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# Against Food Waste: CSR for the Social and Environmental Impact through a Network-Based Organizational Model

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**Abstract:** This article inductively develops a model of how farmers market organizations can contribute to reduce food waste, fight poverty, and improve public health through innovative Corporate Social Responsibility (CSR) practices enabled by networked activity systems. To this aim, a ten-year longitudinal case study of one of the biggest Italian farmers markets has been conducted, based on triangulated data from participant observation, interviews, and internal documents collection. This study suggests that farmers market organizations are in the position to leverage their inter-organizational relationships, institutional role, and power to build collaborative networks with businesses, government bodies, and charities, so that concrete CSR-based virtuous circles on surplus food donation are triggered at the organizational field level. Answering the call from United Nation Goals for successful examples on SDG 12, this case presents how several CSR levers can have a social and environmental impact allowing farmers and their market organizations to increase their efficiency and accountability to the local community, improve processes, reduce food waste, and contribute to public health and social inclusion. CSR actions have co-evolved with significant changes in organizational logics and identity, thus enabling accountability to the local community and innovative network-level auditing of the relevant organizational processes.

**Keywords:** food donation; waste reduction; accountability; inter-organizational processes; network organizations; sustainability; corporate social responsibility (CSR); legitimacy; SDGs

## 1. Introduction

In 2015, the United Nations adopted a set of 17 Sustainable Development Goals (SDGs) as the key headings of the Global Agenda 2030. These SDGs seek to mobilize global efforts around a common set of priorities in order to protect the planet and ensure dignity and opportunities for all. The 17 SDGs, which include for example “end poverty” and “ensure healthy lives”, systematically translate the key grand challenges facing humankind into objectives that can only be pursued through the collaborative and concerted efforts of governments, businesses, and the civil society. Advances in organization and management research on food waste would contribute to the achievement of several SDGs [1]. In particular, the statements relating to the goal n. 12—Ensure sustainable consumption and production patterns—underline the need to substantially reduce waste generation through prevention, reduction, recycling and reuse [2]. Food waste refers to the disposal or alternative consumption of food that was fit for human feeding and “could have been avoided if the food was prepared or preserved, or if inedible waste was otherwise utilized” ([1], p. 5). Consistently, the European Commission recognized food waste as a priority area of EU Action Plan for Circular Economy [3], that has the aim to plan

common approaches for measuring food waste through appropriate indicators, fostering engagement, knowledge sharing and best practices, and enhancing legislation [4].

On the academic side, economists, sociologists and ecosystem scholars are discussing on the macro-level strategies that should drive the fight against food waste [1,5–8]. In particular, the Food Waste Hierarchy has become a reference point, suggesting that food waste prevention (through minimization of surplus and avoidable waste) is the best option, followed by the distribution of surplus food to the poor, and by the conversion of food waste to animal feed [9]. The debate on food strategies is heating, and scholars are far from reaching consensus on several topics.

The research stream on the evaluation of food waste amount and impacts is also viable [10–12]. Input-output analyses [13] and mainly, life-cycle assessments are widely used for these studies [14–17]. These interdisciplinary efforts are increasingly highlighting the complexity of food waste challenges [18]. Interestingly, a viable and growing body of literature highlights the possible role of the corporate social responsibility (CSR) lever in addressing food waste challenges, thus paving the way towards a promising research stream that links management studies to the interdisciplinary efforts for fighting food waste [16,19]. However, it is becoming increasingly clear that CSR actions trigger complex social phenomena that may even result in unintended or counter-productive consequences [20]. For example, power games, poor coordination, insufficient knowledge base and organizational inertia sometimes lead to ineffective or façade CSR practices [21]. Despite the relevance of these phenomena, we know very little on the organizational conditions that enable the development of effective CSR actions as for food waste.

We argue that farmers market organizations provide particularly interesting research settings to explore this under-investigated issue. Despite previous studies on food waste are mainly focused on consumer behavior [22], farmers markets deal with huge amounts of fresh food (mainly fruit and vegetable), therefore they are exposed to particularly tough waste management challenges and are responsible for reducing the wastage of products with great nutritional value. In addition, farmers markets play a key role in their territorial contexts, therefore these social subjects are in the position to leverage their inter-organizational relationships, institutional role and power to build collaborative networks with businesses, government bodies and charities for a scaling-up impact of CSR initiatives. In fact, CSR initiatives relating with food waste can be really effective only if they also influence consumers' perceptions and behaviors, which are of paramount importance for addressing food waste challenges, especially in developed countries [9,22].

Therefore, we focus on the following research question: How do effective food waste reduction practices (rather than façade or ineffective solutions) emerge in farmers markets? More specifically: We explore what can be the role of farmers markets' CSR initiatives in moving from a mere compliance-driven configuration to a sustainability-oriented, proactive institutional work configuration.

In order to address this research question, we conduct an explorative longitudinal study on one of the most important Italian farmers markets. This farmers market organization, which we identify with the invented name "Rainbow Market", has recently developed a network-level activity system to address food waste in an innovative and socially responsible way. The analysis of this case reveals an interesting transition, from a context in which scarcely effective or façade solutions to food waste problems are hastily pursued by individual farmers, to a context in which new network-level protocols and routines related to food waste are collectively developed, monitored and fine-tuned through organized collaborative processes that enhance and reward surplus food donation.

This study sheds light on the powerful role played by the farmers market inside its network in influencing farmers' and dealers' behaviors through the creation of new forms of collaboration. The Rainbow Market model requires the active involvement of profit, non-profit, and government organizations in a networked activity system. In addition, the Rainbow Market case witnesses the development of a unique accounting and control system that is integrated into the operational routines of the food donation activity system, thus enabling the development of practice-driven (rather than

discourse-driven or power-driven) legitimacy [23,24]. Thanks to this CSR-driven distributed activity system, the capabilities to address food waste challenges are developed at the network level, rather than at the level of the single farmer or dealer [25]. This makes the solution much more feasible and, even more importantly, more adaptive.

Thanks to these results, our study is at the crossroads of, and contributes to, at least four literature streams: Food value chain sustainability, accountability-CSR, network forms of organizing, and inter-organizational activity systems.

## 2. Background

### 2.1. Food Waste: A Multi-Faceted Sustainability Challenge

Food waste “refers to the discarding or alternative (non-food) use of food that was fit for human consumption—by choice or after the food has been left to spoil or expire as a result of negligence” ([26], p. 2). A study published by FAO [27] underlines that the amount of food wasted in industrialized countries (222 million tons) is equivalent to food production available in sub-Saharan Africa (230 million tons).

In the last years, numerous projects and studies proposed by governmental and international entities have highlighted the importance of the food waste issue in terms of nutrition security, environmental impact, resource exploitation and sustainable development [25,28,29].

Food waste across the entire supply chain—from the agriculture field to the table—increases production, distribution and disposal costs. Therefore, food waste results in tangible loss for businesses, in addition to the environmental and social problems it results in.

In the fruit and vegetable value chain, a certain level of food loss or waste is often physiological in almost all phases of the production process. Causes could span natural disasters, high perishability during storage and transport, packaging problems. In addition, large quantities of products are lost, while their nutritional and organoleptic properties are still intact, because of food oversupply or aesthetics [25]. Therefore, consumers’ attitudes and behaviors are of great importance in addressing food waste in the downstream part of the value chain [9,22]. United Nations consider this issue in the 17 SDGs that, inside the SDG 12, underline the importance of minimizing the natural resources use and waste generation in order to enhance a sustainable growth and development also through a more sustainable consumption. Specifically, the target 12.3 focuses on the food waste reduction, along with the entire production and supply chain in order to halve the per capita global food waste before 2030. The target 12.5 suggests the rise of actions for prevention, reduction, recycling and reuse, rather the following targets encourage more transparency on sustainability information in the food reporting cycle (12.6) and promoting procurement practice with national (and local) policies (12.7) [2]. The synergy among SDGs [30] drives a cross-sectional influence of SDG 12 on other targets, such as the end of poverty (SDG 1) and hunger (SDG 2). Recently, United Nations report on the Goal 12 the importance of research “to identify the causes and to recommend solutions to the problems; target-setting, the development of policies, frameworks and the enactment of legislation, the use of market-based instruments (taxes, incentives and subsidy schemes) [ . . . ] to promote awareness and advocacy on the issue” ([31], p. 2). United Nations underline the importance to broad the stakeholder’s spectrum involved in SDGs projects considering the implementation of new partnerships at a local, national, and international level (SDG 17). This is a pivotal aspect embedding also the academic audiences [32].

The third sector, through voluntary associations, social enterprises, co-operatives and other nonprofit organizations can be an important partner in building strategies of preventing and reducing food waste. Food rescue organizations, such as the Red Cross or the Food Bank, are engaged in the recovery of surplus food for humanitarian donation [33]. However, these organizations’ donation model is usually based on centralized warehouses and delayed distribution of the collected food to the poor, which is poorly suited for fresh food, such as fruit and vegetable.

In other words, the traditional food donation model is not suited for distributing surplus fruit and vegetable, although this type of food is particularly needed to improve disadvantaged people's health [34]. Nutrition with low inputs of fruit and vegetable is negatively assessed in terms of public health. The World Health Organization (WHO) and many other sources identify consumption of at least five daily portions of fruit and vegetable an important element for a healthy and balanced diet and for the prevention of chronic diseases, particularly cardiovascular diseases, diabetes and some types of cancer. According to Papargyropoulou et al. [9], actions against food waste could be developed at five levels: Preventions of waste along the entire food supply; re-use surplus food for human consumption for people; recycling food waste into animal feed or via composting; recovery to produce sustainable energy; and disposal as last option. Therefore, fruit and vegetable wholesalers and retailers, such as farmers markets, could play a key role for the societal value of the food value chain through the re-use of surplus food. However, the role of farmer markets for enhancing the sustainability transformations of the food value chain [35] has remained substantially underexplored so far.

## 2.2. Food Waste and Corporate Social Responsibility

According to Wood ([36], p. 695) "the basic idea of CSR is that business and society are interwoven rather than distinct entities; therefore, society has certain expectations for appropriate business behavior and outcomes." More widely, the European Commission defines CSR "the responsibility of enterprises for their impacts on society" ([37], p. 6), which translates into the internal dimensions of CSR (e.g., human resources, health and safety, environmental impacts), and the involvement and empowerment of external stakeholders, such as local communities, investors, partners, and consumers [38]. Consumers, in particular, increasingly demand for more sustainable products made through efficient, ethical and environmentally friendly processes [39,40].

According to the standard ISO 26000 ([41], pp. 2–3), CSR "is the responsibility of an organization for the impacts of its decisions and activities on society and the environment, through transparent and ethical behavior that contributes to sustainable development, including health and welfare of society, takes into account expectations of stakeholders, is in compliance with applicable law and consistent with international norms of behaviour and is integrated throughout and practiced in an organization's relationships."

CSR-related research was pioneered by the management literature [42–45] and soon became an important stream in organizational and accounting research [46]. CSR of business embraces different components having different priorities in which philanthropic activities (e.g., donation) are expected to contribute promote human welfare or goodwill for the community, but only if undergird by economic performance [45]. CSR studies explore the relationships between businesses and the environments in which they operate [47] to define how organizations can operate to gain legitimacy and contribute to societal challenges. In this vein, stakeholders' approval is necessary for legitimating organizations innovation [24] and is increasingly considered as a strategic lever that can be managed through communication, accounting, and control.

Concrete CSR actions and approaches vary depending on the industrial sector and the value chain segment [48]. Hartmann [49] and Canali et al. [50] underline that studies on food waste are focused on the retail node and CSR aspects are focused on customer's perceptions and claims [25]. Considering the food industry, CSR is explored mainly in terms of food security, along with environmental and social responsibility [51]. Forsman-Hugg et al. [52] identified seven key dimensions of food chain CSR: Environment, product safety, corporate nutritional responsibility, animal welfare, local market presence and economic responsibility, and occupational welfare. According to these authors, examples on CSR practices are interwoven, such as the initiatives to food control supported by an increasing transparency; using best technologies that enhance cost efficiency and a cleaner production; traceability along the supply chain for a more responsible consumption; taking care of the environment reducing impacts on local community.

In addition, Maloni and Brown [53] proposed a framework that considers biotechnology, fair trade, human rights, community and procurement as key aspects of the food value chain. Anselmsson and Johansson [54] propose three possible dimensions of CSR for classifying retailers: Human responsibility, product responsibility, and environmental responsibility. Another key aspect to be considered is the complex impact that innovation throughout the food value chain can have on the environment, society and economic development [39].

Due to the great importance that the public attaches to food, the companies in the food value chain are increasingly called to respond to CSR expectations [52]. However, because of the large number of stakeholders in the food industry, organizations are often subject to numerous, different and sometimes conflicting claims and pressures [55]. In other words, CSR in the food value chain is a key issue for researchers and practitioners that want to address food-related sustainability challenges. Nevertheless, scholarly attention for the role of CSR across the different actors of the food value chain is uneven. While research is already being conducted on the societal and environmental impacts of large food manufacturers [49] and pioneering studies on CSR-related dynamics around supermarkets also exist [25], scant attention has been devoted to the role of farmers, fresh food wholesalers, and farmers markets in the development and diffusion of CSR actions that reduce the food waste.

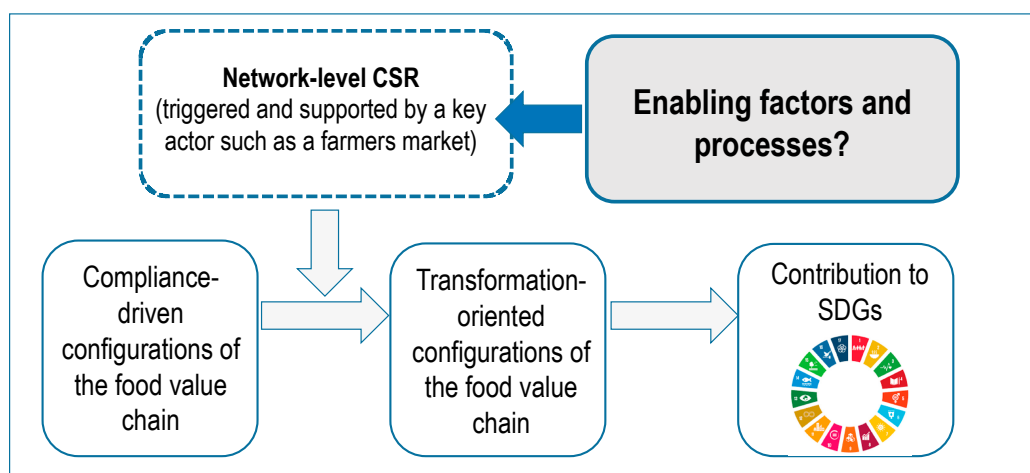
### *2.3. Different Trajectories of CSR: Façade Solutions or Sustainability Transformation Processes?*

The neo-institutional theory is perhaps the most frequently adopted lens to explain the social processes related to CSR practices development and adoption. According to the neo-institutional view, social actors' behaviors are mainly shaped by legitimacy needs [23]. In this light, organizations leverage CSR actions to be accepted as members of their business environment [56], and the local community [57]. This approach to CSR, however, focuses on mere compliance rather than actual effectiveness. First, organizations adopting this legitimacy-based approach to CSR are tempted to adopt façade CSR solutions, by minimizing CSR efforts to just look compliant to the eyes of legitimacy-providing subjects [21]. Second, once legitimacy is achieved, the (seemingly) compliant organization has no incentives to sense and address the possible negative or unintended impacts of the adopted and legitimated solutions. In other words, organizations are substantially incapable of evolutionary learning and adaptive sustainability-oriented innovation in the neo-institutional view [58]. This inertia of the organizations that feel to be sufficiently compliant is a very serious issue, because sustainability problems are so complex that the adoption of sustainability solutions, such as CSR practices, typically results in new problems that had not been envisaged in the first place, like, for example, in the case of biofuels or solar panels [20]. Therefore, the adoption of CSR practices can paradoxically result in negative effects as for system-level sustainability. For example, Devin and Richards [25] found that Australian supermarkets lower food waste by adopting CSR practices that actually just push undesired behaviors into other segments of the value chain, thus gaining CSR-based legitimacy at the expense of the system's sustainability.

It is not surprising, then, that scholars are growingly dissatisfied with the adoption of neo-institutionalism as the sole theoretical lens to explain CSR development and adoption processes. Recent developments of institutional theories [21,58], provide more powerful insights on the complex social dynamics relating with sustainability challenges; these dynamics include also rebellion, power games, lobbying and innovative sense-making [4,59,60]. This viable stream of studies has developed the concept of organizational field [61–65] to indicate an organization's relational space, which is populated not only by classical market forces (like in the traditional concept of industrial sector), but also, and even more importantly, by rules, values, beliefs and social expectation, which are clustered into consistent systems called institutional logics [66,67]. In particular, the studies on institutional/social entrepreneurship [68–72] are providing in-depth analyses on the complexity and importance of institutional dynamics in continuously (re)building sustainability-oriented actions. The first, pioneering studies are exploring how self-organizing networks of motivated actors can trigger long-term processes of sustainability transformations at the level of the organizational field [20].

However, the key factors and processes through which a region's food value chain transitions from a neo-institutional configuration (where each individual organization just pursues legitimation through compliance to existing norms and expectations) to a sustainability-oriented institutional work configuration (where some actors collectively develop, experiment, adjust and make sense of sustainability innovations) remained under-investigated so far.

Based on this gap, we developed the research model synthesized in Figure 1.



**Figure 1.** Research model (Source: Authors). CRS, Corporate Social Responsibility; SDGs, Sustainable Development Goals.

### 3. Methodology

#### 3.1. A Longitudinal Case Study

In a recent commentary on the *Academy of Management Journal*, from the journal editors, Eisenhardt et al. [73] strongly encourage inductive approaches, based on in-depth case studies, in order to develop novel theories that contribute to address societal challenges. In this light, the key contribution of these inductive studies lies in the development of new concepts, models and/or frameworks. Inductive studies cannot be replicable, per se, but they are expected to innovate the field by triggering new streams of replicable studies dedicated to the testing of the new models and frameworks provided. Following this authoritative suggestion, we leverage an in-depth longitudinal case study based on participant observation, document collection and interviews in order to answer the research question.

In social sciences, case study approaches allow scholars to grasp the complexity of a single case in a context [74]. This case could provide an explorative point of view on a recent phenomenon [75] and as a longitudinal study, it also provided an in-depth view on the developmental phases that resulted in successful CSR policies and practices, as well as related impacts in terms of food waste reduction and public health improvements.

Data were collected from 2009 to 2018 through a participant observation [76] carried out by one of the authors, who was directly involved in the food donation project from an early stage. The process of participant observation provided valuable and hardly replaceable first-hand data. The access to internal and confidential documents—such as plans on strategic decisions, budget on the used resource, reports provided to several stakeholders involved in the process—increased the richness of the hermeneutic unit [77]. The key data that were regularly collected throughout time, thus allowing for the longitudinal development of the case, include: Amount of wasted food; costs of wasted food; number and nature of food waste reduction actions; costs of food waste reduction actions; number of partners involved in food waste reduction actions; perceived cause-effect paths between food waste reduction actions and results; perceived ripple effects of food waste reduction actions.

The participant observer was involved in the decision-making process in terms of business model creation, development of the network between partners and beneficiaries, and the implementation of an education path built to spread knowledge and virtuous behavior on food waste prevention in the local community. The participant observer took personal notes taken at meetings, collected first-hand documents and kept an electronic diary [78]. The researcher's direct involvement in the project concluded in 2014; however, data collection has continued through document collection and fifteen semi-structured interviews, lasting on average of 40 min each [79,80]. The interviewees were key-informants involved in the project, such as the farmers market's president, director, an inspector, along with volunteers, food donors, and people working at Rainbow Market's key partnering organization as for food donation, the manager of the local prevention service of Local Health Authority. Semi-structured interviews were conducted according to an interview guide organized in three main aspects: Food waste project drivers, network-level CSR processes, accounting and accountability (see Appendix A). This longitudinal study covers ten years of research, providing a huge amount of data that consisted of interviews transcriptions, internal documents and public reports, videos, the participant observants field notes, as well as her research diary. Through work group and discussions, the data triangulation has been enhanced and the most relevant gathered material and contents were selected and collected in unique hermeneutic unit. The qualitative data (e.g., interviews, field notes, internal documents) were managed and analyzed using Atlas.ti searching for the project's milestones and key CSR-related success factors [81]. An additional Table at the Appendix B provides interviews details and the related coding matrix.

According to Miles, Huberman, and Saldaña [81], The coding phase was carried out in three steps. First the *open coding* permitted to identify the main issues and the general contents in the analyzed data; then the *axial coding*, refined the open coding by identifying the relevant categories and the connections between them; finally, the *selective coding* aimed to identify the CSR-enabling factors as core aspects inside the analyzed data.

### 3.2. Research Setting

Our research setting is the third most important farmers markets in Italy, which is a leading European region in several sectors, including the production of fruit and vegetable. For confidentiality reasons, we will label this farmers' market with an invented name "Rainbow Market" [82].

Rainbow Market is a joint-stock company founded in 1989; it is owned by the city government (75%) and some private subjects. The Rainbow Market organization manages a grand market hall (about 90,000 square meters with advanced logistic facilities) that constitutes an important hub of domestic and international fruit and vegetable commerce. About 70 farmers, dealers and wholesale buyers have developed formal agreements with the Rainbow Market organization for their everyday commercial activities. About 350,000 tons of fruit and vegetable are sold here annually.

Rainbow Market's mission includes the development of new business channels, the international promotion of high-quality fresh Italian food, the optimization of logistics and the development of advanced services around the traded products. In addition, the Rainbow Market organization is significantly engaged in socially and environmentally responsible innovation: For example, Rainbow Market has been awarded as the best Italian fresh food wholesale market as for energy saving, due to advanced technological solutions, including a photovoltaic roof that make the building energetically self-sufficient.

Rainbow Market is the only farmers market in Italy that achieved all the official certifications relating with Quality, Health and Safety, and Environment. It is not surprising, then, that Rainbow market is today considered as a best practice at the international level as for food waste reduction, as well. In the Rainbow Market context, an innovative, network-based system of surplus food donation has been recently developed, experimented and disseminated, with significant societal and environmental impacts [82].

For example (see Figure 2), in 2013, about 790 tons of fruit and vegetable were recovered and donated, which corresponds to an economic value of about 900.000 euros [82]. These data grow at a rate of about 25% each year; in 2016, the amount of the donated food exceeded 1200 tons, thus providing more than 3000 fragile families with healthy food on a daily basis, while significantly contributing to urban waste reduction. In 2017, the reduction of food recovering was due to the more restrictive roles to reduce opportunistic behaviors and to increase transparency. On one hand, suppliers reduce their waste through an increased efficiency in food supply; on the other hand, a more strictly control on donation procedures, prevent opportunistic behaviors.

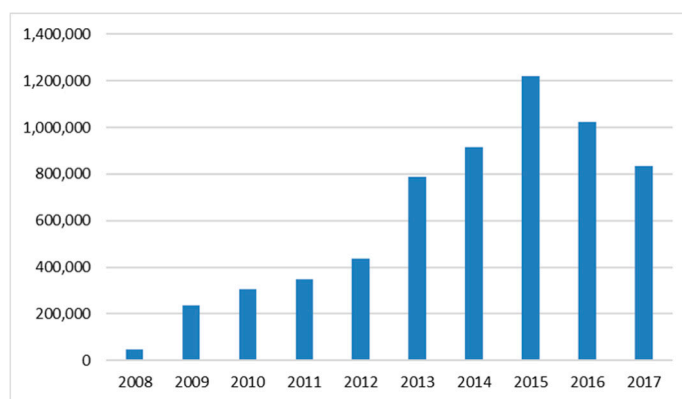


Figure 2. Trend of food recovering from Rainbow Market (Source: Authors).

In conclusion, the Rainbow Market case can be considered an appropriate research setting for addressing this study's research question, since the phenomena of interest unfold with particular intensity in this context [79].

#### 4. CSR Practices in the Rainbow Market Case: Developmental Phases

##### 4.1. Informal Donation and Façade Solutions (before 2008)

In the first place, when no structured CSR actions had been launched for surplus food recovery, Rainbow Market's farmers and dealers perceived that no ready-to-use and economically sustainable solution to food waste was at hand. Therefore, each actor tinkered to individually develop some response to the institutional pressures and consumers' expectations related with food waste minimization. In fact: *"Each wholesaler is brought to act autonomously and independently from each other; a greater mutual coordination could instead generate interesting inter-organizational synergies"* [from a wholesaler's interview]. CSR-related actions were translated just in informal donation activities that often took place on the initiatives of single farmers and dealers, but this also resulted in unintended consequences. The informality of the mechanism opened the way to possible opportunistic behaviors and *"Someone had to stop donating when they suspected that the donated food found its way to the black market"* [from the participant researcher's log]. In addition, since donation was not traced nor controlled, there was no guarantee on the safety of the donated food.

When donation was mediated by charities, the process was more controlled; however, it followed the traditional model (like at the Red Cross or Food Bank) in which the donated food is stored in a warehouse managed by the charity, and then distributed to people in need at a later stage. However, this model is not suited for fresh food, such as fruit and vegetable and implies high deterioration risk to just push food waste from the farmers market to the charity warehouse. In addition, this model implies high storage costs for the charities and is therefore unaffordable in most cases. For these reasons, despite some attempts, this model of food donation to charities had never really taken hold at Rainbow Market.

Another response to the institutional pressures as for food waste was simple negation. Since the people in contact with consumers at Rainbow Market knew that consumers increasingly considered



food waste as ethically unacceptable, they just struggled to keep information about the amount of food they wasted hidden. Definitely, the participant observant affirmed: *“When we started to talk with the farmers and dealers to collect information for the project, they often claimed that they produced no waste! At first, we were astonished. Then we realized: [T]hey did not want the consumers to know about how much food they wasted, because they were afraid this would jeopardize their image”* [from the participant researcher’s log].

#### 4.2. Networking and Problem Articulation (2008)

In 2008, some ethically engaged farmers and dealers started to interact with the Rainbow Market organization and an important non-profit Association of Social Promotion (ASP) with the purpose of addressing the food waste problem in an integrated CSR-view. Through collective problem articulation and the analysis of innovative solutions at the international level, the engaged parties gradually agreed that a just-in-time food donation model, with no intermediate warehousing step, would be the best strategy to follow. This model implied that a networked activity system was to be developed, in order to collect information on surplus food in real time, send someone immediately to collect the surplus food at the farmer’s or dealer’s place, and immediately distribute the donated food to people that are actually in need to receive it. Some charities that were interested to activate their volunteers for performing surplus food collection and delivery were involved in the emerging network. This attracted public attention and encouraged the initial coalition of the willing to further enlarge the network to all the stakeholders that were expected to contribute to the new activity system: The city government, the local health care authority, and also other possible donors, such as school canteens and supermarkets.

The involved stakeholders soon perceived that the project they were developing would be really challenging. Not only did technical difficulties emerge as for multi-level bureaucratic compliance and information system effectiveness: It was also necessary that the new activity system would imply acceptable training and work burdens for all the involved parties. Even more importantly, the different parties responded to very different institutional pressures, had very different and hardly compatible criteria of worth, languages and operational constraints, and had never collaborated before. Accordingly, the Rainbow Market President stated: *“The risks of project lethargy or project-related conflicts were high”* [interview with the Rainbow Market’s President].

A tiny working group, embedded in the ASP, started serving as the emerging network’s core and dedicating specific efforts to address these difficulties. These issues are well summarized by a volunteer: *“The challenges at hand were too novel and too complex . . . we needed that someone, someone we could trust, dedicated themselves to these challenges on a full-time basis. The network needed a reference point at its core . . . Otherwise the project would have died”* [interview with an ASP volunteer].

#### 4.3. Experimentation of a New Network-Based Integrated Activity System (2008–2009)

At the end of 2008, an agreement between Rainbow Market and the ASP was signed, thus officially starting a concrete experimentation of the just-in-time food donation solution identified in the exploratory phase. According to this agreement, the ASP was in charge of developing and managing the network-level activity system, with the technical and operational support of the Rainbow Market organization and partners. This agreement created the working group that included a few professionals and volunteers of ASP and employees of Rainbow Market just dedicate to the CSR project on food waste reduction.

The experimentation started with just a few donors and a few charities for performing the food collection and distribution activities. The local health care authority has collaborated, since the beginning in order to develop and adjust the procedures related with food safety issues, underlining that *“when individuals collaborate with each other, mechanisms that promote the adoption of healthy behaviors are triggered”* [interview with the manager of the Local Health Care Department]. Also, the local waste management company and the city government were involved in the experimentation and started to work on the idea of promoting this CSR project granting a discount on urban waste taxes to donors,

in proportion to the amount of the donated food. The Rainbow Market's President acknowledged: *"As city government, we understood that it was important to intercede (tax interventions, health support procedure and so on) because the project has a double result for the local community: [H]elps needy families but especially reduces the amount of waste that would go into the dumpster and then landfill"* [interview with the today's Rainbow Market's President].

The ASP bridged all these actors, the Rainbow Market organization, donors, charities, health care authority, city government, and local waste management company, and their stakeholders' claims. In addition, the ASP received ad-hoc funding and support from the regional government and a bank foundation to develop routines, protocols and web-based Information and Communication Technology (ICT) solutions for operations management and full process traceability that could be easily adopted or adapted by other territorial contexts that target food waste reduction through food donation. For example, the ASP collaboratively *"defined the criteria to accept and accredit the charities as accredited to food collection and distribution within the project. Only charities with certain characteristics, and whose volunteers accept to be trained to and compliant with the procedures, can join the project"* [from the participant observer's log]. At the same time, *"This network seeks to develop new knowledge through mutual collaboration. The exchange of ideas generates new solutions and enable implementation. Organizational culture is changing, thanks to the activities of several different operators"* [interview with a Rainbow Market's director].

#### 4.4. Field-Level Institutionalization: The Role of Accounting, Accountability and Auditing on CSR Actions (Since 2010)

In 2010, an agreement was reached that made the network organization for food donation economically self-sustainable: Since the reliability of food donation reporting allowed donors to enjoy a significant discount on urban waste taxes, all the Rainbow Market donors agreed to provide the ASP with an amount of money that corresponds to one third of their annual tax discounts.

This was a milestone for the attractiveness and legitimation of the project. Once the protocols, routines and software application were established and the work of the ASP became independent from external funding, the project yielded long-term credibility thanks to this structural funding model. As affirmed by an ASP volunteer, *"Of course, the presence of a financial incentive to donate is important, but it is not just about the incentive . . . thanks to this model people could be confident that the project is not temporary or vulnerable to external factors such as the end of humanitarian funding. A long term-project is something you can invest on"* [interview with a volunteer at ASP]. In addition, this model a formal acknowledgement of the irreplaceable, long-term role of the ASP as the network core and engine.

The food donation network organization (and particularly the ASP at its core, whose work is paid through the waste tax discounts enjoyed by network members) develops and adjusts the protocols and routines for full process traceability after a systematic collaborative work facilitated by the ASP through coordination tables and memoranda of understanding.

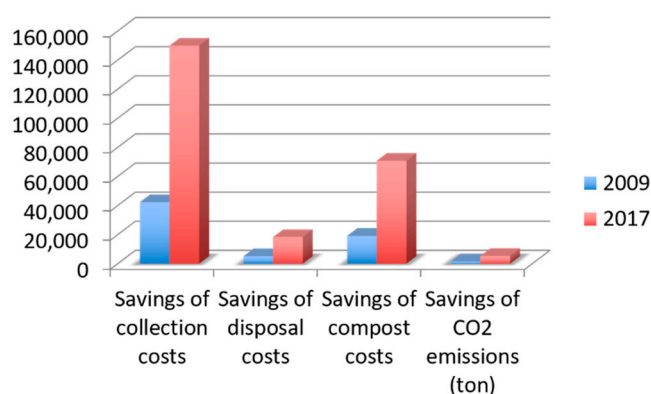
The charities that collect and distribute the food are mainly based on volunteering, part-time work. Therefore, achieving the standardization of the behaviors on the part of the partnering charities, and the compliance of the documentation stemming from their activities, was not an easy task. The food donation network achieved this result by dedicating specific human resources, both from the ASP and the Rainbow Market organization, to train, support and inspect the donors and the volunteers, thus ensuring proper behavior and information flows in the critical phases of food collection and distribution. In addition, a dedicated information system and software application were incrementally developed, that are progressively supporting and automatizing most of the operations and relating data entry routines.

These intense efforts dedicated to contemporaneously develop proper behavior and accountability were key to success. According to a wholesaler, *"Rainbow Market provides the product, but the role of the charities is essential because they perform the collection and distribution work. This collaboration between businesses, government bodies, and charities allows us to get out the most from our surplus products. It is*

*this partnership that guarantees horizontal control and supervision through the network rules. We know that opportunism would be practically impossible under this collaborative model. That is why all parties accept to contribute! Thanks to how things are done here, we can be confident that our efforts will not be useless* [interview with a Rainbow Market's wholesaler].

Transparency is also essential to safety. This is well summarized by the Rainbow Market general manager, that stated: *"The food recovery process is based on specific sanitary procedures, developed in collaboration with the Local Health Care Department; any donation is traced via specific documents to protect consumers' health. In this way, we seek to guarantee transparency, honesty, and legality, for a better quality of life for all. This is an integrated ecological approach to waste management, based on the awareness of our societal role"* [interview with Rainbow Market general manager].

In addition, the full process accountability serves to match on a daily basis the products that Rainbow Market makes available with the distributing charities and final beneficiaries, based on transparent pre-defined rights of use along with protocols for logistics optimization. Internal auditing is also enabled by the ASP that collects documents from Rainbow Market auditors once a month in order to elaborate data and produce an annual report for the Rainbow Market board. Being accountable allows Rainbow Market to quantify environmental and economic savings in terms of waste disposal, while the charities are informed about the economic value of the fruit and vegetable they collect for free and distribute to people in need. The monitoring phase provides further measurements on minor costs and increasing efficiency for the organizations involved in the CSR-project. To support the effectiveness of the network, a collection of data has been periodically presented to the local community during public events and consist, for example, of social and environmental impacts of project, as well as cost effectiveness analysis (see Figure 3).



**Figure 3.** Impact evaluation (Source: Authors).

Finally, the local government bodies are put in the condition to monitor the positive environmental and societal impacts of the donation system. More in general, not only do reporting processes allow the involved parties to evaluate the achievement of the project goals, but they are also a key factor to enable, shape and strengthen the relationships among the network partners. This is witnessed by a council member for social services that affirmed: *"The real key-value of this project is to be a structured network, that allows the certification of all activities; donors are sure that all procedures are respected and incentivized in participation, because they can benefit from the advantages and, at the same time, minimize risks. Municipalities are more protected too. The challenge is to make everyone understand that follow a structured procedure and be a part of a network is better. NPO can have procurement and rather guarantees over time"* [interview with a council member of the Municipality].

The institutionalization of the Rainbow Market model, based on integrated network-level CSR, is confirmed by the successful replication of this model (with the due local adaptations of agreements, protocols and procedures) in another important Northern Italy's city, while further replications in at least two further cities are under study.

## 5. Discussion

In the Rainbow Market case, the development of CSR accountability allowed for a very synergic response to a mix of different needs: The need for real-time information flows that is typical of just-in-time logistics; the traceability needs (due to safety issues) that are typical of the food sector; and the political need for transparency, in order to justify the use of taxpayers' money to incentive specific behaviors [39]. Donations mirror and embed all the four dimensions of CSR—philanthropic, ethical, legal, economic—instead of being considered as a mere consequence of philanthropic behavior [44,45].

As the analysis presented above demonstrates, since food waste is a challenge that involves, according to Devin and Richards [25], the whole food value chain, rather than individual firms, the development of a myriad of individual, disconnected CSR initiatives is likely to result in façade changes with limited impacts on SDGs. Conversely, the results confirmed that the collaborative development of CSR practices on the part of an organization bridging and orchestrating a much wider network plays a key role in successful sustainability transformations. Interviewees highlighted the ripple effects from the upstream side of the value chain (farmers) to the downstream side (consumers' perceptions and behaviors). Starting by the theoretical model proposed by Forsman-Hugg et al. [52], the current study presents concrete examples on how CSR practices could be interwoven. In this sense, the increasing transparency on the food control supported food security; costs monitoring enhanced efficiency and effectiveness; market-based incentives increased food donations; the quality of the donated food supported a healthier diet to the disadvantaged people of the local community.

As supposed from United Nation in the SDG 12 [2], the development of a network-shaped organizational form has demonstrated been crucial for enabling these synergies in the case under analysis. In line with the call of the United Nations [31], this case presents an example of a supporting effective and accountable governance at a network level supported by appropriate regulations and relationships among for profit, nonprofit and the public sector (SDG 17). At an advocacy level, the accountability on the CSR project for food waste reduction has been pivotal for enhancing the development of market-based taxes incentives. In contributing to a sustainable consumption and production (SDG 12) at a network level, the project increased transparency and inclusion into the involved organization (SDG 16). At the same time, the rise of fresh food donations, delivered to the nonprofits healthier food (SDG 2 and 3) as well the possibility to reach a higher number of needy (SDG 1).

Our study shows that the network organization created by Rainbow Market in order to address food waste challenges has four characteristics that proved critical for the development of successful CSR-enabled sustainability transformations at system level [20].

First, a (lean) ASP at the network core is specifically dedicated to monitoring, integrating, facilitating and coordinating the networks' CSR (re)design and practices. Similar to Ferraro's et al. [20], this ASP is a reputed non-profit organization, which credibly warrants for the ethical engagement that drives CSR design and practices, thus encouraging the potential partners to trust the network and contribute to its CSR activity system [25,28,29].

Second, the ASP is also in charge of managing the network's hybridity [83] in an inclusive way, connecting the different logics represented at the network-level CSR activity. As a bridging organization [28], the ASP merged: The business logic carried by the farmers, the farmers market organization, and the urban waste management company; the charity logic of the non-profit organizations and volunteers that distribute the recovered food; the public health logic of the regional health care government; the redistributive logic of the bank foundation and regional government that incubated the project; the educational logic of the schools participating in the project; and the bureaucratic logic of the city government that provides donors with waste tax discounts [31]. The ASP takes care of understanding the different values, habits and operational constraints resulting from these different logics, thus facilitating the development of network-level integrated practices that are compatible with all of these different logics. Thanks to these efforts, CSR actions are incrementally

developed and adjusted through participatory processes, in which different actors adapt to each other in the emerging activity system, without polarizing into conflicting ideological positions [83]. According to the institutional logic perspective according to literature [62], the ASP's capability to understand and integrate the different logics into the collaborative activity system was key to build network-level goodwill and engagement.

Third, the modularity and standardization of the CSR practices developed by the Rainbow Market food donation network enabled the digitalization of the whole process, thus dramatically boosting operational efficiency. Previous studies identify the employment of standards to disclose reliable social and environmental impacts [39,41]. In the case under consideration, the presence of a transparent and user-friendly IT platform proved essential for yielding the collaboration and increasing accountability level of both the donors and the volunteers that distribute the food to the poor. Thanks to digitalization, monitoring occurs in real time and data entry is performed directly by the people (donors/farmers and distributors/charities) who concretely perform the food recovery job. Despite this distributed empowerment of the system's users, the ASP is in charge of the information system (re)design, feedback collection, data integration and problem solving: Far from making the ASP redundant, the digitalization of network processes makes the role of the ASP even more important [28].

Fourth, the availability of a significant waste tax discount for Rainbow Market donors is not just an incentive to socially responsible behavior. In fact, the donors provide the ASP with an amount of money that corresponds to one third of the tax discount they enjoy. This makes the system self-sustained, independent from external funding, and then resilient in the long term. Our sources, similar to Ferraro et al. [20], show that long-term credibility and self-sustainability of the food donation system is often even more important to engaging donors than the mere incentive, per se. This model has important direct consequences on CSR practices. As a legitimacy lever [23,24,47], all the people involved in the different steps of the activity system perceive accountability (such as following the procedures and performing accurate data entry) as directly linked to the system's benefits, rather than a useless bureaucratic burden. Therefore, this model enables a practice-driven (rather than discourse-driven) change in organizational culture and identity on the part of the involved actors.

These four findings allow for the inductive development of a model that provides structured answers to the research question and is translatable into testable hypotheses for further research, as synthesized in Figure 4.

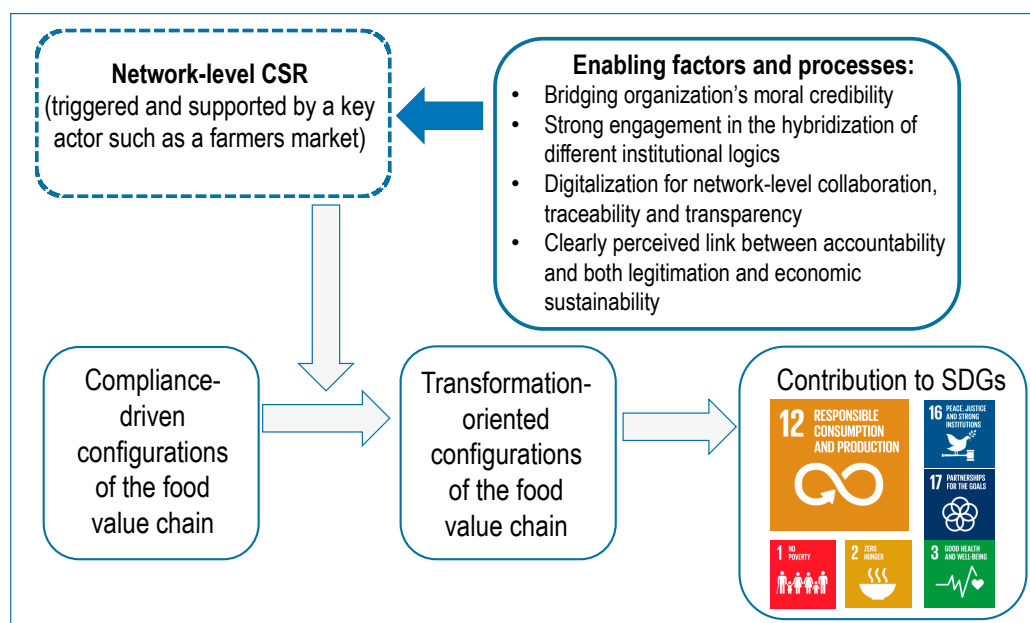


Figure 4. Research model on results and contribution (Source: Authors).

## 6. Conclusions

The study explored the effective role that farmers markets' CSR initiatives could have to reduce food waste, fight poverty, and improve public health. In the Rainbow market case, indeed, four CSR-related organizational factors were identified to enable the scaling-up success of CSR initiatives. These factors intertwine and reciprocally reinforce levers that allow farmers moving from a mere compliance-driven logic (in which each actor pursues individual legitimation through compliance to existing norms and expectations), to a sustainable network-based organizational model, where players do not only implement philanthropic practices, but collaboratively develop, experiment, adjust and make sense of sustainability innovations through CSR practices. Despite farmers markets could play a pivotal role against food waste, further studies should explore also the role of other actors in the food supply (e.g., supplier and consumers) in boosting CSR-related practices.

Answering to the recent call from the United Nations, the case firstly verifies that the development of a network stimulates all the actors to contribute to the CSR-related activity system against food waste, especially thanks to the ASP at its core, enables the development of sustainability innovations at the network level. Secondly, this study provides an example on partnership among profit, nonprofit, the public sector, and the local community for fighting food waste and also provides effective integration of the different logics of all these actors made by CSR practices. The network model, thirdly, enhanced a sustainable growth and development through prevention, reduction, and reuse at a local level. In fact, the social and environmental impacts of the project had an influence at advocacy level and encourage donations through taxes incentives.

Fourth, and finally, the case demonstrates that development of a self-sustaining activity system, capable to bear the costs of the ASP together with the efficiency and effectiveness of the inter-organizational system provides a credible basis for a practice-driven change in organizational identity and culture. The study confirms, as SDGs recommend, the relevance of transparency, accountability, and digitalization on the new sustainability-oriented practices, in particular with regard to health-security and financial procedures. Credibility is supported by accountability on food donations, transparency on the overall process, and the ASP in charge of feedback collection, data integration, reporting, and auditing. The merge of these factors enabled social control and mirrored changes in organizational image, and reputation.

This study suggests that effective CSR actions cannot be implemented once forever; therefore, a specific organizational form is needed, that continuously learns about the impact of previous CSR actions and adjust the network-level activity system accordingly. A network organization steering the four levers mentioned above can generate a hybrid local organizational field, which can nurture the collective institutional work that is necessary to achieve CSR-driven sustainability transformations. These, rather than new discourses and façade claims, are the concrete factors that really changed people's perceptions about how things are done as collective practices against food waste for a more sustainable development.

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## Appendix A. Semi-Structured Interview Guide

The pre-interview procedure includes to thanks the interviewee for the colloquium, a brief introduction of the research project, asking permission to use the voice recorder and eventually, to state his/her name and job title.

The initial part of each interview discussed conceptions of food waste. This then led into a discussion of the organization role in the network. The following open-ended questions were used to guide the discussion and divided in three main aspects.

#### *Food Waste Project Drivers*

1. Collect some soft and general background information, to overcome the broken-ice phase and facilitate the engage in general conversation on interviewee's organization and his/her role.
2. Could you describe the context in which your organization operated?
3. In your opinion, why your organization have decided to join the food waste project?
4. Why do you believe your organization engages in food waste reduction (if relevant)?
5. Discuss your organization's experience into the food waste project?
6. Could you explain the main consequence on the day-by-day operation, due to the food waste project?

#### *Network-Level CSR Processes*

7. What are the roles played by the different organizations inside the network?
8. Could you explain how do you share sources, knowledge and materials among participants? How the network manages this sharing?
9. The project involved the entire food waste supply chain. How do you manage the relationship with (according to the interviewee)?
  - Municipalities
  - For profit organizations
  - Nonprofit organizations
  - The ASP
  - Farmers market
  - Local community
10. How engaging with the food waste project has changed the relationships with these stakeholders?

#### *Accounting and Accountability*

11. How are you monitoring the impacts of the project on your organization (e.g., on efficiency, effectiveness, costs, etc.)
  - Social
  - Economic
  - Environmental
12. How do you present these results?
13. What tools have your organization developed to disclose these results (if applicable)?
14. Why, in your opinion, is this disclosure provided?
15. The researcher asks if any clarification is required.

The above questions were the framework around which each colloquium evolved. Further concerns were discussed where they seemed relevant and the order of the questions marginally varied following the conversation flow. People interviewed were stirred to present examples as an important background information.

## Appendix B

Table A1. Interviewees' role and coding matrix for CSR-enabling factors \*.

N	Organization	Role	Role	Year	Network	Accountability	Engagement	Bridging Organization
1	Rainbow Market	Wholesaler	President of Rainbow Market	2016	✓	✓	✓	✓
2	Rainbow Market	Politician	President of Farmers' market	2011, 2018	✓	✓	✓	✓
1	Rainbow Market	Employee	Director	2011, 2018	✓	✓	✓	✓
1	Rainbow Market	Employee	Inspector	2013		✓	✓	✓
1	ASP	Volunteer	Accountant	2011, 2018		✓	✓	✓
1	ASP	Freelance professional	Project manager	2011, 2014	✓	✓	✓	✓
1	Municipality	Politician	Social services council member	2015	✓	✓	✓	
1	Municipality	Politician	Social services council member	2015	✓	✓	✓	
1	Local Health service	Employee	Director	2013	✓	✓	✓	✓
5	Nonprofit organizations	Employees/volunteers	Various	2016	✓	✓	✓	✓

\* Aspects identified by interviewed as enabling factors, analyzed by researchers through the qualitative coding on the semi-structured interviews.

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