



DO-IT-YOURSELF GOVERNANCE OF FOOD WASTE REDISTRIBUTION

A comparative case study into the individual conditions for, and justice principles underlying the participation in citizen-led initiatives for food waste redistribution

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Abstract

Societal governance is shifting towards cooperative action (Keessen et al, 2013). Do-It-Yourself governance refers to the increasing involvement of citizens in the production of public services. It creates a shift from citizens having solely the role of consumers, to citizens being actively part of the initiation and production of services (Mees, 2019). Within this shift, it is essential to improve the understanding of which conditions for individual action there are, and how each condition relates to the others, ultimately influencing whether (and how) citizens participate in governance (Mees, 2019). The involvement of citizens in governance often has the form of citizen-led initiatives. Lack of citizens' involvement in these initiatives hinders their potential effectiveness. At the same time, doubts are being raised about the environmental justice implications of citizen coproduction of services.

This case study research applies the framework by Mees (2019) to study the influence of individual conditions for participation, contextual variables, and justice principles underlying the participation of individuals in citizen-led initiatives for food waste redistribution. Large quantities of food are wasted globally, creating an externality to the food system that impacts the environment and the access to food among people with limited purchasing power (Vlaholias, Thompson, Every & Dawson, 2015). Food waste redistribution for human consumption by citizen-led initiatives reduces the amount of food being wasted whilst allocating it to people that want it or need it.

Participation in citizen-led initiatives for food waste redistribution is investigated looking at eight conditions for participation, subdivided into three dimensions: motivation, capacity, and ownership (i.e. a citizen has to want, can, and feel responsible for participating in the production of the service). It was found that participation in citizen-led initiatives can be explained by group identification as the main motivational condition, combined with perceived ownership of the issue due to the sense of own responsibility and environmental values felt by the respondents. These conditions are influenced by underlying justice principles, which also influence the nature of the service provided. Contextual variables were less influential than expected, and mainly impacted the objective capacity of participants.

The framework by Mees (2019) proved to be an efficient tool to research the participation of citizens in DIY governance, adaptable to different territorial settings. However, it could be improved by increasing the attention for relational social frameworks. These are found to be key in understanding citizen participation in the governance of food waste systems. Increased collaboration among different actors within food waste governance is found to be essential to boost the potential of citizen-led initiatives for food waste redistribution.

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1. Introduction

In the Anthropocene era, the governance of society towards a more sustainable way of living acquires an increased urgency (Pattberg & Zelli, 2016). The responsibility for responding to complex environmental issues lies on all contributors to societal steering. The urgency of climate change mitigation specifically, requires drastic changes in people's behaviour and habits (Ortega-Egea, García-de-Frutos, & Antolín-Lopez, 2014).

At the same time, governance structures are changing, and becoming increasingly decentralized. Governments work together with actors of various nature, and the role of the government is, as a consequence, changing. Citizens are expected to shape society, give input, and provide public services. There are examples of local governments encouraging citizens to self-organize and take care of the community's well-being (Keessen et al, 2013).

Within this context, DIY governance is defined as the active participation of citizens in governance through the organization and provision of public services (Mees, 2019).

1.1. DIY governance

DIY-governance has enormous potential for tapping into human resources, bringing innovation, finding solutions, and ultimately for tackling major sustainability issues (Mees, 2019). One of the forms through which DIY governance takes place is citizen-led initiatives. These are groups of citizens autonomously initiating and structuring collective action and providing a public service through it, creating a space for citizens' coproduction of services for society as a whole. The citizens' role becomes that of coproducers of public services, rather than merely consumers and users they participate in the initiation, design, and delivery of services. This role as coproducers is at the basis of the concept of DIY governance. The *diffusion benefits* of the rise in awareness prompted by DIY governance, under the form of citizen-led initiatives, reaches many areas, including policy-making, education, politics, and everyday activism by more and more citizens (Zapata Campos & Zapata, 2017).

However, the research by Mees (2019) regarding citizen-led energy initiatives found that DIY governance potential is largely unexploited. Furthermore, academic knowledge about the distributive effects of citizen coproduction is far from complete (Verschuere, Vanleene, Steen, & Brandsen, 2018). Multiple studies call for a closer look at equal participation in citizen coproduction, as well as the effect of these initiatives on democracy and fairness of benefit distribution.

1.2. Food waste issue

The involvement of all societal actors in solutions for environmental issues is key, and research is needed about the role of citizens in the governance of these issues (Mees, 2019). Among all these issues, this research focusses on food waste.

Food waste is a key problem to tackle when considering emissions, land use, and the excessive use of resources overall. Food waste has important social and environmental consequences, strictly intertwined with each other (Vlaholias, Thompson, Every & Dawson, 2015). The social awareness about the magnitude of this issue and its repercussions is slowly rising, and increasing attention has been given to the problem.

On average, one-third of food goes to waste globally (Corrado et al, 2019). Considering the number of resources and pollution related to food production systems, this waste has to be linked with global issues like climate change, scarcity of resources, food security. The reduction of the amount of food

being wasted, therefore, can be seen as a climate change mitigation action. To give just one example, the food discarded annually in the Finnish food chain amounts to 335-460 million kg (Katajajuuri et al, 2014). The food wasted by households (23 kg per capita/year) alone can be converted into greenhouse gases and be found to be equal to the annual carbon dioxide emissions of 100,000 cars. Reducing food waste along the supply chain is, therefore, one of the targets set by the Sustainable Development Goal 12.3 for 2030 (Corrado et al, 2019). The European Circular Economy Action Plan and directive amending the European Waste Framework Directive align with this SDG target at the European level.

Food waste affects both farmers and consumers and is directly related to the issue of food poverty, the insufficient availability of nutritious and safe food to be consumed by a person or household (Papargyropoulou, Lozano, Steinberger, Wright, & bin Ujang, 2014). A diminution in unnecessary food waste could benefit those whose economic situation limits their access to nutritious food. This lack of access, related to limited purchasing power, is often the cause of food poverty, more so than the lack of actual food to be purchased.

Food waste is not a problem that can be tackled only at the global or international scale. In the hierarchy of food waste reduction, redistribution of waste for human use is one of the best options, second only to the prevention of the creation of surplus (Garcia-Garcia, Woolley, & Rahimifard, 2015). Such redistribution of food waste relies on local action by and within communities. This is where citizens coproduction through citizen-led initiatives comes into play in the governance of food waste.

1.3. DIY governance in food waste redistribution

The increasing awareness of food poverty and food waste has incentivized the action of recovery and redistribution of food waste (Galli, Cavicchi & Brunori, 2019). The various actors involved in the process have an increasingly strong role in solving the issue. The governance of the food supply chain is in the hands of governments and policymakers as well as in those of producers, retailers, and consumers.

Citizen-led initiatives for food redistribution have grown due to a broad demand for their action, coupled with a lack of opposition (Levkoe & Wakefield, 2014). Alliances, partnerships, and collaborative actions of all sorts have been built between societal actors across the public and private sector, at different geographic scales. Citizen-led initiatives which redistribute food surplus are often seen as a “win-win” solution, as they work to solve food poverty and often produce an economic benefit for the producers at the same time (Galli, Cavicchi & Brunori, 2019). On the other hand, others criticize these initiatives as inadequate and see the government as solely responsible for the adequate citizens' access to food.

Like in most cases, the cooperation among actors at different scales of the governance system is essential. As mentioned before, supranational organizations called for action. Furthermore, campaigns and initiatives have been organized at the international level, for example by the European Union (Secondi, Principato & Laureti, 2015). Governments have an important role to play, as laws and regulations regarding food safety and retail can incentivize or hinder food redistribution and prevent retailers from making their surplus available for redistribution (Planchenstainer, 2013). For DIY governance under the form of citizen-led initiatives for food waste redistribution to be effective, the legal framework regarding this issue has to be supportive of the solution citizens are proposing. DIY governance has often more of a local function, tailor-made to the community where it exists. The effect of this local action spills over into other governance spheres as awareness arises (Zapata Campos and Zapata, 2017).

A part of the effort to solve food waste, at all governance scales, goes into education and information (Secondi, Principato & Laureti, 2015). Awareness among citizens is essential for addressing the issue, especially seen how much food waste is produced at the end of the supply chain, by households.

1.4. Knowledge gap

To achieve social and institutional change concerning the current unsustainable model of consumption leading to (food) waste, collective action is needed (Zapata Campos & Zapata, 2017). Movements like the above mentioned citizen-led initiatives for the redistribution of food waste are instrumental in the reorientation of everyday consumption. The high potential effectiveness of DIY governance is bound to the involvement of citizens, which is still low (Gifford, 2011; Klein et al, 2018).

There are important knowledge gaps in the literature regarding DIY governance within the field of food waste redistribution. Various authors have mentioned the importance of the public service offered by these initiatives (Garcia-Garcia, Woolley, & Rahimifard, 2015; Vittuari, et al., 2015; Zapata Campos & Zapata, 2017); and analysed the incentives and objectives of different actors involved in the food supply chain and waste management (Mourad, 2016; Vaughan, 2018; Zapata Campos & Zapata, 2017). Nevertheless, to the author’s best knowledge there is a knowledge gap regarding the factors that influence the participation of citizens in general (Mees, 2019) as well as for these initiatives that address food waste management and/or food poverty.

This research aims to analyse the conditions for participation in citizen-led initiatives for food waste redistribution. These initiatives are taken as a proxy for DIY governance, as they represent best-practice scenarios of DIY governance and active citizenship. Using citizen-led initiatives is advised by Mees (2019), as it makes it possible to study real behaviour, bridging the difference between intention and action. It also ensures the actual presence of the desired outcome variable (namely that the citizens are coproducing a public service). The initiatives are selected for the collection of empirical data, and qualify as best practices, as these are functioning, active, and stable.

The framework used in this thesis is developed by Mees (2019) and is the first to recognize three dimensions in the individual conditions of citizens to get involved in DIY governance. The dimensions individuated are motivation, capacity, and ownership: a citizen has to be willing (motivation) and able (capacity) to coproduce a service, as well as feel the responsibility to do so (ownership). Within each dimension, several conditions are considered. Conditions for participation are the factors that have to be in place for a citizen to initiate or join a citizen-led initiative. The framework is based on the hypothesis that all three dimensions have to be present to some extent in order for an individual to participate in a citizen-led initiative.

Table 1: Conditions for involvement in DIY governance (Mees, 2019)

Condition		
1	Motivation	Expected return on investment (M1)
2		Perceived salience (M2)
3		Group Identification (M3)
4	Capacity	Objective capacity (C1)
5		Subjective capacity (C2)
6	Ownership	Peer pressure (O1)
7		Sense of own responsibility (O2)
8		Environmental values (O3)

As citizen-led initiatives for food waste redistribution are being analysed in function of their potential to steer everyday consumption and to address food poverty, it is essential to understand which

environmental justice principles are being taken into account by the participants in the initiatives (Jakobsen & Andersen, 2013). Looking at the way these initiatives steer consumption, and distribute the benefits and burdens created by the service, provides an indication in regarding the possible consequences of increasing participation in citizen-led initiatives for food waste distribution. As coproduction by citizen-led initiatives is often seen as inherently positive (Mees, 2019), it is necessary to perform an objective assessment of the potential distributive effect it generates and of the justice principles that underlie such initiatives, to understand what the role of DIY governance can be within the solution of the food waste reduction and poverty issue and the consequent social and environmental issues.

1.5. Study relevance

The DIY governance framework by Mees (2019) has been developed for the analysis of citizens' coproduction in renewable energy generation initiatives and flood protection and response initiatives. The application of the framework to different types of initiatives than the ones it has been applied to so far gives insight into the potential for generalization and applicability of the framework, strengthening it as a tool for analysis of the conditions of citizens coproduction and the justice principles underlying citizens coproduction. The framework is a tool for understanding the potential of DIY-governance, and how to enhance the justice and fairness of the procedural and distributive effects.

Understanding the potential effect of DIY governance for society at large is of interest, as it could be a tool to move in the direction of a more participatory, effective, generative and sustainable society (Cacciari, 2018).

Understanding the current trends of increasing citizen involvement in governance, as well as the possible effect and opportunities that come with DIY governance, is therefore considered to be of academic and societal relevance.

2. Conceptual research design

2.1. Research objective

By analyzing and comparing the individual conditions and justice principles for the action of the participants of four citizen-led initiatives for food waste redistribution, this research aims to explore the relevant conditions and justice principles for participation in DIY governance and to understand which incentives can be put in place to enhance participation.

The employment of the DIY governance framework by Mees (2019) in two geographical contexts gives the possibility to test the applicability of this framework in different contexts, with the aim to contribute to the strengthening of the framework as a tool for the analysis of participation in citizen-led initiatives.

The research is designed as a comparative case study, which looks into how, and why, certain conditions and principles influence the experience of respondents with citizen-led initiatives for food waste redistribution. The research is based on three study propositions, defining the scope and direction of the research (as outlined by Yin (2018) operationalization of the case study research design). The first study proposition is that the eight conditions for participation individuated by Mees (2019) could apply in the explanation of participation in citizen-led initiatives for food waste redistribution. The second study proposition is that contextual variables could influence the eight conditions for participation individuated by Mees (2019). The third study proposition is that specific environmental justice principles steer the action of the participants in the initiatives, influencing the outcome in terms of burden and benefit allocation.

The research results are descriptive (what are the conditions for action, which environmental justice principles are taken into account by the respondents), and explanatory (how do these conditions explain their active role in citizens initiatives, how do the conditions relate with each other, and what are the differences in different contexts). Based on these results, recommendations regarding how to incentivize the involvement of citizens in coproduction for food waste redistribution are given.

2.2. Research scope

The research focusses on citizen-led initiatives within the issue area of food waste, namely the citizen-led initiatives which collect food waste and implement its redistribution among the individuals of the community the initiative operates in. The initiatives are studied within a case study research design by looking at the individual participants in the initiatives, as well as a control group of citizens who decide not to participate.

For the scope of the research, citizen-led initiatives for food waste redistribution will serve as a proxy for DIY governance. Based on Garcia-Garcia, Woolley, & Rahimifard (2015), the action of these initiatives will be defined as the collection of food waste still fit for human consumption from producers and retailers along the food supply chain; and redistribution of collected food waste among people who need it or want it.

The term “citizen-led initiatives” has been chosen by the author as it is thought to be the most neutral term in the context of food waste governance and DIY governance, as many different terms with slight differences in meaning are used in the articles reviewed for this research. Other recurrent classifications of the initiatives providing food waste redistribution services are, among others, grassroots movements, citizen collectives, citizen activism, non-profits.

It is important to take into account the influence of the context in which the initiatives are embedded in the conditions of incentivizing participation (Zapata Campos & Zapata, 2017). To do so, the research analyses similarities and differences between two regions in two countries within Europe, Italy, and the Netherlands, by analysing participants of several comparable citizen-led initiatives active in the two geographical contexts. In both countries citizen-led initiatives are widely present: in the Netherlands, governance is increasingly cooperative and builds on the effort of multiple stakeholders (Bureau Nationale Ombudsman, 2018). In Italy, an extensive network of groups and associations is key to transformative governance of the economy and society (Cacciari, 2018). The influence of the context in which the initiatives exist is investigated in relation to culture, legal framework, and socio-economical differences. The two geographical contexts are expected to present differences in regard to the perceived role of citizens within a democracy, as well as the institutional support which is given to bottom-up action, like citizen-led initiatives (Dekker, 2004; Michels, 2007; Uitermark & Duyvendak, 2008). These differences are hypothesized to influence the individual conditions for participation identified by Mees (2019), because of their incidence on the dimensions of, presumably, capacity and ownership.

2.3. Research perspective

The research framework developed in this thesis takes the DIY governance analysis framework by Mees (2019) as a basis. This framework combines literature from the fields of study of social psychology, climate change governance, earth system governance, and climate justice. It defines eight conditions and eight justice principles for the involvement of citizens in climate change adaptation services and climate change mitigation services. Taking into account the perspective of these different disciplines allows building a holistic view of the incentives and opportunities for citizens to get involved in governance, taking into account the potential and restraints of DIY governance within the larger governance context.

For this study, food waste reduction and redistribution are defined as a climate service, and accordingly, the DIY governance framework will be further operationalized for food waste governance. Waste reduction is seen as a climate impact reducing measures for the food supply chain (Eriksson & Strid, 2013). The climate impact is reduced according to the amount of waste that is redistributed instead of left unused, both as a direct consequence of the collection and redistribution by the initiatives and by the creation of awareness about food waste among the beneficiaries of the initiative. Food waste redistribution is, however, not to be seen as an exclusively environmentally-related service. The social sustainability factors the initiatives' service touches upon are equally important (Porcellana, Stefani & Campagnaro, 2020).

2.4. Research question

Following the above-mentioned knowledge gap, the following research questions have been formulated:

“Why do citizens engage in DIY governance for food waste redistribution?”

To answer the above-mentioned main research question, the following sub-questions have been defined:

1. How are the individual conditions of motivation, capacity, and ownership operationalized for citizen initiatives in food waste redistribution?
2. To what extent do these conditions, and combinations thereof, stimulate the involvement of individuals in citizen-led initiatives for food waste redistribution?

3. Which environmental justice principles are taken into account by participants in the initiatives, and how does this influence the goals and actions of the initiative?
4. What are the similarities and differences in conditions and justice principles between the two contexts of citizen initiatives, and how can these be explained?
5. What recommendations for incentives can be given for the initiators of food waste redistribution initiatives and local governments to make citizens aware of and join such an initiative?

2.5. Research framework

To answer the research question(s), a research framework has been created (see Figure 1). The first phase is performed as desk research and provides answers to the first sub-question. The second part of the research consists of case studies, performed in interviews with citizens (participants and non-participants) during fieldwork. It provides answers to sub-questions 2, 3, and 5. The third phase of the research, a comparative analysis, provides answers to question 4. The information provided by all steps combined is used to provide recommendations, the last step of the research.

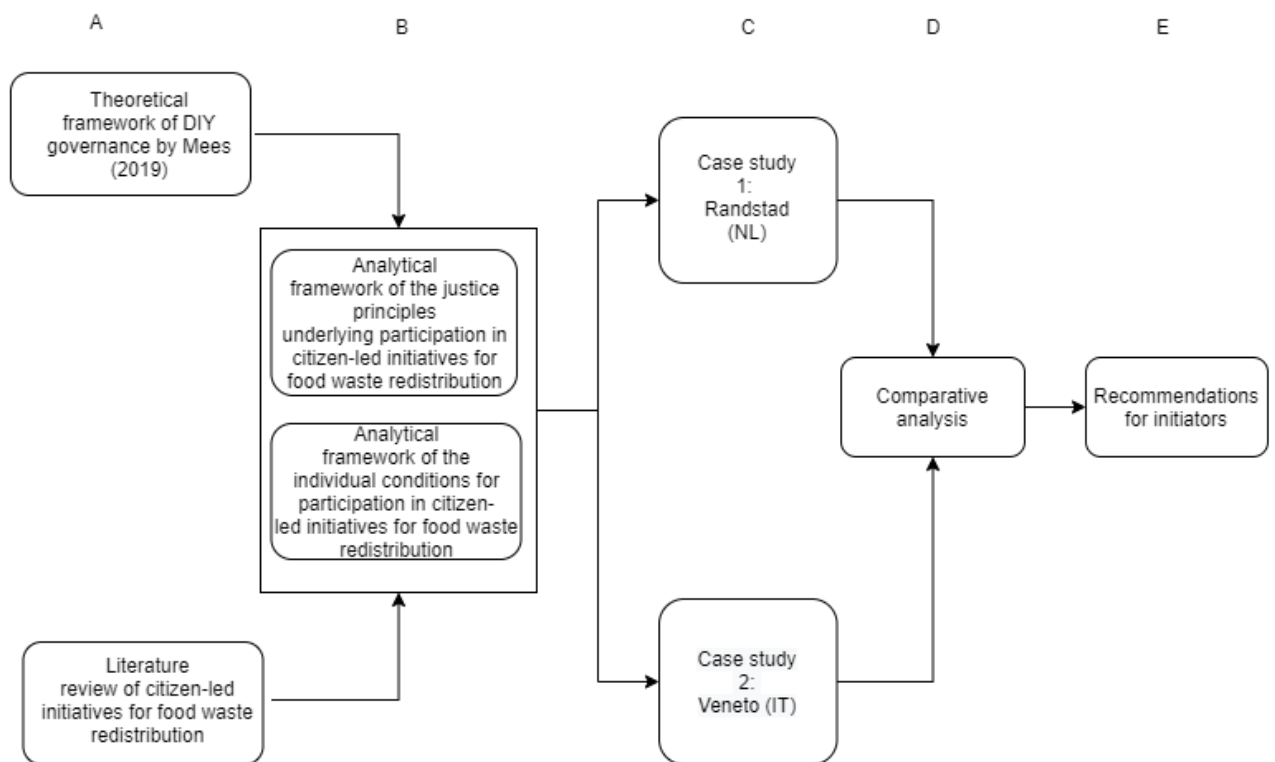


Figure 1: Research framework

2.6. Scientific and societal relevance

Food networks are an interesting topic concerning both social and environmental sustainability (Levkoe & Wakefield, 2014). The study of DIY governance within this realm provides useful insights not only on how to improve the efficiency of food chains, but also to create insight about social mobilization around environmental issues in general.

The scientific relevance of this study is to be found in its contribution to the growing body of literature on DIY governance and citizen-led initiatives, especially by exploring the applicability of the framework by Mees (2019) to the analysis of citizen-led initiatives for food waste redistribution. At the same time,

social relevance is to be found in the understanding of conditions and justice principles for the involvement of citizens in food waste redistribution. This information can be used to design incentives for involvement and boost its transformative potential.

2.7. Thesis reading guide

The first two chapters presented the relevance and scope of the research, informed the reader about the research aim, and illustrated the research framework. In the following chapter, the research is presented following the phases as indicated in the research framework. Chapter three gives an overview of the theoretical review (phase A) and presents the analytical framework used for the collection of the empirical data (phase B). Chapter four presents the technical design of the research, with attention to reliability, validity, feasibility, and the proceedings for the collection of empirical data. Chapter five and six present the empirical results resulting from the analysis of the empirical data collected through fieldwork in two different case studies (phase C), and the comparative analysis of the two case studies (phase D). The results regarding the individual conditions for participation are presented in chapter five, while the results regarding justice principles are presented in chapter six. Chapter seven, the conclusion to this research, illustrates the answers to the research questions stated in section 2.4. Chapter eight is the discussion of the research design, framework, and conclusion, and provides recommendations based on the research (phase E).

3. Theoretical review of the conditions and justice principles for participation in DIY governance

This chapter states the operationalizations of conditions and justice principles for citizen involvement in food waste redistribution related to DIY governance. The conditions and justice principles are, as stated above, based on the research on DIY governance for climate services by Mees (2019).

Mees (2019) states that “citizens (..) must be both willing, able, and feel responsible to provide a climate service”. Her theoretical framework comprehends eight conditions of involvement of citizens in DIY governance. The eight conditions are divided into three categories, namely motivation, capacity, and ownership. Each condition is explained and adapted to the context of citizens-led initiatives for food waste redistribution.

3.1. Motivation

The motivation dimension groups the conditions for the willingness to provide a climate service (Mees, 2019). A citizen wants to act him/herself, to provide him/herself and his/her community with a climate service. There are three key conditions, as stated by Mees (2019): expected return on investment, perceived salience, and group identification.

M1: Expected return on investment

The expected return on investment refers to the reward that the citizen will get from providing a climate service. This reward should overshadow the effort in a reasonable amount of time. The nature of the reward can vary: material, intrinsic, social, and normative (Alford, 2009; Verschueren, et al., 2012; Voorberg et al., 2015). Furthermore, both a reward for oneself and an altruistic reward, so for the community or society as a whole, be important for climate action (Ortega-Egea, et al., 2014).

The different natures of the reward apply in the case of waste prevention initiatives. In the specific case of food waste redistribution, the food becomes a material resource that is salvaged and can be consumed (Zapata Campos & Campos, 2017). Consequently, there is a material reward. Zapata Campos and Zapata (2017) also note the social and normative dimensions of the gains from waste prevention initiatives. There is a social dimension of co-creation of a product tailor-made for the community, as well as a broad engagement with actors within the community and across public and private sectors (social reward). Initiatives can influence consumption patterns and raise awareness in other actors (normative reward).

One of the most common practices of food waste recuperation, dumpster diving, can be taken as a basic example of waste redistribution activity. Dumpster diving is described by Shantz (2005) as an activity motivated by the objective of providing food (usefulness) to those who need it, as well as sending a message, communicating about the possibility to use what has been discarded. Material and normative rewards appear to be strictly intertwined.

Based on the literature described above, expected returns of the initiative are expected to be a condition encouraging citizens to participate in citizen-led food waste redistribution initiatives. Expected returns should mainly be under the form of recovered food, co-creation with the community, and increased social awareness about unsustainable consumption patterns among the members of their community.

M2: Perceived salience

The second condition of motivation, as identified by Mees (2019), is the perceived importance of the service offered through the initiative, both for oneself and the community or even more broadly. It is linked with the knowledge about the problem and how one can actively solve it. Awareness, therefore, is key.

Within food supply chain research, relevance, and local salience are found to be key in the adaptive behaviour of farmers, for example (Hamilton-Webb, Manning, Naylor, & Conway, 2017). Furthermore, linking climate adaptation to other more immediate risks appears to be an efficient way to enhance behavioural change.

Vaughan (2018) found that people involved in dumpster diving activities viewed it as an effort to reduce waste, as well as an effective protest against mainstream consumption. Zapata Campos & Zapata (2017) mention how participants in citizen-led initiatives for waste reduction in their study are found to think that their action will bring widespread structural change in the long run.

To the best knowledge of the author, the influence of perceived salience on the involvement of citizens in food waste redistribution has not been analysed yet. Combining the above-mentioned literature it can be hypothesized that the awareness of the importance of food waste redistribution for human consumption as a climate change mitigation and adaptation effort enhances the possibility of involvement, especially if combined with more local and immediate perceived salience such as food poverty relief within the community.

M3: Group identification

The third identified condition for motivation to act is “a sense of belonging to the community that a person identifies him/herself with” (Mees, 2019). Citizens involved in waste redistribution/reduction initiatives are found to aim for alignment of their activities with societal goals, creating a solution that is tailor-made for the specific local context (Zapata Campos & Zapata, 2017). Vaughan (2018) mentions the importance of solidarity and community building in relation to the practice of retrieving and using thrown away food: finding minds which think alike, people to share a concern and a goal with is essential for people undertaking the practice of dumpster diving. Both Vaughan (2018) and Zapata Campos & Zapata (2018) mention the importance of the sense of belonging to a group in which environmental values are shared.

The creation of a sense of community and belonging which revolves around a common sense of sustainability is, therefore, expected to be key in the involvement in citizens-led initiatives for food waste redistribution.

3.2. Capacity

Besides having the motivation to act, citizens need to be able to do so. Capacity is the second essential condition for citizens to provide a public service (Mees, 2019). In the framework, both subjective capacity and objective capacity are identified to be important.

C1: Objective capacity

Objective capacity is determined by the resources the citizen can count on, which enable the provision of a service. Resources can be material, as well as skills, competencies, information, know-how (Mees, 2019).

Graham-Rowe, Jessop, & Sparks (2014) mentioned food-management skills as one of the key incentives of food waste reduction at the household level. Aschemann-Witzel et al. (2017) found that

key success factors for food waste reduction initiatives (including, but not limited to, redistribution initiatives) are the collaboration among stakeholders, timing, participants' competencies, and scale.

Institutional entitlement is also mentioned in the framework. This is important for food-waste redistribution activities, as regulations influence how citizens can collect wasted food and how they can then distribute it in their community (Planchenstainer, 2013). Food waste is influenced by many regulatory frameworks within the EU (Vittuari et al, 2015). Regarding redistribution specifically, retailers can be refrained from donating their food waste by regulations in place, especially regarding responsibility for food quality (Planchenstainer, 2013). Citizens-led initiatives for food waste redistribution can be hindered by laws strictly regulating safety, hygiene, and acquisition standards. Initiatives can also be supported by policies encouraging food donations, for example through economic incentives (Mourad, 2016). As the awareness about the importance of reducing food waste and tackling food poverty increased, regulations have been adapted to accommodate initiatives helping to solve this problem (Planchenstainer, 2013). As these legislations vary from country to country, it is a very context-specific condition to capacity.

Involvement in initiatives is expected to be influenced by the resources and competencies of the participants, as well as the possibility to move within a stakeholder network. Context-specific legislation is also expected to influence participation.

C2: Subjective capacity

Mees (2019) bases the determination of subjective capacity on the Protection Motivation Theory (PMT) (Rogers & Prentice-Dunn, 1997) and the Theory of Planned Behaviour (TPB) (Ajzen, 1991). These theories conceptualize behaviour control mechanisms, like self-efficacy (Mees, 2019). Self-efficacy refers to the perceived capability of a subject to provide a public service.

Response-efficacy is another control mechanism individuated in the literature (Mees, 2019). It refers to whether the subject finds his/her actions to be effective in solving an issue.

Subjective capacity is key in climate mitigation (Gifford, 2011) and adaptation (Grothmann et al, 2013; van Valkengoed & Steg, 2019). Research shows that people often don't believe they can solve a global problem, even having the objective capacity to do so.

Janmaimool (2017) investigated sustainable waste management behaviour (SWMBs) on the basis of the protection motivation theory. The research, conducted in Bangkok, concluded that the respondents perceived self-efficacy could explain all types of waste management behaviour (which include reduction of waste, sustainable purchasing, reuse and recycle, as well as waste disposal). PMT was concluded to be efficient in explaining the most simple and low-effort SWMBs. The literature appears to be less developed about food waste redistribution initiatives.

As food waste redistribution can be categorized as a climate change mitigation service, subjective capacity is expected to influence involvement in food waste redistribution initiatives. Participants are expected to feel that they are able to provide a public service and that their actions are useful to solve the concerning issue.

3.3. Ownership

Ownership is the third factor that influences whether citizens involve themselves in citizens-led initiatives that provide a public service (Mees, 2019). Ownership refers to the citizens' perceived moral obligation to act. It is categorized in the framework in three key conditions, as explained in the following paragraphs.

O1: Peer pressure

Peer pressure is defined as the need to conform to a social norm, as a way to gain acceptance and recognition (Mees, 2019).

In his study about compliance with pro-environmental requests and regulations, Cialdini (2007) found the perception of what others around you do and think to be an indicator of how a person will act. With regard to climate change concern among adolescents, Stevenson, Peterson & Bondell (2019) found that the norms and values about climate change among friends, and even more among family, have an impact on the climate change concern of the respondents. It was also found that the personal acceptance of the anthropogenic nature of global warming is an even stronger influence on the concern. Harvey, Smith, Goulding & Illodo, (2019) found social pressure to be one of the drivers of willingness to reduce food waste among both consumers and businesses.

Studying intrinsic and extrinsic motivations regarding food waste reduction and recycling, Cecere, Mancinelli & Mazzanti (2014) found that people dedicated to the reduction of waste mainly act because of intrinsic motivations, more so than social norm pressure.

Peer pressure and cultural norms are also found to be an obstacle for food waste reduction (Dang, 2014). The collection of surplus food for later use can be found to be “abnormal” by unaware peers. This could discourage the involvement in initiatives of food waste redistribution if the person feels like the initiative can be seen as weird, and socially unacceptable. Dang (2014) explains the negative perception of food waste recovery drawing a link with the perceived shamefulness of being food insecure, unable to buy enough food. There is an association between consuming food waste and low social status, it is seen as a sign of a life outside of the societal system.

Otherwise than in the framework by Mees (2019), which identifies peer pressure as a condition for participation in citizen-led initiatives offering climate services, in the case of food waste redistribution initiatives a more precise distinction has to be made. Peer pressure regarding involvement in citizen-led initiatives for food waste redistribution could be both an incentive or a barrier, depending on the social network of the person. Perceived social acceptance of food waste redistribution as a valuable contribution to sustainability is expected to be a condition for participation.

O2: Sense of own responsibility

A citizens' sense of responsibility is influenced by his/her perception of responsibility versus others, and especially on the responsibility versus the government (Mees, 2019). Trust in the government's provision of public services is also key.

During a study conducted in France and the United States, Mourad (2016) identified social responsibility as one of the main motivators of participants in food redistribution activities. Zapata Campos & Zapata (2017) individuated a shared sense of responsibility for the care of the environment and its resources among participants in waste reduction initiatives.

Food waste redistribution activities are also linked to a negative perception of capitalism and mainstream consumption patterns (Mourad, 2016; Dang, 2014; Vaughan, 2018). Individuals involved in efforts to redistribute food waste are often found to believe that a new, more sustainable system has to be created through choices of individual consumers.

Sense of own responsibility is expected to be a condition for involvement in citizens-led initiatives for food waste. Responsibility is expected to be felt especially concerning the disruption of structural overconsumption systems. The trust in the effort of the government to reduce food waste could be a place-specific contextual difference influencing involvement. Overall, the feeling that the current

system is not apt to provide a solution to sustainability issues and that individuals are in charge of creating a difference is expected to be one of the conditions for personal involvement in citizen-led initiatives.

O3: Environmental values

Environmental values have been found to predict pro-environmental behaviour (Mees, 2019). As mentioned above, personal acceptance of the anthropogenic nature of global warming is one of the stronger influences on climate change concern (Stevenson, Peterson & Bondell, 2019). The translation of concern and awareness into action is often mentioned in academic literature (Stevenson, Peterson & Bondell, 2019; Harvey, Smith, Goulding & Illodo, 2019).

As mentioned before, participants in initiatives for waste reduction (including but not limited to food waste) have been found to share the value of environmental stewardship, the need to care for the environment (Zapata Campos & Zapata, 2017). In the article by Harvey, Smith, Goulding & Illodo, (2019) food waste redistribution initiatives are presented as a consequence of social awareness about food waste and the ethical issues related to it. Mourad (2016) identified “zero waste” and “environmental protection” as interests of the actors involved in food waste reduction and redistribution.

Anti-capitalism was found to be one of the reasons to act for some of the respondents (Mourad, 2016). This can be reconducted to the widespread opinion that capitalism, and the society in which we live in general, cannot provide a solution to sustainability issues and that citizens should try and construct an alternative reality that better addresses the challenges of climate change and excessive growth. Anarchist and anti-capitalism views have often been encountered among participants in food waste redistribution activities (Mourad, 2016; Dang, 2014; Vaughan, 2018).

The decision to participate in citizen-led initiatives for food waste redistribution is therefore expected to be influenced by strong environmental values, often paired up with negative sentiment towards the widespread culture of overconsumption.

3.4. Operationalization of the conditions for action

Based on the literature review explained in the previous chapter, the individual conditions for participation by Mees (2019) have been operationalized to fit the food waste redistribution topic. The operationalization is illustrated in table 2, to be seen on the following page.

Table 2: Framework of individual conditions for involvement in citizen-led food waste redistribution initiatives

Condition		Operationalization in the form of hypotheses	
1	Motivation	Expected return on investment (M1)	Active participants expect a return under the form of: - collected food (Zapata Campos & Zapata, 2017); - co-creation of a service needed by the community (Zapata Campos & Zapata, 2017); - increased awareness about food waste among the community (Shantz, 2005).
2		Perceived salience (M2)	Active participants believe food waste redistribution to be of substantial importance for -the reduction of food waste issues (Vaughan, 2018); -the reduction of food insecurity (Hamilton-Webb, Manning, Naylor, & Conway, 2017).
3		Group Identification (M3)	Active participants are encouraged by the creation and inclusion within a like-minded community of peers (Vaughan, 2018; Zapata Campos & Zapata, 2017).
4	Capacity	Objective capacity (C1)	Active participants have the resources and knowledge to act (Aschemann-Witzel et al, 2017), as well as a network and legislation to support them (Planchenstainer, 2013).
5		Subjective capacity (C2)	Active participants believe that they are able to provide a public service and that their action can make a difference in solving the issue (Mees, 2019).
6	Ownership	Peer pressure (O1)	- Active participants feel the need to conform to norms encouraging proactive environmental behaviour (Harvey, Smith, Goulding & Illodo, 2019). - Active participants have overcome the need to conform to societal stigmatization of food waste (Dang, 2014).
7		Sense of own responsibility (O2)	Participants feel responsible for actively pushing for a shift towards more sustainable consumption patterns in society (Mourad, 2016).
8		Environmental values (O3)	-Active participants feel morally obliged to care for the environment (Zapata Campos & Zapata, 2017; Harvey, Smith, Goulding & Illodo, 2019). -Active participants feel morally obliged to avoid participating in systematic overconsumption activities (Mourad, 2016; Dang, 2014; Vaughan, 2018).

3.5. Food justice principles in DIY governance

When looking into governance for sustainability, environmental justice is increasingly taken into account by scholars (Dirth, Biermann & Kalfagianni, 2019). Analyzing justice is a matter of what is considered to be just, by who, and for whom. Gupta & Lebel (2010) argue that both allocations of access to resources and allocation of burdens and responsibilities can only be addressed by looking into access to the processes of distribution (movements, laws, science). In environmental governance literature, assessing justice implications generally entails looking at those two dimensions of justice: procedural and distributive justice.

Procedural justice refers to the fairness of the decision-making process (Mees, 2019). Procedural justice is operationalized as the recognition of multiple perspectives, effective citizen participation, and building of capacity (George & Reed, 2017). These three aspects are deemed to be essential to ensure the fair promotion of sustainability and equitable distribution of benefits and burdens. The distribution of benefits and burdens is assessed looking at distributive justice. As a fair process leads to fair distribution, procedural justice is a condition for distributive justice (Mees, 2019).

Distributive justice entails the resources allotted to recipients following set standards, and the interrelationships between resources allocated recipients, and standards regulating this allocation (Cohen, 1987). Distributive justice, referring to burden and benefit allocation, can be analysed from different perspectives. What is considered to be fair, just, and equitable depends on the conceptualization of what is considered to be just.

This research looks into environmental justice specifically in the context of food, referring to the concept of food justice. Food justice is a specific concept that refers to access to healthy food by marginalized groups (Booth & Coveney, 2015; FAO, 2019). It concerns equity in access to healthy food, and to the sustainability of the systems that guarantee said access. It is a right-based concept, as it is based on the notion that every individual has the right to healthy food. This is closely related to the issue of food poverty, the lack of availability of nutritious food often caused by lack of access caused by prices higher than the purchasing power of some (Papargyropoulou, Lozano, Steinberger, Wright, & bin Ujang, 2014). In the Milan Urban Food Policy Pact (MUFPP) the FAO (2019) spells out a framework (to be found at <http://www.milanurbanfoodpolicypact.org>) for social and economic equity in urban food governance (monitoring indicators 18 through 24), but lacks in recognition of the dimension of sustainability of the systems that guarantee said access to healthy and nutritious food. Schlosberg (2013) recognizes the essential function of food within a community, which adds a dimension to the function of food as a basic need in terms of nutrition. This second dimension is related to food consumption and sharing as a ritual, a vehicle of human relations. It plays a big part in human dignity (Porcellana, Stefany & Campagnaro, 2020).

Action for food justice is to be classified as reconstructive environmental justice, in which the focus lies on *“building new practices and institutions for sustainability – practices and institutions that embody not only principles of environmental or climate justice, but a broader sense of sustainability as well”* (Schlosberg, 2013; page 48). The aim is to transform the relationship of communities with food systems. Not only supplying to basic needs inclusively but also spreading awareness about how these resources should be sourced without creating injustice among humans or the ecosystem. This is an essential addition to keep in mind. Resources created in relation to food systems are potentially more than just material food redistribution, comprehending awareness creation, sharing information, access to decision-making and power over food systems, as well as an alternative to the mainstream food retail system. This is closely related to environmental and climate justice, as it empowers civil society

to transform food systems and make them sustainable. Sustainable food systems avoid the creation of, or addition to, injustice in food production and distribution processes.

As part of a process within food systems, the practices of citizen-led initiatives for food waste redistribution are hypothesized to fit within the framework of food democracy. Food democracy is a major concept in food justice. Booth & Coveney (2015) thoroughly explore the concept of food democracy, defined as: “the right of all people to an adequate, safe, nutritious, sustainable food supply” (Booth & Coveney, 2015; page 13-14). Booth & Coveney (2015) also propose food democracy as a process of engagement, active participation, and empowerment of citizens, which brings a power shift that gives civil society some power on food production systems. In the long term, this should bring new governance models that support sustainable food systems. The concept of food democracy relies on *food citizenship*, intended as the practice of influencing the mainstream food distribution system by provision of information, skills, and alternative food access in order to change the existing system. This description is expected to closely fit the citizens engaging in food waste redistribution citizen-led initiatives, as part of their dimension of ownership, one of the three dimensions of conditions for participation in coproduction (Mees, 2019) described in section 3.3.

Mees (2019) has identified a framework for the evaluation of procedural and distributive environmental justice in DIY governance for climate change. This framework consists of eight principles that can be applied in the citizen-led initiatives to the decision-making process (procedural justice), and the burden allocation and the allocation of resources/benefits (distributive justice). The way these principles are applied is expected to affect the service offered by the initiative.

Table 3 shows the framework for the analysis of environmental justice principles in DIY governance (left column), adapted to the analysis of citizen-led initiatives for food waste redistribution (right column). The adaptation is based on literature about food justice and can be reconducted to the notions explained above.

Table 3: Framework of analysis of justice principles in citizen-led initiatives for food waste redistribution

PROCEDURAL JUSTICE PRINCIPLES	CRITERION
Inclusiveness	Extent to which the interest of all individuals in the community have been taken into account in the decision-making process. The community is operationalized as all the potential beneficiaries of the initiative, within the city where they are active, as well as participants in the initiative, and actors providing the food.
Equal participation of all	Extent to which all people in the community have access to and influence on the decision making process.
DISTRIBUTIVE JUSTICE PRINCIPLES	CRITERION
Polluter pays (burden allocation)	Extent to which a higher burden is placed on the actors identified as most responsible for causing food waste.
Ability to pay (burden allocation)	Extent to which a higher burden for food waste redistribution is placed on those most capable of paying.
Beneficiary pays (burden allocation)	Extent to which a higher burden is placed on those benefitting the most from the food waste redistribution service.
Equality (benefit allocation)	Extent to which resources created by the initiatives are equally distributed among all individuals in the community.
Putting the most vulnerable first (benefit allocation)	Extent to which people who are identified as vulnerable, in that they don't have access to healthy food, are prioritized in the allocation of food resources created by the initiative.
Human security (benefit allocation)	Extent to which food resources allocated by the initiative to the most vulnerable raise the capabilities of those people in getting access to healthy food (and related benefits).

The combination of food justice literature with the framework of analysis specifically built to understand the implementation of justice in DIY governance is expected to give a basis for the analysis of the justice principles that guide the participants in the citizen-led initiatives for food waste redistribution, underlying their participation. To analyse this, explorative questions to the respondents are used in this research to investigate the perception of what is just and how this is addressed, as reported by the participants in the citizen-led initiatives for food waste.

On the ground of the existing literature about food justice, the “putting the most vulnerable first” principle is expected to be predominant in the perception of justice of the participants, as it closely relates to the concepts of food citizenship that participants in citizen-led initiatives are expected to fit into (Booth & Coveney, 2015). Inclusiveness is expected to be seen by the participants as part of the aim of the initiatives. The allocation of benefit to those affected by food poverty is expected to be part of the initiative’s service (Papargyropoulou, Lozano, Steinberger, Wright, & bin Ujang, 2014), as well as the usage of recuperated food as a vehicle for the creation and strengthening of human relations (Porcellana, Stefany & Campagnaro, 2020). Finally, it is hypothesized that the conditions for participation “own responsibility” and “environmental values” are in line with the concept of food citizenship (Booth & Coveney, 2015). Therefore, food justice principles are expected to influence the participation of respondents in citizen-led initiatives for food waste redistribution.

3.6. Influence of context variables on participation in citizen-led initiatives for waste-redistribution

The individual conditions for participation in citizen-led initiatives for food waste redistribution are expected to be influenced by contextual variables. Different geographical and institutional contexts might present differences in underlying justice principles as well. Therefore, this research is conducted in two territorial contexts: the North-Eastern-Italian Veneto region, and the Dutch Randstad.

The two geographical contexts are both metropolitans, the economy of both is based on the tertiary sector and both have well-known universities in the region. Both places have a widespread presence of citizen-led initiatives. Culture concerning food, and the legislation regarding food waste, as well as institutional support to the initiative, are all factors in which the two places differ in the experience of the author.

The Italian population has been found to waste 27.5 kg of edible food per person per year (Reduce Project, 2019). Demographic data, like the household composition, region of residence (North, Centre, South), shopping habits and consumption habits have all been found to influence the production of food waste at the household level. Respondents to the study, conducted between 2016 and 2018, were also found to be unaware of the quantity of food waste created by them. 220,00 tons/year are wasted from retail stores. Food donation hygiene practices were found to be necessary to empower practices against food waste. Several projects against food waste are promoted by institutional agencies (Regione Veneto, 2019). The local news site *Vicenzareport* (2017) related that the university of Milan had found that only 8,6% of food waste is recuperated for human consumption in Italy. The region Veneto promotes food waste redistribution performed by assistance organizations, like charities, with the aim of resource allocation to those living in poverty (Nobile, 2017).

In the Netherlands, 34 kg of food are wasted per person each year (Voedingscentrum, 2020). Shopping habits and know-how are found to influence the amount of food waste in households. The amount of food waste pro capita has been reducing since 2016 (Ministerie van Algemene Zaken, 2019). There are national programs aimed at reducing food waste through the provision of information to consumers, and cooperation between the government and businesses (Ministerie van Landbouw, Natuur en Voedselkwaliteit, 2020)

These data show differences in the amount of food wasted, the institutional effort to tackle the problem, and the effectiveness of the measures in place. For the purpose of this study, the academic literature is used in combination with preliminary knowledge and observations. The years spent by the author in both regions where the study is carried out is used to build upon the literature, making it possible to translate the information to be more specific to the region, which is closer to the unit of analysis of the research (the northern Italian region Veneto and the Dutch socio-economic region Randstad). Contextual information found in literature, in fact, is often formulated at the national scale and does not reflect the regional territorial differences present within a country (Forum Disuguaglianze Diversità, 2019).

In Italy, civic activism is part of the socio-economic context (Bee & Villano, 2015). The lack of transparency of the public administration and the need for social interventions because of missing public actions have been found to influence citizens' participation. In the Netherlands, on the other hand, citizen-led initiatives are seen as a part of the functioning democracy instead of a reaction to the dysfunction of the government (Dekker, 2004; Michels, 2007; Uitermark & Duyvendak, 2008). The differences between the perception of the government's role in Italy and the Netherlands are expected to influence the participation in citizen-led initiatives. The presence of public action, in this case, policies and governmental measures specifically aimed at alleviating food poverty and reducing food waste, is also expected to be of influence.

Looking at territory and space, Thøgersen (2017) found that food-related choices and consequent behaviour regarding sustainability are partly dependent on the country of residence within the EU. Meltzer (2005) highlights the importance of social capital and physical proximity of communities as a driver of sustainable practices, like sharing (food) and avoiding the creation of unnecessary waste.

In Italy the shifts in the way spaces were used in cities, which are often a consequence of political changes, also gave citizen-led initiatives space to exist (Casaglia, 2018). The presence of long-standing organizations and local grassroots campaigns, localized networks of support and exchange, have found to be of influence as well (Bertuzzi, 2019).

European countries present differences regarding the economic inequality among the population, as well as the institutional measures in place to bridge that gap (Forum Disuguaglianze Diversità, 2019). The stark difference in the number of people at risk of poverty and social exclusion can be expected to influence the perceived salience of resources allocation to the most vulnerable, or the need to enhance the creation of human relations.

The reviewed literature suggests that the following contextual variables can be expected to influence the eight conditions for participation and the justice principles underlying participation:

- The perceived role of the government (Mees, 2019);
- Hunger relief policies (Mourad, 2016);
- Waste management regulations (Mourad, 2016);
- Consumption patterns (Mourad, 2016);
- Cultural and political context ((Zapata Campos & Zapata, 2017);
- Territory and place (Zapata Campos & Zapata, 2017).

The literature is not conclusive about how each contextual variable influences which condition for participation in citizen-led initiatives. However, some speculations can be made about the possible effect of these contextual differences. The perceived role of the government might influence how citizens perceive themselves within the democratic system, and consequently be of importance for the condition of own responsibility. The policies and regulations might influence the sense of urgency

regarding action to solve the issue, impacting perceived salience, as well as the objective capacity for bottom-up action. Consumption patterns, culture, and political context might influence the support given to the initiative, and consequently the objective capacity of citizens to set a public service in place. Territory and place might influence the availability of a space in which initiatives can operate, with consequences for the objective capacity to perform certain activities. Speculations indicate that objective capacity might be the individual condition for action most influenced by the contextual variables. Contextual variables might also influence justice principles, as the perception of the regulations and policies in place could have an impact on the perceived urgency for resource allocation to determinate individuals. The inclusiveness and equal participation variables could be hypothesized to be influenced by the cultural and political context, as these contextual variables are of influence on the perception of citizen-led initiatives and food waste redistribution. Table 3, here below, states the hypotheses made on the basis of literature, and the personal experience of the author in both geographical contexts. The hypothesis that influence is exercised, is tested within this research.

Table 4: Expected contextual differences between Italy and the Netherlands (based on a combination of academic literature and personal observation, speculative)

Context variables	Hypothesized differences Italian-Dutch differences	Hypothesized influence on conditions for action
The perceived role of the government (Mees, 2019)	In the Netherlands, more so than in Italy, the perception that it is the citizens' responsibility to be active in the coproduction of services is expected to influence participation in citizen-led initiatives.	Own responsibility is expected to be perceived more by participants in Dutch initiatives.
Hunger relief policies (Mourad, 2016)	The presence of efficient hunger relief policies is expected to be felt and trusted more in the Netherlands than in Italy. The link between food waste and hunger relief is expected to be perceived more in Italy than in the Netherlands.	Perceived salience is expected to be perceived more by participants in Italian initiatives. The contextual variable is also expected to strengthen the steering agency of the benefit allocation variables, as resource allocation for human security is expected to be perceived as more salient.
Waste management regulations (Mourad, 2016)	Waste management is expected to be perceived as more sustainable and efficient in the Netherlands than in Italy.	The perception of the waste management system is expected to increase the perceived salience for respondents participating in citizen-led initiatives in Italy.
Consumption patterns (Mourad, 2016)	Consumption patterns in relation to food are expected to be more influenced by social capital and physical proximity of communities in Italy.	Consumption patterns are expected to increase the objective capacity of initiatives in Italy for community building and the creation of sustainable practices.
Cultural and political context (Zapata Campos & Zapata, 2017)	The cultural context surrounding citizen-led initiatives is expected to be characterized by strong, long-standing networks of initiatives in Italy, more so than in the Netherlands. The political context is expected to be more supportive of citizen-led initiatives in the Netherlands, more so than in Italy. The cultural context could influence the perception of food waste redistribution for human consumption.	Both individual capacity conditions are expected to be influenced by these differences in the cultural and political context. However, as both situations are expected to enhance capacity, the conditions are expected to differ in perception, not in the strength of the influence on participation. In Italy, group identification is expected to be influenced by the feeling of belonging within a network of cooperation. The cooperative networks could influence inclusiveness and equal participation, extending reach and cohesion across different groups.
Territory and place (Zapata Campos & Zapata, 2017)	The availability of spaces available to citizen-led initiatives is expected to be more constant and guaranteed in the Netherlands, while in Italy changes are expected to be more frequent. Both contexts have a strong influence on universities, which attract young adults from different provenance.	The objective capacity of participants in the Netherlands is expected to be incentivized by the availability of spaces to them. Subjective capacity in Italy is expected to be stronger, to make up for the obstacles on objective capacity. Group forming is expected to be influenced by the presence of groups of students coming to the city to pursue an academic education.

3.7. Conceptual framework

The literature review described above leads to the following conceptual framework (Figure 2). The participation in citizen-led initiatives is expected to be influenced by the eight conditions for participation. These conditions are hypothesized to be influenced by the above mentioned context-related variables. The contextual variables might also influence the underlying justice principles. For example, perceived weakness of local hunger relief policies could impact the underlying justice principles regarding burden allocation; the culture and local context might differ in how citizen coproduction of services is perceived, therefore influencing the perceived importance of inclusiveness and equal participation in citizen-led initiatives. Furthermore, justice principles are expected to influence the conditions for participation, as they have steering agency on the service provided and are hypothesized to be influential on the dimension of ownership in particular. The figure shows how interconnected all sets of variables are expected to be. The research tests the hypothesis that these connections exist. Multiple links have to be confirmed by the empirical data. The influence of contextual variables on justice principles might be confirmed by respondents reporting how a specific local characteristic has influenced their perception of fair processes or just distribution of costs and benefits. The influence of contextual variables on any condition for participation could be confirmed if the empirical data shows that the influence of a certain condition on participation is different per context, and one of the context-specific differences could explain that difference. The links between justice principles and conditions for participation are expected to be found in how their perception of what is fair is used by respondents to explain their experience regarding a certain condition. Overall, all these connections are expected to come together in explaining why citizens participate in citizen-led initiatives for food waste redistribution.

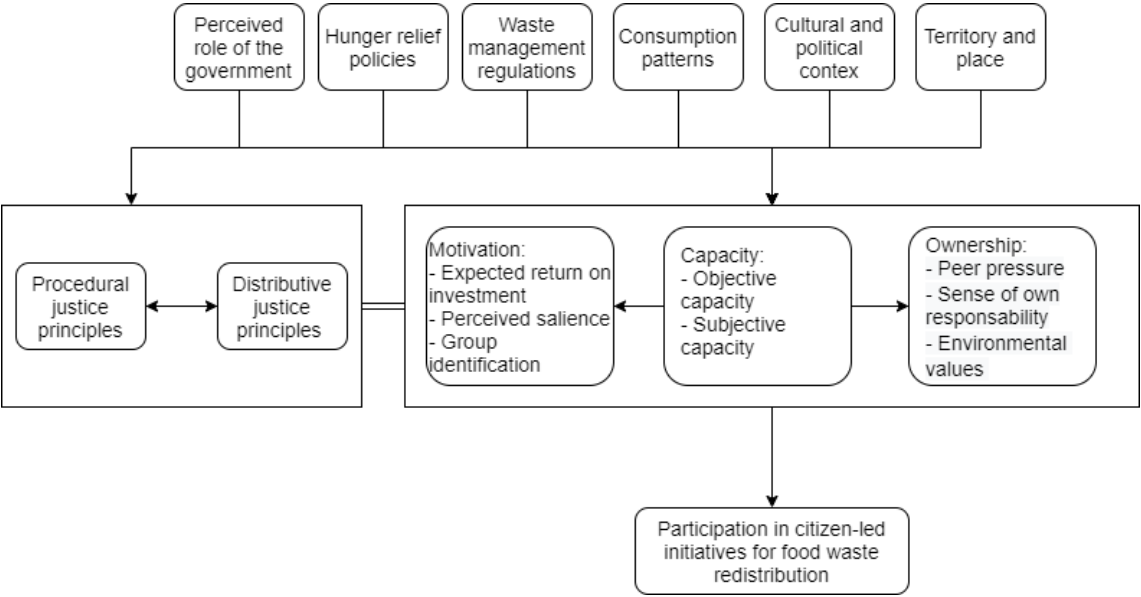


Figure 2: Conceptual framework

4. Technical research design

The research at hand investigates the individual conditions and justice principles that influence citizens' active participation in offering a public service. To perform the research, citizen-led initiatives have been chosen as a proxy for DIY governance. Citizen-led initiatives permit to study actual behaviour rather than intended behaviour, therefore avoiding the mismatch between intent and actual actions (Sheeran & Webb, 2016).

This study is conducted following a comparative case study research design. The choice for comparative analysis has been made to be able to understand causal influences between variables (Pickvance, 2001). The analysis explores the individual conditions for participation, and the influence of the different conditions individuated in literature. Furthermore, causal relations between contextual variables and the conditions for participation are analysed. Finally, the analysis of the predominant perceptions about justice principles is used to explore the role of justice principles in the participation of citizen initiatives. Understanding causal relations enables the author to explain the involvement of citizens in DIY-Governance instead of merely describing it. The understanding of causal relationships will form the basis to formulate recommendations for initiators of initiatives.

The comparative analysis is performed on two different geographical contexts, chosen to be as similar as possible, except for contextual variables individuated in literature as influential on participation. By doing so, it will be possible to analyse in which way said contextual variables influence individual conditions and justice principles (Mees, 2019). By applying the framework to different contexts, the comparative approach can test the external validity of Mees' (2019) framework.

Each territorial region provides one case study. The Dutch case study involves 12 participant respondents who are part of a citizen-led initiative that fits the criteria set by this research (see 4.1). The Italian case study involves 13 participant respondents who are part of a citizen-led initiative that fits the criteria set by this research. Besides, for each case study respondents who are not participants are interviewed, serving as a control group in analyzing the influence of the eight conditions for participation on respondents. In the Dutch case study, 7 non-participant respondents were interviewed. In the Italian case study, 9 non-participant respondents were interviewed.

Yin (2018) argues that the quality of a case study design research method has to be assessed looking at validity and reliability. In this research, the validity and reliability have been jeopardized by the COVID-19 pandemic. The consequences of the pandemic need to be briefly explained to understand the weaknesses of the research design, as well as why the research still provides a valuable contribution to the body of literature about citizen coproduction.

Validity

According to Yin (2018), validity refers to the correct operationalization of concepts (construct validity), the distinction between causal and spurious relationships (internal validity), and the extent to which results are generalizable (external validity).

The data collection strategy described above heavily relies on human contact. Unfortunately, this is not only true for the interviews themselves but also for the search for participants. The contact with most of the initiatives was made difficult when the quarantine imposed participants to shift their focus on other matters than participation in this research, which they had to discuss and decide upon internally. In addition, participation during one of their activities was required to meet the team and personally gather contacts of people willing to participate. Because of the current COVID-19 pandemic, this was impossible. Finding respondents proved to be difficult, and time-consuming, as people were living in uncertainty and had urgent matters to tend to. Smaller initiatives had less trouble reaching an

agreement among members and were the only ones with the possibility to participate in a short time frame. The consequence of this shift was the impossibility to continue with the first research design planned, which entailed four initiatives to be compared as four individual case studies. As a consequence, respondents from multiple initiatives were selected as respondents. This choice weakens the analysis at the initiative level and has created a discrepancy in the number of respondents participating in each initiative.

The comparative nature of the research design is noticeably compromised. There are fewer respondents than initially planned and the research has been executed almost as an exploratory case study instead as the research design on which the framework is based had to be adjusted. Having fewer respondents, causal relations proved to be weak in validity and reliability. Furthermore, the comparison is carried out between a political region (Veneto, in Italy) and a socio-economic region (Randstad, the Netherlands). These are similar in size and economy but are different regarding the homogeneity of local institutions and regulations.

Taking all the participants within a geographical context as one case study, however, has made it possible to still perform a comparison between the two contexts, even if in a more explorative way. As the conditions for participation are individual, and justice principles are analysed looking at the perception of the respondents, results are still valid. The variety in sex, age, and occupation of the respondents enhances the external validity of the results.

Reliability

Reliability is key to reduce errors and bias in a study and is tested looking at whether the research is replicable (Yin, 2018). To ensure reliability the research has to be well documented in each procedure of the case study. This research follows the case study protocol by Yin (2018) as closely as possible. However, anonymity and discretion make it impossible to ensure complete openness about the citizen-led initiatives involved, and the data collected cannot be comprehensively made public. Reliability is ensured by comprehensive reporting of the data collection, and extensive reporting about the procedures, assumptions, and procedures followed.

4.1. Case studies selection

All the selected initiatives are active in the redistribution of food waste under the form of the collection of unsold food from retailers (referred to in this research as “food waste”); and redistribution activities among the community. All initiatives are carried out by volunteers.

The participants in the selected initiatives active in the Veneto region form one case study. The participants to the selected initiatives active in the Randstad form the second case study. The participants in the initiatives are the unit of analysis of the case study, participants who dedicate time to the initiatives each week, and have been doing so for a year or more. The initiatives have to be active in the present and match the criteria presented below. The results given have been matched with the theoretical proposition provided by Mees (2019) and related to the topic of food waste in advance, as can be read in chapter 3. The non-participants are interviewed as “context of the case study”, following the case study method as described by Yin (2018).

As mentioned before, the research follows a “most-similar” research design. Selection is done by keeping all dependent variables similar for all cases and aiming for maximum variation of the independent variable(s) of interest (Seawright & Gerring, 2008). This approach allows for maximum experimental variance on the independent variables while keeping other factors constant. The aim is to fully understand which conditions influence active participation in the studied initiatives, as well as how context influences said conditions. To create a basis for comparison, seven initiatives have been

selected in the two countries. All initiatives are similar in aim, vision, and activities. The selection of initiatives follow the sequent criteria (from Mees, 2019, page 9; applied to the case of food waste redistribution)

- *the initiatives are established and successful (best-practice cases); therefore, the individual participation of a citizen is an accurate proxy for actual action on food waste (as opposed to behavioural intention);*
- *citizens play a considerable role in designing and implementing food waste redistribution activities in the initiative;*
- *citizens in the initiative contribute to a commonly agreed goal (related to the redistribution of food waste to people); the goals for the initiatives should be similar;*
- *the initiatives have a similar level of support from institutional players (governmental bodies, NGOs);*
- *the initiatives require a similar size of investment from participants;*
- *the initiatives have similar size and spatial closeness; they are 'place-based' communities where there is frequent interaction among local people (as opposed to communities of interest, which can be much larger).*

The selection of initiatives has been done through exploratory desk research. Initiatives have been found through their publicity mechanisms, used to attract people to participate or get to know their work. Initiatives that respond to the selected criteria of vision, activities, governmental support, establishment, and success, have been contacted via mail. Contacted organizations have also been asked to provide contacts of initiatives suitable as case studies, to enlarge the pool of cases to select from.

Selected case studies

The difference in contexts given by the setting in two different geographical and institutional contexts is expected to provide insights about how the context (legal, cultural, governmental provision, among others, see 3.6.) influences the eight conditions for participation found in academic literature, as well as the underlying justice principles. The selected contexts for comparison are Northern Italy and the Netherlands. Respondents active in Italy are participants in two initiatives based in Veneto (cities of Padova and Verona). Respondents active in the Netherlands are participants of five initiatives in different cities of the Randstad.

The following list provides a general description of the citizen-led initiatives in which the respondents participate. The data provided is in line with the requirements of anonymity stipulated by the agreement between the author and the participants.

- Initiative A: They are a self-organized group of citizens which united to pursue their objective of reducing food waste. They are operative in Padova since 2016. Their most prominent activity is collecting the unsold produce from the general market of the city and then distribute it once a week. They also get involved with social issues, organize activities like workshops, social meals, social cohesion enhancing activities. Their motive, stated on the very used Facebook page, regards the protection and care of the environment in the broadest sense. Their activities revolve around sensibilization to the issues in food consumption and production, as well as inclusiveness and access. They work city-wide and try to be in a different neighbourhood of the city every week for the food redistribution.
- Initiative B: They are a self-organized group of citizens operative in Verona since 2018. Their objective is to act as a connection between the retailers who have food in excess and the people who need it. The food waste is recuperated at one market in the city and distributed

the same day. They also collect and distribute clothing. Human dignity, the value of food, and generative methods are part of their vision.

- Initiative C: The initiative is active in Amsterdam since 2014, works in many different neighbourhoods thanks to a decentralized structure of multiple organizations working autonomously, guided by one central board. They aim to recuperate food waste and use it to give some help to those in financial hardship and create social cohesion in the neighbourhoods, by organizing weekly meals with recuperated food. Food waste comes from a variety of shops, as well as supermarkets.
- Initiative D: The initiative is active in Utrecht for one year. Their vision is to make it feasible for the population of the city to make choices that fit the idea of a circular economy. They collect food from shops in one street in the city and distribute it the same day. In their fixed location in Utrecht, they also have a shared closet, where second-hand clothing is sold.
- Initiative E: This movement collects and redistributes food waste in The Hague. They aim to prevent waste, raise awareness about food and sustainability, and promote *conscious living*. They describe themselves as community-driven and non-profit. Every week they organize vegan meals with rescued food, and the goal of their activities is, in the long run, to contribute to systematic change. The initiative also strives to enhance community building.
- Initiative F: Modelled after an initiative in Amsterdam, this initiative has been active for years in Utrecht. It collects food waste from shops around Utrecht to donate it to other organizations that aid people in difficult situations. The initiative also collects food through dumpster diving and uses it to cook a vegan meal every week. They describe themselves horizontally led initiative with radical ideas, intending to raise awareness about the issue of food waste at both production and consumer level while working at the local scale to reduce waste. Dinners are donation-based, and the donations are used to support other initiatives.
- Initiative G: This initiative is active in Amsterdam since 2012, and defines itself as a foundation. Their vision is to reduce consumer food waste, the service provided to reach that aim is to give inspiration, information, and opportunity for waste-free consumption. The initiative organizes a variety of activities, most prominently a weekly dinner cooked with rescued food. Food is collected in shops.

The expected differences between the two contexts are explained in paragraph 3.5. The expectation that the comparison of the selected context variables is feasible is based on the experience of the author combined with the conducted desk research. Several variables are expected to influence participation and underlying justice principles, as explained in chapter 3. A comparative analysis is used to understand whether salient differences can be detected between the influence of certain individual conditions for participation on respondents in Veneto and the Randstad, or between the underlying justice principles steering the agency of the initiatives. The causal relationship between the individuated contextual variables and the detected differences (if any) is then analysed. Comparison and analysis are performed on the grounds of the experience of the respondents, as reported by them in the interviews conducted during data collection.

4.2. Data collection method

The units of analysis of the research are citizens. The collection of data regards the conditions for their participation in citizens-led initiatives, as well as the justice principles underlying the participation in citizen-led initiatives for food waste redistribution. Data for the research is collected through desk research and interviews.

Desk research

Desk research is used to collect information about the state of the art of literature regarding citizen coproduction, food waste redistribution, citizen-led initiatives, and food justice; as well as to understand the contextual differences between the two countries where the case studies will take place. The theoretical grounds for the research are based on an already existing framework, by Mees (2020), and the desk research is used to make that framework applicable to citizen-led initiatives for food-waste redistribution.

Interviews

Interviews have been chosen with the reasoning that this method provides the chance to acquire respondent-specific, detailed knowledge. Interviews are semi-constructed, with an emphasis on avoiding to steer the answers of the respondents. The use of interviews allows to get a thorough understanding of respondents' thoughts, beliefs, and experiences (Mees, 2019). Interviews are held via video call due to the COVID-19 pandemic. This allows the flexibility to interview respondents that reside in different cities and countries while avoiding travel. It is time and cost-efficient.

Two types of interviews have been conducted: with participants and with non-participants.

First, interviews with participants in citizen-led initiatives for food waste redistribution have been conducted. All of the respondents are volunteers, and all of the respondents contribute a comparable amount of time to the initiatives. Following the framework by Mees (2019), interviews are structured combining open-ended questions with closed-ended questions. This allows the flexibility to inquire into the specific situation of each respondent as well as a quantification of the influence of each condition for involvement. The open-ended questions inquire about each condition for participation, and the predominant justice principles guiding their actions. The closed-ended questions add to this inquiry by operationalizing each condition in multiple statements, which are scored by the respondents on a 5-point Likert scale. Interviews had an average duration of one hour and a half. A total of 25 interviews with participants have been performed in the months of April, May, and June 2020. 13 respondents are active in citizen-led initiatives for food waste redistribution in Veneto in Italy, 11 from one initiative, and 2 from another. 12 respondents are active in five in citizen-led initiatives for food waste redistribution in the Dutch Randstad, two or three respondents from each initiative. The distribution of respondents in the different initiatives is skewed. This adjustment had to be made in light of external circumstances that arose while the data collection was taking place. However, as the analysis is performed on the unit of analysis of individuals, within the case study of the context and not the initiative, this was deemed to be acceptable. The amount of respondents per initiative is generally proportional to the number of participants in the initiative.

As a control group, interviews are held with members of the community who are not active participants in the initiative. The community is defined by the range of action of the initiatives involved, which is generally citywide. Interviews with the control group provide information about the (lack of) conditions and how these explain the decision not to participate in the initiative. The control group respondents have been found reaching out among the beneficiaries of the citizen-led initiatives, as well as by reaching out through social media to find respondents that are not at all involved in the activities of the initiatives. This ensures that both people involved in the activities and people who don't get involved are taken into account in the results. The measure has been taken to avoid substantial bias in the reasons why respondents in the control group decide not to participate. Interviews with the control group respondents (referred to in this report as "non-participants") were formed of open-ended questions and were half an hour long on average. 16 interviews with non-participants have been performed in the months of May and June 2020. Nine respondents are based

in the Italian cities were the citizen-led initiatives perform their activities. Seven respondents are based in the Dutch cities were the citizen-led initiatives perform their activities.

Table 5: An overview of the number of respondents in each category

Category of respondents	Number of respondents in Veneto (IT)	Number of respondents in Randstad (NL)	Total number of respondents (NL + IT)
Participants in citizen-led initiatives for food waste redistribution	13	12	25
Non-participants in citizen-led initiatives for food waste redistribution	9	7	16
Total respondents	22	19	41

4.3. Data analysis

All interviews have been registered, transcribed, and coded using the NVivo software. The closed-ended questions have also been analysed using the software Excel to provide a more quantitative analysis of the individual conditions. The interviews provide narrative data, and content analysis is used for both qualitative and comparative analysis.

NVivo is used for coding. Qualitative Interpretative Analysis (QIA) is used to thoroughly understand the meaning and detail of each condition. QIA provides information on the meaning of each condition for participation for the respondents, as well as the influence each condition has on their participation. Connections between different conditions are also explored and explained. The environmental justice principles that steer the action of the respondents are also extrapolated from the open-ended questions of the interviews with participants in citizen-led initiatives for food waste redistribution.

Statistical analysis was performed in the software Excel on both the individual statements and the statements aggregated in conditions. The tables illustrating the results of this analysis can be found in appendix 5. The data is used to understand which conditions were most influential in the respondents' experience. Each condition was measured using multiple statements (three to eight statements per condition, to be found in appendix 4). The mean shows the average of the answers given by respondents to the different statements asking if the condition was of importance in their decision to participate (4-5), was not of importance in their decision (1-2), or they were neutral about that condition (3). In the results chapter, the aggregated scores based on equal weights of each statement are given. The mode shows the average of the answer which was given most often to the different statements measuring the specific condition: negative (1, 2); neutral (3); positive (4-5). The median shows the average of the median given for each of the statements measuring the specific condition. The standard deviation is, again, the average of the standard deviation to the answers of respondents to the multiple statements of the condition. Median and standard deviation indicate whether answers were homogeneous, or some respondents were outliers compared with the average opinion of most respondents.

The results from the interviews are then compared between participants and non-participants, and between respondents in Italy and respondents in the Netherlands.

The results of the analysis are presented in the following chapters. Chapter 5 presents the results concerning the eight conditions for participation. Following, chapter 6 presents the results concerning justice principles.

5. Results regarding the individual conditions for participation in citizen-led initiatives for food waste redistribution

This chapter provides an overview of the results of the data collection and analysis process. The data collection consisted of interviews with 25 respondents, all active participants in citizen-led initiatives, 13 in two cities (Padova and Verona) in Veneto, and 12 in three Dutch cities (Amsterdam, the Hague, and Utrecht). The respondents were asked a series of questions aimed at understanding whether the conditions for participation in citizen-led initiatives hypothesized on the basis of literature were confirmed to be true for their experience.

For each of the eight individual conditions for participation, results of the interviews with participants in citizen-led initiatives are shown in an overview table and then detailed in written text. The table shows the results of the analysis of data collected through the quantitative portion of the interviews, as well as a synthesis of the results of the open questions. Both quantitative and qualitative data have been collected to prove hypotheses formulated based on academic literature (see table 2 in section 3.4). The results, therefore, explain whether the collected data proves or disproves the hypotheses. As quantitative results shown are the result of an aggregation of data, it is important to consider the numerical data only in combination with the qualitative results, which give nuance to the results.

Furthermore, 16 respondents who do not participate in citizen-led initiatives providing food waste redistribution were interviewed as part of the data collection. The data collected in interviews with them provides nuance and insight on the actual influence of the conditions for participation. The results are shown for all eight principles together at the end of this chapter.

For each of the eight conditions, a paragraph illustrates the main differences encountered between the two countries. These differences are shown through quantitative data and explained by illustrating the qualitative data. Section 5.4 illustrates the overall results of the comparative analysis, bringing together the insights presented for each condition.

The results are presented per condition, in the same order followed in chapter 3.

5.1. Motivation

Motivation refers to the willingness to volunteer in a citizen-led initiative for food waste redistribution. There are three key conditions within the dimension of motivation: expected return on investment, perceived salience, and group identification. All three conditions were found to influence the motivation of respondents to participate in citizen-led initiatives. However, some differences were found between the hypotheses made in chapter 3 and the results of the data collection.

Expected return on investment

As can be seen in the table, the average answer of participants in regard to expected return was negative, meaning that this condition was not seen as having a salient influence on their participation in citizen-led initiatives. As for most conditions, the standard deviation shows that the answers were quite dispersed, with some respondents agreeing that the expected returns influenced their participation, and others strongly disagreeing. Most respondents considered it to be a neutral condition, which is pointed out by the value of the mode. Median and mean are quite similar, showing that the mean is not overly influenced by outliers.

Table 6: Main results about expected return on investment

	Importance of expected return on investment
Mean	2,85
Mode	3,00
Median	2,67
Standard deviation	1,13
Hypothesis 1: Expected returns are part of the motivation to participate	Disproved: Returns on time and energy invested motivate respondents to continue participating in the initiative. However, the returns experienced differ from the ones hypothesized. Furthermore, respondents state that returns were not expected, and expectations were not part of their motivation.
Hypothesis 2: Participants expect a return under the form of food	Disproved: No food or money are expected by the participants. Returns mostly reported to be experienced and influence motivation are personal development and fulfilment.
Hypothesis 3: Participants expect to create awareness about food waste	Proved: Most respondents expect to achieve the creation of awareness. Expectations about the scale and impact of created awareness, however, are low. Return in own personal development and awareness is experienced as a gain instead.

Participants reportedly invest time and labour in the initiatives they participate in. In return for this, they were hypothesized to expect a return under the form of food they could consume, and creation of awareness about food waste in the community they provide the redistribution service to. These expected returns were hypothesized to overshadow the effort in the perception of the respondent.

Participants reported to generally find the benefits acquired by participating to match or even outweigh the effort invested, which is in line with expectations. Participants also recognized that returns influence their motivation to participate, as it makes their experience meaningful to them. However, the returns on their investment were described by respondents as positive benefits they experienced, not expectations that they had before starting. Furthermore, they did not seem to agree with the concept of getting a return on investment when looking at their experience within the initiative.

All reported returns differ slightly from what was hypothesized based on literature. The benefits experienced were under the form of information learned, perceived visible and immediate positive effect of their action, and social gains. While social gains can be reconducted to the third individuated condition of motivation and will be discussed in detail below, these gains exceed the condition of group identification. Co-creation and engagement with the community were also part of this return. The creation of a space that enhances social cohesion, and gives the possibility to interact among members of the community in a way that is perceived by the respondents as meaningful, is often stated as the main return experienced by the participants.

Material returns under the form of food to be consumed and consequent money saved in grocery shopping was in a benefit some of the respondents (one third) experienced but was not reported as one of the factors motivating their participation. Only 12% of the respondents expected a material return. It can be concluded that for the respondents of this research on average, material gains were not an expected return, and qualified more like a nice extra they did not take too much into account in their experience. This can be explained by the fact that acquiring food that would go to waste is seen

by some respondents as an activity that individuals could do on their own. Citizen-led initiatives are reportedly more focussed on sharing that food, making it into a vehicle for information and social interaction, as well as social assistance in a few cases. Another explanation for the low interest in returns under the form of food is the fact that some respondents tend to avoid mass retail and are eager to support other production and retail forms, with shorter links between farmer and consumer.

The expected return in awareness creation and food waste reduction is also different than hypothesized in chapter 3. Expectations regarding the efficacy of the initiative are divided by respondents in the efficacy of redistribution of an amount of food that makes a difference (deemed important by 48% of respondents) and in the creation of awareness (deemed important by 96% of respondents). Respondents are, however, very realistic about the scale and speed of the impact they create through the service. This makes it possible for respondents to not be disappointed, and enjoy the returns that they get instead of measuring them against unrealistically high expectations. In one instance, it was reported that the initiative started falling short in the eyes of one respondent. This made him take distance, and start his own project to tackle the problem from a different perspective.

Practical skills and knowledge acquired were both mentioned as returns/benefits by the majority of respondents, and are mostly linked to specific knowledge about the topic of food waste, as well as skills concerning organization and management of events and activities. Most respondents had little previous knowledge about food systems and food waste but grew passionate about it through their experience in the initiative. They see this as a return in skills and knowledge acquisition.

The creation of such spaces of contact and community is one of the most mentioned returns to their participation in the initiative. By volunteering, they make sure that there is a space in the city where they can find the human contact that makes them happy.

Several respondents also mentioned the fulfillment given by the perception that their work had an immediate beneficial effect. The practical nature of the initiatives, as well as the short term results created by saving food: feeding people and creating moments and spaces of social contact outside of the mainstream social sphere of the city in which the initiatives are active. This was compared to longer, more complex projects in which results seem to be difficult to pinpoint for the respondents, while the consequence of their volunteering is perceived as a weekly reward in created benefits for the community.

Difference between Italy and the Netherlands

Table 7: Main results about expected returns on investment, comparison between the two geographical contexts

	Italy	Netherlands
Mean	2,79	2,90
Mode	2,67	2,92
Median	2,50	2,67
Standard Deviation	1,16	1,13
Main differences	Most reported return is information learned and personal development	Most reported return is the immediate positive effect of their work within the initiative

There aren't any striking differences between the results of interviews with respondents in Italy and the Netherlands. Both groups of respondents did not see material income or awareness creation as their main expected returns. Both groups did see returns on their investments as a condition for participating in the initiative. In Italy, more respondents reported learning and acquiring information

as a return. In comparison to respondents in Italy, Dutch respondents were less likely to report to expect that the initiative was creating a change of habits in people coming in contact with its service. Respondents in the Netherlands were more focussed on the immediate impact of their action, in comparison to Italian respondents.

Perceived salience

Table 8: Main results about perceived salience

	Importance of perceived salience
Mean	3,54
Mode	3,57
Median	4,14
Standard deviation	1,25
Hypothesis 1: Perceived salience of the service offered influences the motivation to participate	Proved: respondents perceive the service offered by the initiative as salient, and this motivates them to participate in it.
Hypothesis 2: Respondents perceive food waste redistribution as salient for climate change mitigation and adaptation	Disproved: the redistribution of food waste in itself is not seen by respondents as a very impactful activity in itself. Redistribution is seen by many respondents as a way of managing an externality, more than a solution.
Hypothesis 3: Participants perceived salience is enhanced by immediate local effects	Proved: the creation of spaces of sociality and discussion, where beneficiaries and volunteers can share a meal, is perceived by respondents as an essential service. The help which is given to beneficiaries also enhances perceived salience.

Quantitative results show that, on average, perceived salience was of influence on the participation of respondents. Most respondents agreed with the influence exercised by the condition. As can be deduced by the median, a few outliers lower the average, while half of the group feels that the perceived salience strongly influences their participation.

Based on the literature review, participants in citizen-led initiatives were expected to be influenced by the awareness of the importance of food waste redistribution as a service for climate change mitigation and adaptation. It was also hypothesized that participants perceived salience would be enhanced by a local, immediately recognizable effect.

During interviews, the majority of participants reported their understanding of the issue of food waste was based on common knowledge before starting their volunteering experience. Participants did learn a lot about it during their experience in the citizen-led initiatives. Most participants found the food redistribution service by their initiative to be salient, which is in line with expectations. Perceived salience, however, was quite diverse among respondents, even within the same initiative. Salience concerning climate change was mostly linked to the fact that such service is perceived as a bottom-up push to change the habits of society, opening a discussion about the issue. Redistribution in itself is seen as a band-aid, using the externalities of the system to create social value. Local effects are indeed important to respondents. The effort to enhance conscious habits and awareness creation is perceived as key to the salience of food-waste redistribution, more so than the amount of food kept from landfills.

The most noticeable difference between the hypotheses formulated through literature review, and the results gained through data collection, is that the salience of projects related to food is strictly related to community, sociality, being together. More than the avoidance of food waste, respondents

saw the importance of their work in enabling the volunteers and the beneficiaries of the initiatives to share a meal, feel welcomed in an inclusive space, and create a possibility for social interaction that they found to be missing in the cities where they operate. To the respondents, the dimension of human security, ritual, and tradition tied to food sharing is as important as the dimension of pure biological nutrition.

Accepting that the initiatives are not aiming to singlehandedly solve food waste, respondents relate that they use this externality of the food system to create inclusive social value, while simultaneously working towards a systemic solution by creating awareness about the capacity and responsibility of every single citizen. Respondents also often report that a small amount of food saved is better than nothing, and should not be dismissed.

Regarding food poverty relief, the answers are mixed. Respondents were active in 7 different initiatives. Both in Italy and the Netherlands, one out of the initiatives contacted is more focussed on the social dimension of food poverty relief, while the others do not build their organization’s vision around the topic. Participants from initiatives that focus on lending a helping hand to people in need saw the impact of their work and the salience of the help they were giving. For some, this was more important than the salience of helping to solve the food waste issue. Participants in initiatives that are not focussed on food poverty relief saw the possibility to help as an added benefit, but not a priority. Therefore, their opinion about the salience of their work concerning food poverty was mainly seen in relation to other initiatives that could adopt their methods and practices and use them to give access to food to people in need.

Difference between Italy and the Netherlands

Table 9: Main results about perceived salience, comparison between the two geographical contexts

	Italy	Netherlands
Mean	3,14	3,96
Mode	3,43	4,29
Median	3,71	4,71
Standard Deviation	1,29	1,05
Main differences	Salience mostly tied to creation of awareness	Salience mostly tied to bottom-up push for change

There aren’t many notable differences between the two groups of respondents, which disproves the hypothesis that the perception of hunger relief policies and waste management systems would result in higher perceived salience in Italy. Respondents in the Netherlands were more likely to think the waste management systems in the country work well.

Respondents from Italy were a bit more vocal about the salience of the initiative in creating awareness (86% of respondents in Italy expected to create awareness, 67% of respondents in the Netherlands expected the same thing). Dutch respondents often referred to the importance of the initiative as a bottom-up push for change. Dutch respondents were also two times more likely than respondents in Italy to find the amount of food saved from landfill to be salient. Both groups were very focussed on the salience related to the creation of community and interaction, and the local impact of the initiative. In both territorial contexts, the quantity of the food saved from landfill was referred to as a “drop in the ocean”, but also saw the importance of feeding people and interacting with them. Both in the Netherlands and Italy, the participants thought that the moments of food sharing and interaction created by the initiative were different than what the mainstream offer of the city, and that the provided alternative was much needed.

Group identification

Table 10: Main results about group identification

	Importance of group identification
Mean	4,20
Mode	4,50
Median	4,50
Standard deviation	0,88
Hypothesis 1: Respondents feel they identify in the group of the initiative, and this enhances their motivation to participate	Proved: Group identification positively influences the motivation of respondents to dedicate time and energy.
Hypothesis 2: respondents perceive belonging to the community they provide the service to	Proved: Building a network within the city, contributing to wellbeing in the community of beneficiaries, and providing a service needed in the community are all motivators for the majority of respondents.
Hypothesis 3: respondents identify with the group of volunteers participating in the initiative	Proved: Respondents generally feel part of a community of people. This feeling is based on space for meaningful interaction and discussion about shared interests.

The data in the table above indicate that respondents report group identification to be strongly influential on their participation, little outliers, and a relatively small variation between respondents.

Group identification is expected to manifest in both the perception of belonging to a community for which the service is performed, as well as identification within the group of volunteers participating in the initiative.

Initiatives are reportedly mostly formed by volunteers that recognize themselves as part of the same social group: (international) students, social relations within the neighbourhood, attachment to other social structures of active citizenship in the city. Respondents participating in these initiatives mentioned very strong ties and relations with the other volunteers. The sense of belonging and identification within a group was one of the main factors mentioned by participants when reflecting on their motivation.

Of all respondents, 88% mentioned that participating in the initiative gave them a space in which they could find other people to discuss and debate about topics they were passionate about, and valued that meaningful interaction as a return on the time and energy invested in the initiative. These topics often were related to social and environmental sustainability, the role of citizens in the democratic system, and food waste. Participants often specified that they found people to confront and discuss with from different points of view, more so than a group of perfectly like-minded people.

Most of the respondents are young adults, and the social dimension of creating friendships within the initiative is reported to be essential for most of them. It gives them the motivation to dedicate time and energy to the initiative. For many, the initiative was the core of their social lives. This is true for both Italian and Dutch respondents. In both countries, older (30+) respondents were positive about being part of a community they felt comfortable in, but generally less involved with the other volunteers outside of the initiative. Students often referred to the community within the initiative as “family” and expressed how the friendships there are a major part of their social life. Older respondents (30+) were mostly more tepid, even if still grateful and positive for the meaningful

interaction with people they would not have met without the initiatives, and found interaction with other volunteers to be pleasant.

Both forms of group identification (creating a type of social encounter the city was missing and identifying with the common sense of sustainability around which the initiative revolves) are in line with the hypotheses made in chapter 3.

While a small number of respondents started to volunteer as a way to establish connections within a new city, or at the start of a new life stage, many reported that they had not expected the group identification to be so strong. Others had joined on the invitation of friends who were already very involved and knew a lot of the participants beforehand. This points to the conclusion that making friends is not the expectation motivating the respondents of this research to start volunteering. However, it is key in the amount of time, dedication, and continuity of effort of the respondents.

Difference between Italy and the Netherlands

Table 11: Main results about group identification, comparison between the two geographical contexts

	Italy	Netherlands
Mean	4,27	4,13
Mode	4,75	4,38
Median	4,75	4,50
Standard deviation	0.96	0,72
Main differences	-	-

There aren't any salient differences between the respondents based in Italy and the ones based in the Netherlands. The hypothesis that group identification in Veneto would be influenced by the feeling of belonging to a network of cooperation among initiatives was not confirmed. Networks of cooperation and mutual support were mentioned in both case studies. Differences between respondents are more likely to be influenced by age, occupation, and homogeneity of the group of active volunteers. In the Netherlands, group identification was reported as slightly less essential to motivation in comparison to the interviews in Italy.

5.2. Capacity

The second dimension of individual conditions for the participation of citizens in citizen-led initiatives is the ability to provide a public service. Through an academic literature review, it was found that capacity must be both objective and subjective.

In strict terms, anyhow, respondents report that they do not have the objective capacity to tackle food waste. The magnitude and scale of the problem are seen as too big to be solved through food redistribution by citizen-led initiatives alone. This reflects on subjective capacity, which is also perceived as quite limited in the possibility to singlehandedly influence the system at large.

Participants, however, feel that the services provided by the initiative are quite easy to offer. They don't experience many obstacles in getting the basic resources to perform their activities. What they often do feel like an obstacle is the capacity to create an actual systemic difference. They see themselves as operating to manage the problem at the pipeline, bringing awareness, more so than as providing a solution to the issue. Several respondents report that they hope that the service they are providing will not be needed in the future.

Objective capacity

Table 12: Main results about objective capacity

	Objective capacity of participants
Mean	3,71
Mode	3,75
Median	3,50
Standard deviation	1,00
Hypothesis 1: the objective capacity to provide the redistribution service influences the respondents' participation	Proved: Objective capacity, in all its forms, affects how the service is shaped and how respondents choose to participate.
Hypothesis 2: participants have material resources, skills information, and know-how that makes it possible to participate in a citizen-led initiative	Proved: participants have the means necessary to all be objectively capable of providing a food redistribution service.
Hypothesis 3: Contextual variables like supportive network and legislation influence the objective capacity of participants	Proved: legislation limits the extent to which the service can be provided. Embeddedness in a network of actors is key to acquire objective capacity.

On average, respondents agreed that objective capacity has been of influence on their participation. Responses are relatively homogeneous.

Through literature review, it has been hypothesized that participation in citizen-led initiatives would be influenced by material resources, skills, information, and know-how that make it possible for citizens to offer a service; as well as legislation concerning food-waste redistribution for human consumption. The embeddedness in a network of stakeholders is also expected to influence objective capacity.

The initiatives in which the respondents of this research are active all provide a fairly similar service. Fruit and vegetables that would be thrown out are collected at shops or markets, often aided by a stable relationship with specific distributors that agree to give their excess to the initiatives. The collection is done regularly, once to three times per week. In one case, the initiative collects food for a weekly meal directly from waste containers. The collected produce is then transported to a location where it can be distributed among people who want it or used to cook meals that are then given to people who want it. Most initiatives do both distributions of produce, and shared meals. Some of the initiatives also contribute to events organized by other groups by cooking at the event with the food they have collected.

While the place where the food is collected and how it is distributed varies, the resources needed to perform the service are reportedly quite similar for all initiatives. There is need for manpower with the flexibility to go collect when it suits the shops or market stalls; a way to transport the collected produce (in line with what would be expected, this is always done by bike in the Netherlands); a place to store in the cases when the distribution is not done immediately; and a place to cook or distribute. Furthermore, a small budget is required for various expenses.

For participants, the most important resource needed is time to spend on the project. For many younger respondents having friendships within the initiative made it possible to invest more time, as it coincided with social time. Previous knowledge, specific skills, or particular knowhow were

reportedly not needed but were reported as a positive influence on their perceived capacity to make a difference. Multiple respondents were drawn to the initiative by their interest in cooking, which they also reported adding to their capability to offer the service. Respondents homogeneously answered that it is easy to learn how to provide the collection and redistribution service, once you are part of an initiative. Respondents found that providing the service within the established system of the initiative is simple. There is plenty of food waste and it is easy to rescue. There are lots of people interested in the food, and making a connection with them wasn't reported as difficult. The logistics of the activities were reported to be manageable if enough know-how and manpower were present in the initiative.

In line with the hypothesis, network links with food retailers, other organizations and institutional actors enhanced objective capacity.

The space to perform the service often requires quite some embeddedness in a network of other actors: it can be rented, but most often it is made available by other charities and organizations. For all initiatives embeddedness in local networks made it possible to find a space of their own, be given space within another association, or be able to host activities and events in different spaces in the city.

The amount of space limits the number of people and food, but larger quantities of people would reduce efficacy, as it would be more difficult to have a meaningful exchange with participants. Therefore, food waste redistribution by citizen-led initiatives seems to be bound to its small-scale nature. Multiple respondents report the small scale is especially essential for community building and the creation of spaces of social interaction, which was linked with expected returns, perceived salience, and group identification. Objective capacity to create large scale impact was mainly attributed to two features. First, the capacity of organizations to expand, creating sub-groups of the same initiative in other cities or neighbourhoods. Second, inspiring and teaching the technique to other citizen-led initiatives, that could integrate it into their activities.

Embeddedness in the local networks was also found to be essential for the acquisition of permits, the cooperation with other types of initiatives (especially to create informational evenings or add an element of music to the events), and to continuously expand the practice of food waste redistribution, in a process of learning from each other and teaching to new organizations.

Differences between Italy and the Netherlands

Table 13: Main results about objective capacity, comparison between the two geographical contexts

	Italy	Netherlands
Mean	3,49	3,94
Mode	3,63	4,00
Median	3,50	4,00
Standard deviation	1,04	0,92
Main differences	Lack of space and support by the legislation restricts how the service is performed. Embeddedness in the network is key to objective capacity.	Availability of space, also through network connections, and supportive legislation make it objectively possible to have a fixed location in which the service can be performed.

The perceived salience of sociality and meal sharing influences the resources needed, as it enhances the need to have a space where it is possible to be together, organize meals, cook. While in the Netherlands having a fixed space to operate in was reportedly perceived to be a pretty standard thing

to have, in Italy both initiatives didn't have a space at their disposal at the moment. One never had a fixed space, the other lost their one recently, due to administrative decisions made by the local government of the city where they operate, which allocated the space to a different use. This was perceived by participants of both initiatives as an obstacle, indicative of the lack of physical space dedicated to these issues in the cities they operate in. Distribution, on the other hand, was done quite easily, thanks to either a permit to use the ground granted by the municipality or lack of enforcement of legislation. In the Netherlands, all respondents reported that their initiative had a fixed space to cook and store produce. It was not seen as the most simple thing to achieve, but neither as an obstacle.

This difference between the two countries was hypothesized after the literature review, and even if it cannot, by any means, be generalized to the situation of the whole countries, it should be taken into account in further research. A second hypothesis formulated was that local consumption patterns would enhance the objective capacity of initiatives in Italy. The data collected was not sufficient to prove or disprove this hypothesis.

Legislation and bureaucracy also play a role. In Italy, respondents saw food waste collection and redistribution as an activity done in a grey area of legislation, with the tacit agreement of other actors. In the Netherlands, most respondents saw what they did as perfectly legal, and did not have any knowledge of obstacles presented by bureaucratic structures. In general, respondents did not have a very detailed knowledge of legislation regarding food waste. Respondents in Italy, however, were more likely to be aware of the permits needed to be capable of performing the service. Respondents in the Netherlands often referred to the availability of subsidies for the citizen-led initiatives, which were seen as an important help in setting up and running the services. With or without legislative support, the participants reported it was objectively possible to offer the public service they set out to perform.

Subjective capacity

Table 14: Main results about subjective capacity

	Subjective capacity of participants
Mean	3,50
Mode	3,67
Median	4,33
Standard deviation	1,20
Hypothesis 1: the perceived subjective capacity to provide the redistribution service influences the respondents' participation	Proved: Respondents feel capable of providing a food waste redistribution service, as long as it is within the setting of the initiative they volunteer in. Most respondents report feeling capable of doing their share in solving the issue by being part of the initiative.

The statistical data show that respondents thought of subjective capacity as a condition for their participation on average. The median value is indicative that there are outliers who did not feel subjective capacity was a condition for their participation, while half of the respondents fully agreed with the influence of the condition on participation.

It was hypothesized that the perceived capability to provide a public service would influence participation in citizen-led initiatives. The individual's perception of how effective his/her actions are in solving an issue is also expected to influence participation.

As mentioned in the paragraphs about objective capacity, most respondents (68%) felt capable of providing the collection and redistribution service. This was not linked to any specific personal quality and instead explained by how simple the execution of the activities was perceived to be.

Respondents in this research generally found that their actions would not have an effect on the system, but that everyone has the capacity to take ownership of his/her decisions, making choices in line with the change they would like to see happening in the system at large. Most respondents expressing subjective capacity in these terms would explain it saying that they can “do their part”, or “be part of the solution”. Talking with other people, leading by example and supporting options outside of mass food distribution were all perceived as effective ways to have an impact on the network around the individual.

Respondents mostly found that consumers and citizens, like themselves, have the power to direct the market by voting with their money, making conscious choices that would steer the market towards a direction they found to be more sustainable. This was generally perceived as their role within the system. Many respondents linked this with the perception that the possibility of making choices gives the responsibility to use that option to move towards a more desirable market system.

The standard deviation shows a notable variation in the answers given regarding this condition. Some of the respondents saw their subjective capacity as the possibility to not participate in the creation of the problem, while they felt that their possibility to have an impact on the system as a whole was extremely limited. This is in contradiction with what is reported by most. This differentiation between perceived self-efficacy and perceived response-efficacy (as individuated by Mees, 2019) should be explored in further research.

Differences between Italy and the Netherlands

Table 15: Main results about subjective capacity, comparison between the two geographical contexts

	Italy	Netherlands
Mean	3,51	3,50
Mode	3,50	3,67
Median	4,33	3,67
Standard deviation	1,38	1,03
Main differences	Respondents in the Italian initiatives are more likely to report that citizens are not capable of making a systemic difference.	Respondents from Dutch initiatives are more likely to report that consumers are capable of directing the market.

There aren’t very striking differences to report when comparing the subjective capacity of respondents in Italy and respondents in the Netherlands, which disproves the hypothesis formulated, i.e. that subjective capacity would be more salient to participation in Italy than in the Netherlands. The only slight difference is that respondents active in the Netherlands are more likely to refer to the steering agency of consumers within the market when thinking about their capacity to contribute to solving issues related to food waste. In both countries, the respondents refer to a need for more institutional action concerning the issue, especially the prioritization of regulations aimed at tackling food waste.

5.3. Ownership

The dimension of ownership comprehends the three final conditions for participation in citizen-led initiatives, as found in literature and discussed in chapter 3. It refers to the citizen’s perceived moral obligation to act and is composed of the conditions: peer pressure, sense of own responsibility, and environmental values.

For the most part, respondents in both countries had a network of people approving of pro-environmental behaviour around them, did feel the responsibility to act to create change, and were

moved by environmental values. However, respondents did not feel morally obligated to perform a service. More so, they saw their participation in a citizen-led initiative for food waste redistribution as a way to live in line with their environmental values, aiding the life choices they deem to be correct.

Peer pressure

Table 16: Main results about peer pressure

	Influence of peer pressure on participation
Mean	3,93
Mode	4,33
Median	4,67
Standard deviation	1,03
Hypothesis 1: peer pressure influences the sense of ownership of participants	Proved: on average, participants report that a positive opinion by their social network is of positive influence on their participation.
Hypothesis 2: participants are influenced by the opinion about food waste redistribution expressed by their network	Proved: participants mostly report that food waste redistribution is met with a positive attitude within their social network. Negative opinions are encountered, but not prominent. However, respondents report that they would not stop participating as a consequence of negative opinions about the initiative.

On average, respondents confirmed peer pressure to be a condition for participation. Most respondents agreed that it has been of influence in their experience. The mean is even somewhat skewed by outliers who do not find peer pressure to be a condition for them, while more than half of the respondents did strongly agree.

Based on the literature review, the hypothesis has been formulated that the thoughts expressed by friends and family regarding the topic of food waste redistribution would influence the participation of individuals in citizen-led initiatives for food waste redistribution. The perception that the social network values the service offered by the initiative is expected to be a condition for participation.

In line with Cecere, Mancinelli & Mezzanti (2014), it has been found that respondents mainly report operating on the basis of intrinsic motivation, more so than because of peer pressure. The majority of respondents, however, do find it valuable to have a social network in which sustainability is seen as a priority in decision-making. Having friends and family that are concerned about sustainability is perceived by many respondents as an incentive and facilitation to do so themselves. Leapfrogging ideas off each other, and making certain life choices together, are two reported ways in which a network of people interested in leading a sustainable lifestyle helps the respondents. This is what was reported for sustainability and active citizenship in general, as well as for food waste specifically.

The perception of the existence of an established social norm guiding people towards behaving sustainably was present in some, absent in others. Many reported to have a social network in which sustainability and food waste avoidance is prioritized, but the majority found this group of friends in the past couple years, or even through the initiative they participate in. The majority did not report having grown up with food waste being a topic of interest in their family. Based on these results, peer pressure cannot be considered as a condition to start participating in citizen-led initiatives for food waste redistribution.

In literature, the negative image of eating food that is considered to be waste is seen as an obstacle for food waste collection and use (Dang, 2014). With few exceptions, respondents mainly thought that their service was largely perceived as positive by their social network, and by society at large. Many of the respondents, however, did encounter some negative opinions about the rescued food. Respondents encountered negative opinions about food waste redistribution at different levels. Some none, others a couple of comments, some had perceived the general feeling that this was “food for the poor” from the public. In any case, these opinions did not substantially influence them. They mainly saw this as an opportunity to discuss and inform the person expressing that negative opinion, not as an obstacle. They did see it as an obstacle to reach certain societal groups with their service.

Differences between Italy and the Netherlands

Table 17: Main results about peer pressure, comparison between the two geographical contexts

	Italy	Netherlands
Mean	3,92	3,94
Mode	4,00	4,33
Median	4,67	4,67
Standard deviation	0,99	1,04
Main differences	Respondents participating in an initiative in Italy are more likely to have encountered negative opinions regarding food waste redistribution for human consumption.	Respondents active in the Netherlands are slightly more likely to have grown up within a network in which sustainability was a priority in decision making.

There aren't any salient differences in the influence of peer pressure on the two groups of respondents. The only slight difference encountered is the fact that respondents active in the Netherlands are more likely to have grown up in a household in which sustainability was considered to be a priority. Respondents in Italy reported having encountered negative opinions about the food the initiative distributes more often in comparison to respondents in the Netherlands. This was never seen as an obstacle, as these opinions were deemed to be the product of ignorance and skewed perception about the quality of food. Hygiene standards and the confusion about the bureaucracy about these were cited on multiple occasions as a concern for the retailers providing the food in the Netherlands.

Sense of own responsibility

Table 18: Main results about the sense of own responsibility

	Influence of sense of own responsibility on participation
Mean	3,99
Mode	4,00
Median	4,00
Standard deviation	0,91
Hypothesis 1: Respondents' sense of ownership of the issue is influenced by a perceived sense of responsibility about the food waste issue	Proved: Respondents mostly felt responsible for contributing to the solution to food waste issues, within their capacity. The respondents reported that it was the consumer's responsibility to create a bottom-up change.
Hypothesis 2: Respondents are expected to feel responsible for taking care of the environment	Proved: respondents reported to feel responsible to act consciously and take care of the environment, but even more to take care of society and the community.
Hypothesis 3: respondents are expected to feel responsible for making choices aimed at disrupting overconsumption	Disproved: Respondents reported that the initiative was not disrupting the system, and opinions about responsibility to disrupt vary. However, respondents did feel responsible for consciously making decisions, taking consequences into account.

The condition of own responsibility was strongly felt by respondents, as can be deduced by the high average. The responses were relatively homogeneous, as shown by the standard deviation and the median.

In the framework used in this study, the sense of responsibility is seen as closely linked to subjective capacity. It has to do with the perception of personal responsibility towards others and within the governmental system. Trust in the government's provision of the service is expected to be a key factor.

Based on the literature, it is expected that respondents feel responsible for taking care of the environment, as well as responsible for making choices aimed at disrupting structural overconsumption.

Respondents did often feel like it was their responsibility to take care of the environment, behave consciously, and "do their part", as mentioned in paragraph 5.2.2. However, they mostly did not feel personally responsible for providing a service. It is not a must, but something they enjoy doing, that is meaningful and fulfilling to them. Responsibility is perceived as shared, within society and among all influencing actors (government and industries are often mentioned). There aren't substantial differences to report between those who considered their participation as the need to fill in a gap in the institutional action, and those who considered the participation to the initiative as part of their role as citizens within a democracy.

In line with expectations, 88% of respondents thought that the current food production and distribution systems are not in harmony with the ecosystem we inhabit, nor sustainable in the long term. 100% of respondents feel they should try and ensure that future generations will be able to live in harmony with the ecosystem. 76% found enhancing sustainable consumption to be a reason to participate in the initiative.

Their perceived responsibility was mainly characterized as avoidance of supporting overconsumption. The creation of bottom-up movements aimed at creating societal change was also seen as key. Respondents were mainly convinced that the local institutions were not putting much effort into solving food waste and issues related to food waste. Many shared the sentiment that the citizen-led

initiative they are part of is a reaction to structurally unsustainable overconsumption, filling in for the lack of attention given to the issue by institutional actors.

In a slight discrepancy with the formulated hypothesis, respondents were generally convinced that food waste redistribution is a “tail of the pipeline solution”. As a consequence, they did not feel like they were disrupting the system. Because food waste redistribution is based on the existence of this stream of waste, respondents saw it more as a way to manage the externalities the system is producing.

Differences between Italy and the Netherlands

Table 19: Main results about the sense of own responsibility, comparison between the two geographical contexts

	Italy	Netherlands
Mean	3,79	4,19
Mode	3,67	4,17
Median	4,00	4,00
Standard deviation	0,99	0,78
Main differences	A few respondents in Italy reported to not feel responsible for providing the service and insisted that they volunteered for their own pleasure.	Dutch respondents were found to be less likely to report that the initiative was a reaction to a lack of action by other actors.

On average, respondents in the Netherlands are found to perceive the sense of their own responsibility more than respondents in Italy, which is consistent with the formulated hypothesis that respondents in the Netherlands would perceive coproduction to be part of the citizens’ responsibility. In Italy, the extent of perceived responsibility among respondents is more varied. Respondents in Italy refer to a strong presence of citizen-led initiatives in their cities, to which a lot of social and environmental services are informally delegated.

Environmental values

Table 20: Main results about environmental values

	Influence of environmental values on participation
Mean	4,44
Mode	4,60
Median	5,00
Standard deviation	0,82
Hypothesis 1: participation of respondents is positively influenced by strong environmental values	Proved: respondents reported negative sentiments towards the current economic system. On average, the respondents felt the need to act upon this dissatisfaction.

The average of the answers in relation to environmental values is the highest of all conditions, which can be interpreted as a sign that this condition is the one that the respondents agreed on most. In fact, data indicated that the answers were relatively homogeneous and nearly all respondents reported environmental values to be influential in their participation.

Based on the literature review, the hypothesis was formulated that participation in citizen-led initiatives is influenced by strong environmental values, like awareness of the anthropogenic nature of climate change and ethical values in line with environmental stewardship. In line with this expectation, and closely related to the insights about the sense of own responsibility, respondents reported thinking

that the current system was not in line with the ecosystem. The respondents expressed that the balance between humanity and the ecosystems we live in is of great importance for them, a goal to strive for. Respondents mostly felt strongly about the topic. Negative sentiments were expressed regarding the current food production and distribution system, especially concerning the creation of externalities that go unaccounted for, and exploitation of natural resources. As expected, respondents felt the need to act upon this dissatisfaction, taking care of the environment, and doing what they feel possible to be part of the solution to the problem.

As reported above, negative sentiments towards consumerism and structural overconsumption are also widespread among respondents in this research. The underlying values are in line with the concept of food citizenship, as conceptualized by Booth & Coveney (2015) and explained in chapter 3.

Differences between Italy and the Netherlands

Table 21: Main results about environmental values, comparison between the two geographical contexts

	Italy	Netherlands
Mean	4,37	4,53
Mode	4,60	4,60
Median	5,00	4,60
Standard deviation	0,92	0,54
Main difference	Less than half of the respondents perceived taking care of the environment as a reason to participate.	Of all respondents in the Netherlands, 85% felt like taking care of the environment was a reason to participate.

No salient differences were found between the environmental values reported by the two groups of respondents. Both groups are vocal about their negative opinion about the current food production system, and the economic system in general. Respondents in both groups report a need to act upon this sentiment. Being part of the citizen-led food waste redistribution initiative is often part of the action they want to take in reaction to the sentiment. The only slight difference is the influence of the sense of responsibility to take care of the environment in the commitment to the initiative.

5.4. Comparative analysis between the two geographical contexts

Overall, the differences between the two geographical contexts were found to be less stark than expected. The initiatives have similar aims and services. The Motivation conditions were found to be fairly similar in both the Italian cities in Veneto and the Dutch cities of the Randstad. Motivation, in fact, was influenced more by the aim of the initiative and the demographic data of the respondents (namely age and occupation), than by the geographical setting. Capacity was found to be the dimension in which the difference was most noticeable. Namely objective capacity was perceived very differently in the two contexts. Respondents in Italy were reportedly more likely to mention political context and space availability as an obstacle to their objective capacity to perform a service. In comparison, respondents in the Netherlands often reported having experienced a lot of institutional support. Differences in the dimension of ownership were encountered especially regarding the condition of own responsibility, with respondents in Italy being less influenced by that condition in comparison to their counterparts in the Netherlands.

The influence of the presence of universities, attracting students from various proveniences, was found to be strong. Five out of seven initiatives were found to have a substantial portion of beneficiaries and participants being students, many of whom had moved to the city of residence to pursue their academic education. This skewed results concerning the influence of culture and consumption

patterns, as many respondents in the Netherlands were international students who had lived in the city where they are active in an initiative for not longer than a couple of years.

Overall, the influence of contextual variables was found to be the strongest on the condition of objective capacity, and specifically on the availability of space to perform activities in. This resource is reported by participants to be especially needed to aid the purpose of the initiative to create a space of social interaction, community, and awareness creation. The results indicate that the influence of contextual variables is less noticeable than hypothesized based on the literature review in the specific case of this research. The results also show that the framework by Mees (2019) is applicable in different contextual settings, strengthening the validity of the framework as a tool for analysis.

5.5. Comparison between participants and non-participants in citizen-led initiatives

Table 22: Main results in comparing the influence of the condition for participation on the choice of participants and non-participants

	Participants	Non-participants
Expected return	Respondents experience returns in social gains, a feeling of accomplishment, and personal development.	Respondents hypothesize returns in the feeling of accomplishment because of having done something meaningful.
Perceived salience	Food waste redistribution is seen as salient. Salience is mostly linked to the creation of spaces of social interaction and community building.	Food waste redistribution is seen as salient. Salience is mostly linked to the recuperation of food and the assistance of the poor.
Group identification	Respondents often knew people in the initiative or felt immediately welcomed when meeting the initiative.	The expectation of group identification is based on the assumption that spending time together doing something meaningful will create friendships and community.
Objective capacity	Respondents report that being part of an initiative makes them capable of offering a food-waste redistribution service.	Respondents felt that they lacked the time, mostly because they did not prioritize participation above other commitments. Half of the respondents were not aware of the existence of initiatives they could join.
Subjective capacity	Respondents feel responsible for - and capable of the creation of a service.	Respondents link subjective capacity to taking care of food waste within their own household.
Peer pressure	Most respondents are supported by a network of people who prioritizes sustainability, often because of participating in the initiative.	Very mixed. The majority has had a norm of avoiding food waste transmitted to them in their upbringing. Respondents who don't know anyone who participates in a food-waste redistribution initiative generally also report that in their social network sustainability is not prioritized.
Sense of own responsibility	Respondents feel responsible for spreading a message of awareness and take care of the community.	Respondents feel responsible for avoiding food waste in their own households only.
Environmental values	Environmental values are deemed important by respondents. Negative feelings about the current economic food system are reported. Daily choices are influenced by these values, within the limits of personal possibility.	Environmental values are deemed important. Standards are less high than reported by participants. Negative feelings about the current economic food system are reported.

The table above shows that differences were found between how the eight conditions for participation are perceived by participants in the citizen-led initiatives, and non-participants. Some of the conditions presented more differences than others. Those conditions that present the most substantial differences and can be hypothesized to have had more influence on participation. The most striking differences found for the non-participant group in comparison with participants is highlighted by bold font.

Most respondents who do not participate in a citizen-led initiative for food waste redistribution are enthusiastic about the idea, find it interesting and very positive. However, most would not consider participating. Food waste redistribution is not expected to be an activity they would enjoy doing, and other commitments or responsibilities are prioritized. The sense of own responsibility and subjective capacity mostly reconduct to reducing the food waste produced in their own household, as well as supporting the initiatives they know, if any. Trying to spread awareness is generally not perceived as their task. The respondents who are not in contact with any citizen-led initiative for food waste redistribution link the idea of food waste redistribution services to charity, poverty relief, and institutional organizations operating with that aim (e.g. Voedselbank). They do not feel compelled to use the service themselves.

The idea of food-waste redistribution has to be decoupled from being solely linked to poverty relief, shifting the discourse to the environmental sustainability impact of such services. This would help broaden the amount and diversity of beneficiaries of services, as well as attract new participants, making initiatives more effective.

Given that lack of awareness about the service provided by citizen-led initiatives for food waste redistribution is quite prominent among non-participants, to achieve more participation in citizen-led initiatives for food waste redistribution it seems necessary to make them more visible and accessible among people who are not in contact with citizen-led initiatives, who do not volunteer, and who are not part of networks in which a lot of people volunteer. The variety of activities that are part of performing food-waste redistribution services should also be made clearer, as it would probably appeal to citizens who now see it as a very standardized and repetitive occupation.

Flexibility in the time and energy to be committed and accessibility are already very well implemented in the initiatives, and appear to be key in making it possible for more people to join. The superfluity of previous knowledge and skills also helps with the perception of accessibility among non-participants and should be communicated effectively.

A differentiation between non-participants in the Netherlands and in Italy was not deemed necessary, as the respondents in both places provided very similar answers.

5.6. Overall conclusion regarding the individual conditions for participation

Throughout the chapter, it becomes clear that some conditions have more influence than others on the respondents' participation in citizen-led initiatives for food waste redistribution. The dimension of ownership appears to be the most relevant, as all three conditions (peer pressure, sense of own responsibility, and environmental values) are, on average, salient for the respondents. Mees (2019) hypothesizes that all three dimensions have to be present to some extent in order for participation to occur. The results obtained in this research indicate that this is the case for the vast majority of all participants interviewed.

The table below summarizes the findings presented in the chapter.

Table 23: General comparison of main results

Conditions	Mean	Mode	Median	St deviation	Main results	Differences between Italy and the Netherlands, if salient	Differences between participants and non-participants, if salient
Expected returns	2,85	3,00	2,67	1,13	Returns in fulfilment, personal development, and social gains influence motivation.		
Perceived salience	3,54	3,57	4,14	1,25	Service provided is perceived as salient, especially concerning the creation of a space of interaction and sociality.		
Group identification	4,20	4,50	4,50	0,88	Group identification is a key influence on motivation to participate.		
Objective capacity	3,71	3,75	3,50	1,00	Objective capacity affects participation and the services, and is linked to contextual variables.	Respondents in Italy are constrained by the lack of a stable place to perform their service in.	Respondents report that they lack time. Many respondents are not aware of the possibility to join an initiative.
Subjective capacity	3,50	3,67	4,33	1,20	Respondents feel capable of contributing to the diminution of food waste because of their participation in the initiative.		
Peer pressure	3,93	4,33	4,67	1,03	Peer pressure has a positive effect, intrinsic motivation, and support by the initiative make up for negative opinions.	Respondents in Italy are more likely to report having faced people who are negative about the redistribution of food waste.	
Sense of own responsibility	3,99	4,00	4,00	0,91	Respondents feel responsible for taking care of the environment and the community with their actions.	Respondents in the Netherlands are less likely to report their responsibility is the direct consequence of the lack of action by other actors.	Respondents feel responsible for taking into account the environment in their actions.
Environmental values	4,44	4,60	5,00	0,82	Environmental values are consistent and strong. Respondents are negative about the current system and want to act to change it.		

Group identification is found to be a very influential condition, as important as the ownership dimension. It is the most important condition for motivation, and it is seen by most respondents as the main part of their expected returns and perceived salience.

Capacity is proved to be an important dimension for participation, even if less than the ownership dimension. Objective capacity is reported to be influential by respondents in the Netherlands. Respondents in Italy were less likely to attribute as much importance to this condition. This can be explained by looking at how respondents in Italy experienced the obstacles posed by legislation and lack of space to operate in, and how their initiative overcame that obstacle thanks to their subjective capacity, and a bit of disregard of the legislation. This difference in capacity appears to be the most salient difference determined by the influence of contextual variables in this research.

The main difference encountered comparing participants and non-participants is the operationalization of what the respondents own responsibility and capacity is. The difference lies in both conditions of capacity, but also peer pressure and sense of own responsibility. Non-respondents feel the food waste issue to be salient, but see their responsibility and capacity as limited to their own household and network. In contrast, participants feel capable of offering a service to a larger community.

Group identification and environmental values are individuated as necessary conditions, as these are always present in the respondents experiences. Own responsibility also could be a necessary condition, considering the differences between participants and non-participants. The empirical research was not conclusive in regard to a sufficient condition, as none of the conditions was found to be enough on its own to make participation occur.

6. Steering agency of justice principles in the citizen-led initiatives for food waste redistribution

The 25 participants in citizen-led initiatives who participated in this research have been asked about the aim, procedures, and decision making processes of the initiatives. Furthermore, their opinion about the justice implications of the provided service regarding inclusiveness and burden and benefit allocation has been investigated.

The answers to these questions are used to understand how environmental justice principles are taken into account in the initiatives, by looking at how the service is performed and why. The results are presented for both the Italian and Dutch initiatives, as the insights about environmental justice did not present any salient differences when comparing the two contexts, for neither procedural nor distributive justice principles. While some differences were found based on variations in the aim and structure of the initiatives, these differences are not context-specific.

As mentioned in section 4.1, the respondents were selected based on their participation in initiatives with similar aims. There are slight variations between the seven initiatives. The analysis is based on the answers of respondents to open-ended questions. Overall, the initiatives aim at creating social bonds within the community they operate in, giving a social value to food that has lost its economic value, and spread a message of awareness, consciousness, and empowerment.

Within the vision, the community taken into account is the population of the city in which the initiatives operate. Two initiatives, however, operate at the scale of neighbourhoods.

Results are presented looking into procedural justice first, followed by distributive justice.

6.1. Procedural justice

Two factors have been investigated within the realm of procedural justice: inclusiveness and equal participation of all. Inclusiveness refers to the extent to which the interest of all individuals in the community have been taken into account in the decision-making process of the initiative. Equal participation refers to the extent to which all people in the community have access to and influence on the decision-making process of the initiative.

Inclusiveness

The initiatives' inclusiveness is analysed looking at the vision and goal these strive to achieve in the personal opinion reported by the respondents.

All initiatives strive to reach as many people as possible, which helps to spread the message. Building a diverse and welcoming community is key. Loneliness, financial issues, and language barriers are taken into account as much as the respondents deem possible. Accessibility to the decision making is aided in respect of these barriers by choosing very open and participative forms of decision making in some of the initiatives, and by continuous communication with beneficiaries, participants, and other actors by other initiatives.

Anyhow, respondents report that there are barriers of various natures. Some of the barriers mentioned are: architectonical, concerning the location; the language which is spoken by most; the average age of the beneficiaries coming to share a meal; the fixed times and locations of distribution, impossibility to cook or store the distributed food for the homeless. All of these form an impediment for

participation and benefit allocation for many. How the initiative is advertised (often mostly social media) influences the variety of people who get to know it and are informed about its service provision.

Looking at inclusiveness in light of participation in the initiative as volunteers, there are some salient differences between the initiatives. A generative strategy and encouragement to the beneficiaries to become volunteers is mostly set in place by the initiatives. One initiative in the Netherlands avoids the integration of beneficiaries of the service into the provision of the service, reportedly because the integration did not go well when it was experimented with. The other initiatives, both in Italy and in the Netherlands, were very open and encouraging beneficiaries to become active participants in the initiative.

Inclusiveness is seen as part of the aim of the initiatives by most of the participants, as was hypothesised on the grounds of the literature review. The approach to inclusiveness differs between the seven initiatives to which the respondents belong. The approaches are either a hierarchical system or a horizontal one. Three initiatives in the Netherlands have a hierarchy, a selected group of volunteers takes decisions for the rest of the group. Two initiatives in the Netherlands and the two initiatives in Italy have a horizontal decision-making process, in which meetings open to all volunteers are used to make decisions for the initiative. In two of the initiatives, the meetings are open to external people as well.

Overall, the initiatives differ in whose interests are recognized and who is included in the decision-making process. The differences depend on the aim the initiative sets out to achieve. When initiatives are interested in increasing the agency of citizens in food systems, decision-making processes are more inclusive. When the aim relates more to the assistance of the most vulnerable, decision-making processes are more hierarchical. However, decision-making takes the interests of those living in food poverty more closely into account when helping the most vulnerable is the stated aim of the initiative.

Equal participation

Meetings are the most widely used form of decision making. In hierarchical systems, the group of selected volunteers takes into account input from beneficiaries and other volunteers by collecting their opinions and suggestions during the initiative's events (food collections, cooking, meals). In horizontal systems, volunteers who can be present can take part in decision making. Beneficiaries are listened to and taken into account by asking them for their input during the activities. Platforms like *Slack* or *Whatsapp* or *Telegram* are used to inform the volunteers and give insight into the process.

However, meetings are often at a fixed moment in the week or month, take time, and are carried out in the language spoken by most volunteers. This is a barrier to the participation of some. Furthermore, respondents reported that beneficiaries and retailers are rarely directly involved, even when occasionally invited to join the meetings. Finally, decisions are made in a completely independent manner from other actors involved in food systems. The decision-makers decide who can give input to the decision-making process and how.

Equal participation is reportedly aimed for by all initiatives, but its operationalization is widely different for each initiative. Overall, the structure of both initiatives in Italy is open and horizontal. In the Netherlands, three initiatives had more structured, almost hierarchical, while the other two are as horizontal and open as the Italian ones. The participation in decision-making processes is mainly proportional to the time and energy the individual can dedicate to participation in the citizen-led initiative.

6.2. Distributive justice

Distributive justice principles which steer the initiatives' activities have been investigated by inquiring on how the service is performed, and what the effect is on the distribution of benefits and burdens among all actors directly and indirectly involved. These results aim to understand which principles appear to steer the decisions of the participants within the initiatives. Results are based on the perception of respondents regarding burden and benefit allocation, as reported during the interviews. The table below shows the main burdens and benefits perceived by the respondents for the various relevant actors/stakeholders.

Table 24: Burdens and benefits allocated to each actor in the perspective of the participants in citizen-led initiatives

Actors	Burden	Benefit
Participants	Time, energy.	Social and normative rewards.
Beneficiaries	Time at a scheduled moment during the week, price of the service (lower than market prices of the resources they get).	Food, information.
Society at large	Resources allocated by participants, space in the city.	Reduction of the amount of food waste created.
Food waste producers	Time, energy.	Cost-saving on waste disposal.
Institutional actors	Space allocation to citizen-led initiatives; permits allocation.	Diminution of the need to allocate resources to social cohesion and waste management.

Burden allocation

Burden allocation refers to the distribution of the cost of providing the food redistribution service. Three possible principles have been taken into account: causal responsibility, which puts the responsibility of the burden on the actor creating the issue; capabilities principle, in which the burden should be divided depending on someone's ability to act; and the beneficiaries principle by which the share of burden allocated should be proportional to the benefits.

Looking at the service of food waste redistribution, the burdens are minimal. As food waste is an externality of the system, nobody has to pay for its acquisition. Participants in the citizen-led initiatives carry the only significant burden, a time investment. The majority of the respondents saw this as just, as they had the time and resources to dedicate to the provision of the service. This explanation appears to be in line with the "ability to pay" principle, as defined by Mees (2019).

Looking at the cost of the service, beneficiaries were asked to give a monetary contribution in four out of the seven initiatives. In the other three organizations, the food was given away for free, and this was considered to be an essential characteristic of the service. Even when beneficiaries are asked to pay, the price is low and flexible or based on a voluntary contribution system, making it possible for everyone to pay what they can. Volunteers can also benefit from the service for free if they want to, replacing financial contributions with a contribution under the form of work. Respondents put a lot of emphasis on the fact that they did not want the service to be governed by standardized capitalistic mechanisms of price driven by demand and offer. Again, this decision by the initiatives seems to be guided by an "ability to pay" principle, asking beneficiaries to contribute to the burden as much as they are capable of instead of asking everyone to contribute equally.

The majority of the respondents reported that this service is not a long term solution and that the overall reduction of excesses in food production should be made possible. Everyone is seen as part of the system (institutional actors, retailers, farmers, consumers), and therefore everyone should contribute to carrying the burdens of solving the issue. Respondents often see cultural overproduction and consumption as responsible for the issue, not a specific actor. There were some mentions that the governments should have given a different direction to the food system, and therefore are responsible for paying to solve the issues now. Some respondents also felt like the initiative helped to reduce the burden on institutions caused by lack of social cohesion and food poverty, therefore reducing the burden for the local government. Again, respondents' answers are on average in line with the "ability to pay" principle, as most of them seem to think that the initiative is their way to contribute to the solution as much as is fit for their capabilities. Others are deemed responsible for doing the same, as best they can. This result is generalizable to all initiatives, in both geographical contexts.

Benefit allocation

Benefit allocation refers to whom receives the resources created by the initiative, both spiritual (network, togetherness, social contact) and material (food). Benefit allocation depends on how the service is carried out. There are three main perspectives through which the fairness of benefit allocation can be analysed: equality principle, by which benefits should be divided equally among all; the principle of "putting the most vulnerable first", maximizing the benefits for those who are more vulnerable; and the "human security" principle, by which access to resources should be inversely proportional to the degree of human security, and aiming at enhancing the human security of the beneficiary.

The respondents report that the initiatives strive to avoid making distinctions among the people who can benefit from the service. Inclusiveness and equal allocation of benefits among all who wish to use the service are often reported as a goal. To achieve this, the initiatives avoid setting standards for the beneficiaries. No documents or specific requirements are set. The food provided is free or given on a (voluntary) donation basis.

The respondents mentioned several benefits made available to the community by the service. Togetherness, community building, creation of a network among diverse people, reduction of prejudice, and distance in the community are the most cited when referring to social cohesion. For the beneficiaries individually, benefits cited were improvement of self-image and dignity of the beneficiaries, provision of a healthy meal, and financial aid by spending less on food. For society at large, the benefit is the increased awareness which is expected to reduce the amount of food waste and consequent issues, as well as transmission of the practice to other organizations and individuals. The empowerment of individuals to take care of their collection of food waste represents both an individual and a societal gain. Decommodification of food, the gain of worth of food waste, and generative practices of passive beneficiaries becoming active in the coproduction of a public service were also cited as benefits, mostly regarding a long term paradigm shift in how food systems are believed to need to change in the future.

For six out of the seven initiatives involved, the aim is spreading a message of awareness that is meant to benefit society at large. Therefore, they choose to prioritize the creation of moments of contact with as many beneficiaries as possible. During distributions, food is "portioned" so that it can be distributed to a larger amount of receivers. Events are open and advertised to as many people as possible, and everyone is welcome. No distinctions are made. How the service is meant to be implemented seems to be sound from a lens of fairness intended as equal distribution of the benefits for all, so the equality principle is the most prominent guiding principle.

The idea that this food is “for the poor” makes it difficult to reach people with a higher income and make them part of the community building processes. The respondents of six out of the seven initiatives report that the aim is not specifically to be a support system for people vulnerable to food poverty. However, these people are taken into account with specific attention to make it possible for them to benefit from the initiative if needed.

From the perspective of the “putting the most vulnerable first” principle, to be fair benefit allocation should maximize the benefits for the most vulnerable to the issue. People identified as vulnerable, in that they don’t have access to healthy food, should be prioritized in the allocation of resources created by the initiative. One initiative in the Netherlands aims at helping people as a central goal. Respondents report that the initiative revolves around helping people affected by food poverty or loneliness and lack of social support. Even so, it is clear that the initiative does welcome everyone who would like to join for a meal. This, however, is also seen in the function of the creation of a diverse public that will aid social cohesion and connections between people from different social and economic groups. The six initiatives focusing on equal distribution are also reported to give special attention to whom needs it most. Empowerment of beneficiaries to take care of themselves and go collect food personally is one way used to help. Other initiatives are reported to be flexible with prices. Another measure taken is the direct contact between volunteers and the most vulnerable beneficiaries. This personal communication (often via *Whatsapp*) ensures that those who need it will get the information and attention they need to benefit from the service. In this “hybrid” situation the respondents are usually all agreeing with the need to put the aim of spreading awareness first, while the meanings about how central the topic of given assistance should be varied across a broad spectrum. For some, it is a moral duty. For others, it is a nice extra benefit they are happy to make happen. It can be said that by making prices flexible and giving attention to specific situations to assist in the way needed by the most vulnerable, the “putting the most vulnerable first” seems to be the second guiding principle for these initiatives and the respondents active in it, equally important as the equality principle. Allocating resources to the most vulnerable and empowering them to have agency within the food system is almost always linked to an experienced return on their investment by respondents.

No standards whatsoever are required to be able to benefit from the initiative as a citizen. Therefore, the status of the person will not be checked, and many respondents did not have certain data about whom among the beneficiaries could be identified as someone affected by loneliness or food poverty.

Besides their general aim, respondent’s answers also give insight on who benefits from their service in practice. Three out of four initiatives in the Netherlands are found to have a group of beneficiaries composed in a large majority by students. How the initiative is advertised and the composition of the team of volunteers seems to be the direct cause of this lack of diversity. The first come first serve rule regulates the distribution of meals and produce. Having a fixed location also influences who can benefit from the service. To deal with this obstacle, one initiative in Italy continuously moves around to do the food distribution in a different neighbourhood of the city.

The capacity of the initiative is limited by available space, time, and manpower in the reach, scale, and amount of the redistribution. The type of food available also defines what can be redistributed and when. The limited capacity of the initiatives poses limits to the extent to which greater access can be given to those who are most vulnerable. Distributing food that needs to be cooked will not be of much help to those who cannot access a kitchen. Reaching the most detached from society is difficult with the type of advertisement used by the initiatives to promote their activities. Reaching those who do not care for sustainability or food waste, and do not feel like they want to be part of the solution proposed by the initiatives, is also a limit recognized by the respondents. Through a “human security”

lens, therefore, some issues can be found analysing the fairness of the benefit allocation. The aim of most initiatives is not compatible with the prioritization of access to any specific person.

In conclusion, the initiatives seem to be guided by the justice principles of “equality” and “putting the most vulnerable first” blended together, giving space to both the prioritization of the aim and of helping those who need it. When looking at how the initiative’s aim and justice principles lie in between equality and maximization of the benefits of the vulnerable, it is especially interesting to look at the initiatives’ tendency to avoid becoming an organ of assistance. Instead of assistance, most participants show a preference for leading by example, expanding the practice, and use the food waste to give beneficiaries a new perspective on their role within food systems. The redistribution of food waste gives a framework that is conducive to a sense of agency for the citizens. From the point of view offered by the initiatives, citizens are not passive receivers in the food systems, and all can provide for themselves with dignity, within an inclusive community, directing the market with their actions. These justice principles seem to be common to all the investigated initiatives. However, the more the initiative’s focus lies on building agency among the beneficiaries, the more the principle of equality is an integrating part of the way the service is performed. When initiatives focus more on assistance, the “putting the most vulnerable first” principle is more prominent. These results are valid for both geographical contexts in which the research was performed.

The results indicate that the hypothesis that the “putting the most vulnerable first” principle would be the most predominant falls short to the complexity of the underlying burden allocation principles. The hypothesis that allocation of resources to those living in food poverty would be part of the initiatives’ service is also found to not be the case in each initiative, as respondents to three initiatives in the Netherlands reported that this is not the case in their experience. The results are consistent with the hypothesis that the initiatives would use the recuperated food as a vehicle for the creation and strengthening of human relations.

6.3. Overview of the influence of justice principles in citizen-led initiatives for food waste redistribution

The initiatives fit the concepts of food democracy and food citizenship, as defined by Booth & Coveney (2015). In fact, the participants report that the initiatives, and their participation in it, are underlined by a concern about equal access to healthy food, as well as the sustainability of the system in place to guarantee this access. Through the initiatives, participants aim to contribute to creating food democracy. The participant’s action might be considered “food citizenship”, as they actively influence the mainstream food systems. The human dimension of sharing a meal is heavily taken into consideration, in line with the idea of justice outlined by Porcellana, Stefany & Campagnaro (2020). The principles that seem to steer the initiatives are striving for inclusiveness, a utilitarian view of burden allocation (ability to pay principle), and putting the most vulnerable first while also ensuring equality in burden allocation. These findings are in line with the expectations based on the conducted literature review.

During the data analysis, it became clear that some of the justice principles influence some of the conditions for participation in several ways, and are influenced by these in return. These links are presented in the table below. For the sake of overview, the conditions for participation and some of the justice principles have been merged in categories. Influence is however specific to the single principles and conditions, as becomes clear when reading the text in the table.

Table 25: Influences between justice principles and individual conditions of participation

	Motivation	Capacity	Ownership
Inclusiveness	Shared values regarding whom should be included strengthen the community feeling.	The services provided are designed to be inclusive for the population of the city, without distinctions. A small scale is kept in place. <hr/> Inclusiveness is not ensured by institutions, so the initiative has to step in to fix that.	
Equal participation	Time investment is higher in larger initiatives with horizontal decision-making. <hr/> Attention to equal participation makes participants feel listened too, and part of a group of peers.	Flexibility in the amount of commitment asked from them enhances the capacity to participate. <hr/> Horizontal-decision making takes time, new ideas that do not reach a consensus do not make it through. Hierarchical systems are sometimes less in touch with the needs of the beneficiaries.	
Burden allocation	Expanding practices and building agency are seen as ways to enhance human security, and this is perceived as a return on the time and energy invested in the initiative.	Common steering justice principles regarding burden and benefit allocation strengthen the group identification within the community.	Peer pressure to contribute to the best of your abilities to society is experienced by several respondents, and is integral to the “ability to pay” principle as expressed by the respondents. <hr/> The participants feel like their capacity to contribute to the initiative makes them responsible to do so.
Benefit allocation	Saliency is linked to the creation of a new perspective about food systems for the beneficiaries, this perspective is often seen as a resource, which is not allocated but created together.	Food is given for a low price, a voluntary contribution, or for free. For some initiatives, building agency among beneficiaries is more important than making the service as efficient as possible in the amount of food redistributed. The initiatives’ limits in scope, reach, and access to resources influences the capacity to put the most vulnerable first and enhance human security as part of their service. <hr/> Helping the most vulnerable and sharing tools and practices are seen as something that actually makes a difference, more so than the redistribution of food.	The principle that the burden of food waste should not fall on the most vulnerable is part of the participant’s set of justice principles, which stem from their environmental values. The redistribution of benefits in the food systems is considered to be necessary for a just society in balance with the ecosystem.

Justice principles are found to influence the way the service is performed and have an impact on the eight conditions of participation. Justice principles are especially influential on the conditions of perceived salience, objective capacity, and own responsibility. The respondents report that access to healthy food is a human right, and said access should be provided through sustainable systems. This perception is fundamental to the perceived salience of the service performed by the initiative. For many, the idea that everyone in society should have the agency to contribute to sustainable food systems, as well as be aware of the practices providing access to nutritious food, are more important than operating at large scale and increasing efficiency in the amount of food recuperated. As a consequence, the objective capacity of the respondents is influenced by the need for resources that are essential to the work regarding social cohesion, discussion, sharing of practices, and creation of a diverse and inclusive environment. The importance of these goals in the services produced by the initiatives entails that the resources needed are different from the ones hypothesized to be instrumental for the objective capacity to redistribute food waste. Finally, this outlook regarding what is just and fair influences the perception of own responsibility, as many respondents reportedly find that burdens should be proportional to subjective capacity. As they are capable to actively influence mainstream food systems and increase access to information and nutritious food, they feel the responsibility to do so, which strengthens their will to participate.

Environmental values and justice principles are found to be interdependent, and justice principles appear to be at the basis of the environmental values guiding the respondents. The respondents report that mainstream food systems are not fair, as these are neither sustainable nor provide fair access to nutritious food to all members of society. This notion is intertwined with the environmental values often expressed, being that all are equally important, food is a human right, and society must shift to an existence in harmony with the ecosystem it inhabits.

The fact that these justice principles are so strongly felt is believed by the author to be of influence to the perceived salience of social cohesion and community building. The focus on empowerment and agency of the beneficiaries colours how expected returns, perceived salience, and own responsibility are perceived by the respondents. The importance of social cohesion to the participants transcends the framework by Mees (2019) and is a read tread throughout the results, regarding both individual conditions for participation and justice implications of the initiative. Further elaboration on this is presented in the next chapters.

7. Conclusion

While the governance of sustainability issues becomes increasingly participative in several European countries, insight about the individual conditions for the participation of citizens in the coproduction of public services still presents significant knowledge gaps (Mees, 2019). The study at hand focussed on coproduction of services of food waste redistribution for human consumption, using citizen-led initiatives that offer that service as a proxy. This research has studied participants of citizen-led initiatives for food waste redistribution in the Italian region Veneto and the Dutch Randstad, testing the feasibility of application of the DIY governance framework by Mees (2019) on the individual conditions for the participation of citizens coproduction in food-waste governance, and the justice implications of the public service offered by the initiatives. The research was based on a literature review, which combined DIY governance literature and food governance literature.

The literature review shows that the framework by Mees (2019) was most likely to be applicable to citizen-led initiatives for food waste redistribution. Hypotheses were made in regard to how the eight conditions would influence the participation of citizens in the initiatives. The literature review also identified contextual variables that were most likely to have an impact on the conditions. Lastly, environmental justice principles were combined with the notions of food democracy and citizenship to understand how to analyse justice in relation to citizen-led initiatives for food waste redistribution.

Interviews served to collect data about the influence of the eight conditions on the participation of the respondents in citizen-led initiatives for food waste redistribution, as well as the justice principles influencing the participants, and understanding how contextual variables have influenced their participation.

The data collected has been compared with the hypotheses derived from the literature review. The results of this comparison make it possible to answer the following research questions.

1. How are the individual conditions of motivation, capacity, and ownership operationalized for citizen initiatives in food waste redistribution?

The answer to this question is based on a review of existing academic literature and provided in the third chapter of this report. Table 26 shows in which way each condition was operationalized for the specific service of food waste redistribution.

The eight individual conditions for participation specified by Mees (2019) were found to be salient in the literature on food governance as well. However, peer pressure was found to be a possible deterrent to participation in food waste redistribution activities, more so than a condition for participation (Dang, 2014). In food waste governance the sense of own responsibility and environmental values were found to be linked to anti-consumerism and anti-capitalism sentiments in food governance (Mourad, 2016; Dang, 2014; Vaughan, 2018).

Table 26: Operationalization of the eight conditions for participation by Mees (2019), adjusted to food waste redistribution initiatives

CONDITION		OPERATIONALIZATION
1	Expected return (M1)	Participants are motivated by returns under the form of personal development and social gains.
2	Perceived salience (M2)	Food waste redistribution is perceived to be salient by the participants because it is a vehicle for social cohesion and the creation of awareness and discussion about food waste and sustainability at large.
3	Group identification (M3)	Participants feel part of a community in which they have strong bonds, space for discussion, and a welcoming feeling of support in their interests.
4	Objective capacity (C1)	Participants feel like they have the resources to collect and redistribute food waste, but lack capacity for widespread effect.
5	Subjective Capacity (C2)	Participants believe they can do their part to solve the issue.
6	Peer pressure (O1)	Participants are supported by their community in their ideas about the importance of sustainability.
7	Sense of own responsibility (O2)	Participants feel responsible for doing their part of the responsibility to solve the food waste issue, which should be shared by all in society.
8	Environmental values (O3)	Participants feel it is important to care about society and the environment and create a system that allows them to live sustainably.

2. To what extent do these conditions, and combinations thereof, stimulate the involvement of individuals in citizen-led initiatives for food waste redistribution?

The motivation condition of ‘Group identification’ and the ownership conditions of “Sense of own responsibility” and “Environmental values” are the three individual conditions of participation the participants are most vocal about. Being part of a community is essential to the motivation of the respondents, and a salient part of the expected returns. The network of people that supports conscious behaviour, the intrinsic motivation to act and be part of a movement towards a more sustainable society, and the environmental values colouring the perspective of the respondents are definitely three conditions for participation in the case of this research. Respondents cope well with low perceived salience and low subjective capacity.

Perceived salience was investigated based on the assumption that importance revolved around the direct reduction of the amount of food wasted, while the respondents give more importance to the creation of social cohesion and food democracy through the initiative. Social cohesion transcends the scope of the application of the analytical framework in this research. The integration of this aspect as an addition to perceived salience is needed. Subjective capacity was low regarding response-efficacy, higher when looking at self-efficacy. Creating a distinction between these two aspects of subjective capacity in the analytical framework is therefore advised for further research.

Looking at the differences between participants and non-participants the results show that some individual conditions are more influential than others on participation. For the conditions group identification, subjective capacity, and peer pressure there weren’t salient differences between the two groups. Regarding perceived salience, differences depended on whether the non-participant had

experienced the activities of a citizen-led initiative for food waste redistribution. Non-participants who did have this experience understood the duality of salience, being both food waste reduction and social cohesion. This enhanced the perceived salience. Anyhow, salience was perceived to be high even when regarding food waste reduction only.

The reasons not to participate are linked to three conditions for participation. All three dimensions are relevant (motivation, capacity, ownership). The lack of awareness that there is an initiative to be joined is often a reason not to join, as well as a perceived lack of time to invest. This is related to objective capacity. Furthermore, participation is influenced by how in tune with the personal interests of the individual the activities to perform food waste redistribution are. This difference is linked to the condition of “Expected returns”, as this discrepancy between personal interests and the perception of the initiative influences the expectation of enjoyment and fulfilment from participating. Finally, participation in citizen-led initiatives for food waste distribution is determined by the individual condition “sense of own responsibility” of the individual. The non-participant respondents are more likely to perceive their responsibility as linked to their own household, instead of linked to the coproduction of a public service.

Through the application of the operationalized conditions in the investigation of the experience of participants in seven initiatives, it was found that the framework is applicable to food governance coproduction, in both geographical contexts where it was applied (namely the region Veneto, in Italy, and in the Dutch Randstad). The transposition of the framework to food governance coproduction proved to be feasible. However, the dimension of group identification falls short to the need to explain the role social cohesion plays in the motivation of respondents to participate in citizen-led initiatives for food waste redistribution. Furthermore, the influence of contextual variables on objective capacity goes beyond the purely individual condition for participation individuated by Mees (2019). The sense of own responsibility, linked by Mees (2019) to the perceived role of the government, is found to be hardly influenced by the perception of the government in the case of the participants to this research. Respondents perceived responsibility strongly whether it was a reaction to the lack of action by institutional actors, or seen as part of the role of citizens in a democracy.

The results indicate that a minimum presence of conditions for motivation is necessary, as well as the presence of the environmental values condition. The research is inconclusive regarding which conditions are sufficient, meaning that the presence of that condition means that the individual will participate. The results seem to show that the combination of conditions in all three the dimensions (motivation, capacity, and ownership) is needed to ensure the participation of a citizen in coproduction of food redistribution services, but that even if a combination is present respondents still might not participate in citizen-led initiatives.

To investigate further and understand why these results are inconclusive, a larger sample of respondents is needed. Furthermore, insights could be achieved increasing the focus on why citizens choose to prioritize the participation in coproduction of a specific service instead of other activities they could dedicate their resources to. This increased focus should take place during data collection about the dimension of capacity and the dimension of ownership.

3. Which environmental justice principles are taken into account by participants in the initiatives, and how does this influence the goals and actions of the initiative?

The research looks into the justice principles underlying the coproduction of citizens in food waste governance. A distinction is made between procedural justice and distributive justice. Procedural justice within food waste governance is linked to the inclusiveness of all individuals of the community in the decision-making process, as well as the participation of all in the decision making. Distributive

justice in food waste coproduction services are related to the allocation among members of the society of the burden of manpower, costs, space, and resources needed to perform the service, as well as the allocation of food as a way to raise human security and build agency and social cohesion.

The results regarding justice principles were found to be strikingly similar in the two geographical contexts where the research was conducted. Results regarding the differences in perception of justice between participants and non-participants were outside of the scope of this research, and further research is needed to determine it.

Differences in guiding principles, and how these influence the service, are to be reconducted to the aim of the initiative. The most salient differences are given by a more prominent focus on building agency through sharing of practices, as opposed to a more prominent focus on providing assistance to those living in food poverty.

The activities of the citizen-led initiatives show that participants are guided by procedural justice principles of inclusiveness, while equal participation in the decision-making process is mostly restricted to the participants of the initiative, or even to a group among them. With respect to distributive justice, burdens are allocated to the most capable of paying. Benefits are distributed equally, but striving to give attention to the individual situations to give everyone the same possibilities to learn new practices and understand food systems from a point of view of food democracy and food citizenship. The justice principles guiding the initiatives proved to be too complex to be reconducted to “putting the most vulnerable first”. The hypothesis that the “putting the most vulnerable first” principle would be the most prominent in guiding the citizen-initiatives has therefore not been proved by the empirical analysis.

4. What are the similarities and differences in the relevance of the individual conditions between the two contexts of citizen initiatives, and how can these be explained?

The differences between the two geographical contexts in which the research has been performed are less pronounced than what was hypothesized based on the literature review. The dimension of motivation did not present differences between the two settings. Within the dimension of capacity, differences are mainly related to the influence of the context on objective capacity. Finally, differences are present regarding the conditions of peer pressure and own responsibility within the dimension of ownership. These differences regarding ownership, influence how the condition is perceived by the respondents. However, the differences regarding ownership are not salient to the influence of the condition on participation.

Overall, contextual conditions were found to have similar effects on participation in both contexts. The initiatives were perceived to be complementary to the perceived role of the government in both countries. Policies and regulations concerning food poverty and waste management were also found to be of little influence on the participants. Consumption patterns were described as influential on the salience of the food waste redistribution service. In both contexts, consumption patterns were seen as excessively wasteful, because based on convenience, price, and cosmetic standards regarding produce. The cultural and political context was blamed in both countries about lacking prioritization of the issue. Territory and place, however, did influence the participation, as the objective capacity to create spaces of social interaction was compromised by the lack of space made available for the initiatives in Veneto.

Contextual variables are found to influence the condition of objective capacity the most. The availability of space and institutional support is perceived to strongly influence how the service is offered. This influence is especially related to the objective capacity to create a public service that enhances social cohesion, more so than the capacity to redistribute food waste.

The data is not conclusive regarding the hypothesized influence of contextual variables on the participation of the respondents in the citizen-led initiatives. Further research is needed to confirm if, and how, contextual variables are of influence. The used analytical framework appears to be applicable in diverse contextual settings. However, context should be taken into account when looking at objective capacity specifically. Furthermore, further research is needed to determine the external validity of this conclusion.

5. What recommendations for incentives can be provided for the initiators of food waste redistribution initiatives and local governments to make citizens aware of and interested in joining such initiatives?

The research gave insights regarding what would enhance the potential of citizen coproduction in food waste governance, across geographical contexts.

Salient points to keep in mind when looking to enhance the potential of the initiatives are mainly in the power of the initiatives decision-making organism. Participation in citizen-led initiatives for food waste redistribution could be enhanced increasing the visibility of their initiative, not only in networks of people who are already active citizens, but also in new spaces like universities, neighbourhood community networks, and using mouth-to-mouth publicity. This will enhance the objective capacity of non-participants to start participating. Objective capacity of non-participants can also be enhanced with clear communication about time commitment and type of activities. Time commitment is probably best held flexible to avoid reducing the capacity of participants to commit. It seems to be important to highlight the diversity of topics and activities which are part of the initiative's action, which enhances the expected returns of non-participants by clarifying the diverse gratifications and personal development possibilities that can be expected as a consequence of participation.

To enhance the continued participation of participants in citizen-led initiatives for food waste redistribution once they have joined, the condition of 'Group identification' is very important, and incentivizing participation in decision making by all participants can be a way to enhance that, as equal participation makes the participants feel part of an inclusive group of peers where their voices are heard. Making the decision-making process accessible is important. This doesn't only mean that it should be open to those who want to join. Partaking in decision making could be made more accessible diversifying the forms through which it is done. Group chats, information readily available, a person to whom ideas and doubts can be communicated, and structural inquiry into the opinions of participants, beneficiaries, and retailers are found to be practices that help equal participation, and inclusiveness as a consequence. Having a clear aim and vision for the initiative is also a basic necessity for swift decision-making processes.

Regarding the effectiveness and justice implications of the initiatives, the focus on sharing and learning from each other is found to be more efficient than assistance in keeping a focus on awareness creation, which is essential to enhance the sustainability of food waste governance (Zapata Campos and Zapata, 2017). Structural attention for communication, information, and welcoming beneficiaries to join the

moments of food collection are good first steps to enhance this. Expanding the practices to new people or initiatives is also beneficial.

Looking at external actors, the potential of the initiatives can be enhanced with clear communication to retailers about the redistribution services offered by citizen-led initiatives. Collaboration with actors external to the citizen-led initiatives could be key to spread awareness about the issue, incentivizing visibility of the initiatives, and ensuring, to enhance objective capacity. Initiatives seem to thrive when part of a close network of associations and actors. The discussion of this research, presented in chapter 8, presents the recommendations for the enhancement of the potential of citizen coproduction in food waste governance based on the findings presented here.

In conclusion, the research question: “Why do citizens engage in DIY governance for food waste redistribution?” can be answered. Looking at the respondents in this research, engagement in DIY governance for food waste redistribution is thought to stem from the ideal among the participants that the food waste systems are profoundly wasteful and unfair. The harmful externalities of the system are perceived to be useful to create social cohesion and generate practices of empowerment and capability for consumers to influence the systems. This ideal and perception have to be paired up with the sense that it is fulfilling and enjoyable to act upon the sense of responsibility to act to solve the issue. This sense of fulfilment and enjoyability are intertwined with identification with the participants in the community inside the initiative. These findings conduce to the conclusion that motivation, capacity, and ownership all have to be present for participation to occur. The conditions of group identification are essential for continuous participation once joined, while the perception of own responsibility, linked to the justice principle of burden allocation to those ablest to pay is a necessary condition for participation. Strong environmental values, in line with the principles of food democracy by Booth & Coveney (2015), are also necessary conditions for participation.

8. Discussion

In conclusion, it is worthwhile to reflect on the strengths and weaknesses of the research. In this chapter, the technical research design, approach, and meaningfulness of the results of this case study research are discussed. Recommendations are given based on these reflections.

Technical research design

Some of the limitations of this research are a consequence of the time constriction and travel constriction imposed by external factors. A more participatory research design would have strengthened operational and internal validity (as defined by Yin, 2018), but was hindered by the travel ban posed in 2020 due to the COVID-19 crisis.

During the pandemic, a lack of willingness to participate was encountered among participants of the initiatives and this posed an obstacle to achieve the same depth of understanding for each initiative. Performing the comparative analysis would have been more fruitful if the analysis could have been carried out at the initiative level, instead of looking at the individual respondent level. Taking the initiative as a case study, which was the originally selected research design, was expected to facilitate the detection of links between individual experiences of the participants and the initiative as a whole. The influence of individual conditions for participation and individual perception of justice principles on the aim of the initiative, as well as on how the service is performed, would also be more visible when conducting the analysis on the initiative level. It would enhance the comparability of the cases, as well as the possibility to understand how the individual experiences fit in the initiative as a whole. The level of aggregation of data in this research, on the contrary, makes the analysis useful to understand the similarities among the investigated initiatives, not the differences between them. As the experiences of participants of different initiatives are analysed within one case study, the generalization of the data shows what is common to them all, while initiative-specific characteristics go undetected because of the small number of respondents for each initiative.

Research framework

The design and performance of this research, which combines Mees' (2019) framework with food governance literature, present limitations that should be considered when looking at the results and conclusion. In the case of this research, operationalization is valid but limited. In fact, dimensions and factors are operationalized with the aim to analyse participation in the creation of a public service, while it has become clear that this point of view is not all-encompassing for the topic at hand. Food waste governance appears to have a dimension of social structures and human dignity (Porcellana, Stefani & Campagnaro, 2020) that is not fully captured by the operationalization of the analytical framework of individual conditions for participation used in this research. However, this dimension appeared to be prominent through the empirical data analysis and is highlighted in the results and conclusion of this research. Further research is needed to fully understand how this social dimension influences participation in citizens' coproduction for food waste governance, and the underlying justice principles of said coproduction. Social cohesion, the creation of social structures, and the dimension of human dignity in food governance have an influence on motivation, capacity, and ownership. Therefore, these should be prominent in the operationalization of the framework by Mees (2019), or any other framework used to analyse participation in DIY governance for food waste redistribution. It could also be viewed as an entirely new dimension, specific to the importance of social structures and human dignity to participation, to be integrated in Mees' framework (2019) with attention to how it relates to the three dimensions already established.

For that integration aim, an interesting new angle could be obtained by integrating the framework by Mees (2019) with research from the point of view of "commoning", as defined by Bollier & Helfrich

(2015). This point of view relates to the concept of commons as defined by Ostrom (2010). The research about commoning is much more apt at taking into account empathy, social relationships, and culture than most behaviouristic schools (Bollier & Helfrich, 2015). This approach makes it an important complementation to the results of this research. Food waste redistribution, in fact, appears to be a topic that needs to be studied from a generative and reciprocity point of view, more so than as a service provided. The *“commons transition plan: food”* shows that in the Netherlands links are starting to be drawn regarding the concepts of neighbourhood networks, citizen-led initiatives, and commons food, as well as regarding the topics of health, space, finance, energy, and digitalization (Commons Network Team, 2020).

The generative and reciprocity point of view would also be important additions to the justice principles framework. The underlying justice principles transcend the operationalization of either equity, or “most vulnerable first”, or human security, especially in regard to distributive justice. This can be explained by looking at how most of the interviewed participants did not want to “allocate benefits and burdens”, and instead create a new perspective on food waste governance together with the beneficiaries of the service.

Reflection on results

The results are consistent across participants and cases, and the quantitative and qualitative data are consistent with each other. Standard variation is generally accounted for in the explication of the results. However, as this framework is still being developed and adjusted, reliability should be checked by comparing the results with other cases and repeating the research in time.

The use of in-depth interviews has made it possible to understand the personal narratives and connections made by the respondents themselves. These connections are complex and often transcend the topic and aim of the research, but have been explained in this report to the best capacity of the author. The results point out that the framework by Mees (2019) can be used to investigate participation in citizen-led initiatives for food waste and show what type of information can be collected using this framework. There is no claim that the results are generalizable. The results can be compared to similar research to prove by pattern matching whether the conclusions drawn are valid for other cases outside the investigated ones. By looking at respondents’ experiences individually, and then aggregating data collected from participants in various initiatives together, the results are based on data that does reflect the differences and similarities encountered. The variety in age, sex, nationality, and occupation of the respondents also strengthens the validity of the research (Baarda, et al., 2013).

Even with the limitations of the technical research design mentioned above, the research does contribute to the existing body of literature about participative food governance. Drawing a link between environmental justice, contextual variables, and the different dimensions that have to be in place in order for citizens to participate, this research created a broad overview of the different aspects that influence the potential of participatory food governance. Applying the framework by Mees (2019) to initiatives that are not only concerned with climate services provision, proves the effectiveness of a research tool which can be instrumental in understanding how to incentivize the motivation and agency in relation to active citizenship. Finally, conducting in-depth interviews with citizens who are concerned, and are investing in the creation of generative and sustainable solutions within society, has been an effective way to understand what does encourage them, and what could encourage others. The combination of this data with generalizable, quantitative information makes this research design a promising tool to investigate the potential of DIY governance if replicated.

The results of this research provide information regarding why citizens participate in citizen-led initiatives for food waste redistribution. The recommendations based on that information can be useful in enhancing participation. The results can also be used by the involved initiatives to spark discussion and reflection on their action, on the motivation, capacity, and ownership of their participants, and about the vision and aim they set out to achieve. These reflections will hopefully strengthen the initiatives, enhancing their capacity to relate to the beneficiaries, as well as to the other actors involved in food governance.

Recommendations for further research

By testing out the feasibility of the application of the framework by Mees (2019) to coproduction in food waste governance, this research is a contribution to the understanding of how DIY governance can be researched. Further research is needed to look into the effectiveness of the initiatives, and to investigate the influence of contextual variables. To this end, applying SWOT analysis at the citizen-led initiative level would provide relevant information. SWOT analysis maps the strengths, weaknesses, opportunities, and threats of an organization (Gürel, & Tat, 2017). It would aid the comparative analysis of the initiatives and understand the differences in the potential of the various practices used in each of them, therefore providing a useful tool to give advice about how to steer a citizen-initiative for food waste redistribution.

The MUFPP provides both a very relevant sample of 2010 signatory cities, as well as a detailed monitoring framework (FAO, 2019). The framework includes 44 indicators that deal with food waste (indicators 41-44) and social and economic equity (indicators 18-24). Therefore, within the context of the MUFPP monitoring framework there seems to be ample room for deepening the present case study approach in relation to local policies and initiatives that relate to socially vulnerable groups and food redistribution.

At the international level, the way issues of equity and social justice are conceptualized and monitored is being questioned by scholars and multilateral institutions. In his report to the 44th session of the UN Human Rights Council, the special rapporteur on extreme poverty and human rights, Philip Alston (2020), talks of an “unrealized transformative potential”. According to Alston, human rights are yet to be fully integrated into the sustainable development agenda, beginning with SDGs. Specific attention should be paid to civil society engagement in relation to the sustainability agenda, including the ways transformative actions are being monitored and related to a theory of change spelled out in terms of empowerment, funding, partnership, and accountability. Alston’s main criticism provides a significant framework for valuing Do-It-Yourself initiatives, claiming that the current sustainability agenda should explicitly address the reduction of inequalities and work towards inclusive development by addressing wealth redistribution. Such recommendations suggest a key role for research on DIY governance in identifying dimensions of subsidiarity and citizen-led initiatives that frame social inequalities within the wider context of citizens agency.

Combined with the indicators formulated by MUFPP (FAO, 2019), this perspective suggests an agenda for comparative studies and sharing of best practices at the municipality level. Such agency is not yet explicit across the MUFPP indicators, nor the framework used in this research. By enhancing the theory of change elements gathered through this and similar studies, it would be possible to revise the MUFPP indicators taking into account and providing an explicit dimension to the citizens' agency.

This study proved that new insights are provided when adapting the framework by Mees (2019) to a new type of service, being food waste redistribution in this case. In order to deepen the understanding of participation in DIY governance, and underlying justice principles to participation, comparative studies could be performed in regard to different types of initiatives, even comparing citizen-led

initiatives which provide entirely different services to achieve a more generalized view, useful to understand whether conditions are comparable in participants to entirely different initiatives. More attention to the comparison between participants and non-participants is needed, i.e. broadening the number of non-participants included in a study and using a combination of quantitative and qualitative data collection for non-participants as well as participants. As mentioned above, both comparative studies at a municipality level and comparative studies at the single citizen-led initiative level are expected to be useful additions to the present body of academic literature.

Recommendations for initiators and key institutional actors

On the basis of the research at hand, advice can be formulated in regard to policy and managerial implications.

Citizens' coproduction in food waste governance shows potential in giving a social value to food waste. This service can be enhanced by local governments through institutional support under the form of space allocation, permits, and visibility. The potential initiators of initiatives can enhance the potential benefit of the public service they want to provide by focussing on equal participation to the decision making, and designing the service to be small scale and focussed on using food as a vehicle for the creation of agency among citizens, and social cohesion. Participation in citizen-led initiatives for food waste redistribution can be enhanced by advertising the initiative through multiple channels, focussing on the variety of activities performed by participants, and the flexibility of the time commitment. Local governments, initiators, and participants can all benefit from the creation and maintenance of links of communication and cooperation among different actors and different types of citizen-led initiatives.

To strengthen motivation and ownership, information about the role of citizen coproduction in democracies could be communicated through informational campaigns about coproduction of services and expressions of support to the activities performed locally by citizen-led initiatives. Support, not only expressed but also through regulative and financial policy measures, could enhance capacity. Permits, space, and funding could be made accessible by local governments.

However, the amount of food waste created as an externality of the food systems is too big to be handled by citizen-led initiatives alone. Institutional actors are deemed to be needed by the citizens taking responsibility for the management of this externality. Tackling food waste needs to be prioritized and taken into account when crafting policies and regulations that influence food production and distribution, even indirectly. The initiatives' participants experience can be useful in understanding how to tackle this wasteful issue. Cooperation between local governments and citizen-led initiatives could provide the resources and know-how to enhance the objective capacity of both parties to help solve the issue. Managerial attention on how to enhance citizens' environmental values and sense of responsibility for the wellbeing of the community would be beneficial, as this research points out how essential it is for coproduction of services tackling social and environmental issues.

References list

- Alford, J. (2009). Engaging public sector clients. *From Service Delivery to Co-production*. Houndmills, Hamps and New York, NY: Palgrave Macmillan.
- Alston, P. (2020). The parlous state of poverty eradication: Report of the Special Rapporteur on extreme poverty and human rights (A/HRC/44/40). United Nations. Retrieved from <https://srpoverty.org/thematic-reports/>
- Aschemann-Witzel, J., De Hooge, I. E., Rohm, H., Normann, A., Bossle, M. B., Grønhøj, A., & Oostindjer, M. (2017). Key characteristics and success factors of supply chain initiatives tackling consumer-related food waste—A multiple case study. *Journal of cleaner production*, 155(2), 33-45. <https://doi.org/10.1016/j.jclepro.2016.11.173>
- Azjen, I. (1991). *The Theory of Planned Behavior*. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.
- Baarda, B., Bakker, E., Fischer, T., Julsing, M., Peters, V., van der Velden, T., & de Goede, M. (2013). *Basisboek kwalitatief onderzoek: Handleiding voor het opzetten en uitvoeren van kwalitatief onderzoek*. Noordhoff Uitgevers.
- Bee, C., & Villano, P. (2015). Active citizenship in Italy and the UK: Comparing political discourse and practices of political participation, civic activism and engagement in policy processes. In Barret, M. & Zani, B. (2015) *Political and civic engagement: Multidisciplinary perspectives*, (p.p.750-775). New York New York: Routledge.
- Bertuzzi, N. (2019). Political Generations and the Italian Environmental Movement (s): Innovative Youth Activism and the Permanence of Collective Actors. *American Behavioral Scientist*, 63(11), 1556-1577. <https://doi-org.proxy.library.uu.nl/10.1177/0002764219831735>
- Bollier, D., & Helfrich, S. (2015). *Patterns of commoning*. Commons Strategy Group and Off the Common Press.
- Bureau National Ombudsman (2018) *Burgerinitiatief: waar een wil is..* Rapport nr 2018/020. Retrieved from <https://www.nationaleombudsman.nl/>
- Cacciari, P. (2018). Economie solidali creatrici di comunità ecologiche. *Scienze del Territorio*, 6, 60-69. DOI: 10.13128/Scienze_Territorio-24367. Firenze University Press.
- Casaglia, A. (2018). Territories of struggle: Social centres in northern Italy opposing mega-events. *Antipode*, 50(2), 478-497. DOI: 10.1111/anti.12287
- Cecere, G., Mancinelli, S., Mazzanti, M. (2014) Waste prevention and social preferences: the role of intrinsic and extrinsic motivations. *Ecological Economics*, 107, 163-176. DOI: 10.1016/j.ecolecon.2014.07.0070921-8009/
- Cialdini, R. B. (2007). Descriptive social norms as underappreciated sources of social control. *Psychometrika*, 72(2), 263. DOI: 10.1007/s11336-006-1560-6
- Cohen, R. L. (1987). Distributive justice: Theory and research. *Social justice research*, 1(1), 19-40. 0885-7466/87/03009J019505.00/I
- Commons Network Team. (2020, July 20). Commons Transitie Plan Amsterdam. Commons Network. <https://www.commonsnetwork.org/news/commons-transitie-plan-amsterdam/>

- Corrado, S., Caldeira, C., Eriksson, M., Hanssen, O. J., Hauser, H. E., van Holsteijn, F., ... & Stenmarck, Å. (2019). Food waste accounting methodologies: Challenges, opportunities, and further advancements. *Global food security*, 20, 93-100. <https://doi.org/10.1016/j.gfs.2019.01.002>
- Dang, K. L. (2014). Recover, Redistribute, and Reduce: Food Waste in the Stanford Community. Intersect: *The Stanford Journal of Science, Technology, and Society*, 7(1). <http://ojs.stanford.edu/ojs/index.php/intersect/article/view/547/477>
- Dekker, P. (2004). 7. The Netherlands: from private initiatives to non-profit hybrids and back? In Evers, A. & Laville, J. L. (2004) *The third sector in Europe* (p.p. 144-165). Cheltenham (UK): Edward Elgar
- Dirth, E., Biermann, F., & Kalfagianni, A. (2020). What do researchers mean when talking about justice? An empirical review of justice narratives in global change research. *Earth System Governance*, 100042. <https://doi.org/10.1016/j.esg.2020.100042>
- Eriksson, M., & Strid, I. (2013). *Svinnreducerande åtgärder i butik. Effekter på kvantitet, ekonomi och klimatpåverkan*. Rapport 6594. From <https://www.livsmedelsverket.se>
- FAO. (2019). *The Milan urban food policy pact monitoring framework*. Retrieved from <http://www.milanurbanfoodpolicypact.org>
- Forum Disuguaglianze Diversità. (2019). 15 proposte per la giustizia sociale. Retrieved from: <https://www.forumdisuguaglianzediversita.org>
- Galli, F., Cavicchi, A., & Brunori, G. (2019). Food waste reduction and food poverty alleviation: a system dynamics conceptual model. *Agriculture and human values*, 36(2), 289-300. <https://doi.org/10.1007/s10460-019-09919-0>
- Garcia-Garcia, G., Woolley, E., & Rahimifard, S. (2015). A framework for a more efficient approach to food waste management. *International Journal of Food Engineering*, 1(1), 65-72. DOI: 10.18178/ijfe.1.1.65-72
- George, C., & Reed, M. G. (2017). Revealing inadvertent elitism in stakeholder models of environmental governance: assessing procedural justice in sustainability organizations. *Journal of Environmental Planning and Management*, 60(1), 158-177. <https://doi-org.proxy.library.uu.nl/10.1080/09640568.2016.1146576>
- Gifford, R. (2011). The dragons of inaction: Psychological barriers that limit climate change mitigation and adaptation. *American Psychologist*, 66, 290–302 DOI: 10.1037/a0023566
- Graham-Rowe, E., Jessop, D. C., & Sparks, P. (2014). Identifying motivations and barriers to minimising household food waste. *Resources, conservation and recycling*, 84, 15-23. <https://doi.org/10.1016/j.resconrec.2013.12.005>
- Grothmann, T., Grecksch, K., Wings, M., & Siebenhüner, B. (2013). Assessing institutional capacities to adapt to climate change: integrating psychological dimensions in the Adaptive Capacity Wheel. *Natural Hazards and Earth System Sciences*, 13(12), 3369-3384. DOI:10.5194/nhess-13-3369-2013
- Gupta, J. & Lebel, L., (2010) Access and allocation in earth system governance: water and climate change compared. *Int. Environ. Agreements* 10(4), 377-395. <https://doi.org/10.1007/s10784-010-9139-1>

- Gürel, E., & Tat, M. (2017). SWOT analysis: a theoretical review. *Journal of International Social Research*, 10(51). <http://dx.doi.org/10.17719/jisr.2017.1832>
- Hamilton-Webb, A., Manning, L., Naylor, R., & Conway, J. (2017). The relationship between risk experience and risk response: a study of farmers and climate change. *Journal of Risk Research*, 20(11), 1379-1393. DOI 10.1080/13669877.2016.1153506
- Harvey, J., Smith, A., Goulding, J., & Illodo, I. B. (2019). Food sharing, redistribution, and waste reduction via mobile applications: A social network analysis. *Industrial Marketing Management*, 88, 437-448. <https://doi.org/10.1016/j.indmarman.2019.02.019>
- Jakobsen, M., & Andersen, S. C. (2013). Coproduction and equity in public service delivery. *Public Administration Review*, 73(5), 704-713. DOI: 10.1111/puar.12094
- Janmaimool, P. (2017). Application of protection motivation theory to investigate sustainable waste management behaviors. *Sustainability*, 9(7), 1079. <https://doi.org/10.3390/su9071079>
- Katajajuuri, J. M., Silvennoinen, K., Hartikainen, H., Heikkilä, L., & Reinikainen, A. (2014). Food waste in the Finnish food chain. *Journal of Cleaner Production*, 73, 322-329. <https://doi.org/10.1016/j.jclepro.2013.12.057>
- Keessen, A.M, Hamer, J.M., Van Rijswick, H.F.M.W., & Wiering, M. (2013). The concept of resilience from a normative perspective: examples from Dutch Adaptation Strategies. *Ecology and Society*, 18(2), 45. <http://dx.doi.org/10.5751/ES-05526-180245>
- Klein, J., Araos, M., Karimo, A., Heikkinen, M., Ylä-Anttila, T. & Juhola, S. (2018). The role of the private sector and citizens in urban climate change adaptation: Evidence from a global assessment of large cities. *Global Environmental Change*, 53, 127-136. <https://doi.org/10.1016/j.gloenvcha.2018.09.012>
- Levkoe, C.Z. & Wakefield, S., 2014, Understanding contemporary networks of environmental and social change: complex assemblages within Canada's 'food movement'. *Environmental Politics*, 23(2), 302–320. doi:10.1080/09644016.2013.818302.
- Mees (2019) Do-It-Yourself Governance for Climate Change. Conditions, effects, and justice implications. [unpublished]
- Michels, A. M. (2006). Citizen participation and democracy in the Netherlands. *Democratization*, 13(02), 323-339. <https://doi-org.proxy.library.uu.nl/10.1080/13510340500524067>
- Ministerie van Algemene Zaken. (2019, October 2). Nederlanders op koers in strijd tegen voedselverspilling. Nieuwsbericht | Rijksoverheid.NI. Retrieved from: <https://www.rijksoverheid.nl/actueel/nieuws/2019/10/03/nederlanders-op-koers-in-strijd-tegen-voedselverspilling>
- Ministerie van Landbouw, Natuur en Voedselkwaliteit. (2020, January 2). Vermindering voedselverspilling. Voeding | Rijksoverheid.NI. Retrieved from: <https://www.rijksoverheid.nl/onderwerpen/voeding/vermindering-voedselverspilling>
- Mourad, M. (2016). Recycling, recovering and preventing “food waste”: competing solutions for food systems sustainability in the United States and France. *Journal of Cleaner Production*, 126, 461-477. <https://doi.org/10.1016/j.jclepro.2016.03.084>

- Nobile, B. (2017, June 1). Normativa anti spreco alimentare. Rassegna delle leggi regionali: aggiornamento. FARE - Food and Agriculture REquirements. Retrieved from: <https://www.foodagriculturerequirements.com>
- Ostrom, E. (2010). Beyond markets and states: polycentric governance of complex economic systems. *American Economic Review*, 100(3), 641-72. DOI: 10.1257/aer.100.3.641
- Ortega-Egea, J.M., García-de-Frutos, N. & Antolín-López, R. (2014). Why Do Some People Do “More” to Mitigate Climate Change than Others? Exploring Heterogeneity in Psycho-Social Associations. *PLOS ONE*, 9(9), e106645. <https://doi.org/10.1371/journal.pone.0106645>
- Papargyropoulou, E., Lozano, R., Steinberger, J. K., Wright, N., & bin Ujang, Z. (2014). The food waste hierarchy as a framework for the management of food surplus and food waste. *Journal of cleaner production*, 76, 106-115. <https://doi.org/10.1016/j.jclepro.2014.04.020>
- Pattberg, P., & Zelli, F. (2016). *Environmental politics and governance in the Anthropocene: Institutions and legitimacy in a complex world*. London and New York. Routledge.
- Pickvance, C. G. (2001). Four varieties of comparative analysis. *Journal of housing and the built environment*, 16(1), 7-28. <https://doi.org/10.1023/A:1011533211521>
- Planchenstainer, F. (2013). 'They Collected What Was Left of the Scraps': Food Surplus as an Opportunity and Its Legal Incentives. *Trento Law and Technology Research Group-Research Paper*, (13). <http://www.lawtech.jus.unitn.it>
- Porcellana, V., Stefani, S., & Campagnaro, C. (2020). “A Torino non si muore di fame”. Riflessioni antropologiche su cibo e povertà estrema. *Dada Rivista di Antropologia post-globale* 1(1), 91-106. <https://iris.unito.it>
- Reduce Project. (2019). REDUCE Project: Research, Education and Communication. Retrieved from: <https://www.sprecozero.it>
- Regione Veneto - Azienda Ulss 9 Scaligera. (2019, July 17). Procedure per il recupero e redistribuzioni delle eccedenze alimentari. DIPARTIMENTO DI PREVENZIONE SIAN. Retrieved from: <https://sian.aulss9.veneto.it>
- Rogers, R. W., & Prentice-Dunn, S. (1997). Protection motivation theory. In Gochman, D.S. (1997), *Handbook of health behavior research 1: Personal and social determinants* (pp. 113-132). New York, NY, US: Plenum Press.
- Seawright, J., & Gerring, J. (2008). Case selection techniques in case study research: A menu of qualitative and quantitative options. *Political research quarterly*, 61(2), 294-308. DOI: 10.1177/1065912907313077
- Secondi, L., Principato, L., & Laureti, T. (2015). Household food waste behaviour in EU-27 countries: A multilevel analysis. *Food policy*, 56, 25-40. <https://doi.org/10.1016/j.foodpol.2015.07.007>
- Shantz, J. (2005). One person's garbage... Another person's treasure: Dumpster diving, freeganism, and anarchy. *In Verb*, 3(1). DOI: 10.1.1.603.1451
- Sheeran, P., & Webb, T. L. (2016). The intention–behavior gap. *Social and personality psychology compass*, 10(9), 503-518. <https://doi.org/10.1111/spc3.12265>

Stevenson, Peterson & Bondell (2019) The influence of personal beliefs, friends, and family in building climate change concern among adolescents. *Environmental Education Research*, 25(6), 832-845, DOI: 10.1080/13504622.2016.1177712

Thøgersen, J. (2017). Sustainable food consumption in the nexus between national context and private lifestyle: A multi-level study. *Food Quality and Preference*, 55, 16-25.
<https://doi.org/10.1016/j.foodqual.2016.08.006>

Uitermark, J., & Duyvendak, J. W. (2008). Citizen participation in a mediated age: neighbourhood governance in the Netherlands. *International Journal of Urban and Regional Research*, 32(1), 114-134. DOI:10.1111/j.1468-2427.2007.00743.x

van Valkengoed, A. M., & Steg, L. (2019). Meta-analyses of factors motivating climate change adaptation behaviour. *Nature Climate Change*, 9(2), 158-163.
<https://doi.org/10.17605/OSF.IO/G2JC3>.

Vaughan, B. J. (2018). Combating Food Waste: Dumpster Diving as a Form of Consumer Resistance. *Bridges: An Undergraduate Journal of Contemporary Connections*, 3(1), 1.

Verschuere, B., Brandsen, T., & Pestoff, V. (2012). Co-production: The state of the art in research and the future agenda. *Voluntas: International Journal of Voluntary and Nonprofit Organizations*, 23(4), 1083-1101. http://scholars.wlu.ca/bridges_contemporary_connections/vol3/iss1/1

Verschuere, B., Vanleene, D., Steen, T., & Brandsen, T. (2018). Democratic co-production: Concepts and determinants. In Brandsen, T., Verschuere, B., & Steen, T. (2018). *Co-Production and Co-Creation: Engaging Citizens in Public Services* (Routledge Critical Studies in Public Management) (1st ed.). New York, Routledge. DOI:10.4324/9781315204956

Vittuari, M., Politano, A., Gaiani, S., Canali, M., & Elander, M. (2015). *Review of EU Member States legislation and policies with implications on food waste*. ISBN : 978-94-6257-525-7

Vicenzareport. (2017, October 6). Dal Veneto meno sprechi di cibo e più solidarietà. Vicenzareport - Notizie, Cronaca, Cultura, Sport Di Vicenza e Provincia. <https://www.vicenzareport.it>

Voedingscentrum. (2020). Encyclopedie: Voedselverspilling. Retrieved August 6, 2020, from <https://www.voedingscentrum.nl/encyclopedie/voedselverspilling.aspx#blokwelke-rol-speelt-voedselveiligheid-bij-verspilling?>

Voorberg, W.H., Bekkers, V.J.J.M. & Tummers, L.G. (2015). A Systematic Review of Co-Creation and CoProduction: Embarking on the social innovation journey. *Public Management Review*, 17(9), 1333-1357.

Vlaholias, E., Thompson, K., Every, D., & Dawson, D. (2015). Charity starts... at work? Conceptual foundations for research with businesses that donate to food redistribution organisations. *Sustainability*, 7(6), 7997-8021. DOI:10.3390/su7067997

Yin, R. K. (2018). *Case study research and applications: Design and Methods* (6th Ed). Thousand Oaks, California: SAGE.

Zapata Campos, M.J. & Zapata, P. (2017) Infiltrating citizen-driven initiatives for sustainability, *Environmental Politics*, 26(6), 1055-1078, DOI: 10.1080/09644016.2017.1352592

Appendix 1: Interview with participants in citizen-led initiatives

Declaration of informed consent

Information and aim: This interview is part of my master thesis research, the aim is to understand why citizens participate in citizen-led initiatives for food waste redistribution. The interview is used for me to gather data about your experience, the conditions to your participation, the influence of context on your experience, and the way you think about environmental justice.

Participation: The interview will take around an hour and a half. There are questions about the themes of motivation, capacity and sense of ownership of the problem; as well as statements to which I will ask you to express your agreement (1= not at all; 5= absolutely). Afterwards, I have some questions about the context in which the initiative was created, and the way decisions are made within the initiative.

Privacy: I ask you for the consent to record and transcribe your answers. Your name will not be put in connection with the information, and this interview will only be discussed with my thesis supervisor.

Verbal consent registered?

Personal information

1. Age
2. Occupation
3. Studies
4. City of residence
5. Period of activity with the initiative

Introduction

1. Could you tell me a bit about the initiative?
2. What is the aim of the initiative?
3. How did you hear about the initiative?
4. What did they know about the food-waste issue before joining?
5. When did you join?
6. What do you do within the initiative?
7. Do you see it as a long term commitment?

Factors determining participation

- Motivation

What is your main motivation to join this initiative?

1. Expected return
 - a. Is there a return in exchange for your participation?
 - i. Material?
 - ii. Sustainability?
 - iii. Habits of people changing?
 - iv. Information learned?
 - b. Would you participate if there wasn't any return?
 - c. Statements
 - i. I expect to gain something from participating in the initiative
 - ii. The expected returns from participating in the initiative motivate me to participate
 - iii. I wouldn't participate in the initiative if I didn't expect to gain something in return for my effort
 - iv. I expect a return from my effort under the form of food
 - v. I expect a return from my effort under the form of saved money

vi. I expect my effort to increase awareness about food waste

2. Salience

- a. Why is the initiative important?
 - i. Direct effect?
 - ii. Indirect effect?
 - iii. Importance in the process of solving food waste?
- b. How does this importance motivate you to participate?
- c. Would you participate if you didn't think food waste redistribution was important?
- d. Statements
 - i. I think the direct effect of the initiative is important
 - ii. I think the indirect effect of the initiative is important
 - iii. Redistribution of food waste through citizen-led initiatives is an important part of solving the issues related to food waste
 - iv. I think food waste redistribution by citizens can reduce food waste
 - v. I think food waste redistribution by citizens can reduce food poverty
 - vi. The importance of food waste redistribution services by the initiative motivates me to participate
 - vii. I wouldn't participate in the initiative if I didn't think citizen-led initiatives were an important part of solving the issues related to food waste

3. Group forming

- a. Do you feel part of a community within the initiative?
- b. Did you find likeminded people within the initiative?
- c. Other reasons for community forming?
- d. How important is the social aspect to you?
- e. Did you expect a community to form?
- f. Would you participate if it hadn't ?
- g. Statements
 - i. Participating in the initiative gives me the opportunity to be with likeminded people
 - ii. A community has formed within initiative
 - iii. Being with likeminded people motivates me to participate
 - iv. If I hadn't found a community of likeminded people in the initiative, I wouldn't have participated

• Capacity

How do you operate within the initiative?

1. Objective capacity?

- a. What is needed to be able to perform the service?
 - i. Resources?
 - ii. Network?
 - iii. Bureaucracy?
- b. How hard is it for citizens to do this?
- c. Which limits do you encounter?
- d. How do you handle obstacles?
- e. Do you think this is the most effective way to reach your aim? Are there other actors who could do it?
- f. Statements
 - i. I have enough knowledge to be part of solving the food waste issue
 - ii. I have enough resources to act to help solve the food waste issue
 - iii. I have a network that helps me to solve the food waste issue
 - iv. The initiative is effective in reaching it's goal

2. Subjective capacity

- a. Do you feel like participating you are making a difference in making the food production and distribution system more sustainable?
- b. Do you feel like a citizen can make a difference in regard to sustainability?
- c. Statements
 - i. I think I can contribute to the transformation of food waste systems
 - ii. I participate in the initiative because I feel capable of making a difference
 - iii. I wouldn't participate if I didn't feel able to make a difference

- Ownership

Is it your responsibility to offer this service and help make food systems more sustainable?

1. Peer pressure
 - a. What are the sustainability norms among the people in your life? And about active citizenship?
 - i. Are there people around you that motivate you to behave sustainably?
 - b. How did this influence you?
 - c. How is the initiative seen in your network?
 - d. How did this influence you?
 - e. Statements
 - i. There are social norms that guide me to act sustainably
 - ii. People around me influence my behaviour
 - iii. I don't think I should avoid food waste redistribution because of the disapproval of others
2. Sense of own responsibility
 - a. To which extent is it your responsibility to create societal change? Why?
 - b. Whose is the responsibility to make food systems more sustainable?
 - c. Statements
 - i. I am responsible of helping the society to become more sustainable
 - ii. I am responsible of taking care of the ecosystem
 - iii. I wouldn't participate in the initiative if I didn't feel the moral obligation to care for the environment
3. Environmental values
 - a. How do you feel about social structures like capitalism and consumerism? Does this influence your behaviour?
 - b. What are your values in regard to sustainability and the environment?
 - c. Statements
 - i. I think consumption patterns should be more sustainable
 - ii. I think the current economic model is unsustainable
 - iii. I think we, as a society, should try and ensure future generations will be able to live inharmony with the ecosystem
 - iv. Enhancing sustainable consumption is a reason for me to participate in the citizen led initiative
 - v. Taking care of the environment is a reason for me to participate in the initiative

Context

Are there any relations between citizen action against food waste and the local context where the activities take place you can think of?

1. Can you tell me anything about the legal aspects of the activities you participate in
2. To which extent are you aware of any governmental action that aims at doing something similar to your initiative?
3. To which extent are there regulation and policies in place to help reduce food waste and food insecurity?
4. To which extent do local consumption patterns play into the issue in your opinion?
5. Does culture play into the issue?

6. To which extent do local politics influence food waste in your opinion?

Justice

1. How are decisions made in the initiative?
2. What do you take into consideration when making decisions?
3. What kind of image do you want the initiative to have?
4. Who participates in decision making within the initiative?
5. How/to what extent are the vulnerable people who receive the food/dinners involved in the (decision-making of) your initiative?
6. How is influence on decision making distributed? Who ultimately decides?
7. Who makes an effort in the initiative? How?
8. Which benefits does the initiative produce?
 - a) Vendors?
9. Who benefits from the initiative? How?
10. How are the benefits from the initiative distributed? Who is taken into account?
11. Are any prioritizations made when you distribute the benefits? If yes, how and who?
12. To which extent does your initiative help vulnerable people to have a better standard of living? Is this a goal of the initiative in your opinion?
13. To what extent are you reaching the most vulnerable people in your neighbourhood with your initiative? Is there a group of people that is left out, or cannot be reached?
14. Do you think the initiative contributes to a more just society?
15. To what extent do you believe that your initiative helps to reduce existing inequalities in your community/neighbourhood?

Conclusion

1. Questions or comments?
2. Feedback?
3. Do you know anyone that I could interview which is not a participant in the initiative
4. Thank you
5. What will happen with the data
6. Would they like to receive info about the finished research?
7. Reminder that I am available for questions or comments in the future

Appendix 2: Interview with non-participants

Information and aim: This interview is part of my master thesis research, the aim is to understand why citizens participate in citizen-led initiatives for food waste redistribution. The interview is used for me to gather data about your experience with said initiatives (or lack thereof). Thanks to your interview, I gain insights about people who don't participate, which helps me to make a comparison between the answers of participants in said initiatives, adding some nuance to my results.

Participation: The interview will take twenty or thirty minutes. I have questions about your perception of food waste and citizen-led initiatives for food waste redistribution in your city of residence. Other questions inquire about your decision not to participate.

Privacy

The data collected will be used solely for my thesis, and will be used anonymously. I won't state your name or put it in relation with your answers. I would like to ask you permission to record and transcribe the phone call, to be able to use it for the research.

Permission granted and recorded?

Personal information

1. Age
2. Occupations
3. Studies
4. City of residence

Introduction

1. What do you think about the way in which food is produced and consumed, globally and in the Netherlands?
2. Are you aware of the activity in your city of any citizens initiatives that work to collect and use food which would go to waste?
 - a. What do you think of their actions?
3. What do you think is the aim of these initiatives?
 - a. Do you find that positive?
4. Did you ever consider participating?

Factors determining participation

- Do you think participating to these initiatives would bring anything good to your daily life?
- Do you think it's important to collect and distribute food (to fight against food waste)?
- Do you know anyone who is part of these initiatives? Do you get along with them?
- Do such initiatives enhance a community feeling, do you think?
- Do you have time, resources and skills that could be used to participate?
- Do you think you, as a citizen, are able to make a difference against food waste?
- How do people around you perceive/ think about food waste?
- What do you think about sustainability?
- Do you feel it is your responsibility to do something to contrast food waste?
 - What actions do you consider to be your responsibility?
- Who is responsible for making society more sustainable?
- In your opinion, who should be responsible for making the food production and consumption systems sustainable?
 - Do you think the government is doing enough to make food production and consumption sustainable?
 - Do you think enough is being done to make food production and consumption more sustainable?

Appendix 3: Codes for NVivo analysis

Analysis of interviews with participants

- Node 1.1: Expected return
 - Food
 - Money savings
 - Awareness creation
- Node 1.2: Perceived salience
 - Reduced amount of food in landfill
 - Social effects on awareness and agency
 - Effect on food poverty
- Node 1.3: Group identification
 - Interaction with likeminded people
 - Community feeling
- Node 1.4 Extra: creation of social cohesion

Capacity

- Node 2.1 Objective capacity
 - Know-how
 - Resources
 - Network
 - Support
 - extra
- Node 2.2. Subjective capacity

Ownership

- Node 3.1 Peer pressure
 - Conform to social norms
 - Community support of green behaviour
 - Stigmatization of food waste
- Node 3.2 Sense of own responsibility.
 - Role of the government
 - Role of citizens
 - Perception of own role
- Node 3.3 Environmental values
 - Moral obligation to care for the environment
 - Moral obligation to detach from systematic overconsumption, capitalism and consumerism

Context variables

- Node 4.1 Perceived role of the government
 - Hunger relief
 - Waste management regulations
- Node 4.2 Perceived influence of local consumption patterns
- Node 4.3 Perceived embeddedness in social networks
- Node 4.4 Perception of the democratic system

- Node 4.5 Perceived political context
- Node 4.6 Use and availability of space in cities

Justice

- Node 5.1 Inclusiveness
- Node 5.2 Equal participation of all
- Node 5.3 Polluter Pays
- Node 5.4 Ability to pay
- Node 5.5 Beneficiary pays
- Node 5.6 Equality in benefit allocation
- Node 5.7 Putting the most vulnerable first for benefit allocation
- Node 5.8 Human security
- Node 5.9 Aim of the initiatives

Analysis of interviews with non-participants

- Node 1.1: Awareness of possibility to join a citizen-led initiative for food waste redistribution
- Node 2.1: Expected returns
- Node 2.2: Perceived salience
- Node 2.3: Group identification
- Node 3.1: Objective capacity
- Node 3.2: Subjective capacity
- Node 4.1: Peer pressure
- Node 4.2: Sense of own responsibility
- Node 4.3: Environmental values

Appendix 4: Statements for quantitative analysis

Table 27: statements used to measure the influence of each condition on participation of respondents

Dimension	Condition	Statements	
Motivation	Expected returns	Q1 I expect to gain something from participating in the initiative	
		Q2 The expected gain motivates me to participate	
		Q3 I wouldn't participate if I didn't expect to gain something in return for my effort	
		Q4 I expect a return under the form of food	
		Q5 I expect a return under the form of saved money	
		Q6 I expect my effort to increase awareness about food waste	
Saliency	Saliency	Q7 I think the direct effect of the initiative is important	
		Q8 I think the indirect effect of the initiative is important	
		Q9 Redistribution through citizens-led initiatives is an important part of solving food waste	
		Q10 I think food waste redistribution by citizens can reduce food waste	
		Q11 I think food waste redistribution by citizens can reduce food poverty	
		Q12 The importance of food waste redistribution services by the initiative motivates me to participate	
		Q13 I wouldn't participate if i didn't think citizen led initiatives were an important part of solving food waste	
Group forming	Group forming	Q14 Participating in the initiative gives me the opportunity to be with likeminded people	
		Q15 A community has formed within initiative	
		Q16 Being with likeminded people motivates me to participate	
		Q17 If I hadn't found a community of likeminded people in the initiative, I wouldn't have participated	
Capacity	Objective capacity	Q18 I have enough knowledge to be part of solving the food waste issue	
		Q19 I have enough resources to act to help solve the food waste issue	
		Q20 I have a network that helps me to solve the food waste issue	
		Q21 The initiative is effective in reaching its goal	
	Subjective capacity	Subjective capacity	Q22 I think I can contribute to the transformation of food waste systems
			Q23 I participate in the initiative because I feel capable of making a difference
			Q24 I wouldn't participate if I didn't feel able to make a difference
			Q25 There are social norms that guide me to act sustainably
Ownership	Peer pressure	Q26 People around me influence my behaviour	
		Q27 I don't think I should avoid food waste redistribution because of the disapproval of others	
		Q28 I am responsible of helping the society to become more sustainable	
	Own responsibility	Own responsibility	Q29 I am responsible of taking care of the ecosystem
			Q30 I wouldn't participate in the initiative if I didn't feel the moral obligation to care for the environment
	Environmental values	Environmental values	Q31 I think consumption patterns should be more sustainable
			Q32 I think the current economic model is unsustainable
Q33 I think we should try and ensure future generations will be able to live inharmony with the ecosystem			
Q34 Enhancing sustainable consumption is a reason for me to participate in the citizen led initiative			
Q35 Taking care of the environment is a reason for me to participate in the initiative			

Appendix 5: Statistical analysis of statements

Table 28: Statistical analysis of the influence of conditions on participation, measured through a 5 point Likert scale. Tables in the text provide the statistical data generalized at the condition level, by averaging the results of the statements measuring that condition.

Dimension	Condition	Statements	Mean	Median	Mode	Standard deviation
Motivation	Expected returns	Q1	3,44	4	4	1,08
		Q2	3,64	4	4	1,22
		Q3	2,65	3	2	1,23
		Q4	2	2	1	1,08
		Q5	1,56	1	1	1,16
		Q6	3,8	4	4	1,00
	Salience	Q7	3,52	3	5	1,39
		Q8	4,52	5	5	0,87
		Q9	3,32	3	3	1,35
		Q10	3,4	3	5	1,32
		Q11	3,72	4	4	1,28
		Q12	3,56	4	4	1,23
		Q13	2,72	3	3	1,31
Group forming	Q14	4,36	5	5	1,04	
	Q15	4,6	5	5	0,65	
	Q16	4,56	5	5	0,65	
	Q17	3,28	3	3	1,17	
Capacity	Objective capacity	Q18	3,33	3	3	1,17
		Q19	3,71	4	3	0,95
		Q20	3,8	4	4	1
	Subjective capacity	Q21	4	4	4	0,87
		Q22	3,76	4	4	1,16
		Q23	3,96	4	5	1,14
Ownership	Peer pressure	Q24	2,79	3	4	1,28
		Q25	3,36	4	4	1,25
		Q26	3,625	4	5	1,44
	Own responsibility	Q27	4,8	5	5	0,41
		Q28	4,36	4	4	0,64
		Q29	4,52	5	5	0,71
		Q30	3,08	3	3	1,38
	Environmental values	Q31	4,76	5	5	0,60
		Q32	4,6	5	5	0,96
		Q33	4,92	5	5	0,29
		Q34	4,12	4	5	1,09
		Q35	3,83	4	5	1,15

Table 29: Percentage of agreement to each of the statements measuring the influence of conditions on participation. The five point Likert scale is simplified to a three point scale for better overview, merging 1 and 2 as “disagree” and 4 and 5 as “agree”

Dimension	Condition	Statements	Agree (%)	Neutral (%)	Disagree (%)
Motivation	Expected returns	Q1	52%	28%	20%
		Q2	68%	12%	20%
		Q3	30%	22%	48%
		Q4	12%	20%	68%
		Q5	12%	4%	84%
		Q6	76%	12%	12%
	Salience	Q7	48%	32%	20%
		Q8	96%	0%	4%
		Q9	48%	24%	28%
		Q10	48%	24%	28%
		Q11	72%	12%	16%
		Q12	64%	20%	16%
		Q13	32%	24%	44%
Group forming	Q14	88%	4%	8%	
	Q15	92%	8%	0%	
	Q16	92%	8%	0%	
	Q17	44%	32%	24%	
Capacity	Objective capacity	Q18	42%	33%	25%
		Q19	54%	38%	8%
		Q20	68%	24%	8%
		Q21	72%	24%	4%
	Subjective capacity	Q22	68%	20%	12%
		Q23	72%	16%	12%
		Q24	33%	25%	42%
Ownership	Peer pressure	Q25	56%	20%	24%
		Q26	63%	13%	25%
		Q27	100%	0%	0%
	Own responsibility	Q28	92%	8%	0%
		Q29	88%	12%	0%
		Q30	40%	24%	36%
		Q31	92%	8%	0%
	Environmental values	Q32	88%	8%	4%
		Q33	100%	0%	0%
		Q34	76%	16%	8%
Q35		65%	22%	13%	