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# Proceedings of DRS2024 Boston

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Boston, Massachusetts, USA,
23–28 June 2024

**Editors:**
Colin M. Gray
Estefania Ciliotta Chehade
Paul Hekkert
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# Accessible Food Networks: case studies' insights for impacting systemic and socio-cultural transformations of university campuses as urban players.

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# Accessible food networks: Case studies' insights for impacting systemic and socio-cultural transformations of university campuses as urban players

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**Abstract**: In recent decades, there has been a growing momentum in adopting public and private food procurement initiatives as policy instruments to improve the quality and affordability of the food provided in public and private sectors to reach social and environmental sustainability. This includes logistics, service innovation and multi-stakeholder involvement in designing solutions. This paper examines the influence of food systems on facilitating future systemic transition in urban neighbourhoods and peri-urban areas. It does so by analysing case studies and building upon the objectives of an ongoing national research project that will test alternative food networks on university campuses. The article examines alternative systems that can serve as catalysts for communities by establishing interconnected service-provider sites. Cases have been examined through design lenses, including design for social innovation and spatial and service design.

**Keywords**: food procurement; best practices; knowledge base development; alternative food networks

## 1. Introduction

This article presents a study embedded within a broader 3-year national research project that launched in November 2022. The primary objective of this overarching project is to design scenarios and devise solutions addressing food and nutrition sustainability, safety, and security, drawing upon a multidisciplinary lens. Named OnFoods (Research and innovation network on food and Nutrition Sustainability, Safety, and Security) and funded under the Italian National Recovery and Resilience Plan under the Next Generation European policies, it focuses on alternative food systems that can help rethink and redesign the food chain more sustainably in cities and territories, valorising locally sourced products and integrating public and private food procurement strategies. OnFoods is an extended partnership of universities, research centres, and enterprises and is structured into seven executive networks,

operating on the following themes: global sustainability, smart and circular food systems and distribution, food safety of traditional and novel foods, food quality and nutrition, lifelong nutrition, addressing malnutrition, and policy, behaviour, and education. The study presented here is conducted within the "Global Sustainability" component (*Spoke*), which has the primary objective of enhancing the efficiency of food value chains by integrating productivity and sustainability, facilitating technology transfer, and ensuring access to sustainable food for vulnerable populations. This spoke is organized into work packages (WPs). The authors are leading “WP 1.2 - Promoting sustainability in food distribution" with the research project called "Public and private food procurement and short food value chains in urban areas" (PPP-URB), focused on public and private food procurement as policy tools to enhance the local food systems through food production and distribution, consumption, and waste management. The PPP-URB research goals focus on:

- Quality & variety: stimulate the production of Km0 and locally sourced products, regional varieties, and traditional agri-food products.
- Accessible distributional channels: promote short food supply chains and alternative food networks, improving urban-rural linkages.
- Affordability: overcome the trade-off between the increasing consumer demand for organic, local, and healthy food and the need to contain procurement costs.
- Sustainability: ensure environmental, social, and economic sustainability throughout the products’ life cycle.

Within this framework, our analysis delves into the present and prospective dynamics within small territorial units, specifically university campuses within neighbourhoods or cities. We examine the potential of newly designed alternative food networks (AFNs) that can act in innovating distribution systems to foster environmental sustainability. These AFNs are envisioned as catalysts for communities, with interconnected service-provider locations serving as pivotal nodes in facilitating community engagement and empowerment. How could AFNs be seen as magnifying lenses for enabling systemic transition within the context of urban neighbourhoods – characterised by gentrification and social stratification phenomena – and peri-urban areas – production and distribution areas? The study is explored through the lenses of design for social innovation, participatory design, and integrated approaches from spatial design and service design.

Over the past few decades, there has been an increasing shift towards embracing public and private initiatives as integral policy instruments in the realm of food procurement. These initiatives aim to bolster the quality and accessibility of food across both public and private sectors, with a concerted focus on advancing social and environmental sustainability objectives. This involves exploring logistics, promoting service innovation, and engaging multiple stakeholders in developing effective solutions. It is evident how these kinds of practices aimed at transforming food systems are intricately intertwined with broader socio-technological

transformations, which underpin processes of social innovation (Mulgan et al. 2007 et al., 2010; Evers & Ewert, 2015; Manzini & Meroni, 2017).

Indeed, the food systems framework encompasses various components such as food production, food supply chains, food environments, dietary habits, and consumer food choices (cf. High-Level Panel of Experts on Food Security and Nutrition of The Food and Agriculture Organization/FAO of the United Nations). These intertwined components are responsible for adequately addressing, or not, food insecurity and malnutrition in an environmentally sustainable way because of their direct impact on related outcomes, such as nutrition, resilience to economic adversity, consumers' behaviour, and inequalities (Intergovernmental Panel on Climate Change of the United Nations, 2022). As food supply chains grow increasingly complex, involving many stages and stakeholders spanning from production to waste management, it is imperative to prioritise enhanced research and innovation strategies. Such efforts are pivotal in fostering resilience and sustainable productivity within the overarching framework of the food system.

## 2. Research focus

### *2.1 Food as relational practices: AFNs in small territorial units*

We focus on food ecosystems within small territorial units, specifically university campuses, to understand their potential role and responsibility within the local food system. In contemporary urban environments, universities have implemented their role within the cultural infrastructures of cities and nations, increasingly connecting to the nonlocal and trans-local levels and becoming an essential unit for territorial development (Chatterton, 2000). Universities are pivotal intermediaries connecting public administrations, businesses, and citizens.

Territoriality is a crucial element for universities, playing a role in the interplay of institutions, policies, and agents within their regional innovation system: spatial proximity is a competitive advantage since knowledge sharing is also based on trust-based contacts within specific soft infrastructures and locational factors (Innerhofer et al., 2018). Territorial units can leverage the local context as a service strength, weaving the existing networks and organisational systems to develop early-stage innovations that can be structurally connected with social actors to scale it up and down, deep, and broad. Addressing food systems within small territorial units requires a multilevel systemic approach capable of opening to different scales, moving from the macro to the micro and vice versa, because of the organisational proximity of these units.

Tackling this topic from a multilevel systemic approach can open the exploration of AFNs putting micro and macro systems in dialogue and, ultimately, activating the transition towards more sustainable design practices. This reflection is associated in the project with the increasing importance given to public and private food procurement (FP) initiatives that, in recent decades, have highlighted their potential as policy instruments for improving the quality, diversity, affordability, and sustainability of food offered, for example, in both public

and private canteens, aligning with the objectives of the 2030 Agenda for Sustainable Development.

In this context, by implementing FP strategies, local governments and entities like university campuses can significantly impact various aspects of local food systems, ranging from food production and consumption to managing food waste. Hence, it is crucial to investigate how FP initiatives can encourage local agricultural production, promoting the supply of locally sourced products, regional varieties, traditional agricultural products, and locally or self-cultivated vegetables. For example, these initiatives can foster the cultivation of highly nutritious and climate-resilient crops while promoting innovation in distribution channels and consumption patterns, such as those of university campuses, that are internally structured but closely connected to urban infrastructures.

Public and private FP programs can facilitate the development of accessible distribution channels for small farmers in urban and peri-urban areas, simultaneously strengthening the linkages between urban and rural communities. This can be achieved by establishing short food supply chains (SFSCs), AFNs, and urban and peri-urban production, ultimately improving the quality and variety of food served in public and private canteens. Focusing attention on university campuses is a chance to analyse a specific food ecosystem and understand which innovation could be brought in.

Beyond its political and social dimension, design acts in its phenomenological dimension through tangible and intangible artefacts, capable of intercepting, orienting, modifying, and determining the behaviour and relationships of individuals and communities. Acknowledging the existence of plural and ontologically diverse worlds encourages fresh examination of our complex relationalities while challenging how design actively contributes to materialising an intentional process of “negotiations, exchanges, articulations, and nourishments” (Westerlaken, 2020, p. 155, citing Abram, 1996). This, in turn, requires the engagement of diverse publics and extends participation and collaboration through design as a form of democratic enquiry (Di Salvo, 2022), enabling cultural and civic political action through physical and digital encounters. These can enable new forms of collaboration intended to regenerate the public realm through place-centred and trans-territorial communities and identities (Sassen, 2004). Services play a crucial role in fostering and enhancing relationships: they inherently possess a relational nature and are increasingly considered an engine for broader societal transformations (Sangiorgi, 2011). Exchanging knowledge, support, or expertise through these services strengthens the bond between individuals and organisations. However, the impact of services on relationships becomes more pronounced when proximity comes into play. The physical environment acts not just as a backdrop but as an active determinant of relational, functional, and spatial relationships; there is no proximity without a network of interacting multiple nodes of interconnected places where the potential for relationship-building is amplified. Focusing the attention on sustainable food systems, the flow of food into territories and cities is a critical material aspect that influences relationships and the physical scale of space. Food exchange creates a web of commercial, convivial, and productive relationships that transcend geographical boundaries. Pandemics in 2020, climate

change and the conflict between Russia and Ukraine in 2022, in addition to the already manifest fragilities in the global food system, are causing, also in Europe, severe limitations for many people in their access to good, safe, and even sufficient food. Cities face this emergence through policy instruments (i.e., Milan Food Policy) and solidarity organisations to sustain the local food system and alleviate food poverty, developing AFNs and innovative strategies integrated into large-scale distribution networks. For instance, AFNs are represented by service delivery models that support the fight against food poverty, neighbourhood-based circular economy solutions, models of re-marketing surplus, expiring products and urban agriculture production for social purposes.

The research investigates how such systems can shape the identity of these territorial units and act on relationships towards increasing social bonds. These could be explored as testing environments, generating, and supporting collective activities while enhancing new relations, materialities (Blomkvist et al., 2016 and 2023) and preferable futures. Challenges of current experimentations are linked, to mention a few, to the strategy of infrastructuring the system (Star & Ruhleder, 1996) and creating the conditions for project-based communities to flourish (i.e., keeping all the network's actors committed in the medium-long term), and to the design of service and physical environment encounters (i.e., grounding the service in the territorial unit so that the local scale becomes its unique strength).

## *2.2 University campuses and the food ecosystems*

Campus spaces are complex infrastructures alongside natural elements, with sprawling green expanses. An increasing trend has recently given rise to a burgeoning landscape of innovative solutions, including the flourishing presence of community gardens, the implementation of cutting-edge hydroponic systems, and the experimental cultivation of various crops, demonstrating the progressive spirit of contemporary educational institutions. The university's size, strategic placement within cities, and integration with the surrounding neighbourhoods shape the intricate web of relationships and experiences that make campuses as research-intensive environments deeply embedded in the local ecosystem (Collina et al., 2013; Fassi et al., 2016). Indeed, these educational hubs – characterized by a blend of academic activities, cultural initiatives, and social interactions – represent a small-scale environment in which a system of relationships (students, professors, technical, administrative staff, and, beyond, the external community of citizens), and the rhythms of daily life are intertwined with its food system.

The university-city relationship takes shape in different patterns: from isolated settings such as rural and suburban campuses, as well as integrated models like urban ones (Brockliss 2000; Chapman 2006). As campuses have expanded and their connections with neighbouring social contexts have grown, this evolution has given rise to certain discontinuities among the stakeholders involved (Bruning et al., 2006); these factors can provide opportunities for innovative design solutions. Recognizing this gap prompts a strategic evaluation of the active role that universities can play in fostering a knowledge-driven advancement process within the research frameworks.

Though seemingly disparate, canteens, bars, restaurants, vending machines, and food kiosks should be considered integral within an interconnected network, further nurtured by a food procurement system. This is the focal point of the ongoing research endeavours of PPP-URB project. Envisioning the transformation of the food systems that underpin the thriving university campuses entails a comprehensive approach, necessitating strategic interventions in food procurement practices. This initiative is dedicated to optimizing existing processes, aligning them with sustainability imperatives, and embracing innovative methodologies that foster a symbiotic relationship between the campus community and the surrounding ecosystem at the neighbourhood and city levels (Fig. 1).

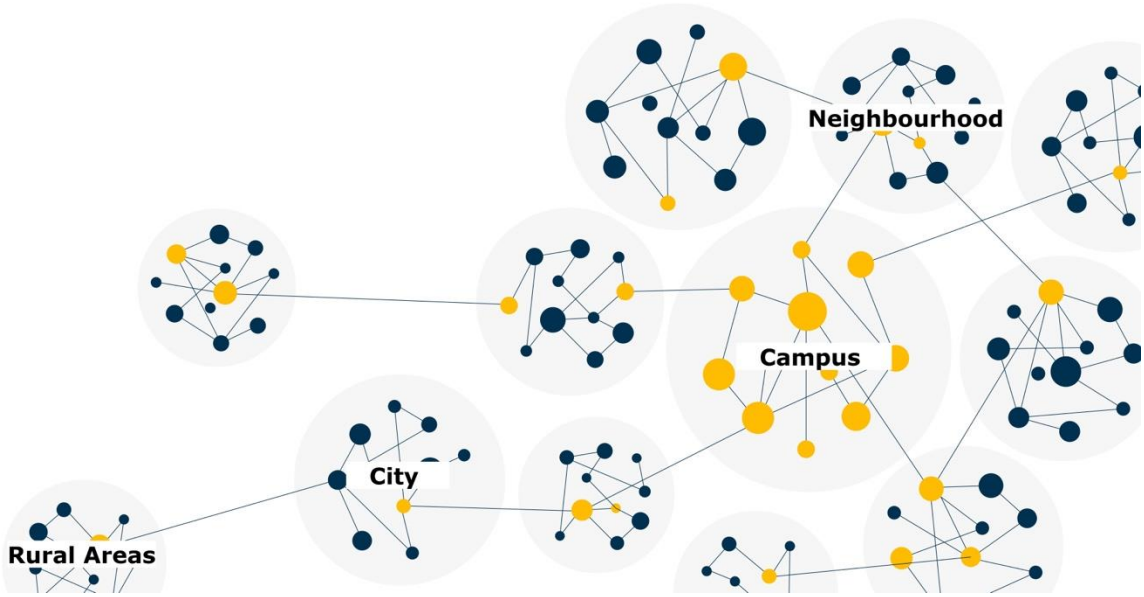


*Figure 1 Complex food ecosystems related to university campuses, neighbourhoods, cities, and rural areas. (Diagram by the authors).*

## 3. Methodology

The research is centred on three primary objectives to investigate innovative and sustainable solutions for enhancing the food ecosystem on campuses:

- Examination of organizational and management models (January 2023 – January 2024).
- Definition of strategies and guidelines for the subsequent definition of a university food policy (January 2024 – January 2025).
- Initial prototyping of actions and activities on campus to analyse the effectiveness of the food policy (January 2025 – January 2026).

This paper addresses the first purpose. The following section presents the defined methodology and its application in the analysis of case studies.

The methodology has three phases: definition of the analysis sample, knowledge base development, and interpretation.

*Definition of the analysis sample.* The overall methodology of the PPP_URB project used involves building a knowledge base rooted in the expertise of research partners. The clarification of disciplinary expertise guided the internal sharing phase, and the contribution of knowledge and research focus resulted from previous research projects of each team involved. The areas of expertise on the project topic of the research groups involved in the project are spatial and service design through a participatory approach (Design - Politecnico di Milano); qualitative and quantitative impact evaluation of public procurement management (Management Engineering - Politecnico di Milano); LCA and eco-design (Agronomy economics and evaluation - Università Statale di Milano); territorial marketing policies (Economics and business management - Università di Napoli); biodiversity preservation and innovation acceptability (Agricultural law - Università di Bari); alternative food network and social farming (Geography - Università di Catania); alternative food network and sustainability indicator (Agriculture economics and evaluation - Università di Parma). This served to structure the sampling of the case studies analysis presented in this paper. The selection criteria are identified according to the project's primary focus and the need to build a qualitative knowledge base. This is followed by verifying relevant material for the qualitative analysis; to then identify the cases for the analysis, the research teams selected the criteria to structure the sampling report:

- Basic information:
    - Location
    - Activeness and/or duration
    - Action's area
    - Stakeholders involved
    - Website
- Intervention context:
    - Local
    - National
    - International
- Intervention characterization: For a thorough analysis, we utilized seven keywords to examine the cases comprehensively. These keywords are crucial in offering valuable insights for the subsequent research steps.:
    - Research programs
    - Service models and experiments

    - Awareness programs
    - Company strategies
    - Future scenarios
    - Scaling/replication strategies
    - Guidelines and policies
- Food system sectors. This cluster served as a preliminary step in selecting the case studies. We chose five distinct realms encompassing food production, distribution, and consumption to ensure a comprehensive exploration of best practices across diverse contexts and environments:
    - Charity actions
    - Community gardens
    - Bars/restaurants/catering
    - Public administrations
    - Retail

*Knowledge base development.* Each partner has identified and thoroughly studied five case studies, resulting in a comprehensive compilation of thirty-five exemplary practices. The analysis lasted seven months, with approximately two months dedicated to observation and interviews and five months of analysis. Mapped cases have been explored through three levels of examination, progressively selecting the analysed sample: i) desk research, ii) site visits, and iii) and interviews. Each research team selected primary cases from their pool of five, conducting approximately 10 interviews with project leaders, participants, beneficiaries, and stakeholders within the project network. Additionally, site visits were conducted for data collection, with weekly progress reports utilized to analyze achieved objectives, monitor processes, and identify challenges. Secondary cases primarily relied on desk research from different sources (interviews, videos, articles).

The results of this analysis were presented at an international event of the OnFoods project (January 2024) and collected in a delivery document to the funding body. In the coming months, they will finally be presented back to the informants and in dissemination events alongside the ongoing analysis of the second phase of the PPP_URB project.

The cases have not been selected for their action areas – namely, only selecting models related to the universities: they have been instrumental in providing insights into some key issues to better theorizing and be supportive in understanding those issues (Merriam, 1998; Stake, 2005), considering the declared lenses of expertise: spatial design, service design, and participatory approaches. Two of the cases presented here, as well as within the 36 cases analysed by the research partners, in fact, do not involve university campuses either as a location or as a component of innovative systems. This decision is justified by the objective of

this research phase, which is to gather ideas from innovative networks, even if developed in different contexts.

*Interpretation.* This selection depicts a panorama of successful food initiatives experimenting with alternative food systems, having common underlying principles (the PPP-URB research goals mentioned above) that are expressed in different intervention contexts and food sectors. It emerges that scaling successful food self-production initiatives within university campuses into broader food systems to achieve a more significant impact can be accomplished through several approaches:

- **Collaborations and partnerships**: Universities can develop public and private institutions, local farmers, food cooperatives, and civil society organizations and can influence the kind of agreements with them to generate paradigm shifts into existing models and facilitate the exchange of knowledge, resources, and infrastructure, enabling greater scalability of the initiatives.
- **Development of distribution networks**: Implementing efficient and sustainable distribution networks is essential to increase access to alternative systems. This could involve creating local sales points, farmers' markets, or delivery services that connect campuses with surrounding communities.
- **Education and awareness**: Promoting awareness and food education among students and the surrounding community can foster greater acceptance and participation in alternative systems. This can be achieved through educational programs, events, and workshops focusing on food sustainability and agricultural practices.
- **Institutional and policy support**: Adopting institutional policies and strategies that promote the integration and development of innovative initiatives is crucial. This may include allocating funding and promoting sustainable food policies within universities and local communities.
- **Monitoring and evaluation:** Implementing monitoring and evaluation systems to measure alternative systems will allow for adapting such strategies based on the specific needs of communities and ensure a positive and lasting impact on local food systems.

The paper presents the analysis of five selected cases conducted by the design team of Politecnico di Milano. The focus lies on a closer examination of spatial and service design practices through a participatory approach that is the core of the authors' research group (Fassi et al., 2018; De Rosa, 2022) to focus on relational, functional, and spatial relationships. Briefly, a spatial and service (S+S) approach entails the analysis of the situated framework in terms of: i) *temporal dimension* – using tools like storyboards and journey maps to visualise the overlapping of interconnected temporalities of beings and things (Bastian, 2014), their cultural, historical, and ritual meanings (de la Bellacasa, 2017), and the nodes of relation-

ships that have settled over time and entangled in places (Tsing, 2015). This serves to highlight the time-based nature of services, defining the chronological sequence of actions of specific actors in relationship to space and touchpoints. ii) The *phenomenological dimension* – to understand how the materiality of the relational value of services (Blomkvist et al., 2016 and 2023) is unfolded in a dialectic with places, impacting social identities. iii) The *relational dimension* – using tools like personas to understand how contextualized services can contribute to the narrative of social roles (De Rosa, 2022).

## 4. Case studies analysis

### *4.1 Case study 1: SOSpesa, equity and resilience around the corner*

*Table 1 Info summary.*

| | |
|---|---|
| **Intervention characterization** | Charity action |
| **Location** | Milan (Italy) |
| **Activeness and/or duration** | 2020 – on going |
| **Intervention context** | Local |
| **Actors** | University staff, local citizens |
| **Keywords** | research programs, service models & experiment |
| **Action's area** | fighting food waste, helping people in need, healthy diet promotion |
| **Website** | https://www.polimi.it/en/spotlight/archive/archive-news-details/archivio8734/sospesa-a-polisocial-award-2021-project |

SOSpesa is a community-driven service that supports vulnerable populations by distributing surplus food recovered from municipal markets and local groceries. Implemented since March 2022, this solidarity initiative is the result of collaboration between a team of designers, management engineers, and IT specialists based at Off Campus Nolo, a living lab of Politecnico di Milano located in the Nolo neighbourhood of Milan. SOSpesa was initially established in April 2020 as a grassroots initiative by proactive citizens in response to the pandemic. The crisis highlighted the widespread existence of poverty, and the logistical difficulties faced by small retailers. In June 2020, as the lockdown restrictions were gradually lifted, the project was temporarily stopped. However, it was later resumed under the supervision of Politecnico di Milano after the service was redesigned through collaborative design with the stakeholders. SOSpesa enables underprivileged people to easily obtain fresh, varied, and

high-quality food. This is made possible by a committed team of volunteers who oversee the distribution process, promoting inclusivity and community involvement.

SOSpesa operates in the diverse community of Nolo, focusing on promoting cultural integration and fostering social empowerment. Beneficiaries receive essential food assistance and gain an appreciation for the communal support offered by local businesses. In addition, establishing local networks facilitates the promotion of projects that help neighbouring restaurants. This enables them to utilise recovered food to create meals at discounted prices and allocate a portion of the profits towards the sustainable funding of the project.

Thanks to donations, SOSpesa distributed weekly food boxes to 30 families, consisting of fresh vegetables acquired at a fixed price from a local Municipal Market and unsold commodities from municipal markets through the efforts of Recup, an organisation dedicated to redistributing food waste to third-sector organisations.


*Figure 2 SOSpesa voucher, ©SOSpesa, Retrieved from: https://www.facebook.com/profile.php?id=61554264993925*

Implementing a voucher system (Fig. 2) was devised to overcome logistical obstacles, enabling recipients to acquire unsold goods directly from nearby stores, thereby simplifying the procedure. In addition, a portion of the retrieved produce is assigned to two restaurants, which use the ingredients to create dishes that promote unity. SOSpesa has effectively established a network consisting of 10 volunteers, a local association of stores, and a network of food suppliers (Fig. 3).


*Figure 3 SOSpesa Volunteers, ©SOSpesa, Retrieved from: https://www.facebook.com/profile.php?id=61554264993925*

## *4.2 Case study 2: Coltivando, the convivial garden at Politecnico di Milano*

*Table 2 Info summary.*

| | |
|---|---|
| **Intervention characterization** | Community garden |
| **Location** | Milan (Italy) |
| **Activeness and/or duration** | 2011 – on going |
| **Intervention context** | Local |
| **Actors** | University staff, local citizens, students |
| **Keywords** | research programs, service models & experiment, scaling/replicating strategies |
| **Action's area** | community gardens, self-production |
| **Website** | https://www.coltivando.polimi.it |

Coltivando is a community garden within the Bovisa Politecnico Campus. It is located on one of the main streets in the neighbourhood, covers an area of 900 square metres, and features growing boxes that the community members themselves built with researchers and students, as well as multifunctional rest areas, shelters, and composting zones (Fig. 4).

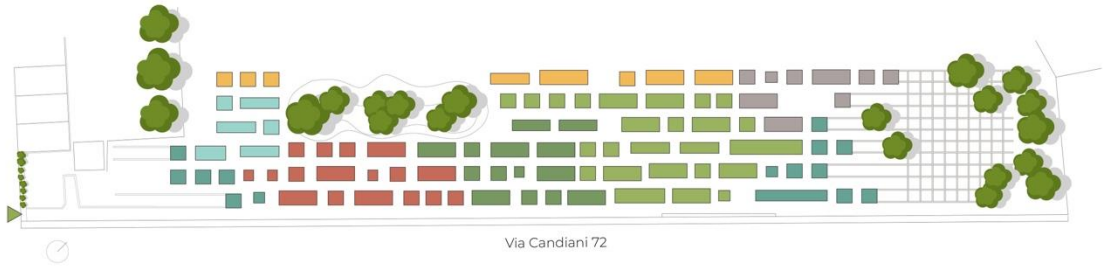


*Figure 4 Garden Masterplan, ©Coltivando.*

Coltivando is as a design experiment that originated from two research projects conducted by the Polimi DESIS Lab, a design research team at Politecnico di Milano. The first project, "Human Cities, Reclaiming Public Spaces" (Creative Europe programme, 2010-12), focused on revitalising public spaces with and for urban communities. The second project, "Feeding Milan, energies for change" (2010-2013), aimed to shorten the food supply chain in the Milanese area. Coltivando integrates the principles of both initiatives, providing a platform for the local community to discover a concealed public place and cultivate their products. The garden catalyzes social interaction and communication among the people, going beyond its function as a simple garden and becoming an essential communal space for the area. The university campus is currently situated in a former industrial site that previously functioned as a primary source of employment for numerous residents. Nevertheless, following the factory's closure and the subsequent acquisition of the industrial space by Politecnico di Milano in the early 1990s, the connection between the place and the residents rapidly deteriorated. Campuses generally serve a specific group of users (students, educators and staff), and are often seen as not easily accessible to the general public. Although they are public institutions, they are not commonly perceived as public areas (Fassi et al., 2018).

The garden's ethos is centred around fostering conviviality, which encourages the development of social connections and the sharing of knowledge. The project is characterised by a pervasive ethos, demonstrated by the interdisciplinary approach in which designers from many backgrounds interact together to build a holistic system. Coltivando first functioned as an educational and research endeavour, combining knowledge to understand how it may improve the maintenance of the garden. The participative approach was crucial in involving various stakeholders within the institution and the neighbourhood. Several tools were created to enable individuals to design the garden through co-design workshops. This allowed designers to understand participants' needs and collect data using surveys, spatial mock-ups, and interactive games. This participatory framework nurtures a sense of ownership among

the participants, promoting a robust sense of community. A team of 15 residents manages the garden (Fig. 5).

*Figure 5 Community Garden, ©Coltivando.*

## *4.3 Case study 3: "Erba Brusca" restaurant*

*Table 3 Info summary.*

| | |
|---|---|
| **Intervention characterization** | bars/restaurant/catering |
| **Location** | Milan (Italy) |
| **Activeness and/or duration** | 2012 – on going |
| **Intervention context** | Local |
| **Actors** | local producers, restaurant's owner |
| **Keywords** | service models & experiment, awareness programs, company strategies |
| **Action's area** | self-production, restaurants |
| **Website** | https://erbabrusca.it/ |

Erba Brusca is a restaurant located in the South Agricultural Park in Milan. The owners of the restaurant, seeing the advantages of the site, started growing a small vegetable garden that can be seen from within the restaurant (Fig. 6). They use the fruits and vegetables they cultivate in their dishes.

*Figure 6 The vegetable garden seen from the restaurant, ©ErbaBrusca, Retrieved from: https://erba-brusca.it/pages/orto-brusco*

The chef strives to create a network of local producers and prioritise procuring ingredients locally and seasonally, building strong connections with committed producers, together with the tiny garden, enhancing self-reliance in procurement. In 2019, the restaurant purchased a nearby plot of land measuring approximately half a hectare, greatly improving its ability to produce its own ingredients. The current phase of expansion involves continuous experimentation in the selection of crops and the preparation of land (Erba Brusca, 2023).

Erba Brusca is diversifying its network of suppliers and ventures. Instead of only branding wine from a winery, it partners with a winemaker, supervising the entire winemaking process from the harvest to the bottling stage. This strategy demonstrates its dedication to assisting wineries who choose not to obtain DOC certification, highlighting the difficulties encountered by small and medium-sized farms that frequently forgo official recognition of their quality due to complex bureaucratic procedures. Furthermore, Erba Brusca provides a farmer's box service, enabling customers to conveniently order and retrieve baskets of freshly harvested veggies and locally sourced goods through online or onsite channels. The

initiative strengthens sustainable networks and encourages the use of locally sourced products by providing a direct experience of the supply chain. Throughout the summer season, the restaurant organises weekly programmes on food education for children.

## *4.4 Case study 4: Copenhagen House of Food*

*Table 4 Info summary.*

| | |
|---|---|
| **Intervention characterization** | Public administration |
| **Location** | Copenhagen (Denmark) |
| **Activeness and/or duration** | 2007 – on going |
| **Intervention context** | Local |
| **Actors** | Copenhagen municipality |
| **Keywords** | service models & experiment, company strategies, scaling replicating strategies, guidelines and policies |
| **Action's area** | Kindergartens, Schools, Ederly Homes, Social Institutions, Personal Canteens |
| **Web site** | https://kbh-madhus.web-flow.io/omos/omkobenhavnsmadhus |

The Copenhagen House of Food (CHF) was founded in 2007 by the City of Copenhagen to enhance the standard of public meals provided to the municipality's residents. In 2013, it became an autonomous, non-profit foundation. In 2009, a target was established to raise the use of organic products to 90% in the 900 municipal kitchens (canteens, day-care centres, and nursing homes), requiring a substantial restructuring of food preparation techniques to incorporate organic produce while staying within their current budget. Due to the increased expense of organic fruits and vegetables, it was imperative to thoroughly reassess the preparation process, provide training for the personnel, and raise awareness among users. The menus' composition played a crucial role, highlighting the significance of the daily preparation of appealing and flavourful meals. The kitchen staff training was essential to convey the suggested proportions of protein, fat, sugar, and other constituents for a nutritionally balanced meal. The programme also promoted the inclusion of youngsters in meal preparation. In 2009, CHF started a food branding initiative – the EAT project (Fig. 7) – that involved 20% of school pupils to offer nutritious and high-quality lunches using the food service concept.


*Figure 7 Example of the EAT project packaging, ©Copenhagen House of Food, Retrieved from: https://kbh-madhus.webflow.io/omos/voreshistorie*

## *4.5 Case study 5: "Rewe" green farming*

*Table 4 Info summary.*

| | |
|---|---|
| **Intervention characterization** | Retail |
| **Location** | Wiesbaden-Erbenheim (Germany) |
| **Activeness and/or duration** | 2021 – on going |
| **Intervention context** | Local |
| **Actors** | Rewe supermarket |
| **Keywords** | service models & experiment, company strategies, future scenarios, scaling replicating strategies |
| **Action's area** | Supermarkets, urban farming |
| **Web site** | https://www.rewe.de/nachhaltigkeit/nachhaltig-einkaufen/green-farming/ |

The REWE green farming supermarket is a model for the REWE supermarket chain. The main objective is to reimagine the conventional grocery shop: the building – by ACME Studio, is designed to be a low-energy structure (REWE, 2023; ACME, 2021), with an aquaponic system and a rainwater collection system from the parking lot to use in restrooms and for irrigation (Fig. 8). The store entry is strategically built to provide a dedicated space for local producers to promote their goods. Within the REWE Green Farming initiative, around 20% of the products are obtained from local sources, which involves around 150 producers operating in the region, also mitigating the impact of market fluctuations on pricing. This fosters fair competition and ensures acceptable costs for consumers. The supermarket's profit margin is 20%, which is far below the industry average of 30% to 50%, resulting in more affordable merchandise. The market maintains a workforce of 1600 employees, produces 800,000 basil plants and breeds 2000 fish each year. The aquaponic system effectively reuses water and nutrients, leading to a sustainable and eco-friendly operation.

*Figure 8 REWE interiors' view, ©REWE | Jürgen Arlt, www.arlt-photodesign.de, Retrieved from: https://mediacenter.rewe.de/themen/rewe-green-farming*

For our research group, the selection of a restaurant and a supermarket that double as food production sites provides valuable insights, for example, on how to integrate this service in a campus, differently from a community garden development, e.g., the use of technical and technological systems involving skills other than participatory spatial design but equally capable of intersecting social sustainability results is a source of reflection.

# 5. Discussion

The case studies provided insights that will influence the forthcoming phases of the study, providing valuable guidance for the definition of strategies and guidelines for a university food policy from a spatial and service perspective.

## *5.1 Self-production: How can spatial proximity be pursued, ensuring system effectiveness and stakeholder engagement?*

The physical environment acts as an active determinant of relational and functional relationships through a network of nodes of interconnected places where the potential for relationship-building is amplified. Food exchange fosters a dynamic network of commercial, convivial, and productive relationships that extend beyond geographical confines. At the heart of this network lies the small unit, acting as a pivotal node linking diverse actors, systems, and beneficiaries, increasing social bonds. This interconnectedness fuels the emergence of innovation, birthing novel economic flows of resources and relationships. AFNs can leverage, in fact, the local context as a service strength, weaving the existing networks and organisational systems to develop early-stage innovations that can be structurally connected with social actors to scale it up and down.

Self-production is an experimental component of the food supply chain in Coltivando, Erba Brusca, and REWE cases. This practice involves various actors engaged in cultivation, ranging from volunteering citizens and university students (Coltivando) to local owners (Erba Brusca) and employees (REWE). The produced goods are consumed at home (Coltivando, REWE) or onsite (Erba Brusca). The self-production is guided by sustainable principles, encompassing:

- Social engagement through the creation of relationships among people (Coltivando)
- The efficiency of the food chain with a "farm to fork" approach (Erba Brusca, REWE)
- Raising awareness about food seasonality for primary actors (employees, volunteers) and secondary beneficiaries (customers, charity associations)
- Educational purposes by providing a wider audience with direct access to the life cycle of vegetables and fruits, allowing them to witness the different stages of growth and gain practical knowledge related to urban farming.

Integrating self-production within the food supply chain showcases a commendable commitment to sustainability and community engagement. By fostering relationships, promoting a comprehensive understanding of the food chain, raising awareness about seasonal products, and providing educational opportunities, these initiatives contribute to local food systems and empower individuals to become more informed consumers and active participants in urban farming practices. This approach highlights the potential for more sustainable and interconnected food ecosystems.

## *5.2 Food transformation: How can we test the shortening of food processing?*

Onsite food transformation connects the food growing place to those of transformation and consumption, as observed in Coltivando, Rewe, and Erba Brusca. The food processing encompasses three primary levels of operational activities:

- Harvesting and semi-processing (Coltivando, Rewe, Erba Brusca): locations where food (mainly fruits and vegetables) is grown, harvested, and roughly processed before being brought home to the final consumer or further processed and consumed after storage (e.g., in supermarkets, restaurants, bars).
- Semi-processing (Rewe, Erba Brusca): locations where raw food comes both from on-site production and external suppliers and is then semi-processed as ingredients for additional on-site preparation (e.g., in bars, restaurants) or for selling purposes (e.g., in supermarkets).
- Processing (Erba Brusca): locations where raw food comes from both on-site production and external suppliers and is directly used to prepare food meals to be sold on-site or off-site.

In the analysed best practices, onsite food transformation enables a short food procurement chain. This results in ingredient traceability, trust in the producer, direct beneficiary access to the process, logistical efficiency, and reduced transportation costs.

## *5.3 Food Accessibility: How can we more broadly understand alternative forms of food access?*

Food accessibility encompasses a range of critical factors that contribute to ensuring that individuals have access to a diverse and nutritious diet. This concept extends beyond physical availability and encompasses the affordability and quality of the food. Each case study sheds light on this multifaceted issue.

The capability of beneficiaries to access a balanced diet. In the context of the case studies, initiatives such as CHF and SOSpesa prioritize the aim of making nutritious meals accessible at reasonable prices or even free of cost. This aspect is especially crucial in addressing food insecurity and ensuring that individuals have access to wholesome food options regardless of their financial status).

The capacity to shorten the food chain by letting the producer directly contact the final user. As seen in REWE and Erba Brusca, establishing direct connections between producers and consumers can streamline the distribution process, reduce costs, and facilitate better communication. These initiatives have effectively bridged the gap between food production and consumption, promoting a more direct and transparent exchange that benefits both the producers and the end-users.

The possibility of getting fresh food alongside processed food is a healthier option. This approach promotes healthier dietary choices.

The traceability of the food chain is place-based and instantly visible. By establishing transparent and place-based supply chains, initiatives such as REWE, Coltivando, and Erba Brusca have instilled confidence in consumers regarding the origins and quality of their food. This transparency fosters a sense of trust and encourages conscious consumption, empowering individuals to make informed decisions about their dietary choices.

By addressing these multifaceted aspects of food accessibility, the case studies have collectively contributed to promoting a more inclusive and sustainable food ecosystem, fostering healthier communities and empowering individuals to make informed and beneficial dietary choices.

### *5.4 Systemic approach: How can a limited system be made more virtuous to impact the more extensive system?*

Connecting components of the food supply chain fosters a series of virtuous processes at different levels, contributing to the development of sustainable and community-driven initiatives that benefit various stakeholders:

- **Micro level**: In the case of Coltivando, the link between the university campus and the neighbourhood eases a process of inclusion and cohesion between the two communities. At the same time, this "collision" generated a fertile field of innovation and circularity, including the compost area in the garden with the leftovers carried by the onsite and off-site community to create a fertilizer to be then used in the garden itself, the connection with charity local associations to regularly donate part of the produce, educational activities connected to the university disciplines taught onsite (spatial, product, service and communication design).
- **Meso level**: In SOSpesa, by establishing a local network of shops, the neighbourhood community activates a virtuous service aiming at saving food from waste and guaranteeing quality food to vulnerable categories.
- **Macro level**: In CHF, the link between the high number of actors related to food processing and the connection with a shared food policy to guarantee quality food at an accessible price improved the value of the experience of the final consumer and the standard of the sustainability of the process itself.

By prioritizing local connections, promoting education and awareness, and advocating for accessible and nutritious food options, these projects have contributed to the well-being of individuals and communities and set a valuable precedent for future endeavours in sustainable food procurement and community development.

## 6. Conclusions

Cases demonstrated that:

- Self-production may be integrated in university systems much more extensivly than albeit virtuous experimentation of a community garden. Through its own policy, the university can involve actors for new forms of agreement or systematise the presence of community gardens with other systems for the centralised reuse of compost (from the university cafeterias and canteens).
- Food accessibility encompasses factors like inclusive and sustainable food ecosystems, fostering healthier communities and informed dietary choices.
- Taking a systemic approach, the interconnection of various components of the food supply chain fosters inclusive and sustainable initiatives at different levels by prioritizing local connections, education, and accessible and nutritious food options. For example, optimizing the entire system's procurement (cooking centres, distribution centres, etc.), reducing and managing waste through revising surplus regulations and measurement, monitoring, and collection (using technological data collection systems), restructuring the service, and strengthening the active involvement of university actors who are currently only beneficiaries, working with institutions to establish criteria for distributing incentives.

The case studies analysis has brought out insights highlighting the potential impact that a small unit's improvement may have on the infrastructures of a city, even including socio-cultural features (i.e., behaviours, habits, people-places connections). This could be a more sophisticated way to impact the awareness and lifestyles of specific subgroups of citizens, de facto overcoming perceptual barriers of – for example – the mainstream student identity. Food systems innovations are not only explicitly connected to environmental sustainability. Still, they may broaden cultural ideas and attitudes in universities and beyond. These efforts set valuable precedents for future sustainable food procurement and community development. These clusters will instruct OnFoods / PPP_URB to research the subsequent phase on strategies to improve the affordability of sustainable food on campuses through public and private procurement and experimentation for future cultural and environmentally sustainable living. University campuses can contribute to the city by leveraging their social and cultural resources to create economic and symbolic value. This goes beyond traditional education and serves as experimental grounds for addressing urgent issues in our current food systems and driving systemic change. The overall research is at the end of the first year of activities.

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