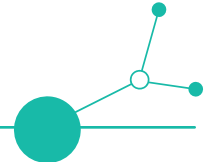


SHORT FOOD SUPPLY CHAINS CHARACTERISTICS AND NEEDS IN ITALY

Short report summary





Food4CE

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AUTHORING, REVISION & QA INFORMATION

Deliverable Contributors		
Type of author	Name and surname	Organisation (short name as in AF)
Main author	Lorenzo Cello	ITL
Contributor	Eleonora Morganti	ITL
Contributor		

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1. Executive summary

Logistics is recognized as a crucial factor for improving the effectiveness and sustainability of Short Food Supply Chains (SFSC). In particular, SFSCs need to involve tailored logistics solutions that vary based on product attributes, distribution systems, and network characteristics. For this reason, it is of crucial importance to thoroughly study the logistics characteristics of SFSCs in order to adopt environmentally sustainable decisions throughout every stage of food distribution, enhance the strategic positioning of supply chain nodes, refine the distribution path, and implement supply chain re-engineering and logistics innovation.

This document aims at summarizing the findings of the desk research, the interviews and the surveys carried out with a selected number of Alternative Food Networks (AFNs) active in the Italian region of Emilia-Romagna. These networks encompass a diverse range of models, including Community-Supported Agriculture (CSAs), farmers' markets, and Community and Food Cooperatives (FCs). Notably, many of these networks aim to serve the largest city in the region, Bologna, given its substantial population, approximately 500,000 inhabitants in the metropolitan area.

About the Food4CE project:

Food4CE is a European project funded by the INTERREG Central Europe Programme, aimed at supporting Alternative Food Networks (AFNs) in their efforts to create sustainable and resilient food supply systems. Within Food4CE 5 local and 1 Transnational Innovation Hub (IH) will be established and will focus on advancing AFNs logistics efficiency through the development of innovative tools and solutions.

Two innovative tools, the Knowledge Transfer Platform and the Matchmaking Platform will be developed within the project. The former is intended for sharing logistics best practices and solutions, while the latter is intended for creating new B2B logistics solutions and services. The aim is to facilitate knowledge transfer and exchange between different regions and actors, and to create a unique mutual support network for AFNs in Central Europe.

Food4CE will also provide jointly developed regional action plans for each participating region and transnational (CE) policy guidelines for AFN support. The project aims to establish a sustainable and lasting AFN support mechanism, which will continue working even after the project end.

By establishing local and transnational Innovation Hubs and developing innovative tools and solutions, Food4CE project aims to facilitate knowledge exchange and cooperation between different actors and regions, leading to a sustainable and lasting AFN support mechanism.



2. Short Food Supply Chains (SFSC) characteristics and needs in Italy

Short food supply chains (SFSC) in Italy are characterized by direct relationships between producers and consumers, focusing on local and sustainable food production. This highlights the need for efficient logistics solutions to support these relationships, manage small-scale production, and facilitate local distribution networks. The primary goal of SFSC is to re-establish a closer connection between food producers and consumers, enhancing transparency, food quality, and economic viability for local producers.

This research explores the logistics needs of SFSC in Italy, aiming to understand how efficient and innovative logistics solutions can support direct relationships, handle small-scale production, and ensure effective local distribution. The study emphasizes the importance of logistics in maintaining producer-consumer connections, improving transparency, food quality, and the economic viability of local producers.

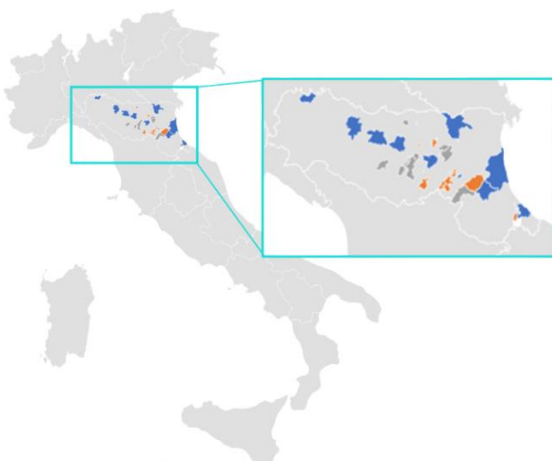
Key logistics requirements for SFSC in Italy include **handling small-scale production and distribution, facilitating direct producer-consumer relationships, ensuring efficient and sustainable transportation methods, and supporting local distribution networks**. Solutions might involve localized storage and distribution centres, efficient routing and delivery systems, and collaboration among producers to optimize transportation resources. Additionally, logistics systems should prioritize traceability and food safety to meet consumer demands for transparency and quality assurance.

Efficient and sustainable logistics solutions for Short Food Supply Chains (SFSCs) in Italy should prioritize fostering direct relationships, managing small-scale operations, and promoting sustainability while minimizing environmental impact. Achieving this requires innovative strategies and collaborations among local producers, intermediaries, and logistics providers. Additionally, integrating IT solutions is essential to enhance logistics operations, streamline processes, and improve overall efficiency within the supply chain. By focusing on these elements, SFSCs can better serve their communities while contributing to a more sustainable food system.

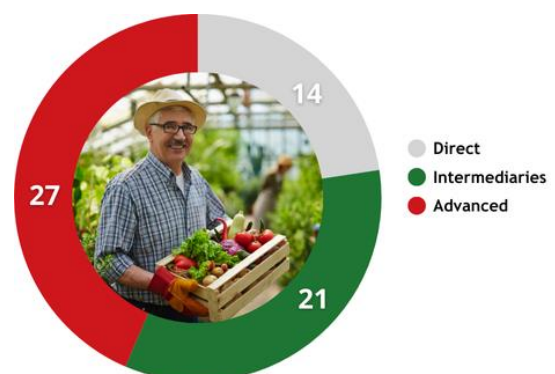
2.1. Research overview

In the research, **62 AFNs** were identified throughout the **Emilia Romagna region**. Most of the identified AFNs are located in the province of **Bologna**, with more than 50% of the analysed AFNs falling into the **platform** category, relying on digital/online shops for promotion, selling, and distribution.

Geographical location



Level of complexity





AFNs were classified into five types:

- The **direct retail initiative** model involves producers selling directly to consumers, bypassing traditional distribution channels to maximize profit retention. It represents the most basic form of distributing locally produced food to end customers, with farmers taking on roles such as advertiser, seller, and delivery person. Sales channels may include the producer's own website, Facebook page, or other social platforms, as well as traditional local markets.
- **Food cooperatives** are community-centric, member-owned establishments that prioritize local and organic produce, granting members significant influence over operational decisions.
- **Producer-consumer partnerships** establish a direct connection between farmers and consumers, who jointly share the risks and rewards of farming, often facilitated through fixed annual fees for a portion of the harvest.
- **Producer cooperatives** involve collaborations among producers to streamline and enhance various business processes, including production, distribution, and marketing.
- **Platforms** function as digital/online shops, forums, or social media accounts that enable producers to distribute, sell, and promote a range of products, enhancing visibility and reach. These platforms usually provide the name of the manufacturer for each product, establishing traceability of the product's origin.

To evaluate the logistics characteristics and needs of Short Food Supply Chains (SFSCs), a thorough analysis of transportation, distribution, packaging, and quality control was conducted. These elements are vital for understanding the operational challenges and efficiencies within SFSCs, providing insights into the logistical frameworks that support these chains and their specific requirements for optimal functioning. This comprehensive examination enables a deeper understanding of how to enhance the effectiveness and sustainability of SFSCs in Italy.

2.2. An analysis of SFSC logistics characteristics and needs

The research sample consisted of **17 advanced Alternative Food Networks (AFNs)** that participated in the survey, with 11 specifically selected for their higher level of complexity. Advanced refers to AFNs that leverage online platforms for product sales and offer delivery services through their own vehicles or logistics operators. Additionally, 15 out of the 17 AFNs employ between 1 and 8 staff members, highlighting their small-scale operations. These networks emphasize the importance of minimizing and optimizing product transportation, reflecting their commitment to efficiency and sustainability in logistics.

2.2.1. Order processing

92% of the respondents indicated that they do receive orders, which are most often placed through **instant messaging and online platform or website**. As common modes for placing orders are also **email**, **phone** and **in-store orders**.

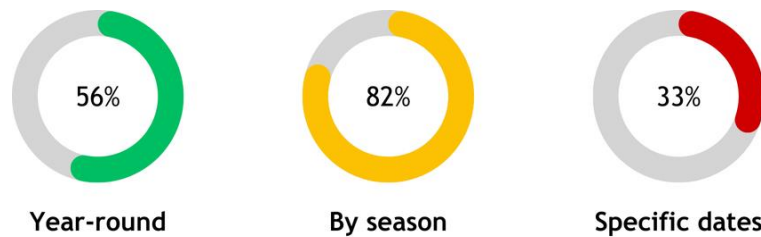




Thus, AFNs use a variety of strategies for handling orders, incorporating traditional and digital communication channels. Initiating processes in the supply chain is significantly impacted by the act of placing orders for goods. **The frequency of incoming orders and variations in seasonal demand or order quantities are crucial elements that affect logistics and the efficient use of production resources.** Almost half of the AFNs receive orders **daily**, while more than 70% receive them **more than once per week**. On average, they receive an **order every 1.8 days**.



The results indicate a consistent and recurring demand trend, with daily orders being the standard practice for most AFNs in Emilia-Romagna. This trend is supported by a combination of electronic, telephonic, and digital communication channels, facilitating efficient order placement and management.

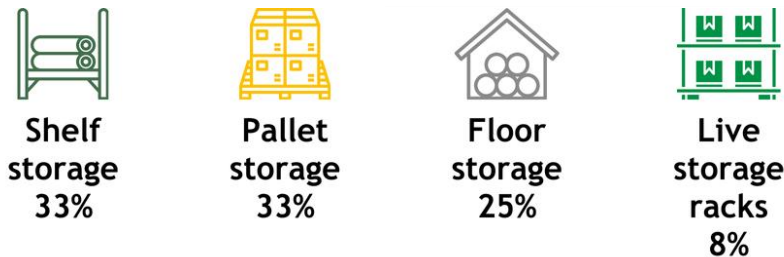


The quantity of orders is quite limited, with an average of 25 orders and a maximum of 50. Also, the number of orderliness received per week is generally low, being 23 on average and reaching a maximum of 100. Thus, the majority of AFNs generally manage a relatively modest number of orders, encountering unique demand patterns and adjusting their order processing approaches accordingly. **Order picking is made particularly hard to organize given that the availability of products is very much dependent on seasonality**, denoting also high levels of fluctuation year-round. This is clearly confirmed by the surveys, which show that 91% of the AFNs use single order picking, proceeding with order-by-order picking.

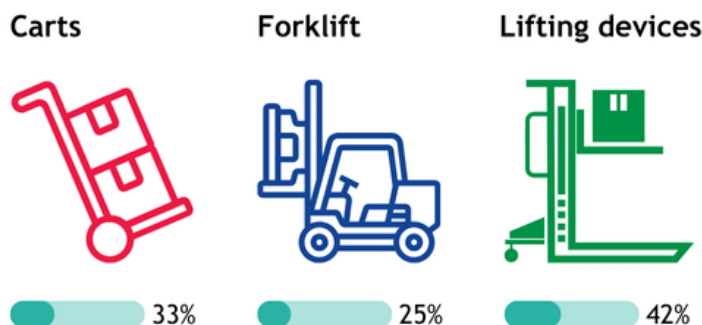
Finally, while orders are received online or electronically by many AFNs, the prevalent method for order picking is still paper based, pointing to the fact that **a considerable number of orders are not directed to a scanner but are instead printed out.**

2.2.2. Warehousing

A variety of storage solutions are used by the surveyed AFNs. AFNs adopt a flexible strategy for storage, depending on the contextual needs and the specific characteristics of the products. **Pallet storage**, used for heavy products, has the same kind of usage as shelf storage (i.e., 33%). Also, **floor storage** is used quite often (i.e., 25%), despite the suboptimal use of space that it implied.



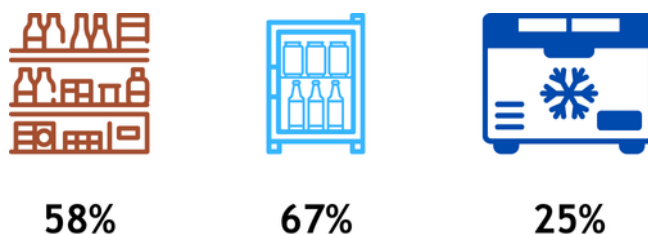
Thus, the warehousing preferences and practices are very much diversified. The same can be said about the warehouse and storage equipment used. AFNs are using a variety of warehouse or storage equipment: **lifting devices** (42%), **carts** (33%) and **forklifts** (25%). It is important to note, however, that **in many cases no storage aids are used**. This is the case for 42% of the AFNs.



This dependence on manual handling methods is probably due to the predominantly small size of AFNs warehouses and to the small amount and size of the products being such that they do not require specialized equipment. Such an insight is confirmed by the indication of Euro pallets and boxes as the most used in-house transport aids by AFNs, with each being utilized by 58% of AFNs. Indeed, these kinds of transport aids are compatible with various types of handling equipment, and they are easily stacked or moved.

Containers, commonly referred to as crates, are used by half of the AFNs. These are typically crafted from plastic, although they can also be constructed from wood. Plastic crates are commonly employed within closed, reusable systems.

Lastly, the aspect of warehousing that was investigated is the temperatures at which products are stored. 67% of the storage facilities are equipped for **cold storage**, 58% have **conventional storage** without special cooling systems, while 25% cater for **frozen storage**.

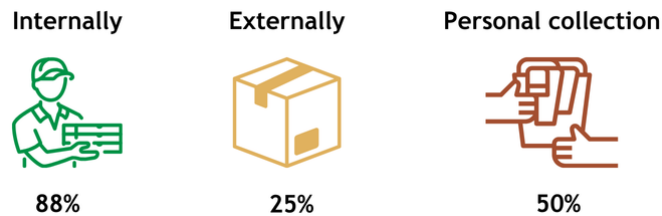


2.2.3. Transport processing

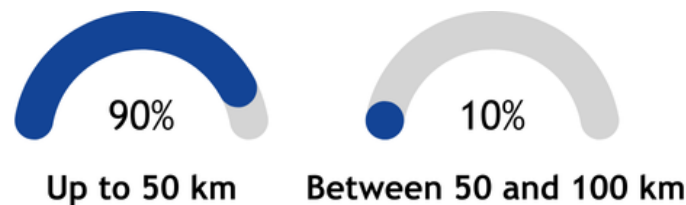
Another important aspect examined by the surveys is transportation. Outsourcing this function is an immediate answer for food producers and AFNs that do not usually have the expertise to manage this kind of process in-house. And even outsourcing can be difficult, not only because it is costly for these small companies, but also because this kind of required transport service is very particular. **It is not easy for AFNs to find partners who are capable or willing to effectively provide such services**. Thus, two thirds of the



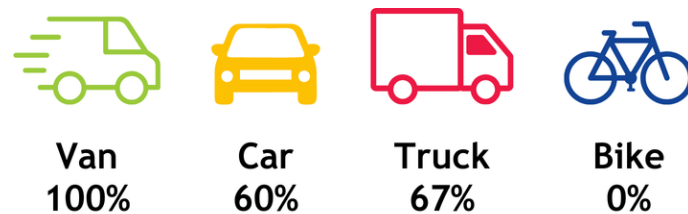
AFNs responded that they provide a transport process. Among these, **88% answered that they manage deliveries internally** through their own resources, personnel, and infrastructure. **Half of them** also foresee the option for customers to **directly collect their products at the company's premises or shop**. Finally, **25% manage the delivery service externally**, in collaboration with specialized third-party providers.



Testimony to their focus on reterritorializing food systems and supply chains is the AFNs declared catchment and selling area. **Almost 90% of the respondents sell their products to up to 50 kilometers**, while the rest do not go beyond 100 km. This data is pretty much aligned with the AFNs predominant tendency to deliver with own resources (vehicles and personnel).



Further, when inquiring about the types of vehicles utilized for food transportation, irrespective of whether the transportation is outsourced or self-managed, the only vehicles indicated were **vans** (100%), **trucks** (67%) and **cars** (60%).



It is interesting to learn that no one indicated bicycles and motorcycles/scooters as a mode of transport used for deliveries. In this regard, **the feasibility of using cargo bikes and other sustainable options should be further investigated and discussed with AFNs**. However, the delivery method used has indeed an impact on ensuring the continuity of the cold chain, which it currently does for about 60% of the respondents.

2.2.4. Digital competence

Analyzing the rates at which different IT tools and technologies are embraced by AFNs, there is a consistent attempt from AFNs to use **IT solutions for ordering processes** (42% use them constantly and 17% often). This data suggests a significant reliance on IT for order management, a critical component of supply chain management. Also **warehouse management IT tools** (25% always, 8% often, 8% sometimes) and **IT tools and technologies for supply chain visibility** (25% always) - such as real-time tracking and RFID - are quite commonly used.

Overall, the results suggest opportunities for enhancement or a potential lack of awareness regarding the advantages of these IT tools in managing warehouses. Costs associated with their adoption, as well as cultural resistance to IT tools, might also play an important role in determining these results.



2.2.5. Business practices

Most of the measures adopted in this domain are non-technological, relying instead on the relationships of trust between producers and consumers favored by the local dimension of most AFNs. Using the same scoring systems of Likert scale (range from 0 - never to 5 - always), the preferences of AFNs concentrated on educating consumers, open communication channels with customers and collaboration with trusted partners. Third-party certification of products such as DoP (Declaration of Performance), DoC (Declaration of Conformity), Slow Food, Organic or Fair Trade, are also quite used by AFNs to further solidify their trust relationship with consumers.

This aspect of trust is certainly favored by the short nature of the food supply chain, which tends to minimize the distance between producers and consumers. AFNs were asked which measures they take to reduce this distance and, not surprisingly, the most relevant ones are direct procurement and local sourcing.

AFNs predominantly depend on direct procurement and local sourcing as their primary strategies for connecting production and consumption, indicating a notable preference for localized supply chains. The same can be said when looking at initiatives like farmer's markets, farm-to-table restaurants or direct sales, and educational events off farm visits. All these measures point towards the importance for AFNs to establish close and direct relationships with consumers, also thanks to the opportunity offered by online platforms and digital communication.

2.2.6. Challenging areas for AFNs

92% of the AFNs declared themselves open to collaborating with other food producers, logistic providers, IT platforms, or retailers. Collaborating with local farmers, producers, and stakeholders can lead to more streamlined and efficient supply chains. Strengthening these relationships is essential for overcoming challenges related to fragmented production. Collaboration among AFNs and with other actors of the food supply chain can offer a key for many AFNs to grow a more economically and environmentally sustainable activity. For one, it can assist in mitigating the seasonal fluctuations and improve supply chain consistency, as well as address the issue of fragmented production. At the same time, collaboration can lead to enhanced competitiveness through a reduction of costs and of those costs associated with logistics and distribution.

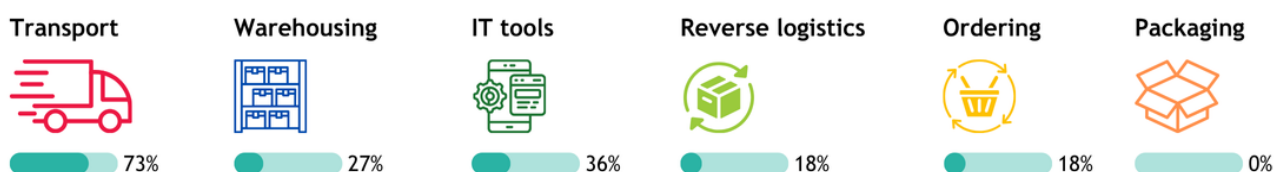
The same can be said for technology integration, the implementation of digital platforms and communication tools that can enhance coordination within the supply chain. Embracing technology solutions for inventory management, order processing, and distribution can improve the overall efficiency of AFNs. However, it has been noted that there might be some cultural resistance towards the implementation of these kind of technological solutions, whose economic viability should in any case be assessed against the small-scale of these enterprises. Exploring new markets and expanding the customer base could help in this, as it can contribute to achieve growth and economies of scale. Diversifying the range of end-buyers and exploring innovative marketing strategies can be beneficial for many AFNs and contribute to enhance their competitiveness. Connected to this is the aspect of promoting awareness about the benefits of supporting local and sustainable food systems. This can foster consumer loyalty. Educational initiatives can highlight the value of AFNs and encourage community engagement.

Finally, there is the important aspect of government and policy support. Advocating for supportive policies at the regional and national levels creates a conducive environment for AFN growth. Access to funding, grants, and regulatory frameworks that encourage local and sustainable practices can be pivotal. Examining and utilizing governmental assistance initiatives, grants, and incentives designed for sustainable and local agriculture will furnish AFNs with the financial means to enhance or expand their activities. When asked which kind of support or resources they considered important to further develop and strengthen their short



food supply chain, regulatory and policy support was the most cited one, followed by consumer awareness and engagement, transport providers or logistic operators, and financial support.

AFNs have identified **transportation** as the most challenging for their businesses, with 73% of the respondents identifying it as a challenging area. This indicates that the great majority of the respondents' face challenges with transportation. The use of **IT tools** is an area of concern for 36% of the AFNs, while **warehouse management** is challenging for 27%. **Reverse logistics processes** and **orders** also present challenges for some, each indicated by 18% of AFNs. Finally, **packaging processes** does not seem to pose problems to the AFNs. The data reflect a common challenge in the operational aspects of business logistics, particularly in transportation, suggesting that improvements in this area could lead to significant benefits for the respondents.



2.3. Challenges and opportunities for SFSC

The changing habits of consumers, who ever more frequently demand local and healthy food, represent an important opportunity for all AFNs to grow and gain new market shares. Yet, to capitalise on this opportunity AFNs in Emilia-Romagna would need to implement a consolidation of logistics services. Despite the well-established culture of local and healthy food that AFNs in Emilia-Romagna clearly embrace, they encounter certain challenges in their efforts to remain competitive and expand. The following structural challenges are especially noteworthy:

- **Supply chain consistency:** Maintaining a consistent supply of specific quantities of food at different times of the year is a challenge. Seasonal variations, fragmented production, and differences in agricultural sectors may contribute to difficulties in meeting demand consistently.
- **Fragmented production:** The existence of a big number of different producers producing small quantities and their lack of cooperation might lead to challenges in coordinating and consolidating supply chains. This could result in inefficiencies and difficulties in achieving economies of scale.
- **Logistics and distribution:** AFNs may encounter logistical challenges in organizing and executing the distribution of locally sourced food. Meeting the diverse requirements of end-buyers, such as public institutions and the HoReCa sector, may add complexity to the logistics process.

Despite these challenges, there are several opportunities for AFNs in Emilia-Romagna to thrive through enhanced collaboration. **Opportunities for AFNs include making more defined decisions about target groups and developing more precise marketing strategies.** Establishing trust with regular, steady customers to understand their product needs and quantities is vital, leading to long-term cooperation, such as multiannual food supply contracts with public institutions. This secures a regular income for AFNs, aiding in the planning of procurement, sales, storage, and logistics.

Significant opportunities also exist in collaboration. By creating cooperative networks among local producers, intermediaries, and logistics service providers, AFNs can optimize **transportation resources** and **improve operational efficiency.** Adopting digital tools and IT solutions for order processing, warehouse management, and supply chain visibility can spur **growth** and **market expansion.** Moreover, focusing on sustainability initiatives, like eco-friendly packaging and sustainable farming practices, meets the growing consumer demand for **sustainable products**, opening new market opportunities.

The findings also suggest the **need for tailored policy support mechanisms** that consider the unique challenges and opportunities within the SFSC sector. Developing policies that foster growth, innovation, and



sustainability in these networks could significantly contribute to a more robust and resilient food system in the Emilia Romagna region.

In conclusion, the evolving consumer demand for local and healthy food presents a significant opportunity for Alternative Food Networks (AFNs) in Emilia-Romagna to expand their market presence. However, to effectively capitalize on this potential, AFNs need to address various structural challenges, including supply chain consistency, fragmented production, and logistical complexities. By enhancing collaboration among local producers, optimizing logistics services, and adopting targeted marketing strategies, AFNs can strengthen their operational efficiency and build lasting relationships with consumers. Furthermore, leveraging technology and pursuing sustainability initiatives will not only meet consumer expectations but also open new market avenues. With tailored policy support and a commitment to innovation, AFNs can navigate the current landscape and contribute to a more resilient local food system in the region.