

6 The potential of Short Food Supply Chains for sustainable urban agri-food systems

The UFIL of Milano Ristorazione

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6.1 Introduction

Short Food Supply Chains (SFSCs) are seen as possible sustainable alternatives to long globalized food supply chains. Different SFSC models in the literature are built on the multidimensional concept of *proximity*, which refers not only to *geographical closeness* but also to the relationship between supply chain actors (*relational proximity*) and the degree of information sharing upstream and downstream (*information proximity*). The three dimensions of proximity can produce different sustainability impacts.

This chapter investigates the innovation of introducing SFSC products in the school canteen meals served by Milano Ristorazione (MiRi) in Milan, based on the Urbal framework and the concept of SFSC. We explore this innovation by drawing on interviews with MiRi representatives as well as the results of a participatory workshop with 20 stakeholders. To corroborate our findings, we analyse the MiRi's meal delivery service from production centres to school canteens. We conclude that the geographical proximity of MiRi's food suppliers and kitchen centres to school canteens is not sufficient to guarantee the sustainability of locally sourced products and short-distance logistics systems, but that new forms of vertical cooperation and information sharing constitute key levers for sustainability. Finally, the Urban Food Innovation Lab (UFIL) provides learnings for practitioners and policymakers, towards a new participatory approach for the development of procurement tenders focused on sustainability.

6.2 Short Food Supply Chains and sustainable development: Insights from the literature

Consumers are increasingly asking for high quality standards, product variety, and food safety guarantees, along with information on the origin of products and the sustainability of the whole value chain (Jarzębowski et al., 2020). However, agri-food supply chains operating on the global market must contend with growing distances upstream and downstream of the value chain,

particularly involving long geographical distances and multiple intermediaries, which present challenges for supply chain control and affect consumer trust. SFSCs have emerged as possible sustainable alternatives to global food supply chains. SFSCs are characterized by short geographical distances (Engelseth, 2016), fewer intermediaries, a stronger relationship between producers and consumers (Todorovic et al., 2018), and information closeness (Renting et al., 2003; Caniato et al., 2012). *Geographical proximity* “expresses the kilometric distance that separates two units (e.g. individual organizations or towns) in geographical space” (Torre & Rallet, 2005, p. 4). *Relational proximity* is defined in terms of the number of intermediaries along the chain (Bos & Owen, 2016; Malak-Rawlikowska et al., 2019) and the type of contractual agreements in place between supply chain actors (Edelmann et al., 2019). *Information proximity* is measured according to the type of information shared along the chain (such as product origin, product quality, sustainability practices, and protocols observed), the accessibility of the information, and the level of visibility over products, practices, and processes along the value chain (Garcia-Torres et al., 2019).

Sustainability has come to be closely associated with SFSCs, as has been highlighted by EU Regulation 1305/2013, which defines these supply chains as a production model that generates economic, social, and environmental benefits. Even though SFSCs are considered as alternatives to global and unsustainable food chains, there is often a lack of evidence regarding the actual sustainability of these “shorter” food supply chains.

SFSCs’ contribution to the sustainability of food systems should not be taken as a given. The different levers of proximity can reinforce or cancel each other out, generating multiple and interdependent economic, social, and environmental impacts that can also offset one another. For example, SFSCs are often associated with environmentally sustainable practices, as small-scale farming is considered to use less energy than large-scale, industrial agriculture (Woodhouse, 2010). Moreover, the shorter travelling distances can facilitate the prevention of food waste (Jarzębowski et al., 2020). On the other hand, SFSC producers might face economic barriers in accessing the market which, among other things, can stem from a weak organization and limited infrastructure, two key factors affecting competitiveness (Yacamán Ochoa et al., 2019).

Another example is that SFSCs help connect urban and rural areas, enhancing rural development and the revitalization of local communities (Jarzębowski et al., 2020). However, proximity does not automatically imply positive effects on working conditions.

Furthermore, the concept of sustainability is associated with the notion of resilience, defined by Rice and Caniato (2003) as “the organisation’s ability to react to an unexpected disruption”. Resilience can be considered as a short-term enabler to achieve long-term sustainability (McDaniels et al., 2008): in many cases, resilience and sustainability are affected by the same management practices (Macfadyen et al., 2015). In the context of agri-food supply chains, resilience relates to the ability to maintain the “function” of the system

(Tendall et al., 2015), that is, to guarantee the availability, stability, and accessibility of food over time (FAO & UNICEF, 2020).

The concept of resilience is currently gaining momentum, following the disruptive effects of the COVID-19 pandemic that posed serious threats to the continuity of the agri-food supply chain, as it did in other industries (Cullen, 2020). However, there is no clear consensus on the most relevant factors for achieving resilience in agri-food supply chains (Stone & Rahimifard, 2018). According to Stone and Rahimifard (2018), the qualities central to agri-food supply chains' resilience are collaboration, flexibility, agility, visibility, adaptability, and redundancy and each organization can determine which dimensions of resilience to leverage in a given context, building different resilience strategies. In this regard, SFSCs can play a crucial role in the resilience and sustainability of the agri-food supply chain, by leveraging *geographic, relational and/or information proximity*.

6.3 The Milano Ristorazione UFIL: Introducing products from Short Food Supply Chains in school canteens in Milan

Given the rapidly evolving regulatory environment and the continuous changes in food consumption habits, the development agendas of cities around the world have started to prioritize reducing the distances between producers and final consumers by creating linkages between urban, peri-urban, and rural areas, as well as promoting more sustainable diets, starting in school canteens.

In 2014, the Milan Municipality established a Food Policy Office in charge of developing a comprehensive food policy strategy for the city of Milan, based on a Memorandum of Understanding signed with the philanthropic organization Fondazione Cariplo. The Milan Food Policy was developed around five priorities:

- 1) ensuring the supply of healthy food and sufficient drinking water as primary nourishment for everyone
- 2) fostering the sustainability of the urban food system in Milan, by enabling the conditions necessary for the management of a sustainable food system and promoting the local production and consumption of fresh and seasonal quality food
- 3) understanding food, by increasing consumer awareness surrounding healthy, safe, culturally appropriate, and sustainable food
- 4) fighting waste
- 5) supporting and promoting scientific agri-food research

Since 2015, the Milan Food Policy Office has promoted the development of an international pact on Urban Food Policies—the Milan Urban Food Policy Pact (MUFPP), now signed by more than 210 cities worldwide—with a view to disseminating best practices for urban food policies and activating joint actions towards more sustainable food systems. Moreover, in 2018 the Milan

Municipality joined the “100 Resilient Cities” programme pioneered by The Rockefeller Foundation, which supports cities around the world to integrate resilience measures into their urban development strategies, so as to be able to prevent and face existing and emerging environmental, social and economic urban shocks and stresses (for instance, relating to poverty, unequal access to public services, flooding, air pollution, and climate change). Like the other cities involved in the programme, in 2017 Milan appointed a Chief Resilience Officer in charge of leading the city’s resilience efforts, coordinating actions with the other Milan Municipality departments.

Within this framework, MiRi operates as a large public company owned by the Milan Municipality that manages catering for a wide network of public schools and prepares meals for nursing homes, the elderly at home, disability centres, immigration centres, and affiliated private schools in Milan. Its priority mission is to offer children safe, healthy, and nutritious food at school, along with educational activities on adequate nutrition and sustainable consumption. MiRi provides an average 85,000 meals per day, prepared in 26 kitchen centres and distributed to a network of 437 school canteens. It employs 815 people directly (in its kitchens, its offices, etc.), and another 2,900 indirectly (distributing food in the schools, providing cleaning services, etc.) (Milano Ristorazione, 2021). It offers more than 8,500 differentiated ethnic and religious menus (e.g., vegetarian, vegan, pork-free, etc.) and over 2,100 health-specific diets to cater to the multiple cultural practices and specific nutritional diets of its consumers (e.g., for diabetes, celiac, or other allergies).

Over the last few years, MiRi has actively promoted several activities and innovative projects to enhance the sustainability of the whole food chain of the school canteens, from product procurement and logistics to waste management and food education for children and parents. For instance, MiRi has replaced plastic tableware with a biodegradable and compostable alternative, has facilitated the procurement of local and organic products in its public tenders, and has introduced Fair Trade products. This commitment to sustainability is driven by the food policy strategy adopted by the Milan Municipality and is supported by the MiRi senior management’s strong commitment to sustainability as well as the obligation to align with current regulations governing public administration at city, national, and European levels, which set strict mandatory requirements regarding food safety, green procurement, and carbon emissions reduction. MiRi’s public procurement policy and meal distribution system for school canteens can strongly impact the sustainability of the local urban food system, mainly by regulating the procurement and logistics processes involving suppliers through long-term contracts and tenders. In addition to this, MiRi tenders often define best practices that are then adopted by other Italian municipalities. Furthermore, MiRi’s catering service and sustainability awareness initiatives reach a vast population of schoolchildren and their families in Milan.

In line with its strategic food policy goals, the Milan Municipality has invested in defining and implementing a Rural Development Plan aimed at

reconnecting the city of Milan with the metropolitan productive agricultural areas, thus facilitating access to sustainably produced food through public tenders.

As part of this, in 2016 the Milan Municipality launched a 12-month pilot initiative in collaboration with the Milan Agricultural District (DAM) and MiRi to establish new arrangements between public administrations and local agricultural enterprises for the development of experimental procedures. Thanks to this institutional innovation, MiRi was able to secure a whole year's supply of rice from the DAM agricultural enterprises (180 tons/year, for a value of €300,000/year), thus introducing this locally sourced product in school canteen menus. Building on the results of this experiment, over the last few years MiRi has been working to scale out the strategy adopted with rice to other 19 food supply chains—including fresh pasta, potatoes, zucchini, lentils, and chickpeas—extending the network of suppliers and partner stakeholders as part of the “Matera Alimenta Urbes” project. This has involved several joint actions on the local territory, including the redevelopment of agricultural land, the modernization of agricultural infrastructure and machinery, the creation of an urban food market with “zero-kilometre” products, and an intense education and communication campaign targeting the school community and civil society.

Given this overall context, the innovation of interest here is the introduction of SFSC products in the menus of the school canteens served by MiRi in Milan. According to the definition of “Short Food Supply Chains” found in the literature, distances between rural and urban areas, as well as distances between producers (agricultural enterprises) and consumers (schoolchildren), can be reduced by mobilizing different proximity levers such as: 1) the sourcing of food that is produced locally, in other words food that is close to the points of consumption (i.e., geographic proximity); 2) the disintermediation of the value chain through new organizational/cooperation frameworks, such as the contractual agreements between MiRi and DAM agricultural companies (i.e., relational proximity); and 3) the sharing of information on products' origin and the associated supply chains, and the development of educational campaigns targeting the school system, institutions, and supply chain actors (i.e., information proximity).

There is however still not a widely shared definition of “local products” within regulation on public procurement. As a result, the boundaries of geographical proximity cannot be clearly identified. The “zero-kilometre” concept is commonly associated with food that is produced within 70 kilometres of the point of consumption, but the definition of “local production” could be extended to cover the whole Milan metropolitan area or the Lombardy Region. Moreover, shortening the supply chain might require some effort from different stakeholders and generate a range of sustainability impacts. Locally produced or zero-kilometre products are not necessarily sustainable; their sustainability depends for instance on how they are produced, transported, and distributed. According to the Urbal framework, sustainability has multiple dimensions, pertaining to the environment, food safety, food security, the

economy, society and culture, and governance. The interdependencies between the three pillars of proximity in the context of SFSCs may therefore vary, affecting these supply chains' sustainability performance and the different dimensions of sustainability.

6.4 The Urbal approach and the methodology

The UFIL of MiRi proceeded according to the Urbal approach described in Chapter 1 of this book, considering the key characteristics of the innovator (MiRi) and the local innovation ecosystem. This UFIL focuses on the innovative process of introducing SFSC products in the Milan school canteens served by MiRi by leveraging public procurement tenders.

The research group of the School of Management of Politecnico di Milano (PoliMi) acted as a facilitator for the UFIL, supporting MiRi staff in analysing the scope of the innovation, understanding the innovation context, identifying and involving key stakeholders and establishing the theoretical framework for the adoption of the new SFSC practice. Multiple sources of data were used for the analysis, following the methodological steps of the Urbal framework.

First, MiRi's internal documents were analysed to understand its organizational structure and school canteen network. Moreover, two semi-structured interviews and two meetings with MiRi representatives (the President, the Director of Quality and Food Security, the Director of Operations, and the Director of Procurement and Contracts) were conducted in order to grasp MiRi's procurement strategy and the logistics system underpinning the preparation of meals and their distribution to school canteens.

Second, additional material available online, including reports and policy briefs published on the website of the Food Policy Office of the Milan Municipality, was reviewed in order to enrich the data on the urban context of innovation and to identify relevant stakeholders in MiRi's network.

Moreover, a participatory workshop focused on the MiRi UFIL was organized on 29 January 2020 at PoliMi to identify relevant sustainability dimensions for the innovator and the stakeholders of the UFIL and build the innovation impact pathway map following a participatory approach. Prior to the workshop, a list of three relevant activities connected to the innovation was established by the facilitator together with MiRi so as to focus the map and guide interaction between the stakeholders.

The workshop lasted three hours. It consisted of a preliminary introduction to MiRi's context, the proposed innovation and the Urbal approach, followed by an interactive and participatory session to discuss the key features of the innovation and its implications for sustainability. The workshop was attended by 20 stakeholders relevant to the UFIL: the president of MiRi, a few professors and researchers from PoliMi who took on the role of experts, facilitators, and rapporteurs, an external scientific expert, one representative of the Food Policy Office of the Milan Municipality, a few current partners and suppliers of MiRi, and other food supply chain actors operating in production,

processing, retail, and food service, as well as packaging and technology providers. During the interactive session, the innovation of introducing SFSC products in MiRi school canteens was analysed according to the Urbal innovation impact pathway map framework. A new version of the innovation impact pathway map was drawn by the PoliMi research group after the workshop, integrating and detailing the input gathered during the participatory session. The final version of the innovation impact pathway map is shown and discussed in Section 6.5.2. Lastly, the Urbal framework was applied to investigate the sustainability impacts of the innovation and identify key barriers to and drivers of its implementation.

6.5 Analysis of the results of the MiRi UFIL

Building on the preliminary analysis of MiRi’s organization and the urban context of the innovation, the UFIL followed a step-by-step approach. First, it identified the key stakeholders involved in the network and their role in the innovation process to produce the network map (Figure 6.1).

Second, it identified the sustainability dimensions addressed by the UFIL (Figure 6.2). Third, it defined the key activities introduced by the innovation as well as the associated changes and impacts surrounding the sustainability dimensions to build the innovation impact pathway map (Figure 6.3). Lastly, it

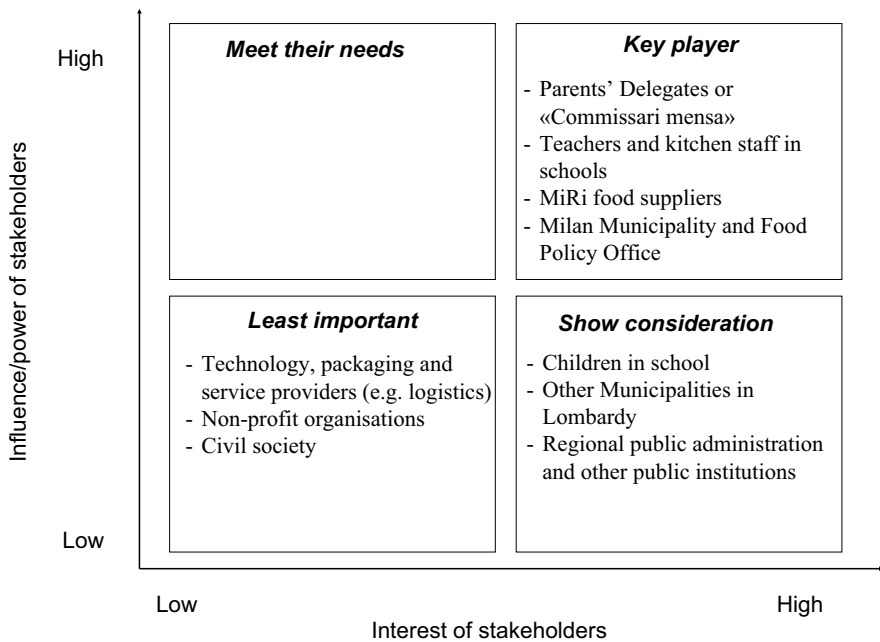


Figure 6.1 Network map.

Authors’ own representation based on Reed et al. (2009).

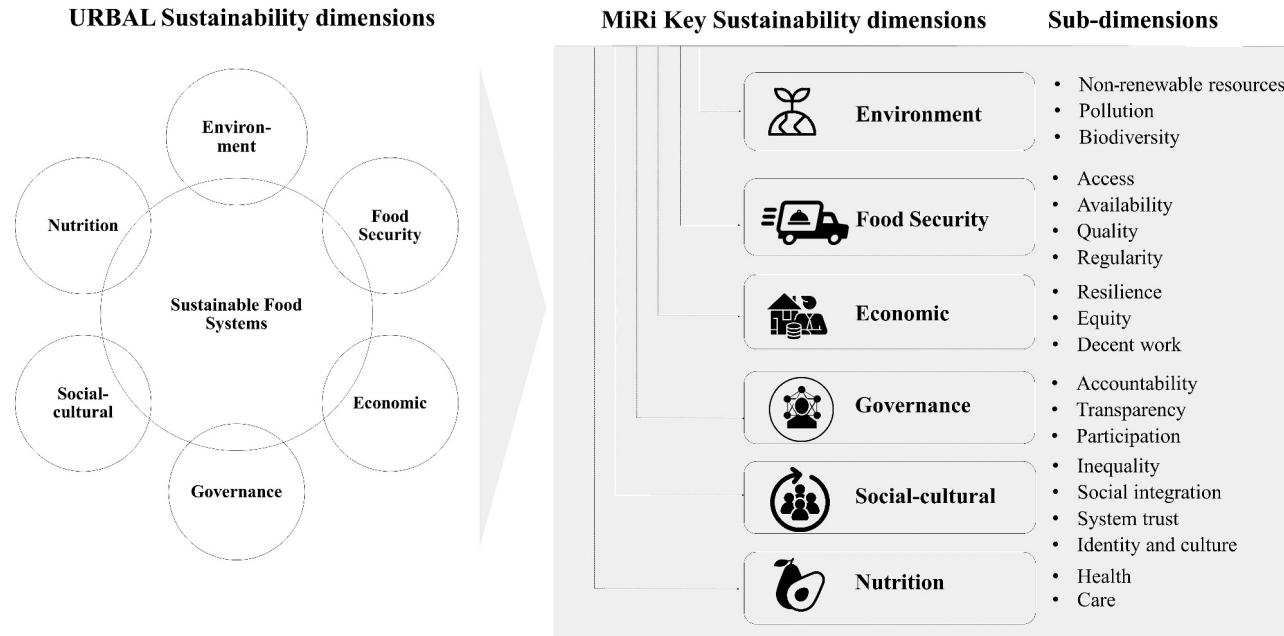


Figure 6.2 Sustainability dimensions.

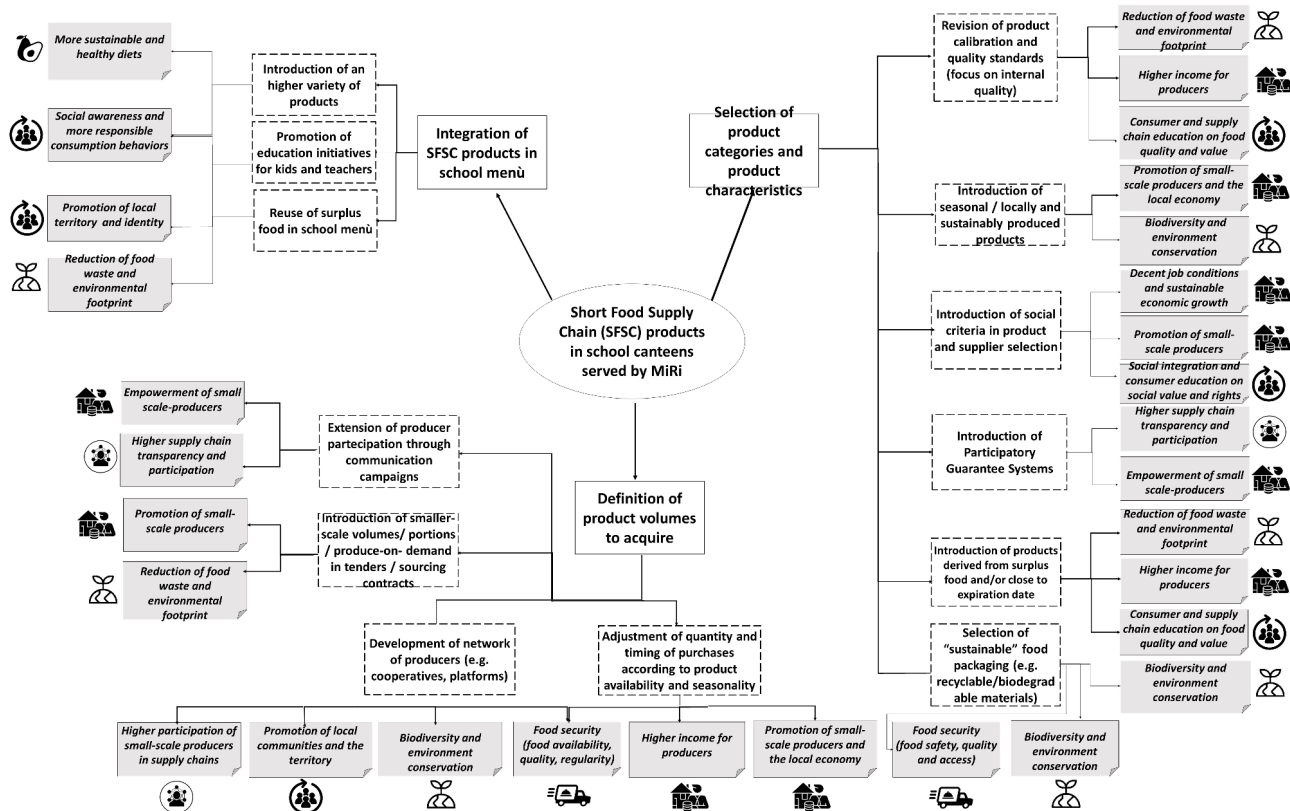


Figure 6.3 Innovation impact pathway map.

identified and discussed drivers of and barriers to the adoption of the innovation, following a multi-stakeholder and supply chain-oriented approach and drawing a comparison with a similar practice, the logistics service delivering meals from MiRi kitchen centres to school canteens.

The results of this step-by-step analysis are discussed within the theoretical framework of SFSCs and presented in the following paragraphs of this chapter.

6.5.1 *The stakeholder analysis and the network map*

The innovation under study involves different stakeholders who can provide valuable information and insights on the innovation context and/or create a conducive environment for the innovation to be deployed through policy, programmes, and tools. These stakeholders have varying levels of interest in the innovation and capacity to influence it.

The core network of stakeholders includes MiRi's own staff, schoolchildren, parent delegates (so called "Commissari Mensa") acting as consumer representatives, teachers, the kitchen staff in schools, the Milan Municipality administration and the Food Policy Office, and food product suppliers. Other key stakeholders within the urban food system may take part in or influence the innovation, including other public or private collective catering companies, distributors, technology, packaging, and secondary service providers (e.g., logistics providers, consulting firms, and communication agencies), research centres and educational institutions, non-profit organizations, and civil society as a whole.

Based on the information collected through the semi-structured interviews and meetings with MiRi representatives, coupled with the analysis of data gathered from secondary sources, we were able to categorize the stakeholders of MiRi's network involved in the UFIL according to their level of interest in the innovation (high/low) and their power/influence over the innovation process (high/low). According to Reed et al. (2009), "key players" are those who have both a high interest in and strong influence on the innovation. These actors should therefore be managed closely, engaged with and consulted regularly, and possibly involved in the decision-making process (Figure 6.1). Schoolchildren's parents have a strong interest in accessing high-quality and sustainable meals for their children and can influence MiRi's decision-making process through the parent representatives or Commissari Mensa. MiRi food suppliers, the Milan Municipality and Food Policy Office, and teachers and school kitchen staff can each in their own way play a pivotal role in enabling the development of SFSCs, with the final goal of providing more sustainable food to schoolchildren and families in Milan. Other stakeholders may also be highly interested in the innovation, starting with the schoolchildren but also including other municipalities in Lombardy and other levels of governance. These stakeholders, however, have a low level of influence on the specific innovation. Finally, packaging and logistics providers, third-sector organizations and civil society have a low level of interest in and little influence on the innovation.

6.5.2 The sustainability dimensions and the innovation impact pathway map

Given the diverse range of stakeholders involved and the complexity of the innovation ecosystem, several sustainability dimensions may be impacted by the innovation under study.

Figure 6.2 shows the key sustainability dimensions and sub-dimensions defined within the Urbal approach that were identified as relevant for the UFIL: the environmental, food security, nutritional, economic, governance, and social-cultural dimensions of sustainability. The impacts are explained in the description of the innovation impact pathway map, discussed in the following paragraph.

The map depicted in Figure 6.3 is built from the data collected during the workshop and shows the *activities* associated with the new supply chain practice (first level—rectangular boxes in the central part of the map), the *changes* arising from these activities (second level—rectangular boxes with dotted borders, directly connected to the *activities*), and the related *impacts* on the sustainability dimensions (third level—grey rectangular boxes with the lower right corner folded over, directly linked to the *changes* shown in the second level). Each activity and the associated changes can be analysed drawing on the multidimensional definition of SFSCs and can have a potential impact on the different sustainability dimensions identified as relevant, codified in the map using the same icons associated with the sustainability dimensions in Figure 6.2 (see the Note that follows Figure 6.3).

Three key activities related to the procurement of SFSC products for school canteens were chosen prior to the workshop and validated based on the data collected during the participatory session:

- 1) the selection of product categories and product characteristics
- 2) the definition of product purchasing volumes
- 3) the integration of SFSC products in school canteen menus

These activities and the changes they bring about can each be linked to one of the three pillars of proximity (geographical, relational, and information proximity) that allow for reducing distances along the supply chain.

With regard to *the selection of product categories and characteristics*, the main changes arising from the activity are:

- 1) the revision of calibration and quality standards for the products purchased in order to also include products that do not match traditional commercial standards surrounding size and aesthetic quality
- 2) the selection of seasonal produce and locally sourced ingredients which are produced following environmentally sound practices
- 3) the introduction of product and supplier selection criteria pertaining to social dimensions, such as improved labour conditions for producers, support for the employment of vulnerable people in production and distribution activities, and the promotion of small-scale producers and rural territories

- 4) the selection of products from surplus food sources and/or products nearing their expiry date
- 5) the introduction of Participatory Guarantee Systems, considered as alternative product certification schemes, which involve the direct participation of producers and consumers in the definition of product specificities as well as the development and implementation of certification procedures. In other words, these are locally oriented product quality protection systems, whereby producers are certified with the active participation of stakeholders and on the basis of trust and reciprocal control, interdependence, and knowledge sharing along the food supply chain
- 6) the selection of food packaging solutions that ensure food quality and safety while also protecting the environment through the use of recyclable materials

The introduction of new criteria for supplier selection that favour locally produced, seasonal, and sustainably produced ingredients implies geographical closeness between production and consumption, as well as new types of vertical agreements reinforcing relational proximity upstream. Moreover, the sharing and certification of information along the value chain through new participatory guarantees systems contribute to reducing distances upstream and downstream (information proximity).

These changes lead to several impacts on the different dimensions of sustainability:

- 1) promoting small-scale producers and the local economy
- 2) reducing the amounts of surplus food and food waste at production sites
- 3) guaranteeing safe and decent working conditions for producers and fostering sustainable economic growth
- 4) minimizing the supply chain's environmental footprint to protect biodiversity and reduce carbon emissions
- 5) increasing consumers' and supply chain actors' awareness surrounding food quality and the value derived from food products' origin and the activities of their upstream supply chain
- 6) promoting a more transparent and participatory supply chain

In this respect, new regulations and increased transparency in the certification and verification of information regarding products and processes (relational proximity)—also enabled by digital technology—can be *drivers* of sustainability impacts. On the other hand, the limited perception of the added value of products from SFSCs, the lack of incentives for the various stakeholders, and the lack of a collaborative approach among supply chain actors can be *barriers* (and can affect both relational and information proximity).

Regarding *the definition of product purchasing volumes*, the main changes arising from the activity consist of:

- 1) the revision of purchase quantities and delivery times according to product availability and seasonality

- 2) the development of networks of local producers, such as aggregation platforms and cooperatives
- 3) the revision of the volumes specified in procurement tenders and sourcing contracts to favour smaller-scale production and production on demand
- 4) the expansion of the supplier base by increasing tenders' visibility and accessibility through ad hoc communication campaigns

The revision of the product volume and delivery time criteria in procurement tenders and sourcing contracts to favour small-scale suppliers, along with the development of new forms of producer aggregation, contribute to strengthening the relational proximity of supply chain actors. Greater information sharing on public tenders to broaden the supplier base provides a way to foster information proximity.

The expected sustainability impacts are:

- 1) the inclusion of a greater number of suppliers with more diverse profiles, and the economic survival of small-scale suppliers
- 2) the promotion of local products and the local territory
- 3) guaranteed availability and regularity of the product supply and food quality
- 4) greater transparency and participation along the supply chain

We identified different drivers and barriers surrounding these impacts. Increased attention paid by consumers to local and sustainable products and the inclusion of small-scale producers can be a *driver* of impact and foster information proximity by enabling consumers to access relevant information on the product and its upstream supply chain. Conversely, the need to supply significant volumes of products to ensure food availability and the regularity of the food service, along with the inclusion of pre-defined size and quality standards within public tenders, constitutes *barriers*. The latter pertain to the selection criteria and the types of vertical agreements reached with suppliers, and therefore to the relational dimension of proximity.

With regard to the third activity selected, namely *the introduction of products from SFSCs in school canteen menus*, the main changes arising from the activity are:

- 1) the introduction of new products to allow for a more varied diet, which can in turn improve consumption habits
- 2) the promotion of educational activities and awareness initiatives for children and teachers, focused on sustainable and healthy diets (including “short supply chain” products)
- 3) the repurposing of edible and safe surplus food in school meals

These activities may mobilize all three dimensions of proximity. The introduction of sustainably produced ingredients implies geographical closeness as well as new contractual agreements and relational dynamics with suppliers.

Education campaigns targeting schoolchildren and teachers help to reduce distances downstream by sharing valuable information and raising awareness.

These changes lead to the following sustainability impacts:

- 1) social consciousness and awareness, contributing to lasting changes in consumer habits
- 2) the promotion of healthier diets for children
- 3) the promotion of the local economy and local identity
- 4) reduced food waste and a smaller environmental footprint

In this respect, proper and tailored communication along with education initiatives for consumers can be a *driver* of impact, which increases information proximity. On the other hand, cultural resistance to change in habits can constitute a *barrier* (again linked to information access and sharing).

6.6 Discussion of the results

The UFIL revealed that suppliers' geographical proximity to consumers is not the only lever available to reduce distance along the value chain: all three dimensions of proximity can be mobilized. The geographical dimension should be integrated through new forms of producer aggregation and supply chain cooperation schemes (relational proximity) and by promoting information sharing and transparency along the supply chain, from producers to consumers (information proximity). The impacts that can be generated are multiple and interconnected. Different enablers and barriers may arise, mostly associated with social awareness, the regulatory environment, supply chain relationships, and consumption habits.

In order to corroborate these results, we here also analyse the logistics service for meal deliveries from MiRi's kitchen centres to the school canteens, following the Urbal approach and based on the SFSC concept. This activity was selected as a benchmark for two reasons. First, as with product procurement, the logistics service contract is granted by MiRi to third-party logistics service providers through a public tender process. Second, in line with its sustainability commitments, MiRi recently started to focus on improving its logistics service and network, making it more sustainable and resilient to urban shocks by innovating with the mandatory and incentive criteria included in the tender.

The network of stakeholders involved in this logistics service includes MiRi's own staff, schoolchildren and their families, teachers, the school kitchen staff, the Milan Municipality administration, logistics service providers and experts, and technology providers (of vehicles and measurement/monitoring tools).

Based on a preliminary analysis of the context as well as interviews with MiRi representatives and relevant stakeholders, including logistics providers and an external expert, the research team found that innovations around the

logistics tender process can have an effect on several of the sustainability dimensions and sub-dimensions identified in the Urbal framework:

- ***Environment: non-renewable sources and pollution.*** The logistics tender can integrate carbon emission reduction criteria and reconsider the means of transportation used in favour of more sustainable solutions (e.g., methane-CNG, hybrid CNG-diesel, electric vehicles), and MiRi's transportation plan can be reviewed.
- ***Food security: availability and regularity.*** The logistics tender should introduce requirements to ensure a continuous and regular meal distribution service to all school canteens in the network on a daily basis. One key strategic lever is the duration of contracts.
- ***Economy: resilience and decent employment.*** Resilience is here understood as logistics providers' ability to promptly respond to unexpected events, such as road congestion due to a car accident or difficult mobility following flooding or snowfall, to guarantee the regular delivery of meals to schools. In this regard, in addition to back-up vehicles in the fleet for emergencies, an incentive criterion could be added to the tender to encourage the introduction of an operative unit for the coordination and management of unexpected events and emergencies.

From an economic perspective, it is important to consider the trade-off between the desire to invest in more environmentally sustainable logistics services and infrastructure, on the one hand, and the need for an economically efficient logistics system with rigid budget constraints on the other.

Moreover, truck drivers must be guaranteed fair working conditions. This could be addressed in the contracts with logistics providers, taking into account different aspects of social sustainability such as appropriate remuneration, training programmes on proper posture when driving and handling goods, forms of integrative insurance, etc.

- ***Governance: transparency and accountability.*** The logistics tender could introduce measurement and monitoring systems to ensure the transparency and traceability of the logistics service and track energy consumption and carbon emissions.
- ***Social-cultural: inequality.*** The logistics tender could include measures to promote diversity and reduce inequality in the work environment.

The analysis of the possible sustainability criteria to be included in the logistics tender reveals that the kitchen centres' geographical proximity to the point of consumption (school canteens) is not sufficient to ensure the sustainability of the logistics service and that other variables should be taken into account at the same time. For example, the reduced geographical distance involved in the meal delivery from MiRi kitchen centres to school canteens says little about the type of labour contracts adopted by the logistics providers or the amount

of carbon emissions generated by the vehicles used for the logistics service. The nature and extent of the organizational arrangements between MiRi and the logistics suppliers, and between the latter and their employees, as well as the availability, accessibility, and visibility of information along the value chain up to the final consumers, can play a crucial role in reducing distances and making the logistics chain more sustainable and resilient.

6.7 Conclusions

The UFIL of MiRi proves that the geographic closeness of producers (both MiRi's food suppliers and the kitchen centres) with the point of consumption (school canteens) does not automatically ensure the sustainability of locally sourced products and short-distance logistic systems. The adoption of other sustainability-oriented criteria relating to the selection of products and suppliers (e.g., favouring the supply of seasonal and fresh products, the repurposing of safe and edible surplus food that does not meet commercial standards, fair working conditions, and social integration), as well as new forms of cooperation between supply chain actors, are key to shifting towards more responsible production and consumption patterns. Moreover, a proper communication and education strategy is needed to foster transparency in the supply chain, increase awareness, and change consumption habits. Thus, relational and information proximity can support geographical proximity to achieve a more sustainable food system.

The sustainability impacts generated by these changes are multiple and intertwined: above all, they involve support to small producers and local production economies, the preservation of cultural and food heritage, the reduction of food waste, the protection of biodiversity in natural ecosystems, and the fostering of innovative participatory production models. New certification schemes and information systems can be a driver of impact, while regulatory and administrative deficiencies, a lack of incentives for stakeholders, limited awareness of the supply chain, strict commercial standards on product quality, and cultural resistance can be barriers to the innovation process.

In conclusion, the UFIL of MiRi contributes to the scientific debate on SFSCs and their potential for building more sustainable and inclusive food systems on an urban level. It provides interesting findings for food supply chain actors looking to build a SFSC and local policymakers wishing to incentivize SFSC schemes, by shedding light on the dimensions and levers of *proximity* involved and providing insights to support the development of a new participatory model for food procurement tenders and contracts with a focus on sustainability.

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