple, multiple, board committee and task force, advisory council plus legally binding board, and hybrid organizational structures). Boards are not supposed to get involved in day-to-day activities, they have the responsibility to support and oversight, which can provide many advantages like strategic support and expertise, access to networks, ensuring vision and legacy, and providing credibility to external stakeholders (Schöning et al., 2012).

Network and communication model

SIs must be developed in a system with high collaborations between different organizations to deliver their benefits (Adro & Fernandes, 2021). To some authors, the most important factor in SIs is the network of persons, organizations, civil society, and others, as explained by Bolaños-Palmieri et al. (2021) in their research about food waste reduction network where it is highlighted how the different alliance makes possible the initiatives to exist. Putnam (1995) also explained this network dependency in his research, which explains that food banks depend on the commitment of retailers and volunteers, where trust is an important factor. These two research shows that most SIs strongly depend on the networks created between diverse stakeholders from economic, social, and political fields (Domanski et al., 2019). This connectivity allows people to become co-owners of the information development that takes place with the innovation (de Ruyscher et al., 2017).

Multiple actors' networks can help a SI gain legitimacy which builds the identity and the essence of a social innovation or social enterprise (Fischer et al., 2021). Other authors mentioned different aspects related to relational capital, for example, the population density as a key factor for SI survival (Haugh et al., 2021); local contacts that ensure supply and demand (Pinch & Sunley, 2015); engaged citizens to support grassroots initiatives (Matschoss et al., 2022); and diversification of agreements among public and private actors (García-Canal et al., 2003; Hodge & Greve, 2005).

Other important aspects considered key for SI are the association with regular businesses and public institutions. Those can make a difference in implementing a SI as regular businesses can have technological tools, competencies, and capabilities for developing SI activities (le Ber & Branzei, 2010; Morais-da-Silva et al., 2019); and public institutions can support SIs (Phills, 2008), helping to create proper environments for developing SI (Arena et al., 2018).

Source of finance

All SIs needs economic resources from external sources, especially to cover their activities and operations' basic fixed costs (Howaldt et al., 2017). Usually, SIs must deal with their own resources, but there are other ways of financing, especially with local and international funding.

It is very important for a SI that the source of finance shares the same social goal, core values, and mission. If this is not the case, there is a risk that the sponsor tries to change the values of the SI, as finance always implies power relationships. To avoid sponsors to change values, SI can use different mechanisms to allow independence (Murray et al., 2010). Another way to avoid this is to use different financial sources, which leads them to apply different business models rather than commercial competition. Some are organized as social enterprises with a non-profit revenue model; others are part of a corporate social responsibility program; others focus on revenues sponsored by fees, licensing models, associations' memberships, support from small businesses, and many others (Howaldt et al., 2017).

Staffing model

The staffing model refers to the persons involved in the activities, their responsibilities, and their capabilities. The SI requires more actors in all the process phases and more participant engagement. It is recognized that several factors that influence the implementation of a SI are related to low quality of education and collaboration from participants, voluntary involvement, personnel fluctuation, lack of motivation, and lack of professional abilities (Dufour et al., 2014).

Development plan for operational systems

A development plan defines how an organization works and how its activities contribute to its goals and ultimately help it fulfill its mission. It comprises the daily tasks that allow the organization runs over time. The development plan for operational systems allows people to know their roles, how and when to perform their activities (Planful, 2022).

3. Methodology

3.1. Scope of the study

The assessment took place within different SII working to reduce FW in several countries of Europe. Europe was chosen as the setting from where to pick initiatives for this thesis due to two main reasons:

1. A preliminary desktop research found that 110 social innovations that promote FW reduction were based in European countries.
2. The European Union has put in place initiatives, such as the Farm to Fork Strategy (European Commission, 2020), and funded several projects related to food waste reduction (WWF, 2020) which generated important information useful for the development of this thesis including the inventory of Social Innovations that reduce food waste in Europe (EU FUSIONS, 2016b), and the European Platform on Food Loss and Food Waste (European Commission, 2022).

The SII invited to be part of this study were retrieved from the EU FUSIONS (Food Use for Social Innovation by Optimizing Waste Prevention Strategies) project website (EU FUSIONS, 2016b). This website provided a long inventory of SII related to food waste avoidance in Europe. The inventory created by the EU FUSIONS project is the only source of complete information of the SII working in Europe and already provides an initial classification within the SII. Therefore, the decision was to collect the initiatives from there. Additional efforts were implemented to identify new initiatives that were not in the FUSIONS inventory using a google search engine and asking experts. However, no new initiatives working as SII for food waste reduction were found.

Even though this thesis developed in the context of SII across Europe, it should not be seen as representative of the European perspective, as the sample size is not significant, and this thesis aims to provide exploratory insights from different SII, not to provide conclusions at the European continent level.

3.2. Research design

This research study followed a two-tier approach consisting of 1) a preparatory phase and 2) a targeted phase (Figure 1). The preparatory phase had the purpose of identifying the initiatives that were invited to be part of the study through an interview. This was done through desktop research using online search engines. In the targeted phase, there was the core data collection stage and a core data analysis stage, both done to target and answer the research aim of this thesis specifically. The following image generally explains the steps taken to fulfill each stage.

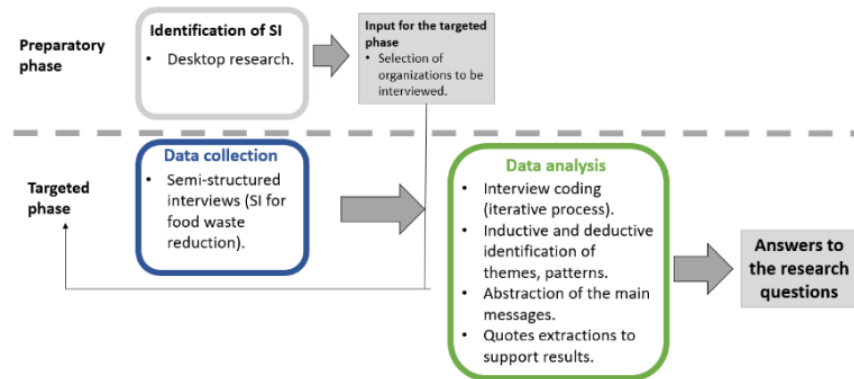


Figure 1: Diagram of research design

3.3. Data collection methods

Qualitative methods have proved to be specifically helpful when a research aim is to let the participants express their views, perceptions, or understanding of their natural contexts (no experimentation) (Britten et al., 1995; Cresswell, 2003; Sovacool et al., 2018). Additionally, the semi-structured interviewing is a very popular qualitative data collection method that allows interviewees to introduce and discuss issues that are relevant to them and allows investigators to re-order, re-word, re-phrase or clarify the questions to additionally examine topics introduced by the interviewee (Krueger et al., 2001; Tong et al., 2007). However, with qualitative approaches, sometimes it is difficult to make quantitative predictions and estimations (Fearon & Laitin, 2008). Therefore, this research had a mixed-method approach for the data collection. The main approach to collect the data was qualitative, specifically through semi-structured interviews. But some questions had a component of quantitative grading, specifically using Likert scales. Combining different types of approaches allowed a robust development of the research as the combination of different methods helped to overcome each method's limitation.

The website of the FUSION project had 110 projects/initiatives in their inventory, which belonged to 16 countries in Europe. From these 110 projects/initiatives, only 48 were found to have their websites or social media still active. Therefore, they were all contacted via email or messages through social media to invite them to be part of the study through an interview (Annex 1). From these 48 invitations, only 10 initiatives replied and agreed to have a meeting where the semi-structured interviews took place. Considering the resources, time availability for the submission of this thesis, and answer rate from the different SI invited to participate, the sample size was settled with 10 semi-structured interviews.

3.3.1. Semi-structured interviews with social innovations initiatives

The 10 semi-structured interviews were conducted through video calls during November and December 2022. The interviews were held in English, and no translation was needed. The interviews were around 1 hour long, including a preamble of formalities and introductions. The questionnaire for the semi-structured interviews (Annex 2) had four sections: 1) A section about the personal drivers of the interviewee to start or work in a SII, 2) A section about the characteristics of the SII (main activities, years since creation, and countries of operations), 3) A section about important factors to sustain SII, 4) A section about the application of key factors according to the (Murray et al., 2010) framework.

However, the interviewer probed inductively on key responses (Queirós et al., 2017). As can be seen in Annex 2, there were a total of 18 questions. The questions were broad and did not direct the participants to any specific type of answer; therefore, their perceptions remained unbiased. After getting the interviewee's consent, the interviews were recorded with a Sony ICD-PX370 recorder device.

To maintain the confidentiality of the interviewed initiatives, a code system was developed according to the classification for different types of SII for food waste reduction described by (Lombardi & Costantino, 2021). The different activities performed by the SII's that participate in the interviews are awareness campaigns, food sharing for the community, food sharing for charities, food sharing for money, surplus food service, and surplus food retail. Food sharing for community is the type of SII most common among the sampled institutions (3 out of 10). The second most common are awareness campaigns and food sharing for charities (2 out of 10 each).

3.3.2 Data analysis methods

After completing the preparatory phase, detailed notes were prepared and transcribed on Microsoft Excel for analysis and identifying operational initiatives from the inventory. Results from this analysis provided the list of initiatives to be invited for the interviews. Subsequently, after the targeted phase concluded, the interviews' audio records were transcribed to Microsoft Word and prepared for content analysis (Margolis & Zunjarward, 2018) using the program MAXQDA (Kuckartz & Rädiker, 2019). This software was selected because it allows manual coding, creating memos and mind maps, highlighting, and retrieving codes and segments immediately.

The interviews' coding (Malterud, 2012) was an iterative process that started with a complete reading of all the transcripts of the interviews (without doing any coding) to get a general sense of the information. Broad sections of the transcripts were classified according to the data needed to fulfill each objective of the thesis. Under these classifications, the data relevant to objective 1 (related to personal drivers) was analyzed and inductively coded into common themes; for objective 2 (related to the analysis of important factors to sustain SIIs), the data was first inductively coded to organically identify specific factors that later were deductively coded under the themes related to the key factors proposed by Murray et al., (2010) as justified in chapter 2 of this research. After this, data related to objectives 3 and 4 were coded deductively (Saunders et al., 2018) under the framework proposed by Murray et al. (2010) about key factors to sustain SIs, according to the reasons stated in chapter 2. Once the codes were all set (see Annex 3), the codes were revised, and larger themes and patterns were inductively identified (Malterud, 2012) to be presented in the results section. Most relevant and representative quotes were extracted to support the themes and patterns presented in the results.

All the interviewees were asked about the importance of the six factors mentioned by Murray et al. (2010), on a Likert scale (Lekhanya, 2019) from 1 to 7, where 1 was considered low importance, 4 was neutral, 7 was high importance. The responses were analyzed by type of initiative, taking the mean when there was more than one initiative. The result was considered as the level of importance given by that initiative. In this study, a statistical analysis was not made as the number of responses was low, and the responses must be seen as insights and not as representative of all the social innovations that aim to reduce food waste.

Finally, a data transformation approach was also used to quantify key findings from the qualitative data analysis and provide table summaries (Cresswell, 2003).

4. Results and interpretation

4.1 Describing sampled social innovations

4.1.1 General characteristics

All the SII that participated in the interviews were from different EU countries (France, Germany, Austria, Italy, Serbia, Spain, Greece, and Portugal), and UK (Wales and England). The SII that took part in the interviews are functioning many years, most of them from 5 to 15 years of operations.

A code system was developed to maintain initiative's confidentiality, based on their main activity and a correlative number inside this category. Then, the code replaced the names of each SII.

Table 2. Codification for the initiatives according to the type of activity

AwCa1 = Awareness Campaigns 1	SFSe = Surplus food services	FsCh 1 = Food Sharing for Charities 1	FSCo 1 = Food Sharing for community 1	FSCo 3 = Food sharing for community 3
AwCa2 = Awareness Campaigns 2	SFRe = Surplus food Retail	FsCh 2 = Food Sharing for Charities 2	FSCo 2 = Food sharing for community 2	FSMo = Food Sharing for money

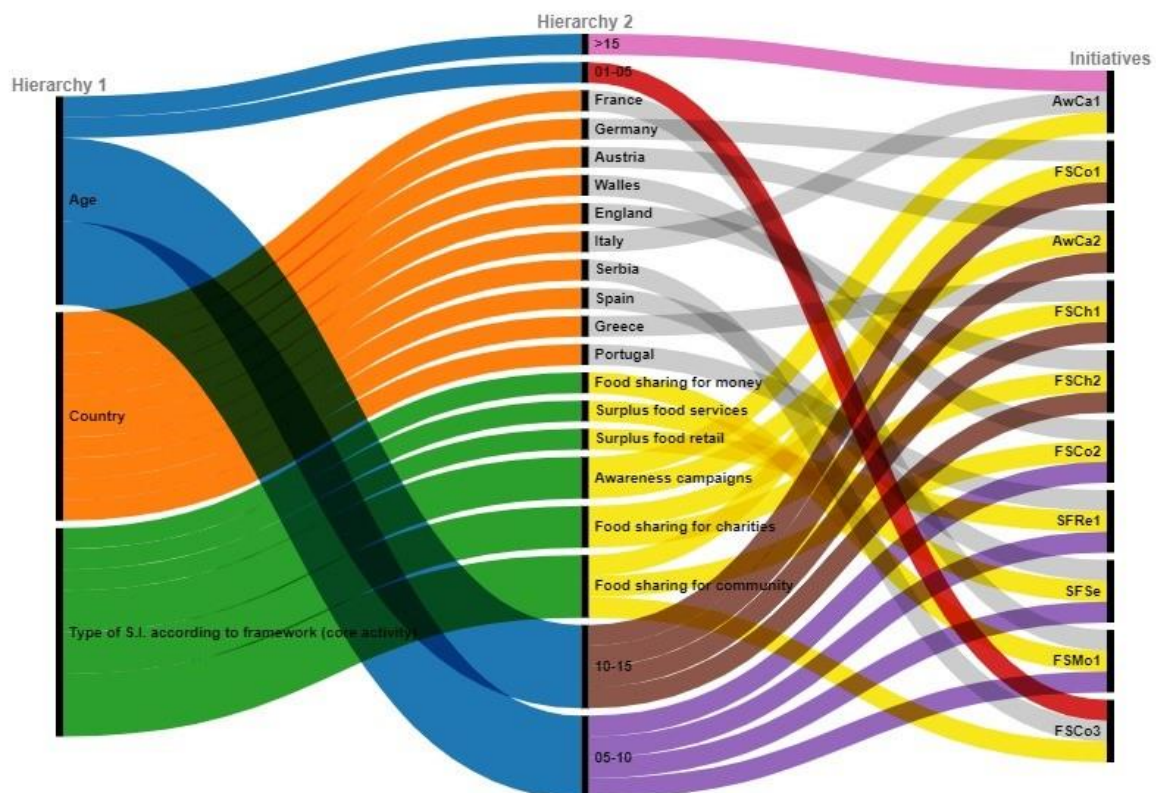


Fig. 2 Description of main characteristics of the initiatives analyzed by age, country, and type of social initiatives.

4.1.2 Principles and missions.

One interesting information collected from the interviews were statements referring to principles and missions, even though it was not part of the semi-structured questionnaire, 9 out of the 10 interviewees mentioned aspects related to principles and missions, which shows that they are essential aspects to their daily work and identity.

The most common theme was “Promoting sustainable food systems,” as 4 initiatives stated principles and missions that align with this theme.

“... our main objectives is to have a more sustainable food system starting from safeguarding and preserving biodiversity” (AwCa1)

The second most common theme was “to ensure that no one is excluded from the initiatives,” which aligns with the theme “no exclusion of people.”

“...one of the big problems you will find I'm sure in Bolivia is what we find here is pride people don't want to tell other people that they are in need they're very proud and they would rather starve instead they'll accept charity and what I want really is to overcome the stigma which is [...] like the soup kitchen and like a food bank the insist people prove that they are poor before they get released and I think that stops a lot of people from applying for help and I think you should say it's there, take it. So I would like to see more things being given just because they can't be not because you have to climb this prove”. (FSCo”)

Others had the opposite principle, to work only with institutions to avoid possible liabilities:

“We took the decision very, very early on that we would only work with businesses. We wouldn't work with food waste in the home, for example, because of food safety aspects. And also, we wouldn't provide food for individuals, again, because of food safety aspects. We would only work with registered charities who could then give the food to people in need.” (FSCh2)

Another important principle mentioned by 2 SIs was to reach all the stakeholders and the maximum number of citizens.

“What we always want is to mobilize, that is, to reach the maximum number of citizens possible, and to the maximum consumers who are the citizens but also to the maximum of actors of the food cycle.” (SFSe1)

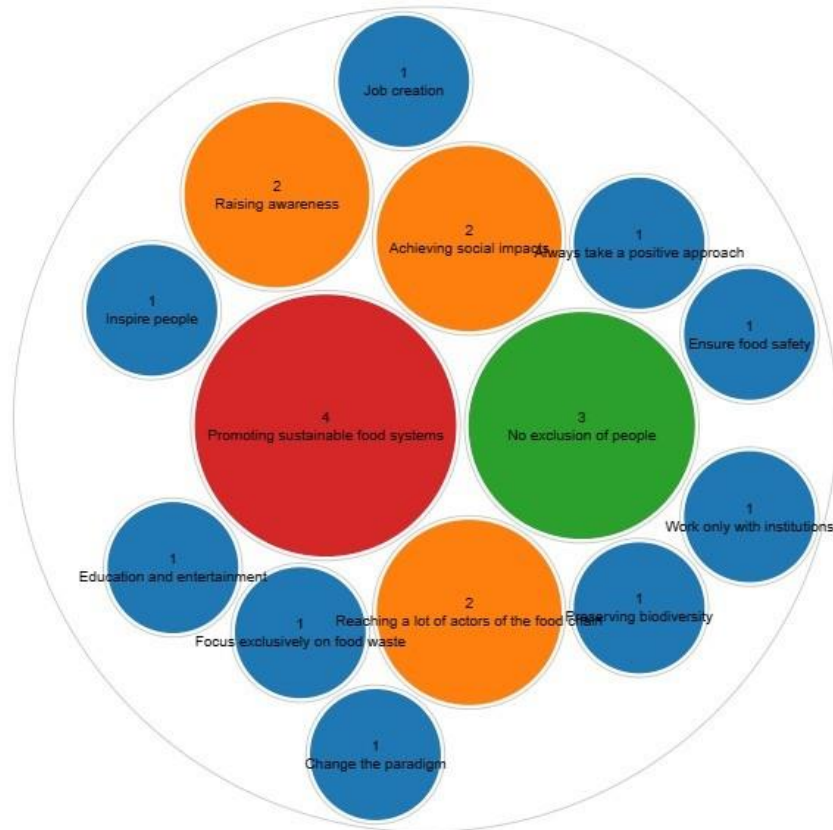


Figure 3. Principles and missions of the social innovations. The color indicates how many SI expressed values and principles that align to that theme.

From these results, it can be implied that there were different approaches to the SII's principles, some SIIs interviewed were focused on sustainability, and some were focused on the social aspect of FW, trying to reach as many people as possible and trying to include all, no matter the social class or economic situation. This result shows that the SIIs interviewed had different perspectives and motivations.

4.1.3 Secondary activities performed by the initiatives.

Another important piece of information gathered was that most SIIs interviewed developed different activities related to reducing FW, even though they had a main activity that gave a core identity.

For example, 5 SIIs developed activities related to awareness campaigns as a secondary activity.

“The second pillar being everything that we do in terms of enhancing awareness and education, so in there you will find our education program where we go to speak to schools of every level; then we have educational seminars for grown-ups we have organized; the biggest awareness raising events in this country in the past ten years” (FSCh1)

Another important activity that 3 SIIs developed was to engage with policymakers to make an impact and encourage law enforcement to create better conditions for SIIs and reducing food waste.

“...later we supported the political work for changing the food waste policy as well. We were cooking in front of the Austrian Parliament demanding a law that bans supermarkets from throwing unsold food.” (AwCa2)

Others diversified to different activities aimed to reduce food waste, for example, different types of food sharing (for money or for charities), and others provided services to businesses or certification schemes.

“I think social business models are quite resilient and for example because we have many services B2B and B2C the risks are quite diversified and so during the COVID crisis we could still make money the B2C service was down because people were just at home and they could not use it, so it was dead for two or three months during the COVID but the B2B was working okay, so I think one of the main aspects is that as we said many services B2B and B2C are quite resilient” (FSMo)

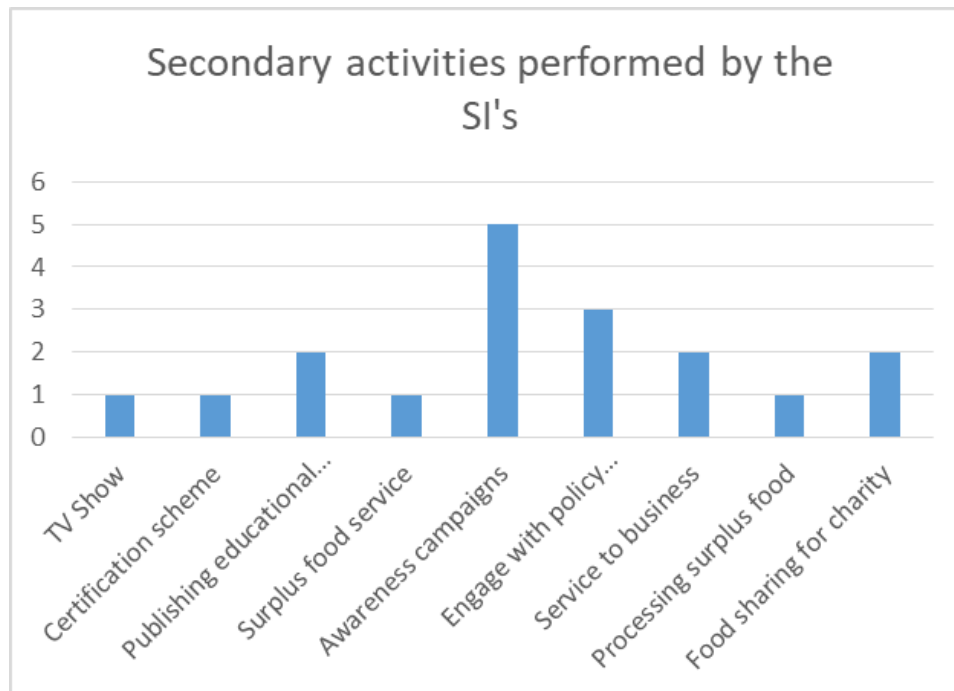


Figure 4. Secondary activities performed by the social innovations related to reducing food waste.

Only 2 initiatives focused on one activity, which implies that to sustain and gain some public recognition is important to be proactive and look for different ways to have an impact.

4.1.4 Difficulties

Although it was not part of the questionnaire, the interviewees mentioned difficulties in their initiatives when they spoke about factors that helped in sustaining their SII. The difficulties mentioned were grouped in themes and were also categorized by the 6 aspects mentioned in the framework for sustaining SIs analyzed in this thesis, plus one extra category, “legal aspects,” that category was created after analyzing the interviews and added to this difficulties analysis.

It is important to mention that none of the interviewees mentioned difficulties related to the network and communication model, which seems to show that was a domain that worked well, probably due to the community support that the SIIs interviewed got.

Regarding legal aspects, 4 interviewees mentioned 4 different difficulties related to possible liabilities that made it difficult to implement their activities and prevented more businesses from participating openly in sharing surplus food.

“...the stores are afraid of responsibility that comes with donating the food. [...] So, stores don't want to be accountable for health damages or whatever. So that's a big part to how strict those laws are and how they're implemented. This also goes for the donation itself because, the way it works right now is that basically the stores legally sell the items with a value of zero, right? So, this is technically, a donation, in fact, it's a donation. But technically that's important to know whether they're selling or they are giving it away. Because if they're selling it to you, that makes your volunteer organization a business. And if you're a food business that means that all kinds of regulations about hygiene, about etcetera, go to you.” (FSCo1)

The source of finance seemed to be a big challenge for the SIIIs that participated in the interview, as 3 interviewees mentioned 7 different difficulties related to this aspect, including the uncertainty of cover basic expenses, the difficulty of not being able to hire some services, and especially the fact that regular businesses do not consider a valuable service the one that the SIIIs provide.

“Our approach has been to try to ask businesses to pay us for the service that we provide. We wouldn't charge charities obviously, because they're also struggling for finance, but we feel that because we provide a valuable service for businesses, they should pay us. Some of them do, most of them don't, which is disappointing” (FSCh2)

Another interesting finding is that 2 interviewees mentioned 3 difficulties regarding the staffing model, and highlighted difficulties dealing with volunteers as they could be unreliable sometimes and are not legally tied to provide support.

“the voluntary people there will be moments and moments in which they will help you the most in which you can count on them but others that you cannot. So, in the end you need to be professional and have a professional team.” (FSSe1)

Related to the source of finance and governance model, one important difficulty mentioned by one interviewee was that sponsors or investors may want to change the purpose of the initiative, and it is important to keep independency to ensure that the initiative's mission remains unchanged.

“you could find investors that that just want economic value and could turn what you want to do in something else, something that's not so valuable on the environmental and social side” (FSMo1)

Another difficulty mentioned by 2 interviewees was the internal competition between social activities and how this affects their performance.

“Good thing or bad thing, our nearest town opened a Community fridge about 17 miles away but caused a few problems because they took all the spaces from the supermarkets and we were left with less than places that we could go and the other community fridge didn't want to share they were quite selfish about it but we survived that we overcame that and we have even more places that we'll donate.” (FSCo2)

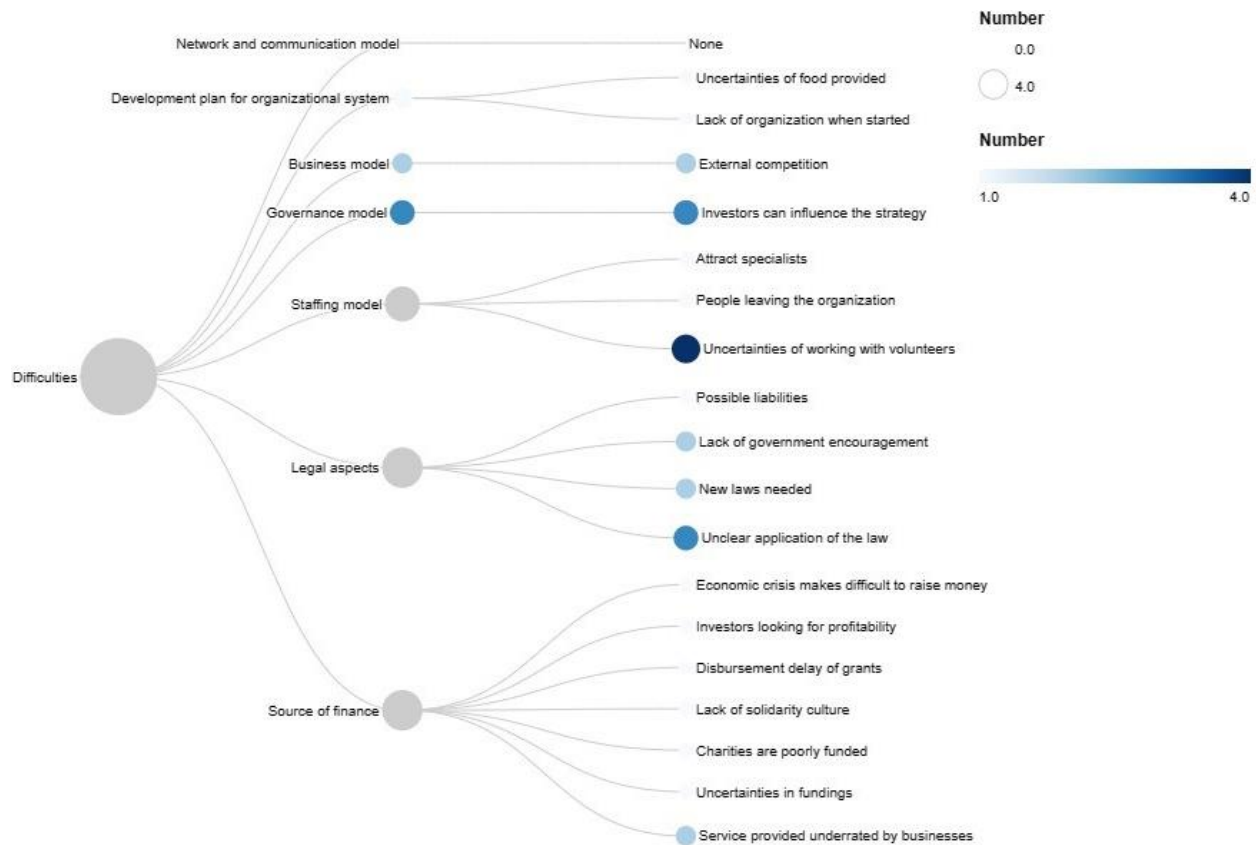


Figure 5. Difficulties faced by the initiatives. Arranged according to the 6 factors mentioned by the framework chosen plus the legal category created after the analysis of the responses.

As mentioned before, the SIIIs interviewed faced different difficulties when developing their activities. The most important ones related to the 6 factors were the source of finance and staffing model. The most common aspect mentioned was the source of finance in different aspects, which means this is the main issue SIIIs must address. Also, being a social initiative, depends on volunteers, which sometimes made the initiative's work unreliable. An interesting finding was that 4 interviewees mentioned some difficulties related to legal aspects, which implies that there are factors to improve and gray areas to address from policymakers to facilitate the job of SIIIs aiming to reduce food waste.

4.2 Personal drivers

One of the semi-structured interview questions was about personal drivers to start or work in SIIIs aiming to reduce food waste, as the participants were developers (meaning persons who initiate or operate the initiative).

According to their responses, the drivers' themes were grouped into four clusters related to the main reasons that motivated the interviewee to join or start the social initiative he/she was representing. The four clusters were: "work-related," "experience-related," "world process related," and "personal aspects related."

The most common aspect among the responses was drivers related to the "personal background" as a volunteers in general, 4 interviewees mentioned this as main driver.

"I've been volunteering my whole life so I was looking for volunteer opportunities and then I found another two women, together we were talking about it and then we said we need to do something to reduce food waste in this country because so much food is being wasted at the same time when economic in the middle of economic crisis with more and more people needing to get food assistance" (FSCh1)

Another interesting finding was that 3 interviewees mentioned factors related to experiences and reports that shocked them and made them wonder what they could do to reduce the amount food wasted.

"We started, reading in newspapers about supermarkets throwing perfectly good food away. And at that time, a lot of food businesses were in denial about what they were doing. They were trying to hide the fact that they had a lot of waste. Um, and right about the same time, we discovered a, a family in London (...) the mother couldn't afford to give each of her three children a hot meal every day in the winter. They had to take it in turns because they were so poor. And we knew that, there was a supermarket very near that was thrown food away while this family was going hungry. So, we decided to do something about it or to try to do something about it". (FSCh2)

The clusters with more comments were "personal aspects" and "work-related," with 10 and 9 comments respectively. Among the work-related drivers, two comments were cataloged as "social purpose" and "contribution to society."

"So in this case, it's food waste. And you feel that it's a good, thing to feel that you are contributing to something that is, nice in society. So, and that is of course, more rewarding and it feels, it's motivating to go to work and feeling that." (SFRe1)

"I worked for social startups and that's I think a good path to follow because I would not work for an NGO and I would not go for a big company that doesn't have any purpose" (FSMo1)

Although it was mentioned only once, an interesting driver was about the opportunities for young professionals that these social initiatives or organizations can provide.

"as a young person I would say it's good to be in a startup because you have a lot of Liberty, and you can learn a lot actually. When you're working in a startup you have a lot of responsibilities even if you're young which is a good thing, I think, so you work a lot but you have very big responsibilities for your age compared to big companies, so you learn a lot actually, so that on a professional side that's very interesting and of course because I think it makes a lot of sense, that's the main reason why I'm here." (FSMo1)

From the interviews an interesting pattern emerge, 5 of the drivers mentioned were related to altruistic characteristic of the person, 4 mentions that they were already volunteers in previous periods of their life, 3 mentioned that a fact or experience influenced them, or when raising the awareness of the topic they decided to take part of the solutions. This information shows that encouraging people to do volunteer activities at young ages and increasing awareness of the food waste problem can increase the number of people participating in SII's aiming to reduce food waste.

The personal drivers' section is completely different from the rest of the questions, as it asked the interviewee's perspective. While in the rest of the questions, the interviewee was answering as representative of the whole organization or initiative. Therefore, it was not possible to do further analysis

or correlations with other variables asked in the interview.

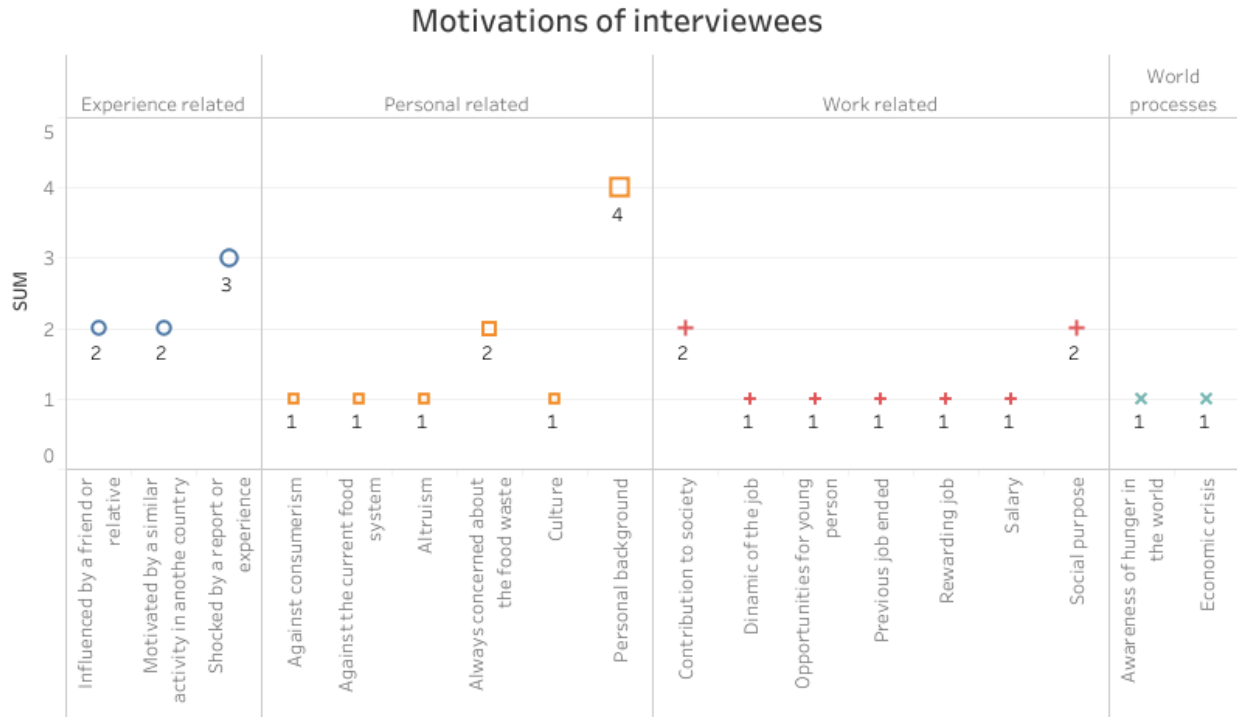


Figure 6. Interviewees’ drivers that motivate them to be part of a social initiative aiming to reduce food waste.

4.3 Key aspects for sustaining a social innovation.

To openly learn and explore the interviewees’ perceptions without contaminating their answers with our pre-defined set of factors to sustain SI, it was asked what the most important aspects necessary to sustain a SII were. When possible, the responses were grouped in common themes to see overlapping answers between responses and analyze.

The theme with more comments was “funds to cover essential expenditures,” with 4 out of 10 interviewees mentioning this as important, which means that the economic factor was very important for most initiatives interviewed.

“First of all when you have a nonprofit organization which is small like ours it's the most important thing is to have financial stability which is very, very difficult and it's an everyday struggle almost, so if you don't have the people to do something obviously you cannot do many things. So that goes for all NGO's and everywhere in the world. So, to be very prudent in terms of financial management is very important” (FSCh1)

The second most commented theme was “having a professional team,” with 3 out of 10 interviewees mentioning it, implying that SII interviewed cannot rely only on volunteer work and needed some persons working full-time.

“Voluntary people there will be moments and moments in which they will help you the most in which you can count on them but others that you cannot. So in the end you need to be professional and have a professional team.” (SFSe1)

Other 2 initiatives highlighted the importance of working with volunteers that allowed them to perform their activities.

"...also, another social aspect of it is that we work with people/volunteers that want to engage in this activity and help us assemble the baskets. And there's a lot of people that are in institutions or people that are employed, are people that just want to spend one and a half hours with us." (SFRe1)

Moreover, other themes mentioned by more than 1 interviewed were "social awareness" and "community support," "engagement with different actors," and "work locally."

"In terms of food waste... look, everywhere in in the world the past ten years, the awareness about food which has been a food waste has been growing everywhere [...] it is being discussed more and more and what I mean by that is that ten years ago it was more difficult to convince somebody to get on board on our network than it is now. Now the state is speaking about it, the European Union is speaking about it, the UN speaking about it so it's easier" (FSCh1)

"The community, community, and community a good group of people who work together not for profit, because they are helping each other and that to us is the most important point of all." (SFCo2)

"the key factor is to have a good project proposal then. And then you actually communicate it at many levels at the city, like city assembly, municipality, maybe find, other NGOs and, find people who are interested, uh, in doing it and scale it up. You know, up a new idea and new Ngo" (FSCo3)

"...we make it local, where we buy our stuff from is not far away. So, we try to keep it local, both in where we go and buy the products from, and also where we sell it to. So, it's people from a neighborhood." (SFRe1)

After the first analysis, the answers were categorized according to the six aspects mentioned by Murray et al. (2010) to see what aspect got more answers.



Figure 7: Proportions of the important aspects categorized by the 6 factors to sustain SI of Murray et al. (2010), and a detail of the type of initiatives that gave these answers.

In this graphic, we can see how many of the SI mentioned each of the factors of the framework described by (Murray et al., 2010), which factor was more mentioned, and by whom.

The most mentioned factor was the Network and communication model, with 25% of the comments. The second most mentioned factor was the source of finance, with 21% of the comments. This evidence shows that the SII interviewed are highly dependent on partnerships and collaboration with different stakeholders to sustain their initiatives and on having a secure source of economic resources to develop their activities.

An interesting fact was that the least mentioned factor was Business model, this can be attributable to several reasons, but one that was repeated among 2 of the interviewees is that they mentioned that they do not consider a business model as part of the SII, as they do not consider themselves a business. This lack of knowledge about business models can be an improvement point for organizations that support SII; socializing the benefits of having a business model to new initiators, even in social enterprises and non-profit organizations can help newcomers to improve their plans.

4.4 Evaluation of the six aspects of the framework by the interviewees

After asking the open question regarding key factors for sustaining a SII, the interviewees were asked about the specific factors proposed by Murray et al. (2010) to identify how the SII perceive and

incorporates those factors in sustaining their activities. This section will explain the results obtained with those questions.

4.4.1 Importance score of the 6 key factors to sustain SI of Murray et al., (2010)

The interviewees were asked to give a value of importance to the different factors mentioned in the framework. The scale was set up from 1 to 7, given 1 as low importance, 4 as neutral, and 7 as high importance. The responses were analyzed by the type of activity the SII performed, meaning that if 3 initiatives performed the same core activity, the value would be taken with a mean. In some cases, low responses were lifted by other initiatives if they gave a high score, as the results were taken from a mean.



Figure 8. Score of importance for the factors mentioned in the framework.

In general, all the factors were in the range above 4, meaning they were considered as important. Except for the “Development plan for operational systems” for SI dedicated to awareness campaigns, which gave a score of 4, meaning neutral, as one of them considered not so important.

“I would give a 3 because for us it was not that important, I know it is for us but is simply not my personality to have a bigger plan and I am always following the flow and this community project you never know how is going to end up so you really need to take the opportunities, whenever a doors opens up you need to be quick and jump on the train, this is my motto.” (AwCa2)

In other cases, some low values were not so evident because other initiatives gave higher values, and the result was lifted, as explained before. This was the case of one score for the business model given a value of 2 by one of the interviewees.

“Because I think first of all, it's not a business. Second of all, I think most of these things are not organized in a central way. So, we have not a central organization (...), you have many small units, many small districts and communities coming up with their way to operate (...). So, I don't think it's unimportant at all. And it's necessary to have some guidelines maybe, what are the goals of the organization, right? So, you got to tie it together. So that's why I say two, not one, because you need a framework maybe around it at least, even if it's decentralized.” (FSCo1)

The not recognition of business models can be interpreted as follows, many of these initiatives are grassroots innovations, sometimes carried out by some inspired people trying to take action on a big problem, and sometimes they do not know different business models and their benefits, and they took action trying to solve problems on the go.

4.4.2 Implementation of the 6 factors mentioned by Murray et al. (2010)

The interviewees were asked if, when they started their initiatives incorporated the factors mentioned by Murray et al. (2010). Some of them were considered more important than others, as showed in the previous section. For that reason the responses were varied.

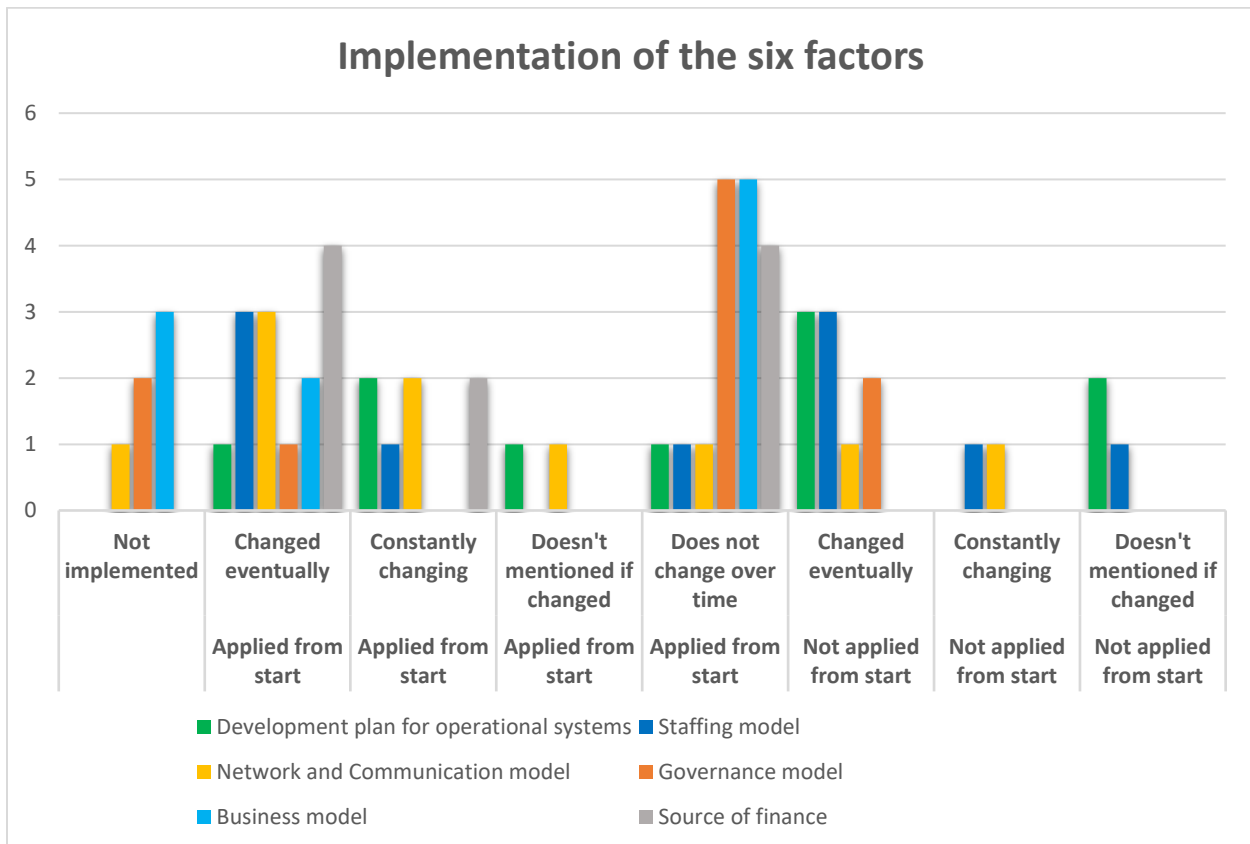


Figure 9. Implementation of the six factors mentioned in the framework.

Development plan for operational systems:

All the interviewees mentioned that their initiative implemented a development plan for operational systems. However, half of them did not consider this factor when the initiative was born, and it was only developed with time.

From the other half of initiatives that implemented a development plan since the beginning of their activities, it was interesting to find that 1 highlighted that they did not intend to make changes to this plan, while the rest seemed more flexible to future adaptations and changes.

Staffing model

All the interviewees mentioned that they have in place a staffing model. However, half of them did not consider this factor when the initiative was born and it was only developed with time.

In this opportunity, most interviewees admitted to changing their staffing model over time.

Network and communication model

Figure 9 shows that 1 initiative did not have a network and communication model in place, and only two did not have it since their beginning. This was in line with the others analysis of importance and key factors for sustaining a SII as this was considered one of the main factors.

Source of finance

Regarding the source of finance, all the initiatives implemented it from the start. Another interesting fact is that 4 out of 10 interviewees said that their finance model did not change in time, which means they still use the same source of finance. The other 6 mentioned that has changed, but only 2 of them mentioned that the source of finance changed all the time.

Governance model

Figure 9 shows that 2 initiatives do not have a governance model in place, only 2 did not have it since their beginning of operations, and 7 of them applied a governance model from the start.

However, here is very interesting to see half of the SI mentioning that their governance model is not flexible to changes. From all the factors, governance is less flexible to changes.

Business model

As mentioned before, there is a perception among 2 of the interviewees that as they are non-profit initiatives, they did not need to have a business model. In this case, 3 initiatives did not have a business model making this factor less applied.

Of the 8 interviewees that mentioned having a business model, they all shared that they have implemented it since the beginning of their activities.

Similarly to the case of the governance model, 5 out of the 8 initiatives that applied this factor mentioned that it was not so flexible to change.

General Analysis

All the initiatives implemented almost all the factors, many of them incorporated them since the beginning, and very few considered some of the factors as unimportant, for example, business model, which means that most initiatives considered all the factors important.

Regarding the source of finance, this was the only factor that all the initiatives implemented from the start. This fact can be related to the importance given by the initiatives even if this factor does not have the highest score on the Likert scale.

4.4.3 Application of the factors mentioned in the framework described by Murray et al., (2010) in sustaining their activities.

The interviews’ results were very rich, and many themes and patterns appeared during the analysis. The results were disaggregated by SIs type and made them more comprehensible and suitable to draw more specific conclusions. In the next lines every type of initiative is analyzed against the different characteristics of the factors to see how the initiatives implemented them.

Surplus food service

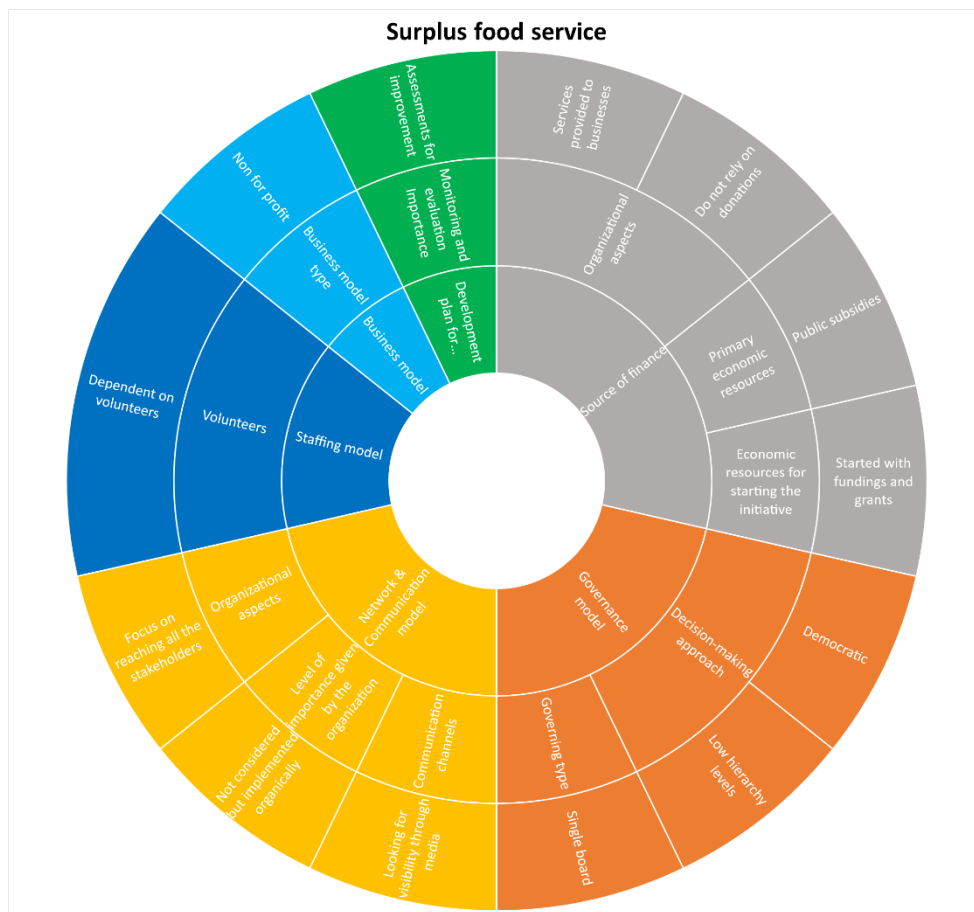


Fig. 10: Array of codes and themes found in the content analysis from the SII that belong to the category of Surplus food service (Annex 4). Source of finance and Governance model are the two aspects more mentioned even though governance model was not given a high score.

Source of finance: the initiative started with funding and grants but did not rely only on that, some sell services to businesses. Another important aspect was that the initiative mentioned that they did not use donations as a source of finance and sometimes get government subsidies.

Staffing model: the surplus food service initiative depended much on volunteers, and even in some cases everyone was a volunteer.

Network and communication model: the initiative did not have a model but applied activities aiming to reach more visibility through media and engaged with several stakeholders.

Governance model: the interviewee mentioned that the type of decision-making is democratic, and a single board leads the strategy with low hierarchy levels.

Business model: the interviewee mentioned that this was considered not applicable to the initiative as it is not a business or a non-profit organization.

Development plan: the development plan was considered important for the interviewee as mentioned that they monitor their activities and always look to improve them.

Awareness campaigns

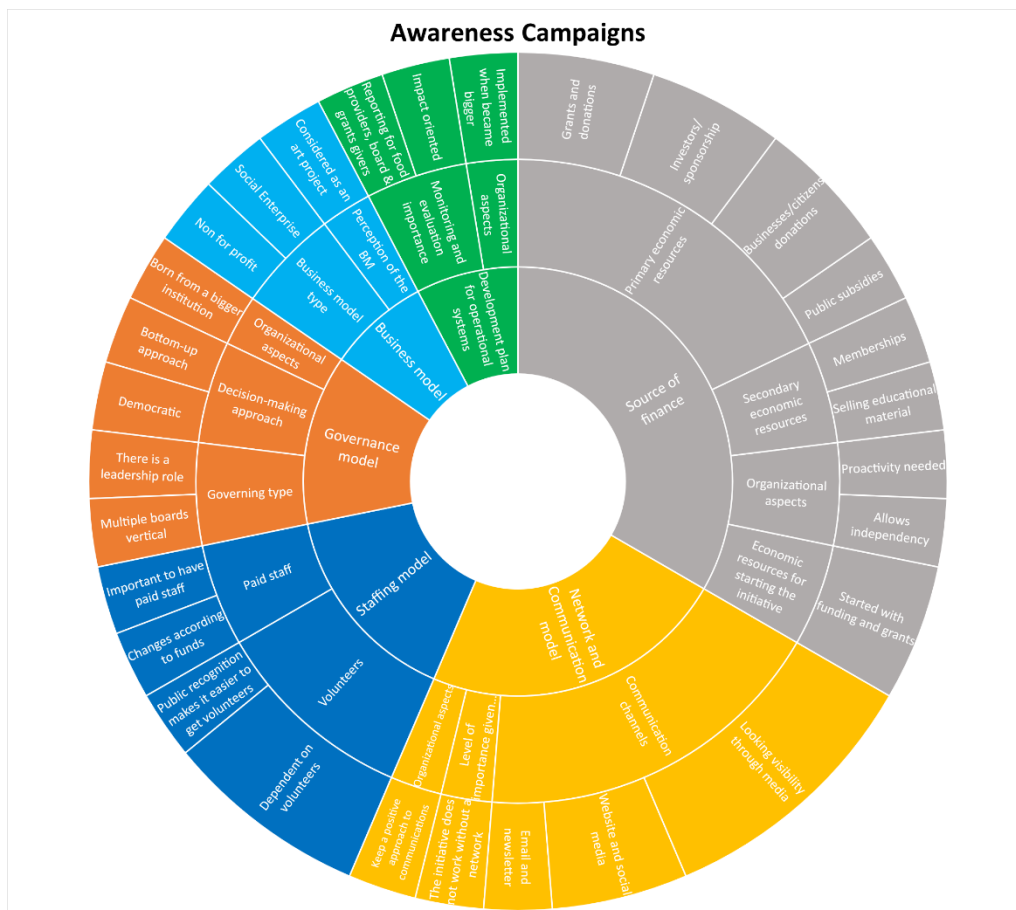


Fig. 11: Array of codes and themes found in the content analysis from the SIs that belong to the category of awareness campaigns (Annex 5). Between source of finance and Network and communication model there were more than 50% of the comments.

Source of finance: the interviewees mentioned the initiatives relied on different financial sources to sustain their activities and applied secondary sources of income, for example, selling educational material. Another important fact was that they started with public funding and grants.

Network and communication model: this was the second most commented factor. An important aspect mentioned was that visibility through media is key for good communication and network enhancement, and for communications, they rely on the website and social media. One interesting comment was that they always had a positive approach when communicating with citizens about addressing the FW problem.

Staffing model: the interviewees mentioned that these initiatives are highly dependent on volunteers, and an interesting aspect mentioned was that public recognition facilitates getting volunteers.

Governance model: the interviewees considered their initiatives democratic and implement a bottom-up approach.

Business model: the interviewees mentioned that the initiatives they belong did not consider having a business model. For that reason, the comments were in that direction.

Development plan for operational system: this aspect was considered important only for reporting, and it was only implemented when the initiatives became bigger. It makes sense that number of comments were proportionally smaller than to the other aspects as this type of SIs gave the lowest importance score to this factor in the Likert scale.

Food sharing for charities

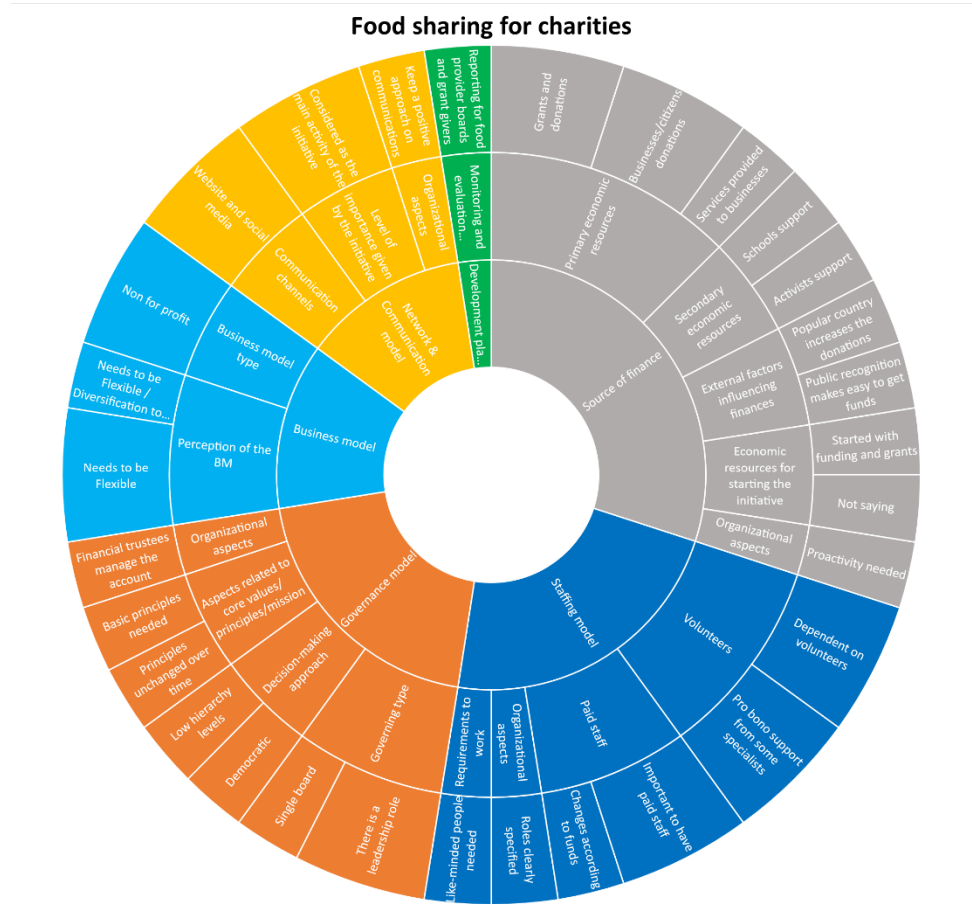


Fig. 12: Array of codes and themes found in the content analysis from the SII that belongs to the category of Food Sharing for Charities (Annex 6). The aspects that got more than 50% of the comments were source of finance and staffing model.

Source of finance: the interviewees mentioned that these initiatives rely on different sources of finance, including public and private funds and even some activists' support. They rely more on private donations and grants. One important aspect mentioned was that public recognition helped them to get more funds.

Staffing model: the interviewees mentioned that these initiatives rely on volunteers and pro bono activities from some specialists but also highlighted how important are the paid staff that works in the initiative.

Governance model: this aspect was the third mentioned, but the responses were very broad, from mentioning the importance of a leading role, to single board governing systems. They considered as having low hierarchy levels and being very democratic. An interesting comment was that the financial trustee managed the organizations' account where the initiative is part, which may imply that it had low independency.

Business model: both initiatives are not-for-profit, and it was mentioned that flexibility is key. One initiative mentioned that they were also diversifying to other fields by also receiving furniture and clothes.

Network and communication model: two important comments were that they rely on the website and social media for communication and considered important to keep a positive approach when delivering the messages.

Food sharing for communities

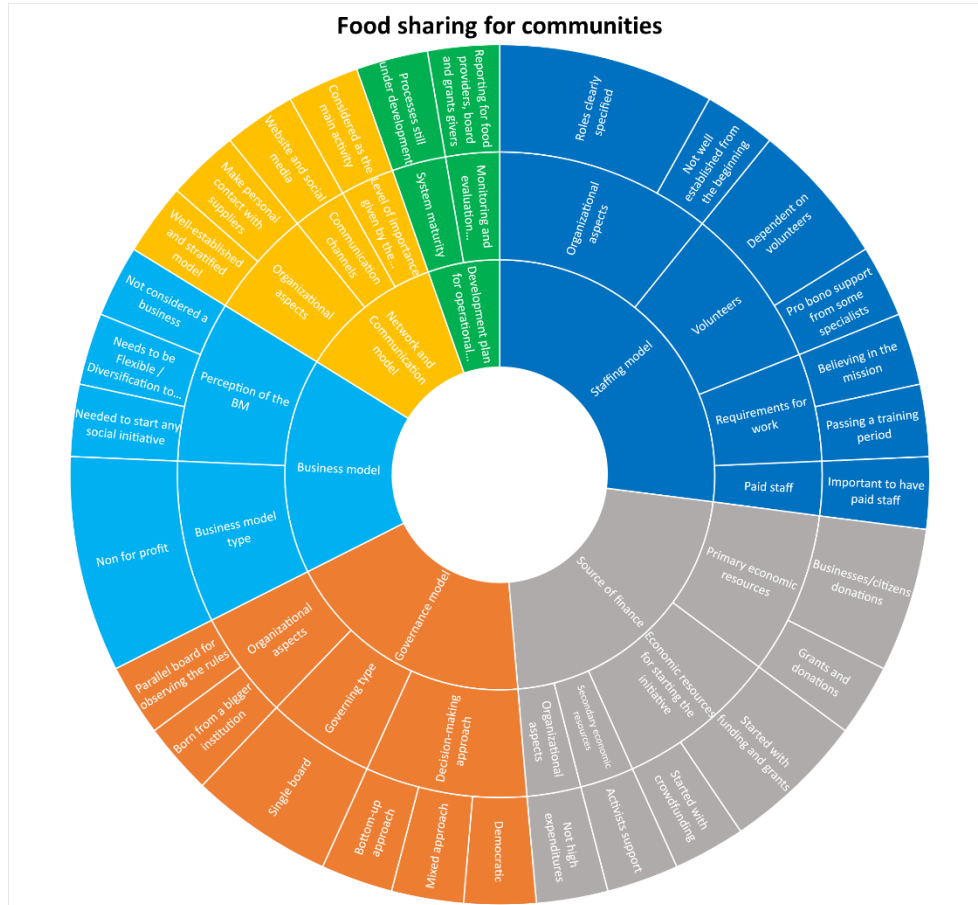


Fig. 13: Array of codes and themes found in the content analysis from the SIIs that belong to the category of Food Sharing for Communities (Annex 7). In this type of initiative, the source of finance and the staffing model were the two more mentioned factors, with almost 50% of the comments.

Staffing model: some shared comments were that roles need to be clearly defined; there is a high dependence on volunteers and pro bono support from specialists, but they also highlighted the importance of paid staff working in the initiative. An interesting comment regarding organizational aspects was the importance for participants to believe in the initiative’s mission.

Source of finance: for the principal source of funding, it was mentioned that the initiatives rely primarily on private donations and support, even though 2 out of 3 initiatives were started with funds and grants, and 1 with crowdfunding. For secondary sources of income, the interviewees mentioned their initiatives rely on activist support.

Governance model: In this factor, the responses were broad as considering, for example, the interviewees consider their initiatives to have a bottom-up approach and democratic decision-making process. Others mentioned they had a mixed approach using some hierarchies to determine key rules while allowing the

local level to take some decisions. An interesting fact was that one initiative use a parallel board to ensure compliance.

Business model: in this aspect, all the initiatives mentioned being not-for-profit, and they had different perceptions, from considered non-applicable to the initiative, to consider an essential part of any social initiative. When the initiative applied a business model, they considered that this must be very flexible.

Network and communication model: the interviewees mentioned that these initiatives rely on the website and social media for communications. One considered this aspect as the main activity of the initiative. An interesting comment highlighted the importance to make personal contact with suppliers.

Development plan for operational systems: This factor was less elaborated, and for one initiative, this was not well developed according to the interviewee. This was also considered essential to report the amounts of food saved to providers, boards, and grant givers.

Food sharing for money

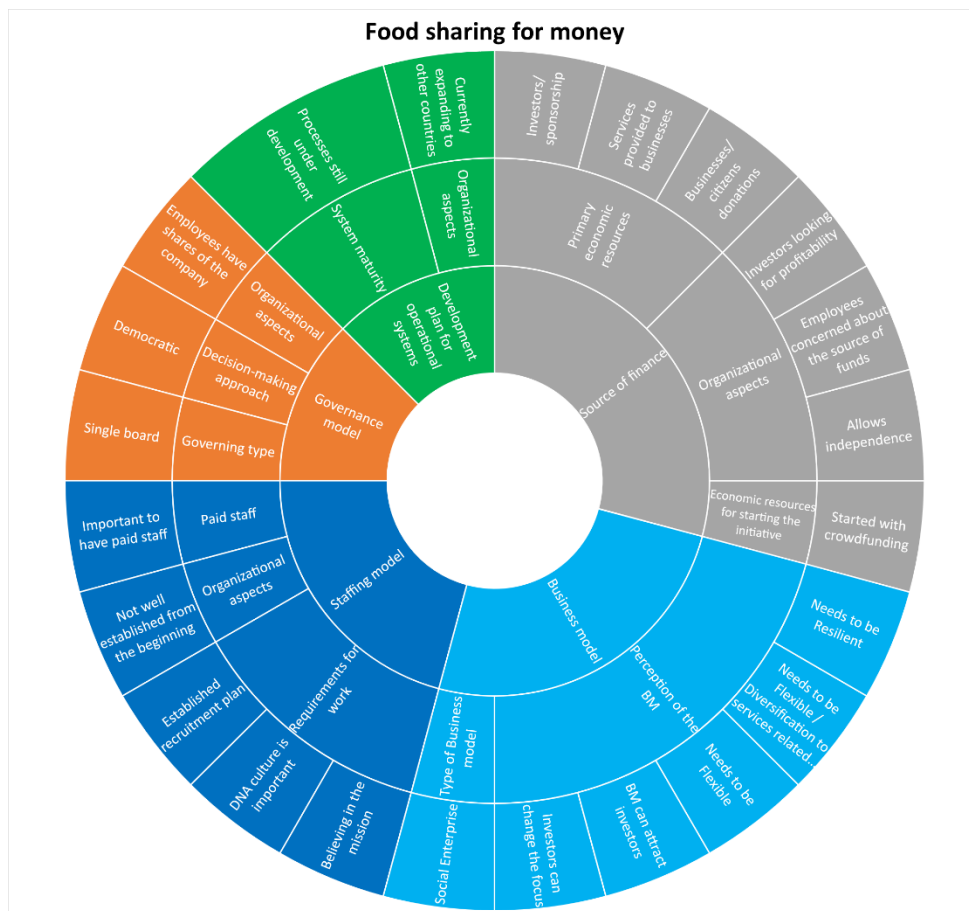


Fig. 14: Array of codes and themes found in the content analysis from the SII that belongs to the category of Food Sharing for Money (Annex 8). In this type of Social Innovation source of finance and business model were the two aspects with more comments.

Source of finance: this initiative was started with crowdfunding, and as a main source of income, it relies on investors, services to businesses, and on a lower scale, citizen donations. An interesting comment was

that investors can influence the objectives of the innovation, and employees also perceived this as a concerning factor. Therefore, the interviewee highlighted the importance of choosing the investors correctly to ensure independence.

Business model: it was mentioned that it needs to be flexible and resilient. The initiative relies on several services offered to businesses that attract investors.

Staffing model: one important factor mentioned was the need to believe in the company's mission and to ensure participants keep the culture's DNA. The initiative admitted that this was not well planned when the activities started.

Governance model: the interviewee considered the initiative as a democratic initiative and mentioned that it is governed by a single board. An interesting aspect mentioned was that employees have shares in the organization where the initiative is part.

Development plan: The interviewee mentioned that the processes were not formally established, and as they were expanding to other countries there are many things of their process that were more organic and informal.

Network and communication model: This factor was not mentioned by the interviewee.

Surplus food retail

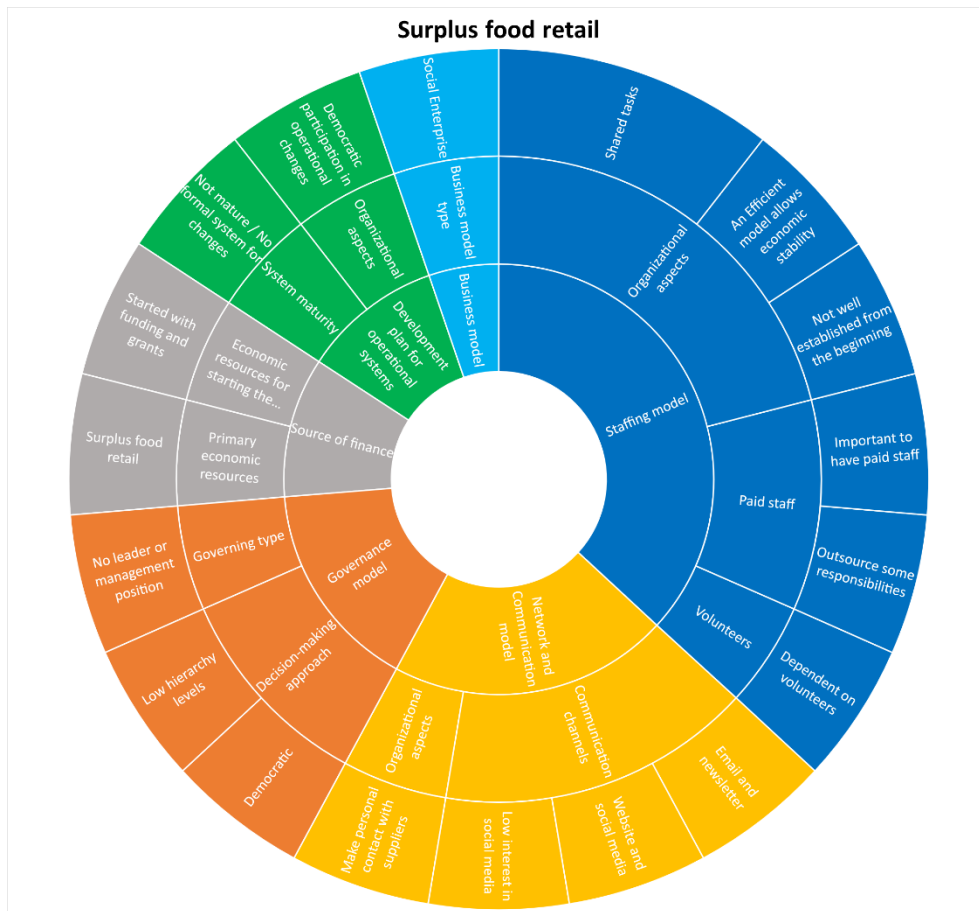


Fig. 15: Array of codes and themes found in the content analysis from the SII that belongs to the category of Surplus food retail (Annex 9). To this type of initiative, the staffing model and network and communication model were the two aspects with more comments.

Staffing model: it was mentioned the importance of sharing the activities among all the participants; an important aspect mentioned was that staffing model efficiency allows the initiative to be economically stable. It was also highlighted the importance of working with volunteers and outsourcing some tasks.

Network and communication model: the interviewee mentioned that they make personal contact with suppliers and do not rely on any specific tool. Also, they do use the website and social media but do not rely too much on social media. Moreover, for internal communication, they use emails.

Governance model: the interviewee mentioned that they consider themselves a low-hierarchy initiative with no established leadership role and democratic decision-making process.

Source of finance: regarding the finances, the interviewee mentioned that the initiative started with funding and grants, but currently, it relies only on its business model to have economic revenues.

Development plan: the interviewees mentioned that they have democratic participation in the suggestions and changes to be made in the operations, and there is no formal process to do those changes.

Business model: It was mentioned that it is important to have a simple business model to run the initiative.

5. Discussion

To foster the undertaking of new SIIs aimed at reducing FW, it is very important to understand the personal motivations of initiators and the mechanism that these initiatives implement to sustain in time. In this research, 10 SIIs were analyzed, and many patterns can be identified according to the different types of initiatives. This thesis uses and adds to the theoretical and empirical knowledge about SIs in the FW field and provides novel information about how social initiatives that work with FW can sustain in time. This “discussion” section answers research objectives describing personal drivers for starting or working in a SII; identifying key factors considered important for sustaining a SII; evaluating the application of the six factors proposed by Murray et al. (2010); identifying common characteristics of the factors proposed by Murray et al. (2010), implemented by the different initiatives participating in this research; and lastly, supporting the research for helping SIIs.

5.1 Personal drivers for participate or start a social innovation aiming to reduce food waste.

Initiators’ drivers are very important to understand what motivates a person to start or work in SIs, as usually these are grassroots organizations and depend on a leader or a group of persons who guides all the activities at the beginning (Howaldt et al., 2017). In this insights analysis, the topics with more responses were related to personal and work-related aspects. The most common reason to be involved in a SI was a previous experience as a volunteer; the second most common reason given was to be shocked by a report or experience. In both cases, the persons were driven by altruistic reason and the willingness to contribute to addressing the problem. This also can be related to specific drivers of ideology and morality, as explained by Klandermans (2004), and instrumentality and efficacy, as explained by Bandura (2016) and van Stekelenburg & Klandermans (2013). With this evidence, it can be suggested that it is important to raise awareness about the FW problem and to encourage people to participate in volunteering activities, as this can increase the probability to keep participating in social initiatives that contributes to society.

5.2 General perspective of key factors for sustain a social innovation

The interviewees gave information that can be classified into different topics regarding the key factors for sustaining a SI. In the next lines, all that information is disclosed and interpreted:

Some of the interviewees mentioned aspects that can be interpreted as initiatives’ principles and missions, with sustainability and inclusion as the two most common responses, but also others are explicitly focused on the social aspect. This information can help understand the drivers and the approach taken by the initiatives that participated in this research. While initiatives focused on sustainability and inclusion will benefit all kinds of people, not considering their social status, those focused on the social aspects will benefit only people suffering from hunger or people who are benefited through charities.

Another topic mentioned by most of the interviewees was the difficulties that they faced in their activities. The aspect that gathers most comments was the financial source, with lack of funding and underrated value of services offered to businesses as the most common answers. The lack of funding was in line with the work of Howaldt et al. (2017), in which was identified as the main challenge for SIs. An interesting finding was that the initiatives’ second most common topic of difficulties is related to legal aspects. Some legal issues need to be clarified and reevaluated to help social initiatives to keep working on avoiding FW.

The interviewed mentioned that they were sometimes worried about possible liabilities that can hinder activities such as food redistribution and prevent businesses from participating in these activities. All this issue with possible liabilities was also highlighted by the FUSION project (EU FUSIONS, 2016a), where it was suggested that laws regarding food redistribution should be revised and provide clarity about food safety, sustainability, taxes, norms about trades, and others.

Another important piece of information extracted by the interviewees was the secondary activities performed by the initiatives. 8 out of 10 initiatives mentioned performing more than one activity related to food waste reduction, as explained in the results section. 50% of the interviewees mentioned that their initiative performs awareness campaigns as a secondary activity, and 30% mentioned that they are involved in activities that engage policymakers to push more legislation to improve their operations' conditions. Those activities can be seen as important to increase the initiatives' impact and get more legitimacy (Fischer et al., 2021).

Regarding the response on specific factors that helps to sustain a SII, the factor with more comments was Network and Communication model. Furthermore, an interesting fact is that no one mentioned a difficulty related to the network and communication model, which can imply that currently, many stakeholders are open to creating alliances with SIs, as stated by Howaldt et al. (2017). The initiatives that took part in the interviews have a broad structure and coalition of actors and parties, for example, users, citizens, beneficiaries, and others. They involve citizens' participation through volunteering and pro bono collaborations. This also can be interpreted that is one reason why all the initiatives that took part in the interviews are many years established in the field, and as stated by Mulgan et al. (2007) and Ritter & Gemünden, (2003), the absence of a network is one reason of failure for SIs and are essential for their success.

The second most commented factor was the source of finance, and in the same vein, many of the initiatives also mentioned that essential funds for covering basic expenditures as the most important aspect in sustaining a SII, as was already explained in section 4.1.4. This is a key factor for all the SIs that participated in the interviews, as it was stated in one study by Arena et al. (2018) about the proper use of economic resources, and Sharir & Lerner (2006) when they explained that to sustain a SI, is important to have access to adequate resources.

Some interesting facts were that the second most common comment was the importance of having a professional team, which also corroborates other studies that explain that working with volunteers is also a factor that hinders the development of this type of activity (Howaldt et al., 2017); and that the least mentioned factor was the business model. Some of the interviewed do not consider this applicable as they did not consider themselves a business. This implies that the social business model is not well socialized among people that initiate this type of initiatives.

5.3 Evaluation of the six-aspect mentioned by Murray et al. (2010)

The first analysis was the level of importance of the six factors of the framework proposed by Murray et al. (2010) according to the Likert scale given by the interviewees. As explained in the results section, all factors were given scores above 4, which signifies that all are considered important by the different initiatives, which means that the framework is still applicable to social innovations, and the factors are important for the SIs that aims to reduce FW.

The second analysis was regarding the implementation of the six factors proposed in the framework previously mentioned. Almost all the initiatives implemented the six factors, with a few exceptions. It is worth mentioning that some factors were not implemented from the beginning, which in some cases led to problems in initiatives operations, but generally, almost all factors were implemented at some point.

5.4 Characteristics of the implementation of the six aspects mentioned in the framework

From the analysis of the different types of SIIs many patterns emerged:

- i) Business model: is not a widely known concept among the interviewees, 2 of them mentioned that do not consider applicable to the initiatives they are part of. Another important piece of information is that 6 interviewees mentioned the importance of flexibility in their business models, and they must look for all possible opportunities to keep their initiatives running. Analyzing the characteristics of the initiatives, 7 are not-for-profit, and 3 are social enterprises.
- ii) Governance model: 3 interviewees mentioned that they are low hierarchy initiatives, and 6 defined themselves as democratic initiatives that include all participants in decision-making; another interesting fact is that 5 of the interviewed initiatives are governed by a single board, and in 3 cases, have a clear leadership role.
- iii) Source of finance: only 2 initiatives started with crowdfunding, and the other 8 started with grants and public funding. For primary economic resources, 7 initiatives relied on more than one source of finance, and they tried to use as many sources as possible such as donations, grants, activists' support, providing service to businesses, and certifying businesses. All this diversity of economic sources is in line with the work of Howaldt et al. (2017), who suggest that it is important to enhance the funding methods for developing social innovations and explain that SI uses different income streams.
- iv) Network and communication model: for communications, 6 interviewees mentioned that they relied on social media and websites, and 5 considered important to gain visibility through media. For the network, all interviewees mentioned that different actors contributed in their SII. For example, regular business act as partners and sponsors, and contribute with specific capabilities, as explained by Le Ber & Branzei, (2010) and Morais-da-Silva et al. (2019), the society act as supporters, sustainment and helps to spread the social innovation. The media collaborate by increasing support by drawing attention to the innovation (Howaldt et al., 2017).
- v) Staffing model: 8 SIIs were highly dependent on volunteers, and 3 mentioned the dependency on support from specialists as pro bono services. Nevertheless, 6 interviewees also highlighted the role of paid staff who keeps the initiative running.
- vi) Development plan for organizational system: this aspect was one of the least commented, 3 initiatives mentioned that they consider important to report appropriately to their stakeholders and investors, and 2 mentioned that they do not have a development plan well established.

5.5 Limitations

The development of this thesis had some limitations. First, regarding contacting SIs aiming to reduce food waste, there is no up-to-date inventory of the social initiatives operating in the EU. The list of possible initiatives was taken from the EU FUSIONS project (EU FUSIONS, 2016b). However, the project was active until 2016, which made it difficult to contact new initiatives. Nevertheless, other means to look for new social initiatives were taken, but no other initiative outside the list of EU FUSIONS agreed to participate, and therefore new SI's created in Europe to promote food waste reduction after this year have not been invited to participate in the interviews for this research. Another limitation of the FUSIONS website is that only includes in the inventory 16 countries, and by this date, many of the initiatives were no longer active.

A second limitation was that the topic was not well developed, and information about social innovations related to food waste was limited. Much of the information was taken from studies that analyzed social innovations in general or analyzed different types of social innovations, but a few related to food waste.

Finally, a third limitation was the number of interviews for the analysis. From 110 listed initiatives, only 48 were found active, and only 10 agreed to participate. This can be attributed to the period where the research occurred, reaching the end of the year. Moreover, this situation was worse due to the region's economic and political situation, which made social organizations and initiatives to suffer from the lack of resources and time availability.

5.6 Future research

Future research could analyze how SIs working on reducing food waste can expand to other populations and countries and what are the main factors that allowed current SIs to be established in several countries.

6. Conclusion

This thesis aimed to analyze the main drivers to start or get involved in a SII aimed at reducing food waste and identifying which are the key factors for SI's sustaining according to initiators, then analyze if these factors are aligned to the framework proposed by Murray et al. (2010).

Analyzing 10 interviewees it can be concluded that the main drivers were related to altruistic factors with motivators of ideology and morality and instrumentality and efficacy, as the feeling to contribute to a big problem and the personal background as volunteer. This can imply that to increase participation in these activities there should be more awareness of FW and the participation of people in volunteering activities should be encouraged.

Regarding the key factors to sustain a SII, the perception of the interviewees was that according to the framework proposed by Murray et al. (2010), the source of finance and the network & communication model are the most important. The interviewees also described common characteristics of the factors implemented by the different initiatives, showing similarities among them, as for example, having diverse source of finance; being democratic and having low hierarchy levels of governance; relying on volunteers and professionals support; using social media and websites to communicate, and incorporate different actors to support their activities; having a not-for-profit business model, and being proactive, and open to any opportunity to create impact and financial incomes; and to ensure having a proper reporting system. All this evidence demonstrate that the six factors of the framework are generally incorporated in the different initiatives, and they are considered as important.

All this information is important to enable future initiators to develop SIIs that aims to reduce the food waste production, as social initiatives usually do not survive in time, this insights and patterns can help to implement novel initiatives that can sustain in time and have a bigger impact in social behaviour.

7. References

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Annexes

Annex 1. Invitation for participating in the study.

Dear _____,

My name is Paulo Ortiz, and I am a student of the Joint Master's degree in Sustainable development at Ca' Foscari University. I am writing to you because I am interested in the work of the initiative that you are part of specifically that aims to reduce food waste, as I am currently developing my master thesis on social innovations for food waste reduction. My thesis especially focuses on how the different social initiatives that can be considered as social innovations sustain at the downstream level of the food chain (retail & wholesale, and consumption & service).

For my research, I have already done a structured literature review to understand how key aspects of the sustainability of social innovations are tackled by different academics. However, I would like to complement my literature review with insides from different initiatives working in the field of food waste reduction, and for this, I am contacting you to invite you to a short interview where I intend to ask you some questions divided in 4 sections regarding the following topics:

1. Personal motivations to be involved in those activities.
2. Brief description of the principal activities related to reduce food waste.
3. Key aspects for sustaining a social innovation.

Your experience with an initiative to reduce food waste will provide valuable information for my research and could lead to a greater public understanding of social innovations to reduce food waste. Your responses and the name of your initiative will be kept confidential. Each interview will be assigned a number code to help ensure that personal identifiers are not revealed during the analysis and write-up of findings. There is no compensation for participating in this study. If you are willing to participate, please suggest a day and time that suits you, and I'll do my best to be available.

If you have questions or concerns about this research, feel free to contact me via email at 887737@stud.unive.it

Thanks, and best regards,

Paulo Ortiz

Annex 2: Questionnaire for the semi-structured interviews

Section 1: Personal drivers

1. *What were your main personal drivers to participate in this kind of activity?*

Section 2: Characteristics of the SI

2. *Can you describe briefly the aim and activities developed by your initiative regarding food waste reduction?*
3. *How many years of operation your initiative has?*
4. *In which countries do you operate?*

Section 3: Important factors to sustain SI (in general)

5. *Which factor or aspect do you think is the most important to the sustainment of your social innovation / social initiative regarding reducing food waste?*
6. *Can you describe why? (You can mention as many as you want)*

Section 4: Important factors to sustain SI (reflections from the Murray et al., (2010) framework)

7. *Did your initiative established a business model from the beginning? How has this been applied? and has this model changed overtime?*
8. *From 1 to 7 what importance do you give to the business model for sustaining your initiative? (1 Low, 4 neutral, 7 High), and can you explain why you give this score?*
9. *Did your initiative established a governance model from the beginning? How has this been applied? and has this model changed overtime?*
10. *From 1 to 7 what importance do you give to the governance model for sustaining your initiative? (1 Low, 4 neutral, 7 High), and can you explain why you give this score?*
11. *Did your initiative established a source of finance from the beginning? How has this been applied? and has this model changed overtime?*
12. *From 1 to 7 what importance do you give to the source of finance for sustaining your initiative? (1 Low, 4 neutral, 7 High), and can you explain why you give this score?*
13. *Did your initiative established a network and communication model from the beginning? How has this been applied? and has this model changed overtime?*
14. *From 1 to 7 what importance do you give to the network and communication model for sustaining your initiative? (1 Low, 4 neutral, 7 High), and can you explain why you give this score?*
15. *Did your initiative established a staffing model from the beginning? How has this been applied? and has this model changed overtime?*
16. *From 1 to 7 what importance do you give to the staffing model for sustaining your initiative? (1 Low, 4 neutral, 7 High), and can you explain why you give this score?*
17. *Did your initiative established a development plan from the beginning? How has this been applied? and has this model changed overtime?*
18. *From 1 to 7 what importance do you give to the development plan for sustaining your initiative? (1 Low, 4 neutral, 7 High), and can you explain why you give this score?*

Annex 3: codebook structure

Code System

1 Characteristics of initiative	0
1.1 Years since creation	0
1.1.1 >15	1
1.1.2 10-15	4
1.1.3 5-10	4
1.1.4 1-5	1
1.2 Activities description	0
1.2.1 TV Show	1
1.2.2 Certification scheme	1
1.2.3 Publishing educational material	2
1.2.4 Intermediaries	2
1.2.5 Surplus food service	2
1.2.6 Awareness campaigns	8
1.2.7 Engage with policy makers	4
1.2.8 Provide many services to business	2
1.2.9 Processing surplus food	1
1.2.10 Surplus food retail	1
1.2.11 Food sharing for money	1
1.2.12 Food sharing for charity	3
1.2.13 Food sharing for community	3
1.3 Country	0
1.3.1 France	1
1.3.2 Germany	1
1.3.3 Austria	1
1.3.4 Walles	1
1.3.5 England	1
1.3.6 Italy	1
1.3.7 Serbia	1
1.3.8 Spain	1
1.3.9 Greece	1
1.3.10 Portugal	1

1.4 Type of S.I. according to framework (core activity)	0
1.4.1 Surplus food retail	1
1.4.2 Surplus food service	1
1.4.3 Value added preparation	0
1.4.4 Food sharing	0
1.4.4.1 Food sharing for money	1
1.4.4.2 Food sharing for charity	2
1.4.4.3 Food Sharing for community	3
1.4.5 Awareness campaigns	2
1.5 Principles / mission	0
1.5.1 No exclusion of people	3
1.5.2 Focus exclusively on food waste	1
1.5.3 Always take a positive approach	1
1.5.4 Reaching a lot of actors of the food chain	2
1.5.5 Achieving social impacts	2
1.5.6 Preserving biodiversity	1
1.5.7 Promoting sustainable food systems	4
1.5.8 Education and entertainment	1
1.5.9 Inspire people	1
1.5.10 Ensure food safety	1
1.5.11 Work only with institutions	1
1.5.12 Raising awareness	2
1.5.13 Change the paradigm	1
1.5.14 Job creation	1
1.6 Difficulties	0
1.6.1 Legal aspects	0
1.6.1.1 Lack of government encouragement	2
1.6.1.2 Possible liabilities	1
1.6.1.3 New laws needed	2
1.6.1.4 Unclear application of the law	3
1.6.2 Related to governance model	0
1.6.2.1 Investors can influence the strategy	3
1.6.3 Related to staffing model	0
1.6.3.1 Attract specialists	1

1.6.3.2 Uncertainties of working with volunteers	4
1.6.3.3 People leaving the organization	1
1.6.4 Related to source of finance	0
1.6.4.1 Economic crisis makes difficult to raise money	1
1.6.4.2 Investors looking for profitability	1
1.6.4.3 Disbursement delay of grants	1
1.6.4.4 Lack of solidarity culture	1
1.6.4.5 Service provided underrated by businesses	2
1.6.4.6 Charities are poorly funded	1
1.6.4.7 Uncertainties in fundings	1
1.6.5 Related to network and communication model	0
1.6.6 Related to development plan for organizational system	0
1.6.6.1 Uncertainties of food provided	1
1.6.6.2 Lack of organization when started	1
1.6.7 Related to Business models	0
1.6.7.1 External competition	2
2 Drivers of interviewee	0
2.1 Experience related	0
2.1.1 Shocked by a report or experience	3
2.1.2 Influenced by a friend or relative	2
2.1.3 Motivated by a similar activity in another country	2
2.2 World processes	0
2.2.1 Awareness of hunger in the world	1
2.2.2 Economic crisis	1
2.3 Work related	0
2.3.1 Contribution to society	2
2.3.2 Social purpose	2
2.3.3 Opportunities for young person	1
2.3.4 Salary	1
2.3.5 Rewarding job	1
2.3.6 Dynamics of the job	1
2.3.7 Previous job ended	1
2.4 Personal related	0
2.4.1 Against the current food system	1

2.4.2 Against consumerism	1
2.4.3 Always concerned about the food waste	2
2.4.4 Personal background	4
2.4.5 Culture	1
2.4.6 Altruism	1
3 Perceptions on key factors to sustain the initiative	0
3.1 Factors related to staffing model	0
3.1.1 Work with volunteers	2
3.1.2 Professional team	3
3.2 Factors related to Network and communication model	0
3.2.1 Positive approach solution oriented	1
3.2.2 Media support	1
3.2.3 Society awareness	2
3.2.4 Community support	2
3.2.5 Promoting the initiative	1
3.2.6 Engagement with different actors	2
3.3 Factors related to Business model	0
3.3.1 Project proposal and Business model	1
3.4 Factors related to development plan	0
3.4.1 Platforms and tools	1
3.4.2 Make it easy for participants	1
3.4.3 Make it local	2
3.4.4 Go for quick wins	1
3.5 Factors related to governance	0
3.5.1 Ensure legal compliance	1
3.5.2 Board facilitates to raise funds	1
3.5.3 Horizontal initiative	1
3.5.4 Have and follow basic principles	1
3.6 Factors related to source of finance	0
3.6.1 Funds to cover essential expenditures	4
3.6.2 Economically sustainable	2
4 Development plan for operational systems	0
4.1 Do you have one?	0
4.1.1 No	0

4.1.2 Yes	10
4.1.2.1 Applied from the start	0
4.1.2.1.1 Yes	5
4.1.2.1.2 No	5
4.1.2.2 Changed over time	0
4.1.2.2.1 Yes	4
4.1.2.2.2 No	1
4.1.2.2.3 Continually changing	2
4.1.2.2.4 Did not say	3
4.2 Organizational aspects	0
4.2.1 Implemented when became bigger	1
4.2.2 Currently expanding to other countries	1
4.2.3 Democratic participation in operational changes	1
4.3 Monitoring and evaluation importance	0
4.3.1 Impact oriented	1
4.3.2 Assessments for improvement	1
4.3.3 Reporting for food providers, board, and grants givers	3
4.4 System maturity	0
4.4.1 No formal system for changes	1
4.4.2 Processes still under development	3
4.5 Score	0
4.5.1 7	4
4.5.1.1 Allows growth	1
4.5.1.2 You always should follow a plan	1
4.5.1.3 Not explained	1
4.5.1.4 Allows to have accurate reports	1
4.5.2 6	2
4.5.2.1 Important to focus on people	1
4.5.2.2 Important to monitor the compliance with rules	1
4.5.3 5	3
4.5.3.1 Now is getting better	1
4.5.3.2 Not Explained	1
4.5.3.3 Flexibility to stay relevant	1
4.5.3.4 You can still do important things	1

4.5.4 3	1
4.5.4.1 Not so important	1
5 Staffing model	0
5.1 Do you have one?	0
5.1.1 No	0
5.1.2 Yes	10
5.1.2.1 Applied from the start	0
5.1.2.1.1 Yes	5
5.1.2.1.2 No	3
5.1.2.1.3 Did not say	2
5.1.2.2 Changed over time	0
5.1.2.2.1 Yes	7
5.1.2.2.2 No	1
5.1.2.2.3 Continually changing	1
5.1.2.2.4 Did not say	1
5.2 Paid staff	0
5.2.1 Outsource some responsibilities	1
5.2.2 Important to have paid staff	6
5.2.3 It changes according to funds	2
5.3 Volunteers	0
5.3.1 Pro bono support from some specialists	3
5.3.2 Public recognition makes it easier to get volunteers	1
5.3.3 Dependent on volunteers	9
5.4 Requirements for work	0
5.4.1 like-minded people needed	1
5.4.2 Passing a training period	1
5.4.3 Established recruitment plan	1
5.4.4 DNA culture is important	1
5.4.5 Believing in the mission	2
5.5 Organizational aspects	0
5.5.1 Not well established from the beginning	3
5.5.2 Roles clearly specified	4
5.5.3 Shared tasks	2
5.5.4 An efficient model allows economic stability	1

5.6 Score	0
5.6.1 7	6
5.6.1.1 Most valuable resource in an organization is the people	1
5.6.1.2 Everything works	1
5.6.1.3 Crucial to develop the activities	2
5.6.1.4 Contribute to harmony	1
5.6.1.5 Self sustainable	1
5.6.2 6	1
5.6.2.1 Not 100% reliant on staff	1
5.6.3 5	2
5.6.3.1 Getting better now	1
5.6.3.2 Not so important	1
5.6.4 4	1
5.6.4.1 You do not need a formal model	1
6 Network and Communication model	0
6.1 Do you have one?	0
6.1.1 No	1
6.1.2 Yes	9
6.1.2.1 Applied from the start	0
6.1.2.1.1 Yes	6
6.1.2.1.2 No	2
6.1.2.1.3 Not saying	2
6.1.2.2 Changed over time	0
6.1.2.2.1 Yes	6
6.1.2.2.2 No	2
6.1.2.2.3 Network constantly change	2
6.2 Organizational aspects	0
6.2.1 Make personal contact with suppliers	2
6.2.2 Focus on reaching all the stakeholders	1
6.2.3 Keep a positive approach on communications	2
6.2.4 Well established and stratified model	1
6.3 Level of importance given by the initiative	0
6.3.1 Considered as the main activity of the initiative	3
6.3.2 Not considered but implemented organically	1

6.3.3 The initiative does not work without a network	1
6.4 Communication channels	0
6.4.1 Low interest in social media	1
6.4.2 Website and social media	6
6.4.3 Looking for visibility through media	5
6.4.4 Emails and newsletter	2
6.5 Score	0
6.5.1 7	6
6.5.1.1 Important to get in touch	1
6.5.1.2 Crucial to reach the stakeholders	1
6.5.1.3 Connecting with people that shares the ideal	1
6.5.1.4 Important for communicating the message	1
6.5.1.5 Key aspect to develop the activities	2
6.5.2 6	4
6.5.2.1 Allows everyone to know the goals	1
6.5.2.2 Not complex / do not rely on communications	1
6.5.2.3 important to Trust that investors won't change the purpose	1
6.5.2.4 Core activity	1
7 Source of finance	0
7.1 Do you have one?	0
7.1.1 No	0
7.1.2 Yes	10
7.1.2.1 Applied from the start	0
7.1.2.1.1 Yes	10
7.1.2.1.2 No	0
7.1.2.2 Changed over time	0
7.1.2.2.1 Yes	4
7.1.2.2.2 No	4
7.1.2.2.3 Did not say	0
7.1.2.2.4 Constantly changing	2
7.2 Economic resources for starting the initiative	0
7.2.1 Not saying	1
7.2.2 Started with fundings and grants	7
7.2.3 Started with crowdfunding	2

7.3 External factors influencing finance	0
7.3.1 Public recognition makes it easy to get funds	1
7.3.2 Popular country increases the donations	1
7.4 Organizational aspects	0
7.4.1 Do not rely on donations	1
7.4.2 Allows independency	2
7.4.3 Employees concerned about the source of funds	1
7.4.4 Investors looking for profitability	1
7.4.5 Not high expenditures	1
7.4.6 Proactivity needed	2
7.5 Primary economic resources	0
7.5.1 Businesses/citizens donations	7
7.5.2 Services provided to businesses	3
7.5.3 Investors/sponsorship	3
7.5.4 Surplus food retail	1
7.5.5 Public subsidies	2
7.5.6 Grants and donations	5
7.6 Secondary economic resources	0
7.6.1 Activists support	2
7.6.2 Selling educational material	1
7.6.3 Memberships	1
7.6.4 Schools support	1
7.7 Changed over time	0
7.7.1 Yes	9
7.7.2 No	1
7.8 Applied from the start	0
7.8.1 Yes	10
7.8.2 No	0
7.9 Score	0
7.9.1 7	4
7.9.1.1 Esential for survival	3
7.9.1.2 Economic sustainability allows to still work	1
7.9.2 6	2
7.9.2.1 People are very generous	1

7.9.2.2 Not absolutely essential	1
7.9.3 5	2
7.9.3.1 Not so easy to find money	1
7.9.3.2 You can change it	1
7.9.4 4	2
7.9.4.1 You can find people for support	1
7.9.4.2 funds needed for few essential things	1
8 Governance model	0
8.1 Do you have one	0
8.1.1 No	2
8.1.2 Yes	8
8.1.2.1 Applied from the start	0
8.1.2.1.1 Not saying	1
8.1.2.1.2 Yes	6
8.1.2.1.3 No	3
8.1.2.2 Changed over time	0
8.1.2.2.1 Yes	3
8.1.2.2.2 No	7
8.2 Aspects related to core values / principles / mission	0
8.2.1 You need basic principles	1
8.2.2 Principles unchanged over time	1
8.3 Organizational aspects	0
8.3.1 Employees have shares of the company	1
8.3.2 Parallel board for observing the rules	1
8.3.3 Born from a bigger institution	2
8.3.4 Financial trustee manage the account	1
8.4 Type of decision-making approach	0
8.4.1 Low hierarchy levels	3
8.4.2 Bottom-up approach	2
8.4.3 Mixed approach	1
8.4.4 Democratic	6
8.5 Type of governing	0
8.5.1 No leader or management position	1
8.5.2 There is a leadership role	3

8.5.3 Single board	5
8.5.4 Multiple boards vertical	1
8.6 Score	0
8.6.1 7	5
8.6.1.1 It should be processed by law	1
8.6.1.2 Engaging governance model	2
8.6.1.3 Maintain harmony	1
8.6.1.4 Give stakeholders confidence	1
8.6.2 5	2
8.6.2.1 Allows autonomy	1
8.6.2.2 Allows the sense community, compliance, etc	1
8.6.3 6	3
8.6.3.1 Not explained	1
8.6.3.2 Low hierarchy works better	1
8.6.3.3 Enables participatory processes	1
9 Business model	0
9.1 Do you have one?	0
9.1.1 No	3
9.1.2 Yes	7
9.1.2.1 Applied from start	0
9.1.2.1.1 Yes	6
9.1.2.1.2 No	4
9.1.2.2 Change over time	0
9.1.2.2.1 Yes	2
9.1.2.2.2 No	8
9.2 Perception about the BM	0
9.2.1 Investors can change the focus	1
9.2.2 Attract investors	1
9.2.3 Not considered as a business	1
9.2.4 Considered as an art project	1
9.2.5 Needs to be Flexible	3
9.2.5.1 Diversification to services related on FW	1
9.2.5.2 Diversification to other fields	2
9.2.6 Needs to be Resilient	1

9.2.7 Needed to start any social initiative	1
9.3 Type of Business model	0
9.3.1 Social enterprise	3
9.3.2 Not-for-profit	7
9.4 Score	0
9.4.1 7	2
9.4.1.1 Not given	1
9.4.1.2 simplicity	1
9.4.2 6	5
9.4.2.1 Focus on KPI	1
9.4.2.2 Allows to sustain itself	2
9.4.2.3 Needed to run an organization	1
9.4.2.4 Allows freedom	1
9.4.3 5	1
9.4.3.1 You need flexibility	1
9.4.4 4	1
9.4.4.1 Flexibility	1
9.4.5 2	1
9.4.5.1 Not really important because is decentralized approach	1

Annex 4: Surplus Food services characteristics

SURPLUS FOOD SERVICE			
Factor	Theme	Subtheme	Comments
Development plan for operational systems	Monitoring and evaluation Importance	Assessments for improvement	1
Staffing model	Volunteers	Dependent on volunteers	2
Network & Communication model	Organizational aspects	Focus on reaching all the stakeholders	1
	Level of importance given by the organization	Not considered but implemented organically	1
	Communication channels	Looking for visibility through media	1
Source of finance	Economic resources for starting the initiative	Started with funding and grants	1
	Organizational aspects	Do not rely on donations	1
	Primary economic resources	Services provided to businesses Public subsidies	1
Governance model	Decision-making approach	Low hierarchy levels	1
		Democratic	1
	Governing type	Single board	1
Business model	Business model type	Not-for-profit	1

Annex 5: Awareness Campaigns characteristics

Awareness Campaigns			
Factor	Theme	Subtheme	Comments
Development plan for operational systems	Organizational aspects	Implemented when became bigger	1
	Monitoring and evaluation importance	Impact oriented	1
		Reporting for food providers, board & grants givers	1
Staffing model	Paid staff	Important to have paid staff	1
		Changes according to funds	1
	Volunteers	Public recognition makes it easier to get volunteers	1
		Dependent on volunteers	3
Network and Communication model	Organizational aspects	Keep a positive approach to communications	1
	Level of importance given by the initiative	The initiative does not work without a network	1
	Communication channels	Website and social media	2
		Looking visibility through media	4
		Email and newsletter	1
Source of finance	Economic resources for starting the initiative	Started with funding and grants	2
	Organizational aspects	Allows independency	1
		Proactivity needed	1
	Primary economic resources	Businesses/citizens donations	2
		Investors/sponsorship	2
		Public subsidies	1
		Grants and donations	2
	Secondary economic resources	Selling educational material	1
Memberships		1	
Governance model	Organizational aspects	Born from a bigger institution	1
	Decision-making approach	Bottom-up approach	1
		Democratic	1
	Governing type	There is a leadership role	1
		Multiple boards vertical	1
Business model	Perception of the BM	Considered as an art project	1
	Business model type	Social Enterprise	1
		Not-for-profit	1

Annex 6: Food Sharing for Charities characteristics

Food sharing for charities			
Factor	Theme	Subtheme	Comments
Development plan for operational systems	Monitoring and evaluation Importance	Reporting for food provider boards and grant givers	1
Staffing model	Paid staff	Important to have paid staff	2
		Changes according to funds	1
	Volunteers	Pro bono support from some specialists	2
		Dependent on volunteers	2
	Requirements to work	Like-minded people needed	1
	Organizational aspects	Roles clearly specified	1
Network & Communication model	Organizational aspects	Keep a positive approach on communications	1
	Level of importance given by the initiative	Considered as the main activity of the initiative	2
	Communication channels	Website and social media	2
Source of finance	Economic resources for starting the initiative	Not saying	1
		Started with funding and grants	1
	External factors influencing finances	Public recognition makes it easy get funds	1
		Popular country increases the donations	1
	Organizational aspects	Proactivity needed	1
	Primary economic resources	Businesses/citizens donations	2
		Services provided to businesses	1
		Grants and donations	2
	Secondary economic resources	Activists support	1
		Schools support	1
Governance model	Aspects related to core values/principles/mission	Basic principles needed	1
		Principles unchanged over time	1
	Organizational aspects	Financial trustees manage the account	1
	Decision-making approach	Low hierarchy levels	1
		Democratic	1
	Governing type	There is a leadership role	2
Single board		1	
Business model	Perception of the BM	Needs to be Flexible	2
		Needs to be Flexible / Diversification to other fields	1
	Business model type	Not-for-profit	2

Annex 7: Food Sharing for Communities

Food sharing for communities			
Factor	Theme	Subtheme	Comments
Development plan for operational systems	Monitoring and evaluation importance	Reporting for food providers, board and grants givers	1
	System maturity	Processes still under development	1
Staffing model	Paid staff	Important to have paid staff	1
Staffing model	Volunteers	Pro bono support from some specialists	1
		Dependent on volunteers	2
	Requirements for work	Passing a training period	1
		Believing in the mission	1
	Organizational aspects	Not well established from the beginning	1
		Roles clearly specified	3
Network and Communication model	Organizational aspects	Make personal contact with suppliers	1
		Well-established and stratified model	1
	Level of importance given by the initiative	Considered as the main activity	1
	Communication channels	Website and social media	1
Source of finance	Economic resources for starting the initiative	Started with funding and grants	2
		Started with crowdfunding	1
	Organizational aspects	Not high expenditures	1
	Primary economic resources	Businesses/citizens donations	2
		Grants and donations	1
Secondary economic resources	Activists support	1	
Governance model	Organizational aspects	Parallel board for observing the rules	1
		Born from a bigger institution	1
	Decision-making approach	Bottom-up approach	1
		Mixed approach	1
		Democratic	1
	Governing type	Single board	2
Business model	Perception of the BM	Not considered a business	1
		Needs to be Flexible / Diversification to other fields	1
		Needed to start any social initiative	1
	Business model type	Not-for-profit	3

Annex 8: Food Sharing for Money characteristics

Food sharing for money			
Factor	Theme	Subtheme	Comments
Development plan for operational systems	Organizational aspects	Currently expanding to other countries	1
	System maturity	Processes still under development	2
Staffing model	Paid staff	Important to have paid staff	1
	Requirements for work	Established recruitment plan	1
		DNA culture is important	1
		Believing in the mission	1
Organizational aspects	Not well established from the beginning	1	
Source of finance	Economic resources for starting the initiative	Started with crowd funding	1
	Organizational aspects	Allows independence	1
		Employees concerned about the source of funds	1
		Investors looking for profitability	1
	Primary economic resources	Businesses/citizens donations	1
		Services provided to businesses	1
Investors/sponsorship		1	
Governance model	Organizational aspects	Employees have shares of the company	1
	Decision-making approach	Democratic	1
	Governing type	Single board	1
Business model	Perception of the BM	Investors can change the focus	1
		BM can attract investors	1
		Needs to be Flexible	1
		Needs to be Flexible / Diversification to services related to FW	1
		Needs to be Resilient	1
	Type of Business model	Social Enterprise	1

Annex 9: Surplus Food Retail characteristics

Surplus food retail			
Factor	Theme	Subtheme	Comments
Development plan for operational systems	Organizational aspects	Democratic participation in operational changes	1
	System maturity	Not mature / No formal system for changes	1
Staffing model	Paid staff	Outsource some responsibilities	1
		Important to have paid staff	1
	Volunteers	Dependent on volunteers	1
	Organizational aspects	Not well established from the beginning	1
		Shared tasks	2
		An Efficient model allows economic stability	1
Network and Communication model	Organizational aspects	Make personal contact with suppliers	1
	Communication channels	Low interest in social media	1
		Website and social media	1
		Email and newsletter	1
Source of finance	Economic resources for starting the initiative	Started with funding and grants	1
	Primary economic resources	Surplus food retail	1
Governance model	Decision-making approach	Low hierarchy levels	1
		Democratic	1
	Governing type	No leader or management position	1
Business model	Business model type	Social Enterprise	1