


Article

The Second Life of Food: An Assessment of the Social Impact of Food Redistribution Activities in Emilia Romagna, Italy

Matteo Vittuari ¹ , Fabio De Menna ^{1,*} , Silvia Gaiani ¹, Luca Falasconi ¹ ,
Alessandro Politano ¹, Jana Dietershagen ² and Andrea Segrè ¹

¹ Department of Agriculture and Food Science, University of Bologna, 40127 Bologna, Italy; matteo.vittuari@unibo.it (M.V.); silvia.gaiani3@unibo.it (S.G.); luca.falasconi@unibo.it (L.F.); alessandro.politano@unibo.it (A.P.); andrea.segre@unibo.it (A.S.)

² Technical Centre for Agricultural and Rural Cooperation (CTA), 6708 PW Wageningen, The Netherlands; jana.dietershagen@gmail.com

* Correspondence: fabio.demenna2@unibo.it; Tel.: +39-051-2096150

Received: 13 July 2017; Accepted: 6 October 2017; Published: 10 October 2017

Abstract: The increased relative poverty and migration crisis in Europe are determining a raise of food insecurity levels. Cities and regions are experiencing—and to some extent stimulating—a growth of food recovery initiatives. Food redistribution activities (FRAs) are acknowledged as a tool for addressing food insecurity and preventing food surplus wastage ensuring economic, environmental, and social benefits. This paper aimed to identify the characteristics of FRAs and their social impact in the context of the Emilia Romagna region (Italy). A literature review and two experts' consultations were carried out to inventory and categorize relevant social impacts. A questionnaire was then drafted and submitted to a sample of FRAs operating in the region. Results provided a profile of the surveyed food redistribution activities in terms of type of food redistributed, service provided, and workforce. In addition, the qualitative investigation allowed the identification of hotspots in terms of social, economic, psychological, health, and political impacts as perceived by engaged stakeholders.

Keywords: food waste; food redistribution; food policy; local food plans; FUSIONS; Italy

1. Introduction

The growing number of people living in relative poverty [1,2] and the escalating migration crisis [3] are leading to an increase of food insecurity in Europe [4–7]. Cities and regions are devising local policies to ensure food security and promote resilient food systems [8–11] while experiencing a growth of food recovery initiatives [4,12]. At the same time, food waste is exerting a pressing challenge in the design of sustainable food systems [13–16]. Recent studies suggested the relevance of food waste induced emissions, water consumption, land use, and related economic and social impacts: food waste represents the third emitter globally, with an estimated cost of about US\$940 billion [17,18]. Consequently, food waste is now at the core of several international policy agenda including the UN Sustainable Development Goals and the European Plan for a Circular Economy [19,20].

According to the European Food Banks Association from 2010 to 2016, the number of equivalent meals per day ensured by their member associations increased from about 700 million to over 1 billion, beneficiaries moved from 5 to 6.1 million, engaged people (social contracts, paid employees, volunteers) from almost 9000 to 16,400. The number of charities served moved from less than 28,000 to 37,200 [21]. In Italy in 2016, the almost 1,900 engaged volunteers and paid employees of the Fondazione Banco Alimentare (<http://www.bancoalimentare.it/it>) served around 133 million of equivalent meals to about 1.6 million beneficiaries of over 8,000 charities [22].

As the knowledge on food waste definition and scope boundaries, quantification and conditions that lead to its creation increases, policies, and policy proposals addressing its reduction are emerging. The array of interventions includes food donation and redistribution as policy instruments considering that food redistribution activities (FRAs) are increasingly recognized to have a pivotal role both in addressing food insecurity and preventing food surplus from being wasted [16,23,24]. FRAs include various types of organizations and initiatives that distribute edible food that is about to be wasted, directly or indirectly to food insecure people [19]. Most of the food is usually sourced from manufacturing and retail sector [23], although fresh fruits and vegetables collection from farmers' markets do exist [25]. FRAs can present relevant differences in terms of characteristics and delivery, depending on the local context and intervention strategies. They can be differentiated by type, product range, and freedom of choice by the client, price charged, services offered in addition to food provision, donations accepted (see Figure 1 and Table 1).

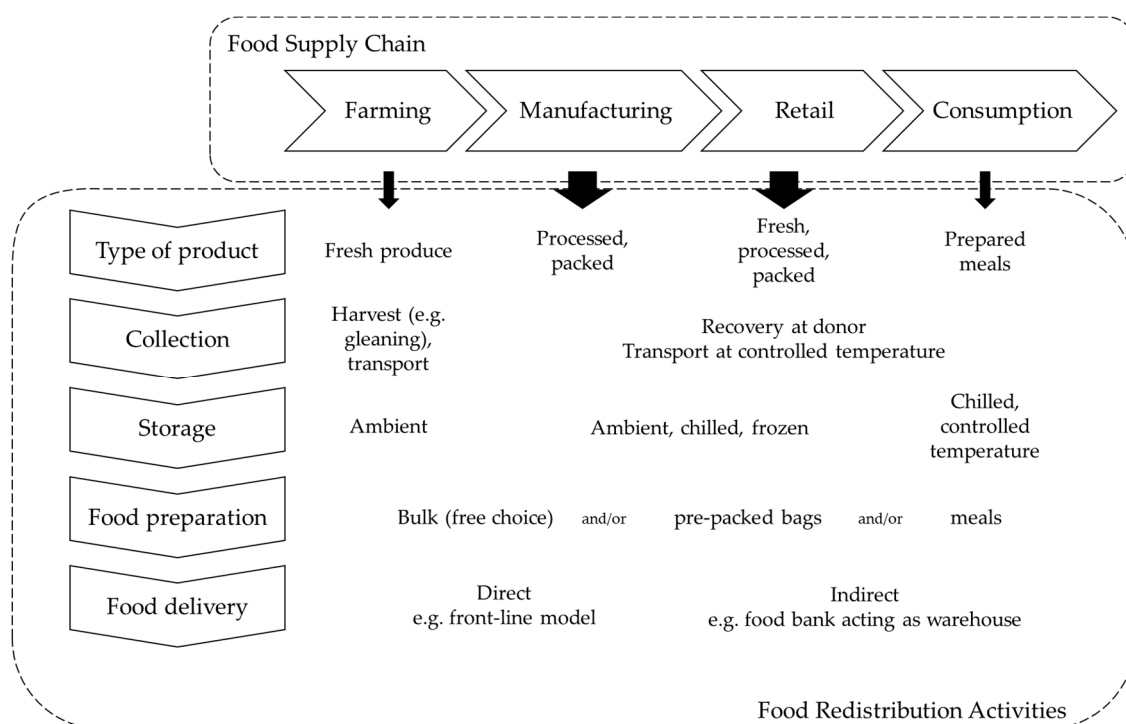


Figure 1. Schematic representation of food redistribution activities.

Table 1. Characteristics of food redistribution activities.

Characteristic	Description
Type	Food bank, food pantry, soup kitchen, social supermarkets, shelters
Product range and freedom of choice by the client	Free choice vs. pre-packed bags
Price charged	Free distribution, symbolic price, reduced price
Services offered in addition to food provision	Employment, counseling, house, etc.
Donations accepted	Products or money, organization and companies or private individuals

While food waste prevention through FRAs can have direct effects in terms of avoided environmental impacts [26,27], these activities can also lead to potential social and economic benefits [19,28]. Some authors critically discussed the general role of food redistribution in society [29,30]. In particular, Cooper and Dumpleton [31] underlined how the increasing recourse to food banks in UK was largely deriving from the combined effect of welfare cuts and increasing poverty,

thus replacing traditional social safety nets. A similar conclusion was reached by Curtis [32] and Riches [33], who both argued that voluntary food assistance could ultimately draw the responsibility of assistance from the public to the private. Moreover, Loopstra and Tarasuk [4] suggest that food banks might be a poor indicator of food insecurity since the number and characteristics of people using food banks are a non-representative subset of the food insecure population. In general, the contribution of FRAs to waste prevention and poverty alleviation is characterized by the lack of a clear consensus [34,35]. When the impact on food access and security is regarded, food banks are usually crucial in granting access to food [36]. Notwithstanding, products offered sometimes do not match clients' expectations [37] or nutritional guidelines and needs [38–40].

Globally there is quite an extensive amount of literature on FRAs in various regions or countries, such as Australia [41,42], Austria [43–46], Canada [47,48], Belgium [49], Europe [12] Germany [50], Spain [51–53], Nordic Region [54], UK [55–58], and the US [25,59,60]. Some studies on food donations have been conducted also in Italy. Rovati et al. [61,62] focused on the food poverty perspective, surveying samples of food banks to draft a profile of users. Pesenti [63] discussed the Fondazione Banco Alimentare case as an example of social innovation, finding that its activities are stimulating new information exchanges and linkages and favoring social responsible behaviors. Few authors focused on socio-economic aspects, such as benefits for retailers and donors [64–67], network creation [68], or food safety [69].

In general, no consensus has been reached on the social impacts of FRAs and no comprehensive framework for assessment exists. Therefore, the aim of this paper is to profile food redistribution activities in the Emilia Romagna region and to identify their social impacts assessing their contribution to the improvement in the lives of social marginalized groups. The Emilia Romagna region was chosen as the study area considering the commitment of various local institutions and organizations in addressing food waste reduction and food redistribution. Last Minute Market (<http://www.lastminutemarket.it/>)—which is together with Fondazione Banco Alimentare a leading organization in food recovery initiatives—was funded in Bologna in 1998. The Emilia Romagna Region—following Lombardia—provides support to food recovery since 2007, while the Municipality of Sasso Marconi—together with Last Minute Market—created the association Sprecozero.net (<http://www.sprecozero.net/>) to share the best practices among municipalities. Overall, the over 900 FRAs spread across the regional territory provide food aid to approximately 150,000 food insecure people [70–72]. The study represents a preliminary assessment of social impacts according to the perception of food redistribution managers.

This work was inspired by the European Project FUSIONS (Food Use for Social Innovation by Optimising Waste Prevention Strategies—<http://www.eu-fusions.org/>). The project provided the methodological foundations to frame the analysis of the social impacts of food redistribution activities and ensured a fundamental support through consultations and discussions organized in the framework of the Project's activities.

2. Materials and Methods

The methodology foresaw different phases: (i) a literature review to identify the relevant impacts; (ii) two experts consultations [73,74] conducted to integrate the information retrieved with the literature review and to collect experts opinions on the social impacts of redistribution activities from a wide range of engaged stakeholders; (iii) the design and distribution of a questionnaire; and, (iv) data collection and analysis.

The literature review focused on the social aspects identified by the different authors, categorizing them around stakeholders' groups affected, typologies of impact, and magnitude of effect. Literature [51,57,75] and consultations suggested four groups of stakeholders—people in need, workers, donors, community, and society (including institutions, authorities, and policy makers)—as the most important actors engaged with food redistribution. As presented in Table 2 for each group, different social aspects were classified depending on their characteristics (e.g., social,

economic, psychological, health, and political aspects). Categories thus varied among different stakeholders. Depending on the assigned value and on the evidence found in the literature, the impacts were initially classified on a qualitative scale: (rather) positive/negative or controversial. This last category was including both impacts with no agreement among authors and impacts reputed to have debatable effects. It must be noted that in some impact categories there are only negative effects (e.g., psychological impacts). After the preliminary identification the following selection process was carried out to simplify the questionnaire. First, controversial impacts were excluded. Secondly, overlapping impacts were grouped within broader items (e.g., “overcoming social exclusion” includes “overcome isolation” and “feeling part of the community”). Finally, in the frame of the two consultations, the selection was proposed to a group of experts on food waste to review its consistency and relevance. Table 2 presents the final result of this process.

In order to assess respondents’ perceptions, a multiple-choice questionnaire consisting of a qualitative and a quantitative section, was drafted basing on selected impacts. The quantitative section consisted of questions aimed to identify the main features of sampled initiatives. Collected information regarded:

- Typology of food services (e.g., products and/or meals, donations or sale, etc.)
- Typology of non-food services (e.g., trainings, assistance, shelters, etc.)
- Categories of products received (fruit, meat, meals, etc.)
- Data about food mass flows (donated, redistributed, wasted, etc.)
- Workforce (amount by typology of contract, workers with disabilities, etc.)
- Amount of portions provided

In the qualitative section, the questionnaire was designed to investigate respondents’ perceptions on the selected impacts. All of the questions are referred to positive effects, thus all of the negative impacts were converted in positive terms.

Table 2. Impacts per group of stakeholder.

Stakeholders	Impact Category	Impacts	Sources
1. People in need	A. Social	Exchange of information	[29,44,45]
		Overcoming social exclusion	[29,44,49]
		Capacity building	[34,43,47]
	B. Economic	Cover basic needs	[45]
		Increase purchasing power	[23,29,35,44,45]
		Better household management	[46]
	C. Nutrition and health	Reduce likelihood of food insecurity	[36,57]
		Risk of receiving unsafe food	[30]
		Limited food choice	[30,37,39,43,50]
	D. Psychological	Unsuitable food	[30,36]
		Feelings of degradation	[30,36]
		Stigmatization	[23,34,44]
		Undignified way of receiving food	[36,57]
		Shame	[30]
		Limited autonomy	[30]
		Conflicts due to limited quantity and/or quality of products	[30]
Purchasing limits		[43]	
Required to give up privacy		[32]	

Table 2. Cont.

Stakeholders	Impact Category	Impacts	Sources
2. Workers	A. Employment possibilities	Employment for people with disabilities	[41]
		Higher prospects on labor	[23]
		Impact on skills, education and training	[34]
		Volunteering for unemployed	[48]
		Social integration	[50]
	B. Psychological	Employee satisfaction (Fixed terms employees)	[34,50]
		Employee satisfaction (Volunteering workers)	[34,50]
		Manager satisfaction about the functioning of internal processes and quality standards	[30]
		Manager satisfaction about external relations	[50]
3. Donors	A. Corporate social responsibility	Achievement of company goals of social responsibility	[35,41,43]
		Enhanced customer loyalty	[76]
	B. Psychological	Improved company identity and staff cohesion/motivation	[76]
	C. Economic and food waste reduction	Tax benefits	[34,40]
		Cost savings	[35,43]
Increased awareness on food waste		[77]	
4. Community and society	A. Economic	Provision of ancillary services	[34]
		Cost benefits (savings on food procurement, logistics, personnel)	[41]
	B. Local and community oriented aspects	Network building	[29,57]
		Lobbying	[29,57]
		Synergies among organizations, companies and authorities	[29,57]
		Give voice to food insecure households	[57]
	C. Policies and food poverty	Raising communication awareness towards food insecurity	[33,56,60]
		Raising communication awareness towards food safety	[29,56,60]
		Raising communication awareness towards waste	[29,34,43]
		Solution to food poverty	[34]
		Solution to excessive food production	[34]
		Food waste prevention	[29,34,43]

Answers were rated on a 6-point Likert scale, with 1 representing the lowest score (total disagreement, lower extent, etc.) and 6 the highest (complete agreement, maximum extent, etc.). It should be noted that an even number of grades might lead to limitations in data interpretation and analysis. Nevertheless, considering that this study aimed at a preliminary assessment, it was deemed useful to force the respondents to choose a position.

The questionnaire was then distributed via e-mail to a sample of food redistribution initiatives in the Emilia-Romagna region. Roughly 900 FRAs are estimated to operate in the area [22,72]. The sample included 61 FRAs spread over the region that collaborate with Last Minute Market (LMM) [78]. The types of food distributing initiatives ranged from food banks and pantries to shelters and religious or civic organizations delivering various services to families, minors, migrants, etc. The respondents were the managers of the initiatives. Since after the initial distribution the response rate was rather low, a second round of interviews was carried out via phone with non-respondents. The analysis of results was carried out to derive a draft profile of the initiatives and to identify the main hotspots of perceived

social impact and areas of agreement/disagreement within the sample. Results should then serve as a background for building a more complete assessment framework with another methodological approach (e.g., Social Life Cycle Assessment [79]).

3. Results and Discussion

3.1. Profile of Surveyed Organizations

According to collected information, almost all of the charities distributed either food products (32) or cooked meals (26). Only three charities redistributed both cooked and uncooked food. This is probably due to the increased complexity of the redistribution operations in case both types of services are carried out at the same time. Furthermore, food offered by charity associations depends on donated products. In fact, only three charities recovered cooked meals directly. This figure also depends on the additional issues related to recovery operations, such as the compliance with physical and regulatory requirements related to food (e.g., temperature, hygiene, and prophylaxis) and the narrow time available between the recovery and the delivery of meals.

Similar considerations derive from data on donated products. All of the charities received food belonging to the following categories: (a) fresh fruit and vegetables, (b) bread and bakery products, and (c) other non-perishable products. Only 53% of the charities managed also dairy products and only 42% of them included meat and fish. These food categories are easily perishable, thus their donation, recovery, and storage are more complex and expensive, due to the need for appropriate equipment to ensure the cold chain.

In 2014, charity organizations received and distributed 596 tons of food, while in 2015 there was an increase to 642 tons (+8%). In terms of scale of operations, most initiatives (48) distributed 10 tons or less, nine between 11 and 20 tons, and three between 21 and 40 tons. Only one charity distributed a very high amount of food (more than 200 tons). Overall, these FRAs served the equivalent of ab. 1095 servings per day.

FRAs profiles are summarized in Table 3.

Table 3. Food redistribution activities profiles.

Number of FRAs by:						
Type of food redistribution	Only food products	Only prepared meals	Products and prepared meals	Symbolic sale		
	35	29	3	0		
Type of food received	Fruits and vegetables	Bread and bakeries	Meat and fish	Dairy products	Other food	Prepared meals
	61	61	42	54	61	3
Typology of non-food service	Counseling centers	Employment services	Foster homes and safe houses	Elder care	No further service	Other
	17	12	15	5	6	5
Amount of:						
	Total 2014	Average per FRA 2014	Total 2015	Average per FRA 2015		
Food redistributed (in tons)	596.7	9.8	642.8	10.5		
Yearly equivalent meals	431,500	7074	456,850	7489		

Notably, all of the charities provided a null figure when asked about food waste caused. Several reasons may explain the fact that organizations do not report about their own food waste. For example, when distributing donated food through baskets or shoppers, most food waste is likely to occur at the recipient level, thus organizations could be unaware of this potential figure. Nevertheless, charities that were also preparing meals did not report figures about food waste. Therefore, the collection and interpretation of this data require further investigation.

A large share (90%) of surveyed organizations consisted of charities dealing with several social services, such as counseling (28%), employment opportunities (20%), family homes (13%), medical care (8%), and elderly care (8%). These are essential welfare services for the vulnerable groups of the population that hardly meet their basic needs, and food donations mainly help charities in reducing costs. Indeed, food redistribution was not the main purpose of these charities, so much that none of them provided other food-related services, like cooking and housekeeping lessons, or food waste awareness activities, etc.

A section of the questionnaire aimed at assessing the job creation capacity of surveyed charity organizations. In total, in 2015, there were 180 full-time and 167 part-time or fixed-term employees. More relevant was the recourse to volunteering, which involved 510 volunteers. The total workforce included 92 people with disabilities and 39 unemployed. These latter figures suggest that the surveyed associations can have a relevant occupational impact.

3.2. Perception of Social Impact of Food Redistribution

The second set of results concerned the perceived impact generated by food redistribution activities on the four different categories of stakeholders: (1) people in need, (2) workers, (3) donors, and (4) community and society.

As for people in need (Table 4), the social impact of food recovery and distribution activities organized by charities was perceived as rather positive in terms of exchange of information (on services provided by the same associations or other local entities), as well as in helping to overcome social exclusion. Less relevant was the influence that most respondents attributed to their activities in terms of acquisition of new skills (capacity building). In contrast with other countries [34,43,47], this is most likely due to the limited involvement of beneficiaries in the management of donated food. The promotion of such participation could represent an additional value for redistribution activities, even though a potential substitution effect could generate on volunteers.

Table 4. Selected questions and answers related to people in need (in %; 1 = lowest score).

	1	2	3	4	5	6
To what extent does your FRA help people in need to:						
acquire new competences	18	62.3	6.6	6.6	3.3	3.3
receive safe food	0.0	0.0	0.0	5.0	55.7	39.3
State your agreement with the following:						
people in need feel empowered	0.0	57.4	32.8	6.6	3.3	0.0
they don't feel shame	0.0	42.6	24.6	19.7	9.8	3.3
To what extent are beneficiaries:						
not required to give up their privacy	0.0	0.0	0.0	0.0	47.5	52.5

Receiving food creates some positive economic impact on people in need. This is mainly related to basic needs satisfaction rather than the indirect effect on purchasing power, which could derive from the possibility to spend saved money on other goods and services, and it seems to confirm previous literature [23,29,35,44,45] Likewise, the possibility to improve their own household management capacity—e.g., by acquiring the ability to plan small expenses—was affected only marginally by food redistribution activities. Also in this regard, the provision of further services or the involvement of beneficiaries in the operations may generate some benefits.

According to respondents' perceptions, nutritional impacts from the improved access to food granted by charity organizations were more relevant. FRAs operators highly agreed that food received by beneficiaries was safe, adequately diversified, and, to a lower extent, suitable to their culture. Some disagreement emerged when taking into account the quantity, as a still positive but slightly lower effect was perceived. This probably reflects the inability of organizations to cope with food demand in a sufficient way. In fact, while food recovery remained rather stable, food poverty tended to increase

in the region in recent years [80,81]. The recent introduction of a national law on food donations is hoped to support food recovery thus enlarging the supply for FRAs [82]. However, as underlined by other studies, FRAs suffered some limits in improving overall food security when the achievement of a satisfactory supply of nutrient-dense food is taken into account [83,84].

Charity managers also responded about the perceived satisfaction of people in need towards the service offered, as a proxy of the psychological impact on beneficiaries. The general perception was that people in need considered the distribution initiatives an easy way to access good and safe food. However, interviewees agreed on the fact that food redistribution activities were not contributing to the empowerment of people in need or to their independence. Thus, beneficiaries could still feel some shame in the utilization of offered services, confirming results of previous studies on the emotional responses of receivers [85]. From this point of view, it is important that charities were not generally requiring private details to assisted people. The participation of beneficiaries to FRAs activities could be another way to improve the psychological impacts. Nevertheless, a more robust and qualitative investigation should be undertaken directly involving a sample of beneficiaries.

Workers of charity organizations are the second category of affected stakeholders (Table 5). Managers were asked about both hired (paid) workers and volunteers, and a specific focus was dedicated to disabled workers and formerly unemployed people. This represents a limitation of this study—as well as of reviewed literature—since no other vulnerable categories or further labor issues, as gender balance or contract duration, were assessed. About 13% of the charities involved in their operations disabled people and 9% involved unemployed people, 85% had active volunteers and all of the organizations hired at least one or more full-time worker. Disabled workers were thought to benefit from being involved mainly through the acquisition of new competences. Nevertheless, this did not seem to translate into an increased chance of being employed in the future, probably due to the structural poor access to labor for people with disabilities in Italy [86]. On the opposite, the perception about the unemployed group was that the involvement in food redistribution could moderately increase their chances for future employments through the acquisition of new skills and the integration into society. The psychological impact on workers was investigated through the level of satisfaction that was perceived as quite high for both employees and volunteers.

Table 5. Selected questions and answers related to workers and donors (in %; 1 = lowest score).

	1	2	3	4	5	6
To what extent does your FRA help disable workers to:						
increase job opportunities	0.0	42.9	42.9	0.0	14.2	0.0
acquire new competences	0.0	14.3	14.3	57.1	14.3	0.0
What is in your opinion the level of satisfaction of your:						
employees	0.0	0.0	6.6	45.9	36.1	11.5
volunteers	0.0	1.9	32.7	19.2	38.5	25.0
To what extent are donors benefiting in terms of:						
corporate social responsibility	0.0	3.3	44.3	39.3	11.5	1.6
tax benefits	0.0	34.4	37.7	24.6	3.3	0.0

According to respondents, meals and food donors were benefiting from food redistribution initiatives, with moderately positive impacts in terms of corporate social responsibility and public image (Table 5). There was also a perceived economic impact for those who donate food, related more to disposal costs savings and resource efficiency than potential tax benefits (e.g., tax exemptions). In general, FRAs managers confirmed insights from other studies carried out in Italy [65], highlighting the strong interest towards donations from various food supply chain stakeholders—retailers in particular—given the multiple advantages that this scenario can offer them.

Regarding local community and society, respondents perceived a more significant social impact from redistribution activities on social networking and the creation of synergies between public

authorities, private companies, and associations (Table 6). The establishment of FRAs in local communities usually builds on existing networks and relationships between different actors and can have a relevant role in strengthening such linkages. Social network analysis may be a potential methodology to derive more insights on this aspect, but so far it was applied only to food waste management [87]. The economic influence in terms of money savings from the public was instead lower, likely because charities were still getting support from governments. Charities perceived the inability to provide marginalized social groups a voice, acting as advocacy. Likewise, FRAs were not able to sufficiently raise the political attention related to food waste within their territory, although previous studies mentioned how food banks can have also such aim [88].

Table 6. Selected questions and answers related to local community and society (in %; 1 = lowest score).

	1	2	3	4	5	6
To what extent does your FRA help the community to:						
create social networks	0.0	0.0	8.2	36.1	47.5	8.2
increase political consciousness on FW	21.3	32.8	23.0	18.0	4.9	0.0
To what extent does your FRA contribute to:						
solve food overproduction	32.8	49.2	16.4	1.6	0.0	0.0
prevent food waste	19.7	36.1	26.2	16.4	1.6	0.0

In general, respondents perceived a modest ability to prevent food waste through their initiatives, but at the same time, they believed that this increased community awareness to the problem. Similarly, they realized that initiatives of the associations were definitively not a solution for the over-production of food, but more a tool to prevent food poverty. This confirms that FRAs can contribute limitedly to food waste prevention and can hardly substitute for policy actions against the structural causes of hunger [89,90].

4. Conclusions

Food redistribution activities represent a tool to address both food insecurity and food waste reduction. This twofold nature led to their rapid growth in terms of number, beneficiaries, engaged people, and served charities. This work aimed to profile food redistribution activities in Emilia Romagna and to assess their social impact as perceived by engaged stakeholders.

Charities can be sharply divided between those limiting their operations to food production and those working with cooked meals. Donated products range from fresh fruit and vegetables, to bread and bakery products, to other non-perishable products with only a limited number of charities managing also dairy and—even less—meat and fish. Their size is generally small and services are not limited to food redistribution but include other forms of social support as counseling, employment, shelter (i.e., family houses), medical and elderly care.

The work provided a preliminary assessment of the perceived impact generated by food redistribution activities on four different categories of stakeholders: (1) people in need, (2) workers, (3) donors, and (4) community and society. For the people in need the influence of food recovery and distribution activities was rather positive in terms of exchange of information and overcoming social exclusion. While economic benefits are rather small respondents' perceptions emphasized additional positive effects also in terms of nutritional and psychological impacts. Engaged workers presented different characteristics: employed (paid) workers, volunteers, disabled, and formerly unemployed people. The perception about the unemployed group was that food redistribution activities might moderately increase their chances for future employments, the acquisition of new skills, and the integration into society. A moderately positive impact was also felt on the side food donors that may increase their social responsibility, customer loyalty, and image and promote the cohesion of their staff. There was also a perceived economic impact for those who donate food, not so much in terms of tax benefits, but rather in terms of savings due to the costs of disposing of unsold products and a

greater understanding of the phenomenon of waste. Finally, regarding local community and society, respondents perceived a positive social impact deriving from the redistribution activities, but a limited influence on the food waste issue.

At a time when many governments reduce welfare spending, food redistribution activities are providing important services to stimulate social inclusion and fight food insecurity. Due to their positive impacts, they should receive adequate public support but they should also be considered as temporary solutions and—at least partially—as a failure of current social and economic policies since they are a non-governmental response to a situation of increased poverty and food insecurity. Therefore, in the future, the potential increase of food redistribution activities should be considered also a call for a review of current welfare payments and interventions. Policy interventions should target food insecurity not only encouraging food redistribution initiatives, but also ensuring a wider support to households and individuals through affordable housing, basic income, or employment opportunities.

As the importance of food redistribution initiatives to address food insecurity and food waste is growing, more efforts to investigate their role within the local community should be made. The analysis of their primary function should be extended to the identification and study of the additional services that food redistribution initiatives are providing to respond to emerging social needs. In order to reach such aims, future research should be devoted to explore the social impact hotspots identified through in-depth assessment and to develop methodological frameworks integrating also the economic and environmental aspects of food redistribution activities.

Acknowledgments: The literature review was partially inspired by the work that some of the authors carried out within the European Project FUSIONS (Food Use for Social Innovation by Optimising Waste Prevention Strategies—<http://www.eu-fusions.org/>); however, no financial support was received to carry out any part of the work.

Author Contributions: Authors contributed equally to design the research and writing the paper. All authors proofread and approved the final manuscript.

Conflicts of Interest: The authors declare no conflict of interest. The founding sponsors had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, and in the decision to publish the results.

References

1. Cavero, T. *A Europe for the Many, Not the Few*; Oxfam International: Oxford, UK, 2015.
2. International Labour Organization. *World Employment and Social Outlook: Trends 2016*; International Labour Organization: Geneva, Switzerland, 2016.
3. European Commission. *European Migration Network—2016 Annual Report on Migration and Asylum*; European Commission: Brussels, Belgium, 2016.
4. Loopstra, R.; Reeves, A.; Stuckler, D. Rising food insecurity in Europe. *Lancet* **2015**, *385*, 2041. [[CrossRef](#)]
5. Loopstra, R.; Reeves, A.; McKee, M.; Stuckler, D. Food insecurity and social protection in Europe: Quasi-natural experiment of Europe's great recessions 2004–2012. *Prev. Med.* **2016**, *89*, 44–50. [[CrossRef](#)] [[PubMed](#)]
6. Davis, O.; Geiger, B.B. Did Food Insecurity rise across Europe after the 2008 Crisis? An analysis across welfare regimes. *Soc. Policy Soc.* **2017**, *16*, 343–360. [[CrossRef](#)]
7. Borch, A.; Kjærnes, U. Food security and food insecurity in Europe: An analysis of the academic discourse (1975–2013). *Appetite* **2016**, *103*, 137–147. [[CrossRef](#)] [[PubMed](#)]
8. Sonnino, R. Feeding the City: Towards a New Research and Planning Agenda. *Int. Plan. Stud.* **2009**, *14*, 425–435. [[CrossRef](#)]
9. Brunori, G.; Di Iacovo, F. Urban Food Security and Landscape Change: A Demand-side Approach. *Landsc. Res.* **2014**, *39*, 141–157. [[CrossRef](#)]
10. Blay-Palmer, A.; Renting, H.; Dubbleing, M. *City-Region Food Systems: A Literature Review*; RUAF Foundation: Leusden, The Netherlands, 2015.
11. Coppo, G.; Stempfle, S.; Reho, M. Urban food strategies and plans: Considerations on the assessment construction. *City Territ. Archit.* **2017**, *4*, 8. [[CrossRef](#)]

12. González-Torre, P.; Lozano, S.; Adenso-Díaz, B. Efficiency Analysis of the European Food Banks: Some Managerial Results. *Volunt. Int. J. Volunt. Nonprofit Organ.* **2017**, *28*, 822–838. [[CrossRef](#)]
13. HLPE. *Food Losses and Waste in the Context of Sustainable Food Systems. A Report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security*; FAO: Rome, Italy, 2014; pp. 1–6.
14. Thyberg, K.L.; Tonjes, D.J. Drivers of food waste and their implications for sustainable policy development. *Resour. Conserv. Recycl.* **2016**, *106*, 110–123. [[CrossRef](#)]
15. Derqui, B.; Fayos, T.; Fernandez, V. Towards a more sustainable food supply chain: Opening up invisible Waste in food service. *Sustainability* **2016**, *8*, 693. [[CrossRef](#)]
16. Canali, M.; Amani, P.; Aramyan, L.; Gheoldus, M.; Moates, G.; Östergren, K.; Silvennoinen, K.; Waldron, K.; Vittuari, M. Food Waste Drivers in Europe, from Identification to Possible Interventions. *Sustainability* **2017**, *9*, 37. [[CrossRef](#)]
17. FAO. *Food Wastage Footprint. Impacts on Natural Resources. Summary Report*; FAO: Rome, Italy, 2013; ISBN 9789251077528.
18. FAO. *Food Wastage Footprint: Full Cost-Accounting*; FAO: Rome, Italy, 2014; ISBN 978-92-5-108512-7.
19. Scherhauser, S.; Lebersorger, S.; Pertl, A.; Obersteiner, G.; Schneider, F.; Falasconi, L.; De Menna, F.; Vittuari, M.; Hartikainen, H.; Katajajuuri, J.-M.; et al. *Criteria for and Baseline Assessment of Environmental and Socio-Economic Impacts of Food Waste*; BOKU University of Natural Resources and Life Sciences, Institute of Waste Management: Wien, Austria, 2015; ISBN 9783900932329.
20. European Commission. *An EU Action Plan for the Circular Economy*; European Commission: Bruxelles, Belgium, 2015; Volume 614.
21. European Food Bank Association. Available online: <https://eurofoodbank.org> (accessed on 2 July 2017).
22. Fondazione Banco Alimentare. Available online: www.bancoalimentare.it (accessed on 2 July 2017).
23. Schneider, F. The evolution of food donation with respect to waste prevention. *Waste Manag.* **2013**, *33*, 755–763. [[CrossRef](#)] [[PubMed](#)]
24. Vittuari, M.; Azzurro, P.; Gaiani, S.; Gheoldus, M.; Burgos, S.; Aramyan, L.; Valeeva, N.; Rogers, D.; Östergren, K.; Timmermans, T.; et al. *Guidelines for a European Common Policy Framework on Food Waste Prevention*; Wageningen University & Research: Wageningen, The Netherlands, 2016.
25. Sisson, L.G. Food Recovery Program at Farmers' Markets Increases Access to Fresh Fruits and Vegetables for Food Insecure Individuals. *J. Hunger Environ. Nutr.* **2016**, *11*, 337–339. [[CrossRef](#)]
26. Reynolds, C.; Piantadosi, J.; Boland, J. Rescuing Food from the Organics Waste Stream to Feed the Food Insecure: An Economic and Environmental Assessment of Australian Food Rescue Operations Using Environmentally Extended Waste Input-Output Analysis. *Sustainability* **2015**, *7*, 4707–4726. [[CrossRef](#)]
27. Eriksson, M.; Strid, I.; Hansson, P. Carbon footprint of food waste management options in the waste hierarchy—A Swedish case study. *J. Clean. Prod.* **2015**, *93*, 115–125. [[CrossRef](#)]
28. Butcher, L.; Chester, M.; Aberle, L.; Bobongie, V.; Davies, C.; Godrich, S.; Milligan, R.; Tartaglia, J.; Thorne, L.; Begley, A. Foodbank of Western Australia's healthy food for all. *Br. Food J.* **2014**, *116*, 1490–1505. [[CrossRef](#)]
29. Poppendieck, J. Dilemmas of emergency food: A guide for the perplexed. *Agric. Human Values* **1994**, *11*, 69–76. [[CrossRef](#)]
30. Selke, S. *Fast Ganz Unten: Wie Man in Deutschland Durch die Hilfe von Lebensmitteltafeln Satt Wird*; Westfälisches Dampfboot: Munster, Germany, 2009; ISBN 978-3-89691-754-6.
31. Cooper, N.; Dumbleton, S. *Walking the Breadline: The Scandal of Food Poverty in 21st-Century Britain*; Oxfam GB and Church Action on Poverty: London, UK, 2013.
32. Curtis, K.A. Urban poverty and the social consequences of privatized food assistance. *J. Urban Aff.* **1997**, *19*, 207–226. [[CrossRef](#)]
33. Riches, G. Food Banks and Food Security: Welfare Reform, Human Rights and Social Policy. Lessons from Canada? *Soc. Policy Adm.* **2002**, *36*, 648–663. [[CrossRef](#)]
34. Hawkes, C.; Webster, J. *Too Much and Too Little? Debates on Surplus Food Redistribution*; Sustain—The Alliance for Better Food and Farming: London, UK, 2000.
35. Lorenz, S. *Tafeln im Flexiblen Überfluss Ambivalenzen Sozialen und Ökologischen Engagements*; Transcript Verlag: Bielefeld, Germany, 2012; ISBN 978-3-8376-2031-3.
36. Loopstra, R.; Tarasuk, V. The Relationship between Food Banks and Household Food Insecurity among Low-Income Toronto Families. *Can. Public Policy/Anal. Polit.* **2012**, *38*, 497–514. [[CrossRef](#)]

37. Hamelin, A.-M.; Beaudry, M.; Habicht, J.-P. Characterization of household food insecurity in Québec: Food and feelings. *Soc. Sci. Med.* **2002**, *54*, 119–132. [[CrossRef](#)]
38. Holben, D.H. Food Bank Users in and Around the Lower Mainland of British Columbia, Canada, Are Characterized by Food Insecurity and Poor Produce Intake. *J. Hunger Environ. Nutr.* **2012**, *7*, 449–458. [[CrossRef](#)]
39. Ross, M.; Campbell, E.C.; Webb, K.L. Recent Trends in the Nutritional Quality of Food Banks' Food and Beverage Inventory: Case Studies of Six California Food Banks. *J. Hunger Environ. Nutr.* **2013**, *8*, 294–309. [[CrossRef](#)]
40. Shimada, T.; Ross, M.; Campbell, E.C.; Webb, K.L. A Model to Drive Research-Based Policy Change: Improving the Nutritional Quality of Emergency Food. *J. Hunger Environ. Nutr.* **2013**, *8*, 281–293. [[CrossRef](#)]
41. Koshy, P.; Phillimore, J. Bridge of Support: The Economic Impact of Foodbank WA. *J. Contemp. Issues Bus. Gov.* **2008**, *14*, 21.
42. Wilson, A.; Szwed, N.; Renzaho, A. Developing Nutrition Guidelines for Recycled Food to Improve Food Security Among Homeless, Asylum Seekers, and Refugees in Victoria, Australia. *J. Hunger Environ. Nutr.* **2012**, *7*, 239–252. [[CrossRef](#)]
43. Bernhofer, G.; Pladerer, C. *Lebensmittelweitergabe in Wien*; Österreichisches Ökologie-Institut: Wien, Austria, 2013.
44. Bono, M.L. Sozialmärkte als Vermittler zwischen Lebensmittelindustrie und Armen. In *Nonprofit-Organisationen und gesellschaftliche Entwicklung: Spannungsfeld zwischen Mission und Ökonomie*; Universitätsverlag Rudolf Trauner: Linz, Austria, 2002; pp. 313–325.
45. Leitsberger, P. *Die Bedeutung des Sozialmarktes für Armutsgefährdete und -Betroffene Personen*; University of Wien: Wien, Austria, 2011.
46. Lienbacher, E.; Holweg, C. *Strukturanalyse Sozialmärkte in Österreich*; Eigenverl. Inst. für Handel und Marketing: Wien, Austria, 2011; ISBN 3854750749.
47. Food Banks Canada. *Hunger Count 2013. A Comprehensive Report on Hunger and Food Bank Use in Canada, and Recommendations for Change*; Food Banks Canada: Mississauga, ON, Canada, 2013.
48. Tarasuk, V.; Eakin, J.M. Charitable food assistance as symbolic gesture: An ethnographic study of food banks in Ontario. *Soc. Sci. Med.* **2003**, *56*, 1505–1515. [[CrossRef](#)]
49. Mulquin, M.-E.; Siaens, C.; Wodon, Q.T. Hungry for Food or Hungry for Love? Learning from a Belgian Soup Kitchen. *Am. J. Econ. Sociol.* **2000**, *59*, 253–265. [[CrossRef](#)]
50. Von Normann, K. *Evolution der Deutschen Tafeln: Eine Studie über die Entwicklung Caritativer Nonprofit-Organisationen zur Verminderung von Ernährungsarmut in Deutschland*; Bad Neuenahr: Wehle, Germany, 2003; ISBN 3935307306.
51. González-Torre, P.L.; Coque, J. How is a food bank managed? Different profiles in Spain. *Agric. Hum. Values* **2016**, *33*, 89–100. [[CrossRef](#)]
52. Coque, J.; González-Torre, P.L. Adapting Nonprofit Resources to New Social Demands: The Food Banks in Spain. *Sustainability* **2017**, *9*, 643. [[CrossRef](#)]
53. González-Torre, P.; Coque, J. From Food Waste to Donations: The Case of Marketplaces in Northern Spain. *Sustainability* **2016**, *8*, 575. [[CrossRef](#)]
54. Hanssen, O.J.; Ekegren, P.; Gram-Hanssen, I.; Korpela, P.; Langevad-Clifforth, N.; Skov-Olsen, K.; Silvennoinen, K.; Stare, M.; Stenmarck, Å.; Svanes, E. *Food Redistribution in the Nordic Region: Experiences and Results from a Pilot Study*; Nordic Council of Ministers: Copenhagen, Denmark, 2015; ISBN 9289338571.
55. Alexander, C.; Smaje, C. Surplus retail food redistribution: An analysis of a third sector model. *Resour. Conserv. Recycl.* **2008**, *52*, 1290–1298. [[CrossRef](#)]
56. Lambie, H. *The Trussell Trust Foodbank Network: Exploring the Growth of Foodbanks Across the UK*; SURGE: Coventry, UK, 2011.
57. Lambie-Mumford, H.; Crossley, D.; Verbeke, M. *Household Food Security in the UK: A Review of Food Aid-Final Report*; Defra: London, UK, 2014.
58. Caplan, P. Win-win? Food poverty, food aid and food surplus in the UK today. *Anthropol. Today* **2017**, *33*, 17–22. [[CrossRef](#)]
59. Chapnick, M.; Barnidge, E.; Sawicki, M.; Elliott, M. Healthy Options in Food Pantries—A Qualitative Analysis of Factors Affecting the Provision of Healthy Food Items in St. Louis, Missouri. *J. Hunger Environ. Nutr.* **2017**. [[CrossRef](#)]

60. Mabli, J.; Cohen, R.; Potter, F.; Zhao, Z. *Hunger in America 2010: National Report Prepared for Feeding America*; Mathematica Policy Research: Princeton, NJ, USA, 2010; Volume 2393.
61. Rovati, G.; Pesenti, L. *Food Poverty, Food Bank. Aiuti Alimentari e Inclusione Sociale*; Vita e Pensiero: Milan, Italy, 2015; ISBN 9788834329917.
62. Rovati, G.; Campiglio, L. *I Cento Volti Dell'indigenza. Il Profilo delle Famiglie Sostenute dalla Rete Banco Alimentare*; Guerini & Associati: Milan, Italy, 2009.
63. Pesenti, L. Banco Alimentare, soggetto di innovazione sociale. In *La Povertà Alimentare in Italia. Prima Indagine Quantitativa e Qualitativa*; Campiglio, L., Rovati, G., Eds.; Fondazione per la Sussidiarietà: Milan, Italy, 2009.
64. Giuseppe, A.; Mario, E.; Cinzia, M. Economic benefits from food recovery at the retail stage: An application to Italian food chains. *Waste Manag.* **2014**, *34*, 1306–1316. [[CrossRef](#)] [[PubMed](#)]
65. Cicatiello, C.; Franco, S.; Pancino, B.; Blasi, E. The value of food waste: An exploratory study on retailing. *J. Retail. Consum. Serv.* **2016**, *30*, 96–104. [[CrossRef](#)]
66. Sert, S.; Garrone, P.; Melacini, M.; Perego, A. Surplus Food Redistribution for Social Purposes: The Case of Coop Lombardia. In *Organizing Supply Chain Processes for Sustainable Innovation in the Agri-Food Industry*; Emerald Group Publishing Limited: Bingley, UK, 2016; pp. 153–173.
67. Tonelli, F.; Brignone, G.; Spirito, F. La procedura di ritiro e di distribuzione alimenti del Banco Alimentare. *Logist. Manag.* **2008**. Available online: <http://porto.polito.it/2497014/> (accessed on 13 July 2017).
68. Baglioni, S.; De Pieri, B.; Tallarico, T. Surplus Food Recovery and Food Aid: The Pivotal Role of Non-profit Organisations. Insights From Italy and Germany. *Volunt. Int. J. Volunt. Nonprofit Organ.* **2016**. [[CrossRef](#)]
69. Milicevic, V.; Colavita, G.; Castrica, M.; Ratti, S.; Baldi, A.; Balzaretto, C.M. Risk assessment in the recovery of food for social solidarity purposes: Preliminary data. *Ital. J. Food Saf.* **2016**. [[CrossRef](#)] [[PubMed](#)]
70. Italian Ministry of Labor and Social Policies. *Relazione di Attuazione Annuale Fead—OP I. Anno 2014*; Italian Ministry of Labor and Social Policies: Rome, Italy, 2015.
71. Azzurro, P. Recupero e donazione di cibo in Emilia-Romagna. *Ecoscienza* **2016**, *2*, 70–72.
72. Delegazione Regionale Caritas Emilia Romagna. *L'incontro fra Solidarietà e Povertà Alimentare. Indagine 2013 su Enti, Beneficiari e Volontari All'interno del Circuito della Raccolta e Distribuzione di Prodotti Alimentari a Fini di Solidarietà Sociale in Emilia-Romagna*; Delegazione Regionale Caritas Emilia Romagna: Bologna, Italy, 2014.
73. FUSIONS. Minutes of the FUSIONS European Platform Meeting. Unpublished work, 2013.
74. FUSIONS. Minutes of the Consultation Held at the Fourteenth Edition of the Sardinia Symposium. Unpublished work, 2013.
75. Do Paço, A.; Agostinho, D. Does the kind of bond matter? The case of food bank volunteer. *Int. Rev. Public Nonprofit Mark.* **2012**, *9*, 105–118. [[CrossRef](#)]
76. Teron, A.C.; Tarasuk, V.S. Charitable food assistance: What are food bank users receiving? *Can. J. Public Health* **1999**, *90*, 382–384. [[PubMed](#)]
77. Adams, C.; Tabacchi, M. Perishable-Food-Rescue Programs: Status and Prospects. *Cornell Hotel Restaur. Adm. Q.* **1997**, *38*, 62–67. [[CrossRef](#)]
78. Falasconi, L.; Vittuari, M.; Politano, A.; Segrè, A. Food Waste in School Catering: An Italian Case Study. *Sustainability* **2015**, *7*, 14745–14760. [[CrossRef](#)]
79. UNEP; Setac Life Cycle Initiative; Benoît-Norris, C. *Guidelines for Social Life Cycle Assessment of Products*; UNEP DTIE Sustainable Consumption and Production Branch: Paris, France, 2009; Volume 15.
80. Regione Emilia-Romagna Povertà, nel 2016 già Recuperate 16.552 Tonnellate di Cibo. Bonaccini ai 25 anni del Banco Alimentare: “Fondamentale il Vostro Impegno”. Available online: <http://www.regione.emilia-romagna.it/notizie/2016/ottobre/poverta-nel-2016-gia-recuperate-16-552-tonnellate-di-cibo-bonaccini-ai-25-anni-del-banco-alimentare-fondamentale-il-vostro-impegno> (accessed on 9 January 2017).
81. Regione Emilia-Romagna. *Redditi, Povertà ed Esclusione Sociale in Emilia-Romagna. Anno 2014*; Regione Emilia-Romagna: Bologna, Italy, 2015.
82. Italian Parliament. *LEGGE 19 Agosto 2016, n. 166 Disposizioni Concernenti la Donazione e la Distribuzione di Prodotti Alimentari e Farmaceutici a Fini di Solidarietà Sociale e per la Limitazione degli Sprechi*; Italian Parliament: Rome, Italy, 2016.
83. Bazerghi, C.; McKay, F.H.; Dunn, M. The Role of Food Banks in Addressing Food Insecurity: A Systematic Review. *J. Community Health* **2016**, *41*, 732–740. [[CrossRef](#)] [[PubMed](#)]

84. Neter, J.E.; Dijkstra, S.C.; Visser, M.; Brouwer, I.A. Dutch food bank parcels do not meet nutritional guidelines for a healthy diet. *Br. J. Nutr.* **2016**, *116*, 526–533. [[CrossRef](#)] [[PubMed](#)]
85. Van der Horst, H.; Pascucci, S.; Bol, W. The “dark side” of food banks? Exploring emotional responses of food bank receivers in the Netherlands. *Br. Food J.* **2014**, *116*, 1506–1520. [[CrossRef](#)]
86. Eurostat Disability Statistics—Labour Market Access. Available online: http://ec.europa.eu/eurostat/statistics-explained/index.php/Disability_statistics_-_labour_market_access (accessed on 9 May 2017).
87. Xu, W.; Zhou, C.; Cao, A.; Luo, M. Understanding the mechanism of food waste management by using stakeholder analysis and social network model: An industrial ecology perspective. *Ecol. Model.* **2016**, *337*, 63–72. [[CrossRef](#)]
88. Santini, C. The adaptive change of the Italian Food Bank foundation: A case study. *Br. Food J.* **2014**, *116*, 1446–1459. [[CrossRef](#)]
89. Booth, S.; Whelan, J. Hungry for change: The food banking industry in Australia. *Br. Food J.* **2014**, *116*, 1392–1404. [[CrossRef](#)]
90. Warshawsky, D.N. The devolution of urban food waste governance: Case study of food rescue in Los Angeles. *Cities* **2015**, *49*, 26–34. [[CrossRef](#)]



© 2017 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).