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WP 3_Report – UFIL Food Aid

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1. Executive Summary

Guaranteeing food security for all and reducing food waste are key priorities for sustainable development, and central objectives in the United Nations 2030 Agenda. Recovery and redistribution of surplus food for social purposes – i.e. for human consumption and in particular for most vulnerable people – is a promising solution to tackle economic, social and environmental issues at the same time.

At city level, municipalities around the world have begun developing urban food policies to foster the sustainability of urban food systems. The municipality of Milan launched in 2015 its own Food Policy Office, and since then it has been coordinating an international network of cities called Milan Urban Food Policy Pact. Milan has developed over the years a favourable regulatory environment for surplus food redistribution, which has enabled the implementation of several initiatives of food recovery and redistribution at local level. However, there are some limitations in the “traditional” food banking system, and virtuous initiatives are not scaled yet at a systemic level.

Given this context, the innovation presented in this UFIL is a food aid innovation (“Local Food Waste Hub”) aimed at developing a multi-stakeholder cross-sector partnership for redistributing surplus food for needy people in urban areas. The innovation has been studied through various methods, in line with URBAL Methodology: in-depth literature review, identification of key stakeholders, followed by interviews and meetings, and participant observation. Then, an *innovation impact pathway map* – describing the new activities, the changes brought by them and the generated impacts – has been sketched and validated through interviews with key stakeholders.

The innovation is centered around a cross-sector partnership between the local government (the Municipality of Milan), food supply chain enterprises, business associations, non-profit organizations and universities (Politecnico di Milano). The system aggregates surplus food through a consolidation hub and brings benefits in terms of quality and variety of surplus food recovered, efficiency of recovery and redistribution processes and activities and possibilities to recover surplus food at a local level. Being integrated in a neighbourhood context, the hub facilitates relationships and human connection among people and organizations evolved in the recovery. Moreover, the system is based on an innovative governance model which favors cooperation, inter-organizational learning, visibility on operations and results, reduction of information asymmetries between participants, and reputational benefits for participants.

2. The innovation context

2.1 Problem introduction

Food security is defined as a condition in which "everyone, at all times, has physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and their preferences for an active and healthy life" (World Food Summit, 1996). While originally food insecurity has been mostly a rural issue, in the last decades also urban areas in developed countries have started to be the scene of increasing inequalities, poverty and marginalization. Low-income people, even when they have access to a calorically sufficient amount of food, often follow an unbalanced diet (high in fats and sugars and low in proteins and vitamins), making them more likely to develop health issues such as cardiovascular problems, diabetes, obesity. In more extreme situations, people cannot afford one or more meals per day, and must resort to welfare measures put in place by governments or food-aid distribution activities promoted and managed by non-profit organizations. Furthermore, vulnerable segments of the population are often concentrated in certain areas and districts of the city. For this reason, municipalities have begun to develop *ad hoc* policy responses that can synergically combine the sustainability of agri-food systems with more historical urban policy objectives (such as infrastructure development, education, housing, employment), leading to the emergence of *urban food policies*.

The economic, environmental and social impacts linked to the generation of surplus and waste in the food supply chain are massive, and much of the sustainability effort in the supply chain is concentrated towards the alleviation of the so-called "food waste paradox": while in the world 1.3 billion tons of food are wasted every year, more than 800 million people suffer from hunger. The centrality of the issue is reaffirmed by the importance assumed within the framework of the United Nations Sustainable Development Goals: in particular, SDG 2 ("No Hunger") and Target 3 of SDG 12 ("halve per capita global food waste [...] and reduce food losses along production and supply chains").

Multiple academic and institutional sources agree in identifying redistribution as the priority option of surplus food management. In fact, through recovery and redistribution it is possible to address both food waste and food poverty in a synergic way, reusing surplus for social purposes, i.e. for human consumption. This is particularly true in developed countries, where surplus food is very often generated in the final stages of the supply chain as an (at least partially) inevitable

consequence of an imperfect matching between supply and demand, and therefore cannot be effectively fought by concentrating only on the prevention of its generation.

Recovery and redistribution of surplus food are often carried out by food banks, non-profit organizations (NPOs) responsible for the logistic operations of recovery, storage and distribution of surplus food to front-line NPOs (such as food pantries) that serve needy people. The traditional model of food banking suffers from two major limitations, which result in unbalanced food mixes: the limited capacity to manage perishable products (fresh food), and the dependence on uncertain amounts and quality of food donations. Furthermore, the traditional food banking model is characterized by logistic constraints (such as a minimum collection size to allow the feasibility of recovery trips) and by a marginal involvement of public welfare and policy.

2.2 Food recovery and redistribution in Milan

Milan, known worldwide as a leading capital of business, fashion and design, is a metropolis in Northern Italy and capital of the Lombardy region. The city counts a population of 1.4 million inhabitants, following Rome as the second most populated in Italy. In the latest years, Milan has gone through a process of massive growth, increasingly putting “food” at the centre of its development policies: a turning point in this process has been the hosting of the World Exposition 2015, which drew more than 20 million visitors from all over the world. The event – with the motto “Feeding the Planet, Energy for Life” – focused on the critical topics of food security, innovation in agri-food supply chains, technology for agriculture and biodiversity and in general food culture all over the world. Despite being an industrialized and economically leading city, Milan – as most densely populated urban areas – faces the paradox of food abundance and waste and food insecurity: indeed there is an high concentration of potential surplus food generators, both supply chain actors and final consumers, while at the same time 75,000 people (about 6% of the Milan population) live in poverty and cannot afford to purchase essential goods, above all sufficient and nutritious food¹.

To respond to this challenge, several actors (food service operators, retailers and local shops, non-profit organizations, start-ups) are developing solutions to recover and redistribute surplus food and reduce food waste across the city, and the Municipality has been reinforcing its policy efforts over the last years to build a systemic ground to integrate individual initiatives in a collective action.

¹ Data from the Food Policy Office

In 2014, the Municipality – together with Cariplo Foundation, the charitable branch of a large Italian bank, and with the technical and scientific support of EStà (Economia e Sostenibilità) – began developing a comprehensive Food Policy with some priority goals to favour the transition to a more sustainable urban food system in Milan. Moreover, since 2015 Milan coordinates an international network of metropolitan cities to pursue the achievement of sustainable, fair and inclusive urban food systems, formalized as the Milan Urban Food Policy Pact (MUFPP)² and signed by 210 cities around the world. Since February 2017, the Food Policy Office is direct responsibility of the Vice Mayor, who brings its instances at the core of the municipal activity. The five priorities of the Food Policy are assuring healthy food to city population, promoting food system sustainability, food education, fighting food waste, sustaining and promoting the scientific research in the agri-food sector.

The guidelines of the Food Policy related to the strategic objective of reducing food waste include the *promotion of recovery and redistribution of surplus food* and the *promotion of partnerships with institutional, social and economic entities*. In 2017 Milan joined the European Platform for Food Losses and Food Waste³, as the only local entity admitted to the platform, together with the European Commission, 27 countries and private organizations. In 2018, in order to promote corporate food donations, Milan’s municipality established that donors may be able to deduct up to 20% of the variable part of the waste management municipal tax.

The evolution of the local food redistribution policy was aided by a favourable regulatory environment at the national level in Italy. Indeed, Legislative Decree 460/1997 and Law 133/1999 grant VAT exemptions on donations. The Good Samaritan Law of 2003 (155/2003) limits the safety liability of donors to their internal processes until the donation. Legislative Decree 35/2005 allows companies to deduct the value of donated items, up to 10% of taxable income or 70,000 €/year. Law 166/16 (“Gadda Law”) simplifies donation processes paperwork and allows municipalities to provide further fiscal incentives.

The innovation described in this report is inserted in this context and it is a food aid innovation, more specifically an innovative model for surplus food redistribution for human consumption in urban areas, where the Municipality is a key stakeholder – as it will be described in detail later.

² <https://www.milanurbanfoodpolicypact.org/>

³ https://ec.europa.eu/food/safety/food_waste/eu_actions/eu-platform_en

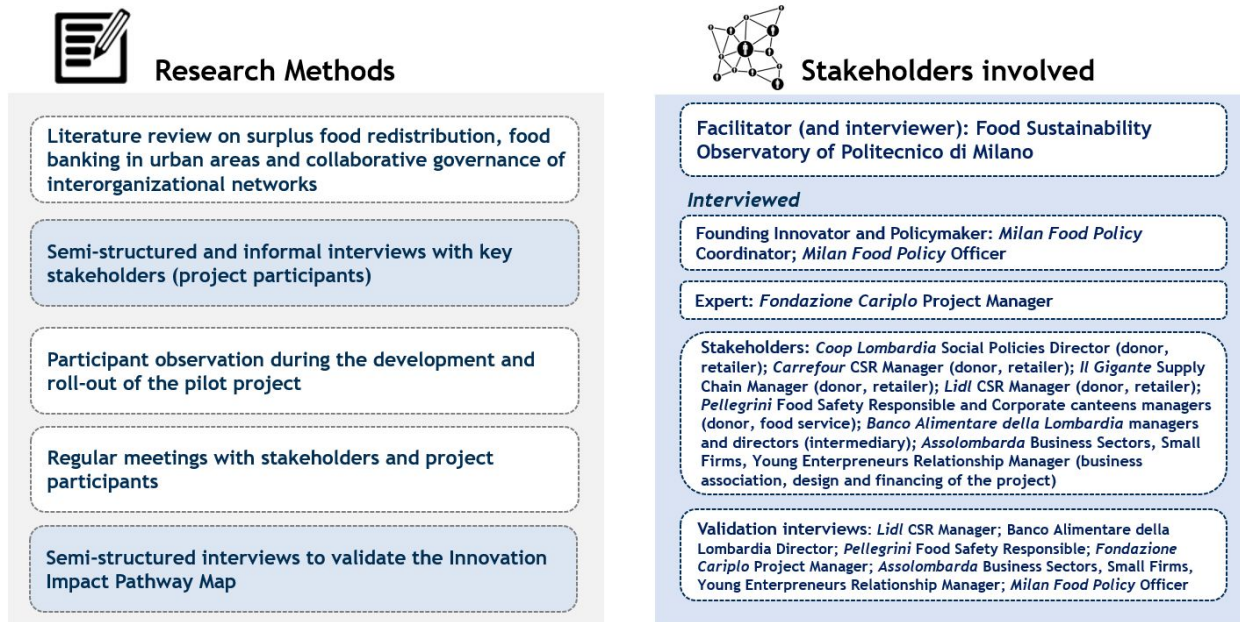
3. Gaps and innovation: the methodology

The redistribution of surplus food for social purposes at the urban level is a complex issue that requires a variety of different actors involved to effectively connect surplus generators and potential beneficiaries. These actors – such as companies in the supply chain, food banks and non-profit organizations, and municipalities – are often from different sectors (private, public, third sector). Despite this, redistribution in urban contexts is often approached from a non-synergic point of view, in which virtuous actions of individual actors are not integrated at a more systemic level, preventing them to reach the scale and resources necessary to effectively tackle the issue. Moreover, the fragmentation of surplus food recovery and redistribution activities in urban contexts leads to a lack of data and information on such flows and processes, limiting the possibilities of optimization and their use as a decision support for policy and administrative decision makers.

The presented innovation was developed to overcome the aforementioned problems. In line with URBAL Methodology, multiple research methods have been applied along the innovation process, following a step-by-step approach (Figure 1):

- literature review on themes of surplus food management, surplus food redistribution, food banking in urban areas and collaborative governance of interorganizational networks was conducted to better understand the problem, define gaps and possible areas of action;
- semi-structured interviews with key stakeholders and project participants took place in the planning and development stages of the project in order to understand the context and map needs, create the network and design the governance and operative processes. Key stakeholders were the Municipality officers, and managers of involved non-profit organizations, retail distribution organizations and food service operators.
- regular meetings with stakeholders and project participants took place during the implementation stage of the project to align members, share intermediate results, discuss issues and further developments;
- participant observation was exerted during the project, since the research team of Politecnico di Milano acted both as a third-party scientific observer and as a participant to the project, directly contributing to tasks and objectives;
- after the development of the preliminary innovation impact pathway map based on the insights and data collected in the previous steps, six further interviews were carried out with a sample of key stakeholders to review and validate the map;

Figure 1. Methodology overview



4. Description of the Innovation

4.1 Project description

In 2016, the Municipality of Milan, Politecnico di Milano and Assolombarda Confindustria Milano, Monza e Brianza, Lodi (the most important regional business association) signed an agreement protocol, aimed at systematizing in an organic effort initiatives, competences and resources to reduce food insecurity and food waste in the urban area of Milan. The project culminated in the design and implementation of a network of surplus food redistribution for social purposes through a pilot project (“Local Food Waste Hub”), thanks to a cross-sector cooperation effort of formal and informal institutions, firms and NPOs. The network leverages on consolidation hubs to overcome two primary issues: on the one hand, the difficulty of recovering small and heterogeneous volumes of surplus food generated by multiple food donors in a rapid and economically convenient way; on the other hand, the difficulty of food banks in delivering balanced mixes, including fresh and prepared food, to front-line organizations. The first consolidation hub was opened as a pilot in January 2019 in the Isola neighborhood in Milan, and serves Zones 8 and 9 of the city (Figure 2).



The project is led by a “Signatory Board” (the Municipality, Politecnico di Milano and Assolombarda) which takes strategic decisions and summons periodic update meetings between participants. The Municipality designs the redistribution policy (including fiscal incentives) and provides underused spaces to serve as neighborhood hubs. Politecnico di Milano is the scientific advisor, it designs the logistic model and the reporting system; as an independent party, it promotes collaboration and monitors individual and aggregate performances. Both the Municipality and the university perform coordination roles in the network, ensuring that the collaborative processes work smoothly. Assolombarda facilitates the involvement of business enterprises (corporate canteens and retailers) as food donors as well as sponsors, providing material, immaterial and economic resources. Donors are 4 retailers (9 points-of-sale) and 5 corporate canteens. They donate surplus food, have adopted a shared reporting system and adapted their daily operations to perform the activities required for the initiative, such as organizing to deliver donations during the morning collection route. Additionally, donors are required to send on a monthly basis data on their donated volumes and surplus generated to the university researchers, who are in charge of processing those data and elaborate performance KPIs both at an individual and aggregated level.

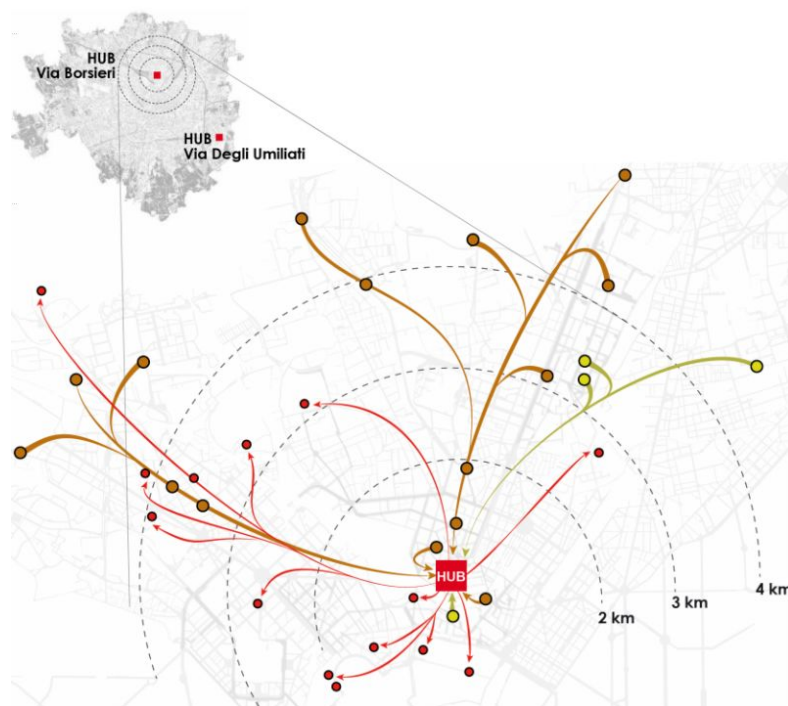
Banco Alimentare della Lombardia – the regional branch of the main Italian food bank – operates the hub, collecting, stocking and sorting donated surplus food to 24 local NPOs. A balanced mix collected from retailers is consolidated in the hub and delivered to the NPOs, while prepared meals from corporate food service are directly redistributed.

Cariplo Foundation – a key actor in the development of the Milan Food Policy – facilitates the network creation, providing knowledge on poverty distribution across neighborhoods, and helping with the identification of the beneficiary NPOs. It also provides financial support for the

development and operations of the hub, together with other financial and in-kind donors, such as a Number1 Logistics Group, a logistic service operator who provides refrigerated trucks for food recovery and distribution. Financial support from private (for-profit and non-profit) organizations is fundamental to carry out the hub activities.

The hub is equipped with shelves for dry food and a refrigerated area for fresh products. The collection route from retailers takes place each weekday in the morning, with two trucks, and donated collected surplus food is consolidated in the hub by the end of the morning, along with related transportation documents. Another truck is responsible for collecting prepared meals from canteens and directly redistributing them to the front-line NPOs, since cooked meals need to be consumed within 24 hours. The hub receives the NPOs each afternoon according to a weekly schedule, predefined considering the number and typology of beneficiaries served and their nutritious needs and the kind and quantity of available recovered surplus food. The volunteers of the food bank managing the Hub establish the quantities for each beneficiary, creating a balanced mix of fresh and dry food, which is packed and redistributed to NPOs in the afternoon.

Figure 3. Graphical representation of the hub system (Milano Food Policy, 2020)



Regular meetings take place among project participants. During such meetings, intermediate results and internal and external best practices are shared, and issues and criticalities are discussed. This allows participants to reflect, learn and be engaged in a continuous improvement process for surplus food management.

During the period from March 2019 to December 2020, the hub was able to recover almost 165 tons of surplus food and served 24 NPOs, reaching 1,307 households (1,488 children and 2,478 adults). The equivalent economic value of the donated food was about 600 thousand euro.

Due to the COVID-19 emergency situation, the hub worked at very limited capacity since March 2020 and further welfare measures have been put in place by the Municipality to face the subsequent income crisis. During the period of the first lockdown in the spring of 2020, the hub served as an operational model for the design and development of a temporary system of ten food distribution hubs, coordinated by Milan Municipality and with the collaboration of several companies as food donors, municipal agencies, Banco Alimentare della Lombardia, the Milan branch of the Italian Red Cross and other NPOs, which remained active from March till July 2020⁴. After the first lockdown, in September 2020 the hub reopened and restarted the activities, and a second hub was launched in October 2020 in the Lambrate neighbour of Milan⁵. Furthermore, two other hubs are in the planning phase (in the Corvetto and Gallarate neighborhoods), the spaces and actors able of supporting their operation has already been identified.

For the scope of the UFIL Food Aid, this Report will focus on the innovation process of the first hub, from the initial planning of the system until its testing and consolidation.

4.2 Innovation elements

Based on the analysis of the as-is food banking and surplus food management processes in urban areas, the main elements of novelty of the proposed model may be highlighted:

- The Local Food Waste Hubs model seeks to systemically integrate previously sparse recovery actions. This implies an aggregation both at a physical level (consolidation in the hub) and at an informational level (data and performances are monitored centrally). This generates several benefits which will be deepened in the innovation impact pathway map.
- Project participants are included in a network with complementary expertise and resources on surplus food management. Through interaction with other stakeholders, they are engaged in a continuous and reciprocal learning process.

⁴ <https://www.som.polimi.it/poverta-e-aiuti-alimentari-al-tempo-del-covid-19/>

⁵ <https://www.comune.milano.it/-/food-policy.-inaugurato-il-nuovo-hub-contro-lo-spreco-alimentare-in-via-bassini>

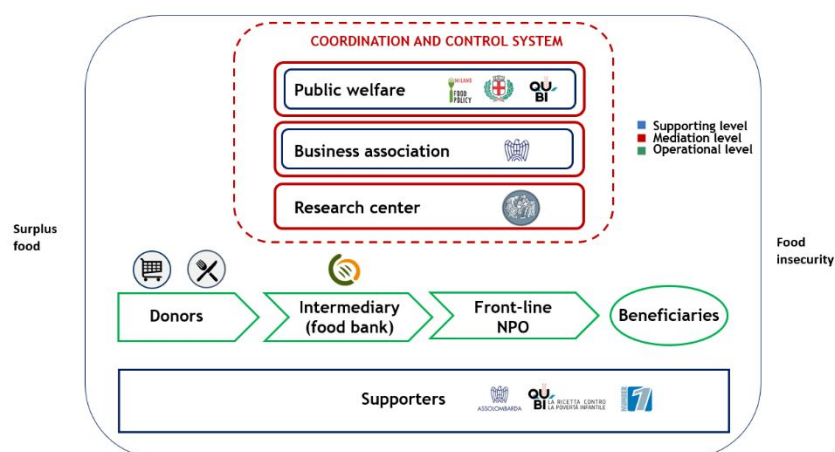
- The project allows to have visibility on internal processes and performances of participants. This allows integrated planning of recovery and redistribution, and targeted actions.
- The model allows to achieve economies of scale and economies of density for the food bank operations, necessary to bring food recovery operations also at a local level.
- The model abates transaction costs for donors who wish to participate in donation processes. Indeed, not only the hurdle to select and coordinate with final beneficiaries is transferred to the food bank managing the hub – as in traditional food banking – but the presence of a structured measurement and monitoring process managed and certified by the university as third party increases the transparency and accountability of the system, further reducing transaction costs.
- The model allows to leverage on two sets of resources: public (municipal) resources and spaces which were previously underutilized can be exploited to serve as hubs thanks to innovative administrative procedures and tools developed and adopted by the municipality; private resources are attracted to support the activities thanks to the deployment of a project with clear, visible and measurable impacts.

4.3 The Network Map

To understand the relevant stakeholders to map, two groups were distinguished:

- *internal stakeholders*, corresponding to project participants
- *external stakeholders*, corresponding to actors who do not directly participate to the project network but still have influence over the project and / or are in some form affected by it.

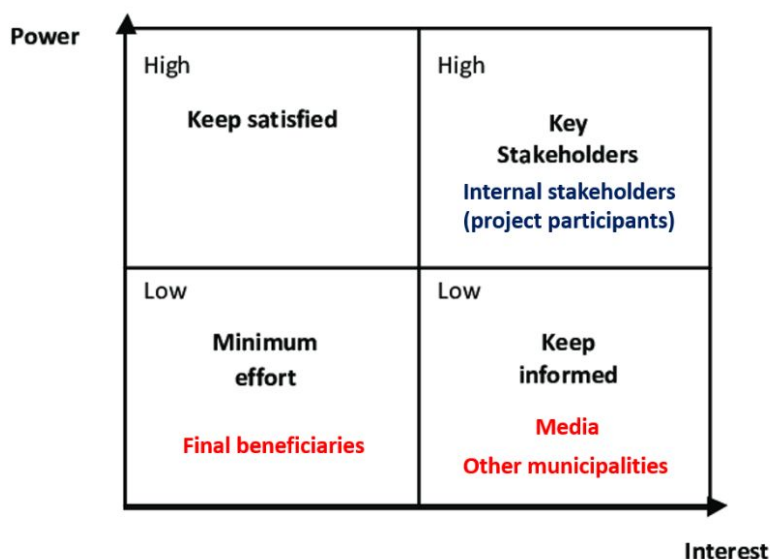
Figure 4. Network map of internal stakeholders



The relationships among internal stakeholders are summed up in Figure 4. Internal stakeholders make up the redistribution system, which links surplus food generation and surplus food demand. They may be considered as divided in three domains. The *coordination level* ensures the design and management of the network. It involves the research center and the municipality with complementary roles. The *operational level* moves and coordinates the daily flow of food from surplus generators to recipients, and involves donors, the food bank and beneficiary NPOs. Financial and operational resources are provided by *supporters*. All of these internal stakeholders are deemed to have high interest in the project, and high power to influence its direction.

External stakeholders as media, other municipalities and research centers, citizens and potential beneficiaries are identified. After a classification according to the model by Reed et al. (2009), none of these stakeholders is identified as being critical in affecting directly the initiative, but might have either a low or high interest in it. The network map is reported in Figure 5.

Figure 5. Network map



4.4 The Innovation Roadmap

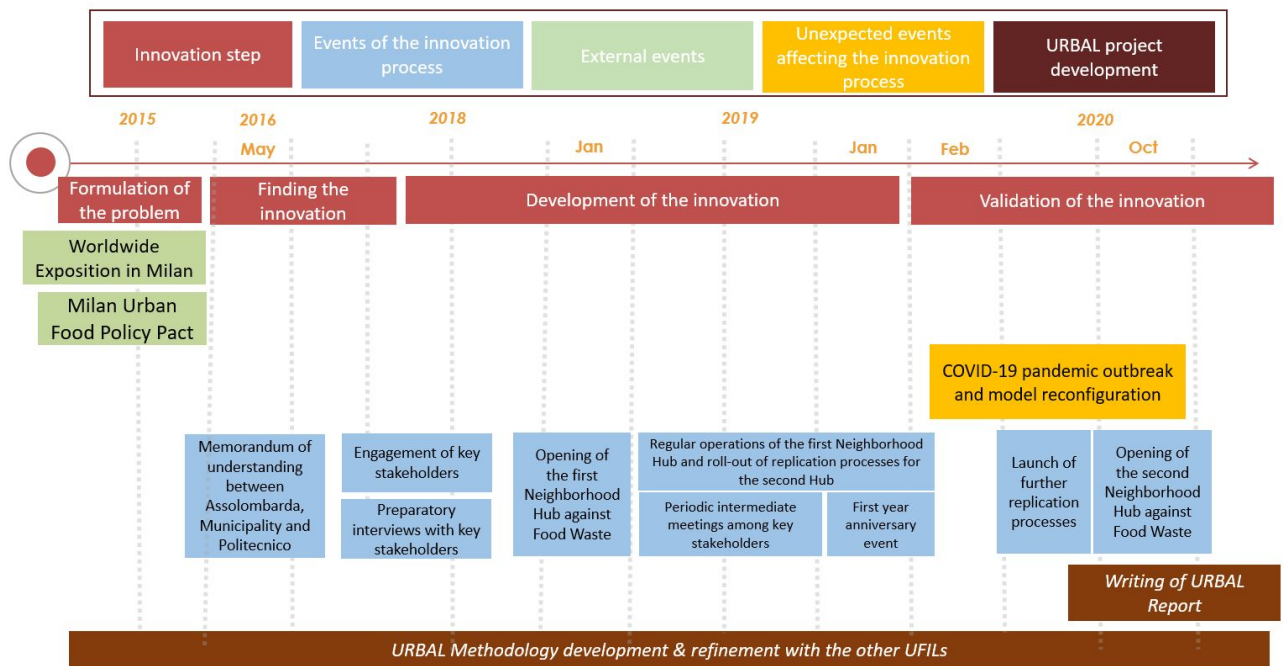
The focus of the Municipality of Milan on food topics comes from the success experience of the 2015 Worldwide Exposition, which led to the establishment of the Food Policy Office. In May 2016, the memorandum of understanding to design a collaborative project was signed between the Municipality, Politecnico di Milano and Assolombarda. The project was designed and developed throughout the following years, where intensive cooperation among the three signatories took place

to engage the main participants and project stakeholders. First of all, Cariplo Foundation was involved as key strategic actor in light of the strong synergies with the QuBi Program it coordinates, in terms of objectives and scope of action; then, food donors, intermediaries and financial supporters were identified and progressively engaged in the project.

In January 2019, the first hub was opened and operated regularly until the outbreak of the Covid-19 pandemic. During the first year, intermediate meetings and monitoring took place, leading to the 1-year anniversary event in January 2020, where the main results were publicly disclosed. In September 2019 an open call was published to identify possible sponsors and spaces for the developing of new hubs in the other neighborhoods. In September 2020, the second hub was opened in the Lambrate neighbourhood. In addition, other replicability processes were launched in July 2020 in the Corvetto neighbour and in January 2021 in the Gallarate neighbourhood.

The main steps may be seen in the chronogram (Figure 6).

Figure 6. The chronogram



4.5 Sustainability Dimensions and Innovation Impact Pathway Map

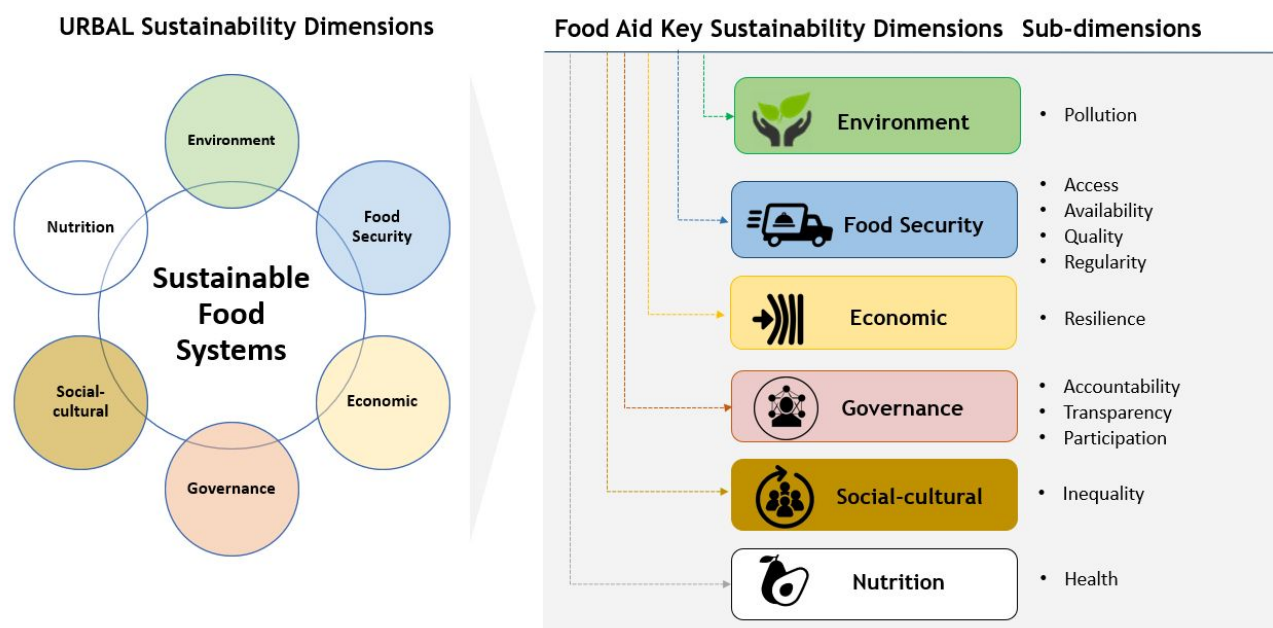
The following sustainability dimensions are deemed relevant (Figure 7):

- **Social-cultural:** *inequality* is addressed, since served beneficiaries are disadvantaged and vulnerable people. Providing food insecure people with a consistent and balanced amount of food partially levels out inequalities intrinsic of modern urban areas. Furthermore, the

project allows the spread of a shared culture regarding redistribution and reputational advantages for such initiatives;

- **Environment:** *pollution* is tackled, since the reduction of food waste generated from local retailers and food service operators and the consumption of surplus food for human consumption allows to avoid less environmentally-friendly solutions;
- **Governance:** *transparency, accountability, participation* are addressed through the design of the collaborative governance form of the network.
- **Food security:** *access, availability, quality, regularity* are all addressed with the effort to provide a balanced and constant amount of food;
- **Nutrition:** *health* is addressed through the effort to deliver more balanced food mixes;
- **Economic:** *resilience* of the model is tackled through the efficiency in recovery. Other factors, such as its financial model and its reconfiguration during the pandemic, are not directly tackled in this report.

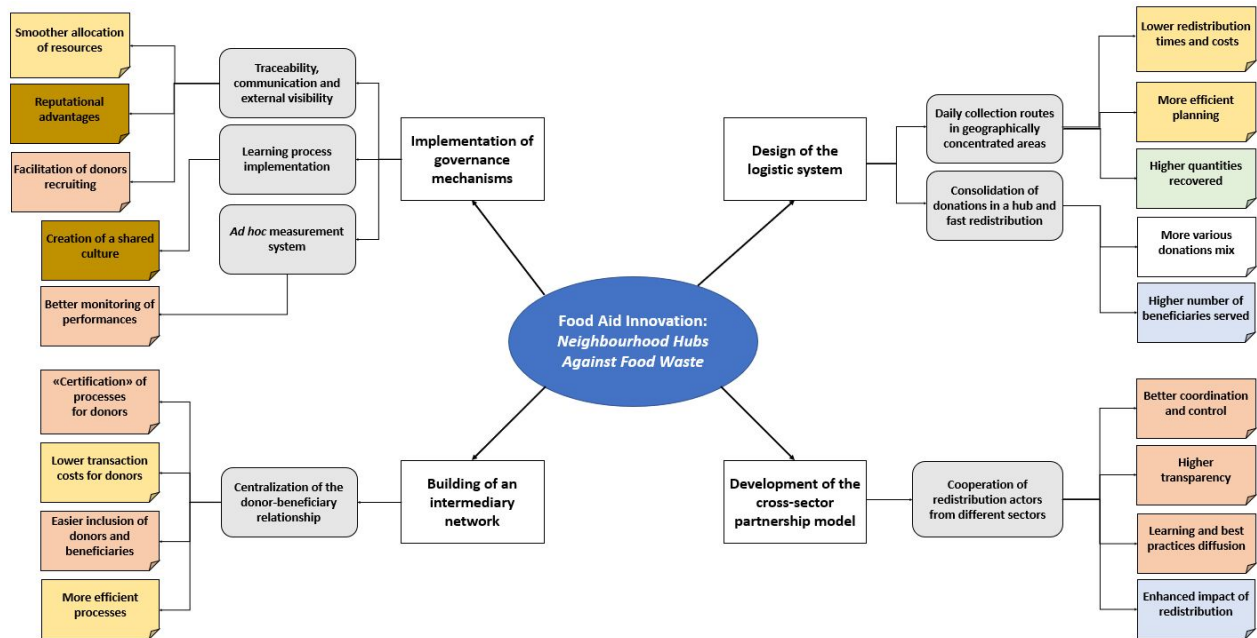
Figure 7. Sustainability dimensions



Accountability, communication, innovative administrative practices are also at the center of the replicability and scalability strategy of the model in other neighborhoods.

Sustainability impacts are defined in the Innovation Impact Pathway Map in the figure below (Figure 8). To build the map, it has been conducted the identification of the main *activities* put in place, the *changes* they bring in respect to the as-is scenario, and the *impacts* they generate. Impacts are differentiated considering the six dimensions discussed above, using the color scheme of Figure 7 as reference.

Figure 8. Preliminary innovation impact pathway map



4.6 Validation of the Innovation Impact Pathway Map

In order to validate the Innovation Impact Pathway Map, further interviews were carried out involving six respondents among the project stakeholders. In particular, stakeholders were selected among the project participants, who were identified as *key stakeholders* in the classification.

The map was validated through semi-structured interviews which followed the questionnaire reported in the Annex. The activities, previously selected and included as key dimensions of the interview protocol, were validated by asking at the end of the questionnaire if all relevant activities were covered during the interview. Changes were discussed explicitly at the beginning of the interview in the general section of the questionnaire, and implicitly over the development of the interview. Questions were mainly directed at validating/rejecting the hypotheses of impacts or at generating new impacts.

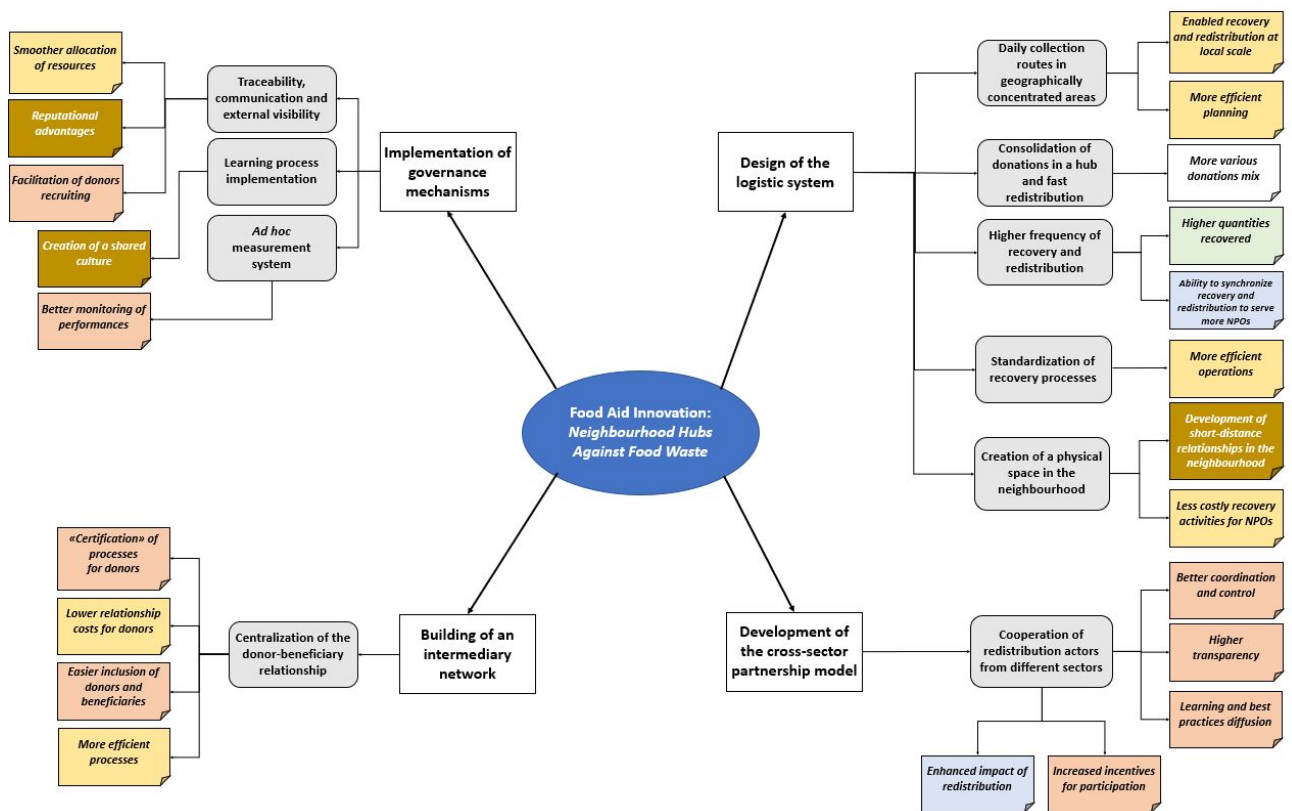
Activities	Changes	Impacts	Discussion
Development of the cross-sector partnership model	Structured cooperation of redistribution actors from different sectors	Better coordination and control	Validated , at least for a part of the operations. An interviewer underlined the importance of the work of coordination of Politecnico di Milano to align actors on individual actions. A food donor highlighted that the project led to increased awareness on data and performances of internal processes.

		Higher transparency	Validated. In particular, a financial supporter highlighted the importance of monitoring of performances.
		Learning and best practices diffusion	Validated. In particular, the collaborative and pre-competitive environment was highlighted.
		Enhanced impact of redistribution	Validated
		Increased incentives for participation	Added. Most interviewees highlighted the “reassuring” dimension of the cross-sector network.
Design of the logistic system	Daily collection routes in geographically concentrated areas	Lower redistribution times and costs	Refocused. It was highlighted that the model is not per se more efficient compared to other food banking models which operate at a larger scale, but it allows to carry out operations more efficiently with respect to redistribution systems at the local level.
		More efficient planning	Validated
	Higher frequency of recovery and redistribution	Higher quantities recovered	Validated but generated by another change
		Ability to synchronize recovery and redistribution and serve more NPOs	Added
	Consolidation of donations in a hub and fast redistribution	More various donations mix	Validated and highlighted as a crucial factor by all interviewees
		Higher number of beneficiaries served	Validated but generated by another change
	Standardization of recovery processes	More efficient operations	Added change and impact
	Creation of a physical space in the neighbourhood	Development of short-distance human relationships in the neighbourhood	Added. This impact was highlighted by most interviewees
		Less costly recovery activities for NPOs	Added
	Implementation of governance mechanisms	Traceability, communication and external visibility	Smoother allocation of resources
Reputational advantages			Validated by most actors, but not important for all of them.
Facilitation of donors recruiting			Validated. Most interviewees considered this to be a very important factor, citing it as a “reassuring” element for those entering the network
Learning process implementation		Creation of a shared culture	Validated

	<i>Ad hoc</i> measurement system	Better monitoring of performances	Validated. Especially relevant for those who did not have a structured measurement system in place as well as for financing actors
Building of an intermediary network	Centralization of the donor-beneficiary relationship	“Certification” of processes for donors	Validated. Most interviewees considered this to be a very important factor, citing it as a “reassuring” element for those entering the network
		Lower relationship costs for donors	Validated
		Easier inclusion of donors and beneficiaries	Validated
		More efficient processes	Validated

The final revised Innovation Impact Pathway Map is depicted in Figure 9.

Figure 9. Revised Innovation Impact Pathway Map



5. Conclusions

The analysis conducted has highlighted innovative characteristics and impact of a novel model of surplus food redistribution based on a cross-sector partnership including public, private and third sector organizations.

As it may be seen, a relative majority of impacts are related to the *governance* dimension related to the building of the partnership and its mechanisms. Such impacts refer to higher levels of coordination, transparency, knowledge and information sharing, and the inclusivity and attractiveness of the network. Two other important areas of impacts are *socio-cultural* and *food security*, with related benefits for the *environment* and *nutrition*. Indeed, the system allows to perform surplus food redistribution efficiently at a local neighbourhood level, collect a more balanced food mix (including fresh food such as fruit and vegetables, dairy products and proteins) and enhance local cooperation and collaboration at multiple levels. Other impacts are related to the *economic* dimension and to process efficiency in recovery and redistribution operations.

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