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Designing Food Hubs for Territories of Proximity: Assessing the Spatial, Ecological, and Cultural Potentials of Places through Multi-Criteria Decision Support Systems

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Abstract: Logistics, distribution models, and landscapes of food production strongly influence the space of our cities and territories. In addition to the network of large-scale retail distribution that is diffused in urban and non-urban areas, with this contribution, we study the presence of new forms of the local and sustainable distribution of food (such as Alternative Food Networks, and community-supported agriculture). Studying and understanding how these distribution models can support and be integrated within a landscape planning and design approach is explored through the Analytic Hierarchy Process (AHP), a multi-criteria decision analysis method. Through the specific focus of a Food Hub localization, the aim is to demonstrate how distribution models can not only support but also integrate into landscape planning and design. The fundamental objectives for structuring and locating a Food Hub can be organized under three strategic objectives: pursuing the benefit of people, the planet, and profit. The choice of one distribution method over others, or what is the best location and condition for distribution centers, is the question we have tested with the collaboration of "L'Ortazzo" Association. The case study is a solidarity purchasing group located in the upper Valsugana valley area (Trentino Region, Italy), a supra-municipality reality involving about a hundred families that, currently, do not have a physical distribution center.

Keywords: food hub; AHP; foodscape; emerging food practice; sustainable food system

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1. Introduction

Food has shaped our cities and landscapes since the advent of agriculture [1]. The relationship between food and landscape has changed over the centuries. Starting from the European Conference on Rural Development in 1997, the need to reconnect urban and rural areas has emerged. The aim is to remove rural areas from their margins and raise awareness of the need to safeguard the natural environment and to preserve rural areas and the ecosystem services they provide. Numerous studies have been devoted to the rural–urban relationship and various definitions have been given since the 1990s such as 'campagne urbane' [2]. The topic has been approached from different perspectives, spatial, socio-cultural, behavioral, and systemic. In this paper, we focus on the spatial perspective, trying to answer the problem of the spatialization, and thus logistics, of sustainable food systems within the landscape. The foodscapes [3,4] we see today are often children of the Industrial Revolution [5], the commodification of food, and the Green Revolution. These processes have resulted in an industrial food system—as opposed to conventional, large-scale agricultural practices and alternative, more sustainable practices—that prioritizes large-scale, mechanized production with a strong focus on economic efficiency, often at the expense of environmental and social considerations [6,7]. These phenomena can

be seen in cultivated rural areas as well as in city centers; just think of how our cities and towns have changed their faces with the spread of fast-food outlets and the loss of traditional places where food is sold and consumed. In recent years, trends have emerged as opposed to industrial food landscapes [6] and more and more alternative initiatives, named Alternative Food Networks (AFNs), are emerging (e.g., CSAs, Social Purchasing Groups). These initiatives arise due to increased consumer awareness of the negative externalities of food globalization and its impact on the environment and communities. Many of these initiatives aim at shortening the food chain to achieve a fairer, more equitable, and healthier food supply chain. European Regulation n. 1305/2013 defines a "short food supply chain" as "a supply chain with a limited number of economic operators, is committed to cooperation, local economic development, and close geographical and social relations between producers, processors, and consumers" [7]. Another definition has been proposed by Slow Food: "A short food supply chain is created when producers and final consumers realize they share the same goals, which can be achieved by creating new opportunities that strengthen local food networks. It is an alternative strategy that enables producers to regain an active role in the food system, as it focuses on local production–decentralized regional food systems that minimize the number of steps involved and the distance traveled by food (food miles)" [8]. As reflected in the two definitions, the theme of geographic continuity, and thus space, is central. The definition of a Local Food System is even more focused on the spatial theme and on the proximity between producer and consumer. Local Food Systems (LFSs) refer to the production, processing, distribution, and consumption of food within a specific geographical area. This system emphasizes the relationship between food producers and consumers within the same region.

Although short food supply chains (SFSCs) have expanded recently, their logistics is a difficult problem affecting their performance [9,10]. If the SFSC definition focuses on the geography and logistics of the food chain, giving more importance to the least number of steps between actors, the Local Food System definition is even more focused on spatial proximity. Local Food Systems are those systems where the production, processing, trade, and consumption of food occur in a defined reduced geographical area, depending on the sources and reflections, of about a 20 to 100 km radius [11]. In this framework, logistics, related to food systems, was defined by the Council of Supply Chain Management Professional [12] as "The process of planning, implementing, and controlling procedures for the efficient and effective transportation and storage of goods including services, and related information from the point of origin to the point of consumption to conform to customer requirements. This definition includes inbound, outbound, internal, and external movements". Nevertheless, as highlighted by Kukovič et al. [13], they emphasized the relevance of agriculture logistics and warned against the possibility of seeing logistics only in relation with the business and industrial areas.

Inside the SFSC and LFS, a key role is played by Food Hubs (Figure 1). In the literature, in most cases, it is more common to find references to Food Hubs as organizational systems of the food network [14] and much rarer to find references to their spatial, landscape, geographical, and logistical components. The authors of this article, considering the key role that Food Hubs play within SFSC and LFS, believe that these are instead key elements to be considered in the development and planning of new Food Hubs within the territory. The spatial component of a Food Hub has been recognized by Berti and Mulligan [14] and De La Salle and Holland [15]. While the first authors focus more on the role of a Food Hub in re-territorializing the agri-food systems, the second authors define the Food Hubs as "A place that brings together a wide spectrum of land uses, design strategies, and programs focused on food to increase access, visibility, and the experience of sustainable urban and regional food systems within a city" [15]. Furthermore, based on the literature review by Horst et al., the concept of the Food Hub is still evolving, so its definition is developed in different ways in different communities. In the North American case, the definition of a Food Hub differs in three main versions. The first approach, defined by the United States Department of Agriculture (USDA), has a vision of the Food Hub as a central facility

that provides for the aggregation, storage, processing, distribution, and/or marketing of locally or regionally produced food products [16]. The second approach developed by the non-profit organization Wholesome Wave integrates the definition developed by the USDA and emphasizes the role of the community, and therefore consumers, within the system. Finally, the third approach, developed by landscape architects Janine de la Salle and Mark Holland in their book *Agricultural Urbanism: Handbook for Building Sustainable Food Systems in 21st Century Cities*, identifies Food Hubs as a "place that brings together a wide spectrum of land uses, design strategies, and programs focused on food in order to increase access, visibility, and the experience of sustainable urban and regional food systems within a city" [15].

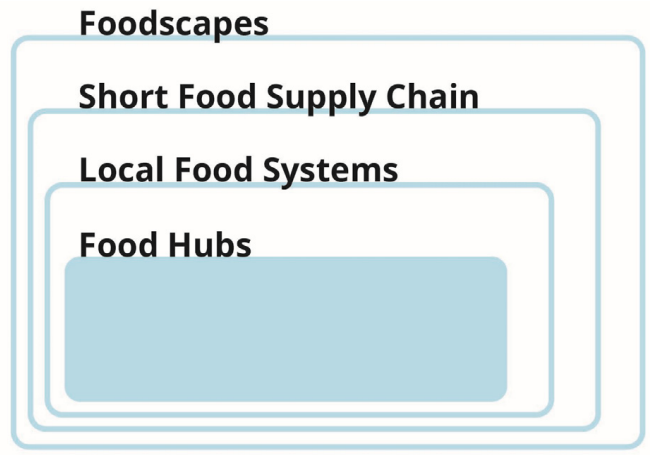


Figure 1. Foodscapes' organization diagram, within which Food Hubs play a key role within the Local Food Systems (LFSs) as part of the short food supply chain (SFSC) systems. Graphic elaboration by the authors, 2024.

Based on these considerations, the authors identify their own vision of the Food Hub as a holistic space, physical and virtual, supporting the entire local food cycle. Food Hubs are represented by all those central points, physical or virtual, where producers and consumers are in a relationship [17].

Building upon this theoretical framework, our research delves into the integrated approach among spatial, landscape, and logistical aspects of Food Hubs. Specifically, we employ a multi-criteria decision analysis (MCDA) as a methodological tool to identify optimal locations for Food Hubs. This research is a part of the HelpFood 4.0 project, co-funded by EIT Food, which aims to define and characterize Food Hubs within its scope. The central research question explores the assessment of Food Hub locations within food systems that need to effectively interact with consumers. This involves examining both logistical considerations and the impact on landscape transformation. To address this, we utilize quantitative and qualitative spatial models. The focus of this paper is to apply these theoretical insights to a practical scenario: a case study in Trentino, part of the European project HelpFood 4.0. The case study aims to address a specific need—finding a new location for logistics in product exchange. Our response is formulated through the application of multi-criteria methods. We aim to demonstrate how these distribution models can not only support but also integrate seamlessly into landscape planning and design. This approach is intended to offer practical solutions while considering the broader implications of landscape transformation and sustainable food system development.

This study focuses on addressing spatial challenges and issues and land use planning to design spatial strategies for urban foodscapes. Following the definition of the theoretical approach underlying the research, the focus of the discussion moves towards understanding the idea of Food Hubs and the decision-making methodologies that can be implemented to develop sustainable spatial strategies that support foodscapes. After

understanding the idea and tactics discussed above, the L'Ortazzo case study as part of the HelpFood 4.0 EIT Food POC research project will be examined, and conclusions will be drawn.

2. Background

Within the city-regions model [18], the equilibrium between urban and rural areas has entered into a crisis [19] when the urban system has widened from the suburbs to the entire territory and urban areas began to have a dominant role over rural areas [20], which, instead, began to be increasingly marginalized. In Europe, the beginning of this pressure on rural areas could be dated from the post-war period [21], when the run to the reconstruction and urbanization of many territories began. The push towards the industrialization of those years led to the movement of many people from the countryside to urban/industrial areas and involved the agricultural sector with a reduction in the social and environmental sustainability of the sector, for example, leading to an increase in the consumption of synthetic fertilizers and pesticides. The need to industrialize the agricultural production process was also due to the continuous loss of available territories because of the expansion of urban areas. In those years, the urban development model was often associated with the concept of expansion, so cities have increasingly taken away territory from surrounding areas [22]; this push is still ongoing despite the demographic growth trend in Western countries being significantly reduced if not stopped. As the theory of urban metabolism recognizes, cities highly depend on their surrounding territories [23,24], and this is true also for food provision. This interdependence relationship has led to a high degree of fragmentation, both from the landscape point of view and the social bonds [5], or perhaps the equation should be reversed, and the landscape fragmentation should be seen because of the fragmentation of social values and thinking. The centralization of functions in urban areas and the disconnection between urban and rural areas have resulted in a widespread feeling of abandonment by those who live in marginal areas and a removal of those who instead live in urban centers with respect to territorial problems and the poor consideration of the benefits and services provided by rural areas [25].

With most people already living in urban areas—not only in large metropolitan areas but also in secondary cities and small towns—a greater focus on urban planning as a way of influencing food systems' development will be critically important [26]. Historically, essential elements such as public transport, air, water, and decent housing have been addressed by planners, but food has often been overlooked, despite its profound impact on various sectors [26,27]. The renewed interest in integrating food into urban planning reflects [26] a recognition of its multifunctional character and its societal, economic, and ecological implications [27,28]. As demonstrated by Morgan and Sonnino [28], foodscapes are not only about the production of food but also about creating spaces that foster community, promote sustainable living, and bridge the urban–rural divide. Indeed, food production—but more generally, a reflection on the entire food system—can be the key to the reconnection between urban and rural landscapes. If it is recognized from many local experiences that urban agriculture could play a relevant role in re-designing spaces and perspectives with active citizens' engagement, less discussed are the impacts and effects on the territorial scale of food dynamics called rural–urban metabolism [23].

The concept of Food-Sensitive Urban Design (FSUD) [29] has developed within a new framework for enhancing the role of food systems in urban planning. FSUD was introduced in 2008 by the Victorian Eco-Innovation Lab (VEIL) to express the need to integrate the food system into the sustainable urban development of cities. Kirsten Larsen, founder of VEIL, saw in this concept the opportunity to improve social equity and access to food for all, increase the sustainability and the resilience of urban systems to climate change, improve the relationship between rural and urban areas, and the opportunity to enhance ecosystem services as the protection against erosion or the support of bee pollination, tourism, and biodiversity. The underestimation in the planning field of intangible products supplied by agriculture, such as the regen-

eration of soils and landscapes, could be due to the difficulty of assigning a market value to these goods–services. The assignment of a value judgment could be the key to the recovery of the areas that today are considered 'peripheral', and which hide considerable strengths such as better livability of spaces and potentialities linked to ecosystem, landscape, and cultural values that could be revalued towards a multifunctionality of the territory that associates agricultural productivity with economic and development resources linked, for example, to ecotourism [30]. The services and benefits derived from the multifunctionality of land uses are also reflected in urban spaces and improve the quality of life of citizens [31]. As stated in several documents at the European level (e.g., Cork Declaration, Cork 2.0 Declaration "A Better Life in Rural Areas", Charter of Aalborg, Agenda 21), an improvement in the connection between rural and urban areas is requested through bottom–up approaches. The participation and involvement of citizenship therefore return to be key elements in urban and territorial planning [32].

Several tools and strategies can be employed in foodscape planning. For example, participative and advocacy planning offers valuable frameworks. These approaches involve engaging communities in the planning process, ensuring that the development of foodscapes is in line with local needs and preferences. Such strategies help in creating spaces that are not only productive in terms of food but also inclusive and culturally relevant. In this framework, the concept of Food Hubs provides a physical space for interaction between producers and consumers. This supports not just the exchange of goods but also the sharing of knowledge and practices, fostering a more integrated and sustainable food system within urban settings. Furthermore, the development of comprehensive food visions by cities, such as the 260 cities that signed the Milan Urban Food Policy Pact in 2015 [33], indicates the growing importance of food in urban planning. Therefore, planning tools for foodscapes must embrace a holistic approach, combining communicative strategies with practical design elements. This involves not only creating spaces for food production but also fostering social, economic, and ecological sustainability. The integration of foodscapes into urban planning is a step towards reimagining cities as more self-sufficient, resilient, and community-oriented environments.

3. Methods

3.1. Contexts

Based on these premises, the HelpFood 4.0 project, a European project co-funded by EIT Food within the Proof of Concept (PoC) program, was implemented in 2022, starting in March and ending in December. The HelpFood 4.0 project built upon the empirical research developed during the pilot project HelpFood (EIT Food POC 2021) and envisaged the scaling up and replication of the socio-technical innovation experimented in other EIT Food RIS (Regional Innovation Scheme) countries. Organizations from five EU countries were part of the partnership: the University of Trento, Fondazione Edmund Mach, Fondazione Hub Innovazione Trentino (Povo, Italy); Municipality of Gothenburg (Gothenburg, Sweden); Ruralia Institute (Seinäjoki, Finland); Building Global Innovators (Lisbon, Portugal); and BioAzul (Málaga, Spain). The main objective of HelpFood 4.0 was to increase local food production through the creation of food ecosystems, which opened opportunities for a more secure, local, and sustainable food system. This initiative aimed for the development of a livable peri-urban countryside, the creation of jobs, the growth of biodiversity, and the improvement of the nutritional value of vegetables, as well as for social, economic, and ecological sustainability. These concepts have been further developed and deepened through the EIT Food Seeds4Future project co-funded by EIT Food POC 2024 within the Public Engagement program.

By promoting food ecosystem models as sustainable examples of food production, distribution, and consumption, the project examined the role of food as a means of reuniting farmers, citizens, and "eaters" (i.e., citizens more aware of sustainable food issues). It was believed that citizens who were better informed about food issues could

support ecologically, economically, and socially sustainable food systems. To increase their adoption and sharing, HelpFood 4.0 investigated several approaches to food ecosystem design. Working with a multiscale and multilayer strategy was important to advance these systems. Thanks to the collaboration between research institutions and farmers, as well as the development of short supply chains, the initiative encouraged the sustainability of high-quality food across the food value chain. In terms of competitiveness and the evolution of the sustainable food system within the RIS countries, this project increased the competitiveness of the local ecosystems by identifying new production and market opportunities, with increased returns for the businesses, as already demonstrated by the EU Geographical Indications' system; supported innovative value chain design that increased the competitiveness of small-scale farmers and local distributors; optimized the use of local distributors and producers; improved the economic viability of local farmers and exported the CSA model to other RIS countries; measured and monitored well-being and progress using both quantitative and qualitative research methods and techniques; and involved local policymakers to make the distribution model more systemic.

In Trentino, the HelpFood 4.0 project was built on previous experiences that were part of the Nutrire Trento project (lit. Feeding Trento) that started in 2017 in the city of Trento. The Nutrire Trento project aimed to promote more conscious consumption, raise awareness of more sustainable production, and shorten the distance between producer and consumer [34]. The main project tool was a round table where food-related issues were discussed monthly, and actions were planned to achieve the objectives mentioned above. The project also developed a digital platform to visualize the actors and places of the Trentino short supply chain to optimize the interaction between actors and develop new links, networks, and opportunities. Actors could join the project and apply independently on the platform, after which the working group verified compliance with the membership requirements. In 2020, the Nutrire Trento #Fase2 initiative arose to study the changes in purchasing habits during the pandemic emergency. A platform to sell local food products was developed, aiming to create a strong relationship between farmers and consumers. The creation of the Naturalmente in Trentino Community Supported Agriculture (CSA) was the most important outcome of the project, thanks to some synergies and common interests that emerged during the Nutrire Trento #Fase2 project. The CSA was a food production and distribution model that foresaw the demand for products and relied on the alliance between consumers and farmers. In 2021, the project HelpFood (also funded by EIT Food) assisted with the development of a purchasing platform for the CSA and some communication activities. Four experiences running in Trentino participated in the project: Naturalmente in Trentino CSA, the Orto San Marco, L'Ortazzo, and Emporio di Comunità Edera. These communities with the local public administrations of the cities of Trento, Arco, and Rovereto have been involved in the EIT Food Seeds4Future project with the aim to propose an innovative approach to improve urban nature management and, at the same time, to improve sustainable local food production. The goal is to create a roadmap for an integrated green plan strategy that can be replicated in different national and international cities and contexts.

3.2. Case Study

The Trentino case study fits into the framework of the Autonomous Province of Trento, an Italian alpine region in northeastern Italy (Figure 2). The region is made up of valleys and high mountains with a sizeable part covered by forests and agricultural land, which, during the past years, has experienced a notable increase in organic farming [35]. In Trentino, the Alternative Food Networks appear to be affiliated with the Trentino Solidarity Economy Table, a working group recognized and supported by the Autonomous Province of Trento. The HelpFood 4.0 project analyzed four case studies in the context of the Trentino Alternative Food Networks. One of these concerned the 'L'Ortazzo' Association. L'Ortazzo was born 15 years ago as the result of a youth project about organic community gardens

in the upper Valsugana valley. A primary goal of the association was to act as a solidarity purchasing group (SPG), which is a formal organization that promotes the purchasing of sustainable, fresh, and processed products, and responsibly produced hygiene products and clothes. Furthermore, L'Ortazzo collaborates with the provincial association for minors, who are involved in the distribution of goods to families, and promotes informative and educational public events. To date, the association counts 110 families, which place orders once a week through an online platform and pick up their products at a specific place and time during the week. Currently, the association does not have a stable physical location for the distribution of goods but temporarily relies on a venue provided by the Municipality of Caldonazzo (Figure 3), hence the inspiration to evaluate with some representatives of the association a possible new location for distribution among potential areas in the territory.

During the HelpFood 4.0 research project, four realities belonging to the Alternative Food Networks were involved through comparison activities born to explore and investigate local food distribution and consumption models to tell all the characteristics of distribution systems and analyze what turns out to be the problems of these distribution systems. These include the difficulty in finding products for inflexible schedules and sites, with insufficient spaces and limiting aggregation and social interaction, and the lack of traceability and communication for products with ineffective platforms. Also reported was the difficulty in accessing farmers' markets, which are open in the morning and in city centers. Therefore, the need to search for multifunctional spaces and the importance of raising awareness and skills in agriculture by popularizing important risk-sharing issues among producers, consumers, and communities to ensure safe and quality food ensue.

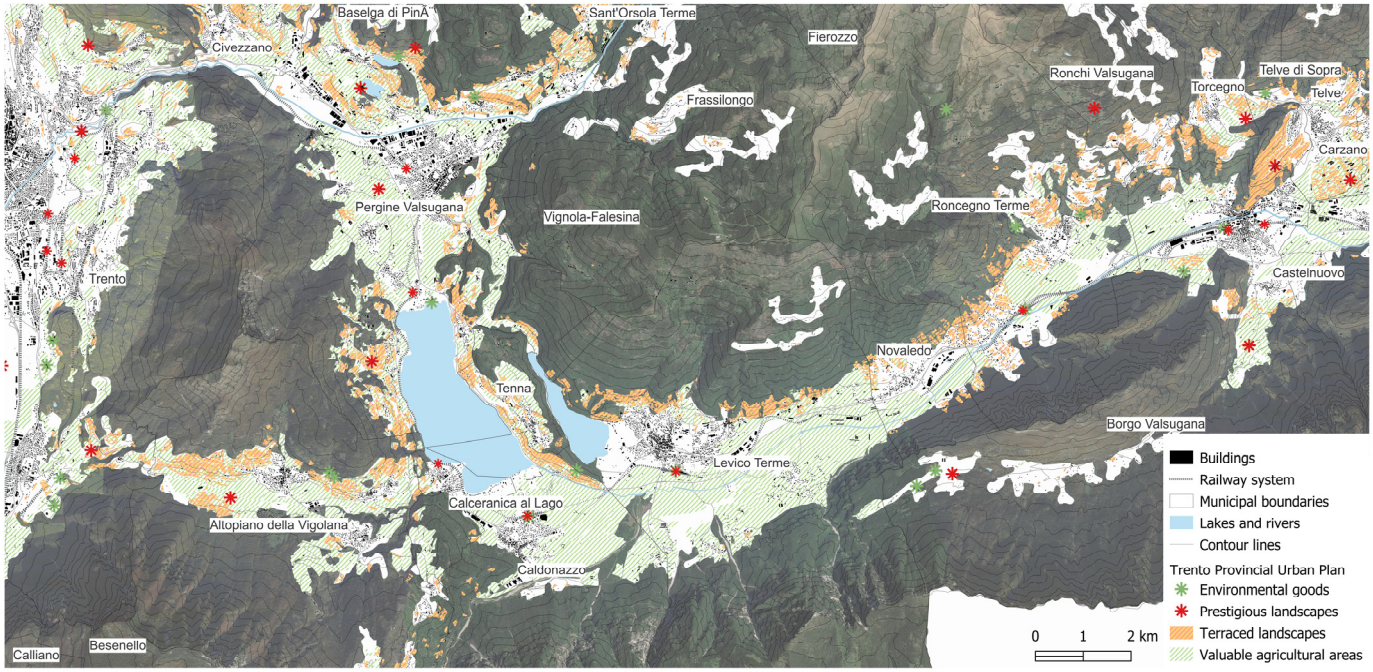


Figure 2. The spatial visualization of the upper Valsugana with the visualization of prestigious landscape elements, such as agricultural areas and terraced landscapes, environmental assets, and natural and administrative data. Graphic elaboration by the authors. Data sources: ISTAT (2023), CTP (2014), PUP (2019), GeoCatalogo PAT (1998, 2007), Google Satellite (2016).

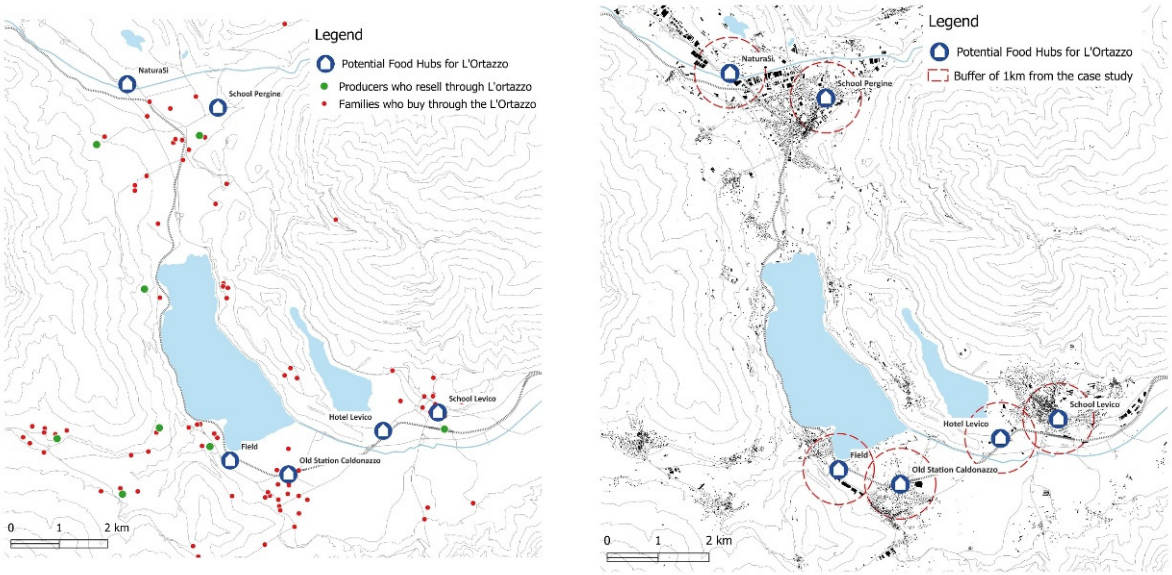
Figure 3. Photographs of agricultural land in upper Valsugana of the producer "Azienda Agricola Ai Masi" supplier of the L'Ortazzo solidarity purchasing group, and photographs of the meeting and presentation event of the L'Ortazzo solidarity purchasing group with the partners of the HelpFood 4.0 project and the local administrations in their temporary distribution center in Caldonazzo. Photo Giulia Zantedeschi, 2022.

3.3. Mapping

As part of the research, the application of the Analytic Hierarchy Process was supported with a GIS analysis and graphical representation to describe the territory and system of the case study L'Ortazzo in upper Valsugana. Consequently, the entire territory of Valsugana and, on a larger scale, the Province of Trento were studied using a database provided by the L'Ortazzo Association to place its current consumer base in space. The analysis database contains the fairly approximate localization of the families; furthermore, the database contains the localization of companies that supply the products (Figure 4a). This map shows the spatial arrangement of the families of the members of the solidarity purchasing group L'Ortazzo, some of the producers where they obtain their supplies, and the potential new locations for the distribution of products. In addition, cartography from the Autonomous Province of Trento was used for land and landscape representation, such as land use and administrative data, and population data provided by ISTAT (National Institute of Statistics) were elaborated on. Relevant data for the case study analysis elaborated on through QGIS software version 3.22 are the placement of current users of the association, who currently purchase through the solidarity purchasing group; the potential users that can be intercepted by the localization of the new distribution location; and the potential locations of the new L'ortazzo Food Hub.

Through these elaborations, it is therefore intended to assess from a spatial point of view which of the six possible new locations of L'Ortazzo Association is most suitable for the group from a spatial point of view in the territory. To conduct this, we based the elaboration by expanding the concept of "proximity" from the 15 min city [36] to a territorial scale, for evaluating the services that the territory offers in the proximity of the case studies and the proximity to members' residences (Figure 4b). The maps were constructed focusing on the study area by setting the Alta Valsugana area as we wanted to evaluate possible new Food Hubs proposed by the L'Ortazzo Association. The maps show the arrangement of the potential new locations for the distribution of products of the solidarity purchasing group L'Ortazzo and the representation of a buffer of 1 km from the case study useful for

the spatial analysis. However, the coverage of consumers/members and producers is more extensive than the chosen frames, but they are not useful to us for the selected analyses.



(**a**) (**b**)

Figure 4. (**a**) The map of the territory of the upper Valsugana showing families of the members of L'Ortazzo, producers, and potential new locations for the distribution of products. (**b**) The map of the territory of the upper Valsugana where one can observe the arrangement of the potential new locations for the distribution of products of L'Ortazzo. Graphic elaboration by the authors. Data sources: CTP (2014), GeoCatalogo PAT (1998, 2007), L'Ortazzo members and producers' anonymized data (2021).

3.4. A Multi-Criteria Decision Support System

In the case study, we adopted a value-focused thinking approach, according to which the definition of a hierarchy of objectives by means of a value tree precedes the generation of alternatives [37]. The definition of a suitable value tree was conducted in a two-step procedure. In the first step, the definition of a prototype of a value tree saw the involvement of stakeholders from local organizations in a shared meeting. From this meeting, the opportunity to use the People–Planet–Profit (PPP) classification of values [38] emerged. Then, each of the three perspectives was divided into attributes of possible alternatives, which could potentially bring value to any of the PPP aspects. A general (but customizable) value tree was the outcome: its goal was to represent a starting point for fostering communications between stakeholders. The second step refers to the actual application of the value tree to the case study. The complete value tree is represented in Figure 5, and a full description of the criteria is presented in Table 1. The case study refers to the optimal location of a Food Hub in the surroundings of Caldonazzo Lake, Italy. Further brainstorming helped identify six possible alternatives for the location of the Food Hub.

Moreover, the initial value tree needed some modification to suit the case study, and, for the sake of simplification, it was pruned to eliminate irrelevant attributes. An example of an irrelevant attribute for this case study was the "range of products": each one of the six locations could have guaranteed, without differences, the presence of all the necessary products and therefore accounting for it would have been unnecessary as it would not have discriminated among alternatives. It goes without saying that in larger and/or more complex cases, such attributes can be relevant. One can think of quickly perishable products like some special types of salad that require fresh temperatures once harvested or meat and dairy products requiring certification levels that some locations may not have.

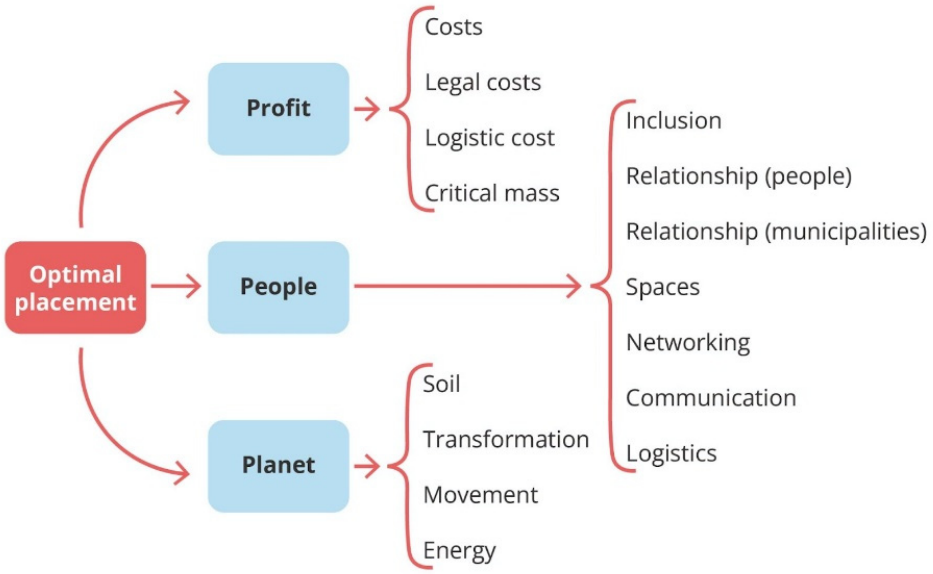


Figure 5. The value tree of the Food Hub location problem. The overall satisfaction is decomposed using the people, planet, and profit paradigm and then each of them is decomposed into sub-criteria.

Table 1. A description of the attributes included in the value tree is represented in Figure 5. The items marked with an asterisk (*) were part of the value tree outlined during the HelpFood 4.0 project, but they were not included in the value tree used in this research.

Value	Attribute	Description
Profit	Costs	Setup, fixed, and variable costs were considered in the analysis. Setup costs are required to realize the whole infrastructure: the cost of building, renewal, and purchasing of land. Production costs can be split into fixed and variable costs. The former should account for the rent cost of spaces if any, and maintenance of facilities. Variable costs accrue for the cost of energy, and the cost of goods and services, e.g., the cost of the IT platforms to communicate with the participants of the AFN. Setup and variable costs may be highly interrelated: e.g., the renewal cost of a building influences its energy efficiency, and hence its running cost.
	Legal costs	The cost to obtain licenses for the use of spaces, and to realize the juridical form of the entity that should manage the Food Hub ecosystem.
	Logistics costs	Logistics costs accrue for the cost of refrigeration of food, and the transportation of goods from producers to the hub. The cost of delivery is on the AFN users, who autonomously come to the hub to pick up the food. The logistical cost includes the cost of adapting buildings to meet accessibility criteria.
	Critical mass	The capability of the Food Hub to reach a critical mass of producers and eaters that would lead to the financial sustainability of the project. The location of the Food Hub concerning the geographical center of gravity of AFN users may influence the success of the project. For example, since most AFN users live in the municipalities of Caldonazzo, Levico, and Calceranica (which are near to each other), the locations close to these municipalities can be conveniently reached. The presence of grocery stores in the proximity of a location is also relevant to the acquisition of new users for the AFN.
	Products (*)	The portfolio of products offered by the Food Hub. It should be evaluated concerning the variety of products and the possibility of retrieving them from certified producers. In the case of fresh food, the seasonality of the offered goods is a fundamental value identified by all the stakeholders.

Table 1. *Cont.*

Value	Attribute	Description
People	Inclusion	The capacity, using positive actions, to involve vulnerable people in the food ecosystem and the community at large. It can be divided into sub-objectives: the possibility to include vulnerable people in the organizational structure of the hub, and the sustainability of purchasing prices of the goods sold. In the considered case study, the association APPM (Provincial Association for Children) takes part in the dispatching activities of the AFN. Since the association is in the municipality of Levico, the proximity to the hub may foster the continuation of such a long-lasting relationship.
	Relationship (people)	The possibility of cultivating relationships between producers and eaters, and hence increasing the trust in food distribution systems alternative to the large, organized distribution. Not less important is the possibility of cultivating relationships between stakeholders of the association; being part of a community is important to AFN users.
	Relationship (municipalities)	The availability of the municipality where the hub will reside to cultivate a relationship with the representative of the AFN. In general, AFNs are no-profit associations and collaboration with the local municipality can make a difference in finding adequate spaces for the activities of the association.
	Spaces (*)	The quality of spaces is intended as the livability of the centralized Food Hub.
	Networking	The creation of a venue and events where people can meet and network, possibly organized by topics. Different networking opportunities are enabled only by the availability of dedicated facilities and experts. For instance, the organization of a cooking class can be a networking opportunity for both lay people and professionals. Networking activities are crucial for promoting the AFN to new participants and tourists.
	Communication	The ability to deliver the right information to stakeholders at the right time. Communication concerns the coordination of participants and the promotion of the AFN to new users. Several different communication channels can be considered, e.g., institutional communications, newspapers, social networks, and messaging apps. To involve new participants and encourage attendance of the hub, the esthetic of the hub is crucial because it enables the creation of attractive media content (e.g., Instagram posts, or YouTube videos).
	Logistics	The capacity to make the Food Hub ecosystem accessible. The location of the Food Hub plays a relevant role and, similarly, the opening hours of the hub (or lockers) are crucial to ensure that eaters can access food easily. The choice of a hybrid facility, where the hub co-exists with other realities, may increase the accessibility to food lockers. The accessibility of a location should be evaluated concerning the presence of parking for cars, bicycle paths, and proximity to public transportation.
	Education	The ability to increase awareness and knowledge of lay people and professionals about responsible production, distribution, and consumption of food.
Planet	Soil	The consumption of virgin soil should be minimized. Renewal of abandoned, closed, and unused buildings or the possibility of giving a second life to already occupied soil should be preferred. No less important are the capacity to be integrated with the surrounding environment, the ability to fit facilities with the landscape, and the quality of spaces.
	Transformation	The impact of the whole transformation process, which includes, e.g., the ability to reuse the most already-existing facilities, the use of recycled material, etc. The age and status of the building are relevant to determine the impact of the facility after renewals.
	Movements	The expected environmental impact of travels of users, customers, and people in general to and from the Food Hub. The relative position of the hub to the center of gravity of the users is an effective measure of the average travel distance to reach the hub, and hence the environmental impact of the project.
	Energy	The possibility to install facilities to produce green energy, or the efficiency enhancement of the hub. For example, the installation of solar and photovoltaic panels to produce hot water and electricity, or the possibility of installing efficient heat management systems like heat pumps, etc.
	Traceability/ certification (*)	A particular characteristic of a Food Hub should be to offer high-quality products. Products with a certification of organic origin contribute to sustainable use of land, whereas the possibility of tracing the origin of food (e.g., the origin of meat) enhances consumer awareness.

Among the many multi-criteria decision analysis (MCDA) methods [39] that could potentially help operationalize the value tree, we chose the Analytic Hierarchy Process [40,41] (AHP). The relevant advantages of using this method are that, despite its drawbacks, (i) unlike other methods like TOPSIS [42], it can handle intangible and qualitative attributes and (ii) conveniently handles possible inconsistencies in the subjective judgments of experts.

A further element of complexity and richness, of the case study, was that two experts were involved in the preference elicitation phase. Both experts were simultaneously present during the interviews and consensus was found for each answer so that the experts were encouraged to converge towards a single representative judgment. This allowed us to avoid a posteriori aggregation of preferences and the consensus-reaching process between the two experts helped them share their thoughts and ideas on different aspects of the problem.

The AHP follows a divide and conquer logic and allows the decomposition of a complex problem like the one at stake into much smaller and tractable subproblems, each considering a pair of criteria or alternatives, and a successive aggregation phase where all the "atomic" results are aggregated to find a final ranking of the alternatives. We shall give here an application-oriented exposition of the AHP so that the main concepts are exposed using the case study.

Pairwise comparisons are collected in pairwise comparison matrices (PCMs), square matrices with a particular structure. First, alternatives are compared with respect to the attributes at the lowest level. For example, the following is the PCM collecting the pairwise judgments of the six alternatives concerning the criteria "inclusion":

$$A_{inc} = \begin{pmatrix} 1 & - & 1/3 & - & - & - \\ - & 1 & 1/3 & - & - & 3 \\ 3 & 3 & 1 & 1 & 5 & 5 \\ - & - & 1 & 1 & - & - \\ - & - & 1/5 & - & 1 & - \\ - & 1/3 & 1/5 & - & - & 1 \end{pmatrix}$$

When not missing, each element represents the subjective estimation of the ratio between the weight (score) of the alternative on the row and the alternative on the column. That is, if we call w_k the weight of the k-th element to be compared, then we ask the expert to express a judgment $a_{ij} > 0$ such that $a_{ij} \approx w_i / w_j$. All the diagonal entries are equal to 1, and the matrix is reciprocal, i.e., $a_{ij}a_{ji} = 1$ for all i, j. Moreover, a property called "consistency" suggests that, for all i, j, k, the condition $a_{ik} = a_{ij}a_{jk}$ should hold. Consistency remains, however, a desideratum, as subjective judgments are seldom fully rational. Nevertheless, it is wise to check that its violations are tolerable. For example, for the previous matrix (and the elicited elements), we have

$$(a_{26}, a_{23}a_{36}) = \begin{pmatrix} \\ 3, \overbrace{\frac{1}{3} \times 5}^{=\frac{5}{3}} \\ \\ \end{pmatrix}$$

that denotes an inconsistency, which, nevertheless, was considered tolerable. Conversely, excessive deviations from this condition were singled out and shown to the experts to expose their inconsistencies and possibly ask them to revise their judgments.

In its original version, the AHP considers only complete PCMs and no missing entries are allowed. Despite this, in a modern decision analysis, it is common practice to not require all possible comparisons between alternatives and instead focus only on a subset of them, as we did. As the basic AHP theory suggests, to derive a priority vector as the eigenvector associated with the Perron–Frobenius eigenvalue of A, we need an extension of this theory to derive the weight vector from an incomplete PCM. In particular, Harker's

method has been used. Again, to offer an example, the normalized weight vector obtained using Harker's method applied on A_{inc} is

$$w_{inc} = (0.10598,\ 0.13406,\ 0.32417,\ 0.31795,\ 0.063591,\ 0.054231)$$

This vector can be interpreted as the rating summarizing the information contained in A_{inc}. Among other things, it unveils that, from the point of view of inclusivity, the experts consider the fourth alternative three times better than the first, which, in turn, is twice as good as the sixth.

Proceeding in this way, we end up obtaining as many weight vectors as the number of lower-level attributes. Hence, in the next step, we use the same technique to pairwise-compare sub-criteria according to their perceived importance within each one of the macro-categories. The following is the matrix containing the comparisons between the four criteria within the macro-category planet:

$$A = \begin{pmatrix} 1 & 1 & 3 & 2 \\ 1 & 1 & 3 & 2 \\ 1/3 & 1/3 & 1 & 1/2 \\ 1/2 & 1/2 & 2 & 1 \end{pmatrix}$$

From matrices like this, one can then find the weights of the sub-criteria, which are then used to aggregate, as a convex linear combination, the ratings of alternatives with respect to sub-criteria and move up towards the top of the value tree. This allows us to aggregate the first 16 weight vectors into 3 vectors representing the ratings of alternatives with respect to three macro-categories, planet, people, and profit.

$$w_{profit} = (0.264794,\ 0.0644994,\ 0.155829,\ 0.1631,\ 0.104412,\ 0.247365)$$
$$w_{people} = (0.152768,\ 0.119313,\ 0.334246,\ 0.191538,\ 0.0918897,\ 0.110245)$$
$$w_{planet} = (0.285312,\ 0.107147,\ 0.107108,\ 0.220117,\ 0.129239,\ 0.151076)$$

While the experts felt comfortable in comparing alternatives and sub-criteria, they did not feel comfortable enough to express opinions on the relative importance of profit, people, and planet. To overcome this difficulty, we decided to uniformly sample a large number of vectors from the set

$$\Omega = \{(\alpha_{profit},\ \alpha_{people},\ \alpha_{planet}) | \alpha_{profit} + \alpha_{people} + \alpha_{planet} = 1,\ \ \alpha_{profit},\ \alpha_{people},\ \alpha_{planet} \geq 0\}$$

and the final vector containing the rating of the six alternatives is determined as

$$w^* = \alpha_{profit} w_{profit} + \alpha_{people} w_{people} + \alpha_{planet} w_{planet}$$

so that we can explore the possible trade-offs between the three dimensions of the analysis. Furthermore, this last equation shows that the underlying model is additive. That is, the final scores of alternatives are convex linear combinations of the scores of the alternatives with respect to the three dimensions: planet, profit, and people. We acknowledge that more general formulations, for example, based on multilinear functions [43] and non-additive aggregation functions like the discrete Choquet integral [44], exist. However, in most of the cases, especially when extreme alternatives are not considered, the additive model is sufficient to represent the preferences of a decision-maker. For example, Vilkkumaa et al. (2014) [45] claimed that, in multi-attribute value theory, the conditions leading to the additive model "can be usually achieved through careful problem structuring". This was corroborated by simulation studies [46]. Moreover, the use of a more general model could allow us to consider positive and negative interactions between the three dimensions of the analysis, but this would require the elicitation of further parameters characterizing such levels of interactions. In our context, where even the determination of individual weights for the three dimensions is extremely problematic, this could be an insurmountable

problem. Thus, thanks to the capacity of the additive model to represent preferences, we chose to use it in this case study.

4. Results

The MCDA method combined with a spatial analysis processed through QGIS software version 3.22 can be an excellent decision-analysis tool to support Alternative Food Networks in making decisions on the placement of their locations for the distribution of food and goods within the short supply chain. These tools prove to be valuable, particularly due to their ease of communication and transparency. As a result, they enhance the defensibility of the recommended decision by explicitly revealing its reliance on the guiding principles that underlie the decision-making process. During the analyses conducted for the study of the different scenarios, we used the number of families as the data provided by L'Ortazzo. For the research purposes, we also considered the number of housing units to be insignificant as the study area is a tourist area with many holiday homes. The solidarity purchasing group is based on a direct relationship with the families in the area, less those that reside in the area for a short time. As far as future development is concerned, we have not looked into the issues of a potential increase in population in the area, but the potential growth of the pool of users for the association considering the current resident families.

4.1. Integrating Land, Mobility, Community, and Perceptions

From the interpretation of geo-referenced data related to the area and those provided by the association, graphical and numerical results were developed to help understand the actual and potential state of the solidarity purchasing group. These results can help the association's decision-making mechanism to evaluate the positioning of the new distribution location. By processing the data, four scenarios were developed to stand for the spatial data and the data provided by the association. The scenarios are not different but complementary for a complete understanding of the case studies.

4.1.1. Scenario 1: Distribution Density of Consumer Families

The visualization of consumer placement using a density map is useful in identifying as a function of current users the concentration of members in the area. The map shows the upper Valsugana area where one can observe the spatial arrangement of the families of the members of the solidarity purchasing group L'Ortazzo visualized through the effect of the concentration of points. It also highlights some of the producers and where they supply and the potential new locations for the distribution hubs of products. This type of visualization makes it easy to perceive the area where there are members and thus the area that would be most likely to meet the needs of current consumers. This is primary processing that achieves a visual and not a numerical result (Figure 6).

4.1.2. Scenario 2: Current Catchment Area of Consumer Families

Starting with the possible new distribution centers, we wanted to assess the positioning of members at one kilometer, counting through the buffer tool the number of users intercepted considering the distance of 1 km (city model 15 min [36] proximity service, accessible via a walking or biking distance of a few minutes). The map of the upper Valsugana territory shows the spatial arrangement of the families of the members of the solidarity purchasing group L'Ortazzo as well as the potential new locations of the group and the buffer of a 1 km distance from the location. This was used to assess the number of residents belonging to the association within the proximity area. It is clear how the visualization by density confirms that again Caldonazzo Station would bring proximity service to the greatest number of households (Figure 7). The response, as in Table 2, however, is numerical and easily shows the disparity between some of the case studies analyzed. Choosing a different location over others would allow these households to reach the distribution point via slow mobility and disadvantages the use of cars. Obviously, this methodology considers only

the location of residence, as it turns out to be the only data held, but could be influenced by the work routine of households.

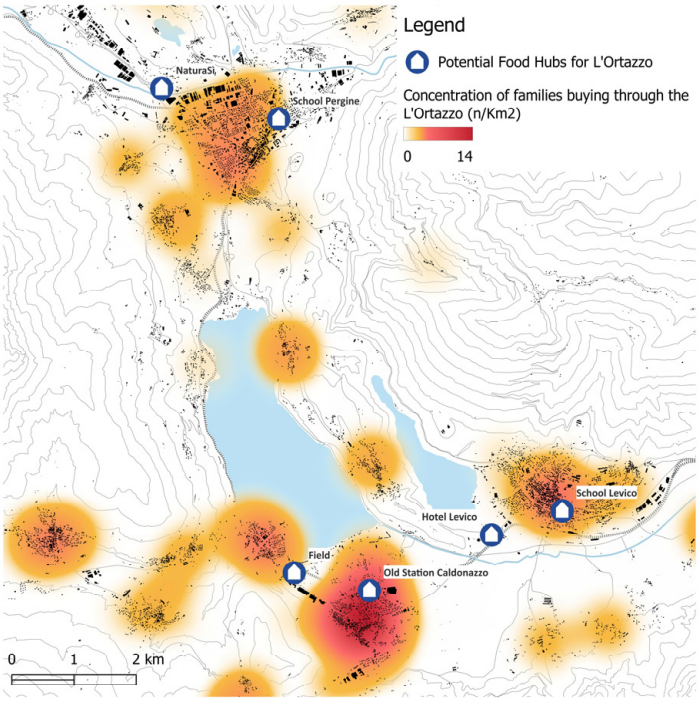


Figure 6. Scenario 1. Graphic elaboration by the authors. Data sources: CTP (2014), GeoCatalogo PAT (1998, 2007), L'Ortazzo members and producers' anonymized data (2021).

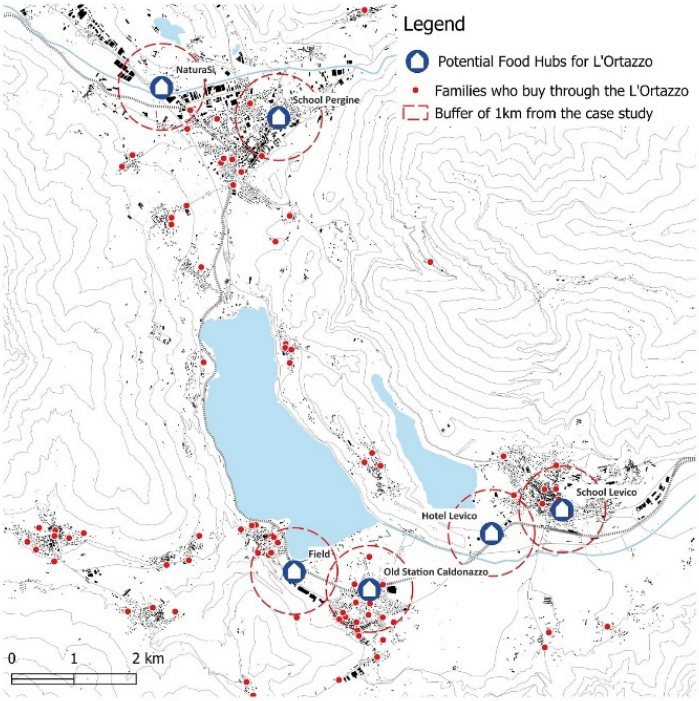


Figure 7. Scenario 2. Graphic elaboration by the authors. Data sources: CTP (2014), GeoCatalogo PAT (1998, 2007), L'Ortazzo members and producers' anonymized data (2021).

Table 2. Table relating the case studies proposed by the L'Ortazzo Association and the number of member families of the association within an area with a radius of 1 km from the case studies. The table therefore aims to assess the current catchment area benefited by the positioning of the new location using the proximity principle. Data processing by the authors. Data sources: ISTAT (2023), L'Ortazzo members and producers' anonymized data (2021).

Name of Case Study	Number of L'Ortazzo Families in the Buffer of 1 km
Old Station Caldonazzo	25
School Levico	8
School Pergine	5
Field	5
NaturaSì	1
Hotel Levico	0

4.1.3. Scenario 3: Potential Catchment Area

Through an elaboration of geo-referenced data provided by ISTAT (National Institute of Statistics), containing the number of families and residents in the territories, it was possible to evaluate in the previous case what the potential consumer catchment area could be. The elaboration was developed from the population and family density data, so we reported an estimate of the inhabitants and families of the intercepted territories. The number of families and inhabitants residing, as can be seen in Table 3, within one kilometer from the Food Hub was then calculated to see how much the potential population might value this type of food supply given the proximity. Accordingly, the map of the upper Valsugana territory shows the potential new locations of the solidarity purchasing group L'Ortazzo and the buffer of a 1 km distance from the location overlaid on the map of population density in the proximity area. This map is intended to highlight the most densely populated areas in the proximity of the case studies (Figure 8). More densely populated areas are favored, so following this, data could be an indicator for the association to evaluate areas such as these if the intent is to increase the user base.

Table 3. Table comparing the case studies proposed by the L'Ortazzo Association and the number of families and the number of residents within an area with a radius of 1 km from the case studies. The table therefore aims to assess the potential catchment area that could be intercepted through the positioning of the new distribution center using the proximity principle. Data processing by the authors. Data sources: ISTAT (2023), L'Ortazzo members and producers' anonymized data (2021).

Name of Case Study	Number of Families Residing in the 1 km Buffer	Number of Residents in the 1 km Buffer
Old Station Caldonazzo	896	2073
School Levico	1415	3393
School Pergine	1856	4701
Field	284	651
NaturaSì	303	2073
Hotel Levico	523	221

4.1.4. Scenario 4: Catchment Area by Public Transportation

In addition, in the fourth scenario, using spatial data, the aim was to assess how well potential new Food Hubs are provided with public transport services. The map of the upper Valsugana territory shows the potential new locations of the solidarity purchasing group L'Ortazzo, the 1 km buffer from the location, and all elements of public transport and cycle paths in the territory. Train stations and road public transport stops are then shown (Figure 9). It is clear how public transport services were assessed within the 1 km buffer from the case study whether there were any public transport stops by road or train stops; in addition to assessing and enhancing slow mobility, we wanted to consider whether there is a bicycle path in the proximity (Table 4). Although we did not obtain a clear result as

different situations occurred, it is easy to see how there are areas that are well served such as the schools in Pergine and Levico and the Old Station in Caldonazzo, while other areas are poorly served by public service.

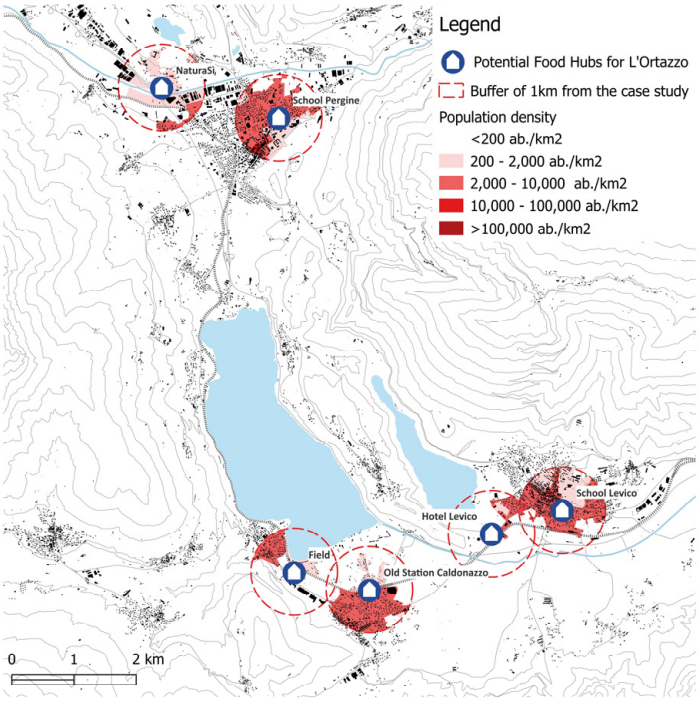


Figure 8. Scenario 3. Graphic elaboration by the authors. Data sources: ISTAT (2023), CTP (2014), GeoCatalogo PAT (1998, 2007), L'Ortazzo members and producers' anonymized data (2021).

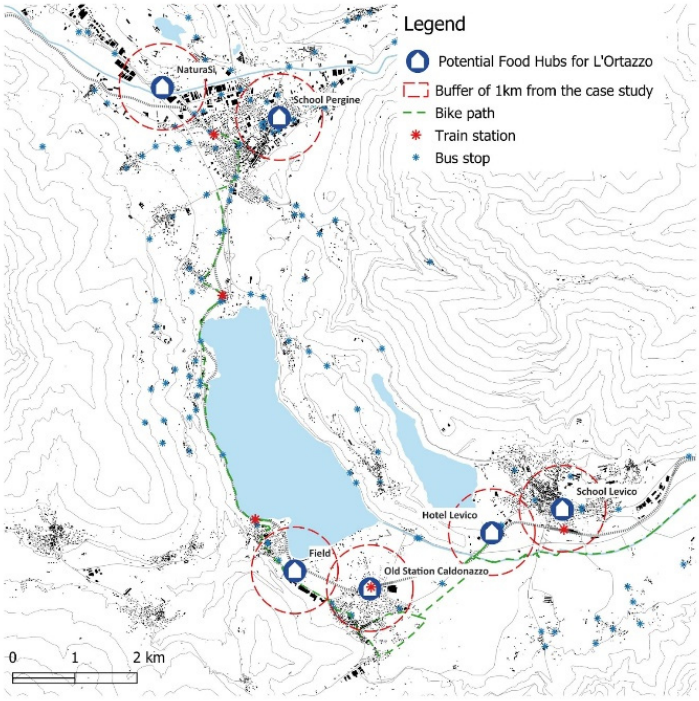


Figure 9. Scenario 4. Graphic elaboration by the authors. Data sources: CTP (2014), GeoCatalogo PAT (1998, 2007, 2013), L'Ortazzo members and producers' anonymized data (2021).

Table 4. Table comparing the case studies proposed by the L'Ortazzo Association and the presence of cycle paths, railway stations, and bus stops within an area with a radius of 1 km from the case studies. The table aims to evaluate whether there are elements in the proximity of the new distribution center that can promote sustainable travel (such as public transport and cycle paths) for the association's members. Data processing by the authors. Data sources: GeoCatalogo PAT (2007, 2013), L'Ortazzo members and producers' anonymized data (2021).

Name of Case Study	Crossed by a Bike Path?	Number of Train Stations in the Buffer of 1 km	Number of Bus Stops in the Buffer of 1 km
Old Station Caldonazzo	yes	1	6
School Levico	yes	1	7
School Pergine	no	0	17
Field	yes	0	3
NaturaSì	no	0	3
Hotel Levico	yes	0	2

4.2. Aggregating/Calculating Qualitative and Quantitative Characters

Two approaches were used to analyze the results of the AHP-based approach: (i) equal weights are assigned to planet, profit, and people; (ii) a Monte Carlo study with randomly generated weights. Let us first consider the case with equal weights: Figure 10 shows that, when the weights are equal (or whenever the weights of the three macro-criteria are determined), it is possible to decompose the final value of each alternative into the separate contributions of people, planet, and profit. Different attributes favor different alternatives. When considering the planet, Old Station and School Levico excel, primarily because the impact of adapting the current buildings for use as a Food Hub is moderate. Conversely, from the perspective of people, Hotel L is significantly advantageous due to the abundance of available space in its renovated state. For profit, the net balance between revenues and costs must be evaluated. In this regard, Old Station and NaturaSì prevail over all other alternatives.

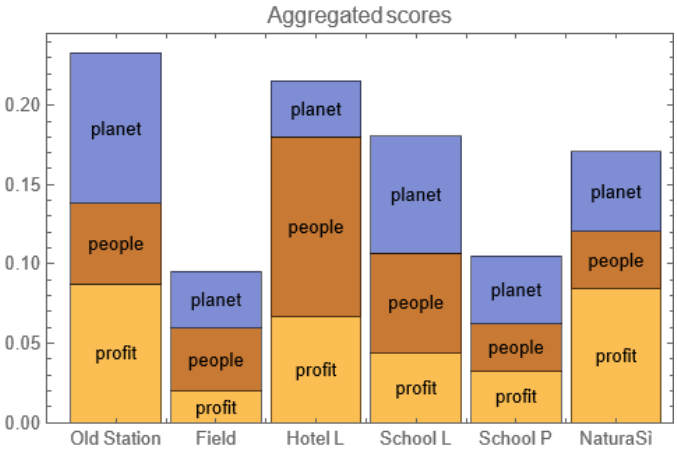


Figure 10. Final scores of the six alternatives decomposed into the contributions of the three main objectives.

Another perspective to analyze the results would be that of favoring balanced alternatives. The concept of a balanced alternative does not entail that an alternative with equal scores concerning all the attributes should be preferable to another one, but draws from the idea that a "chain is only as strong as its weakest link". In our study, this is reflected in the fact that, for example, even if an alternative is extremely profitable, we may nevertheless prefer to discard it if its value for the planet is too small. Figure 11 identifies and represents the "weakest" aspects of each alternative. We can deduce that, according to this analysis, Old Station is the best alternative.

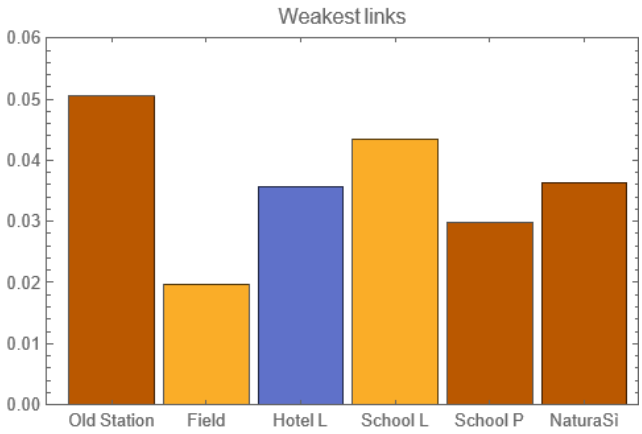


Figure 11. The analysis of the weakest objective score of each alternative. The color corresponds to those employed in Figure 10.

If we shift our focus to the Monte Carlo simulation, where the weights of the three Ps are randomly chosen, we can display the outcomes using a ternary plot. It is important to note that this approach allows us to explicitly analyze the sensitivity of the solution to the relative importance given to the planet, people, and profit, respectively. Each point in Figure 12 corresponds to a sampled vector, and its color indicates which alternative is the best for that specific combination of weights. Interestingly, we can observe that we can eliminate four out of six alternatives. In other words, there is no mindset or trade-off among the three main criteria that would favor any of these four alternatives. This implies that it is prudent to focus only on the non-dominated alternatives, namely Old Station and Hotel Levico. From Figure 12, it is evident that if "people" are prioritized, Hotel Levico emerges as the top choice. Conversely, if more importance is given to planet and profit, then Old Station is the best alternative.

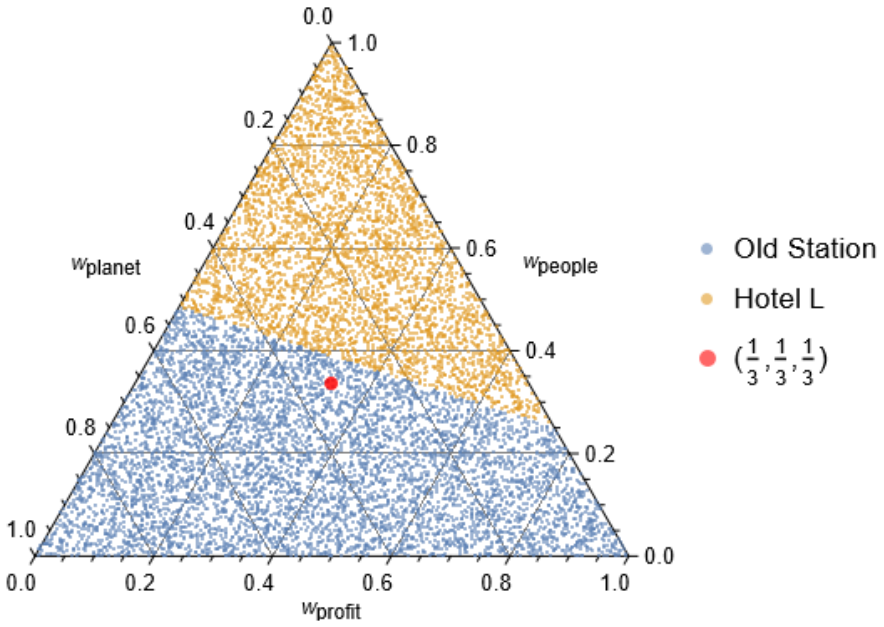


Figure 12. The ternary plot of the six alternatives with respect to the three main objectives. The color of each dot shows that the alternative is considered the best and its coordinates in the ternary plot are associated with the weights of the three main objectives. Only two alternatives out of six are non-dominated.

5. Discussion

A territorial conformation characterized by disorder and a continuous interposition of urban, peri-urban, and rural areas fragments the natural eco-mosaics and therefore leads to a decrease in ecological connections and further complicates the revision of future planning towards greater resilience of the territory in the damage and risks related to climate change. To avoid it or at least to reduce the consequences, a new conception of planning becomes necessary and urgent. Up until now, urban development has been often linked to sprawl, but nowadays a new paradigm for the concept of urban development is urgent; it should rather be considered as an improvement in environmental conditions and in the psycho-physical well-being of citizens. Establishing a new and closer relationship between rural and urban landscapes is the basis for overcoming logics linked to urbanism or neo-ruralism [47].

Food systems have become a key part of urban planning, and it is expected that in the next few years, it will assume an even more important role in the reconnection between urban and rural landscapes [4,48]. The attitudes that have governed the management of the territory so far have been based on a fragmented approach and have often not been very attentive to ecological and environmental aspects. In this context, agricultural production, both urban and rural, becomes an opportunity for the sustainable development of the territory and increasing the quality of urban life. In this perspective, the food system can become a key element capable of producing innovation and social inclusion, establishing a strong narrative with the actors involved, and reconnecting citizenship to one's own identity, including landscape. The entire food system therefore becomes a process by which to build a complete and flexible framework to guide cities in their planning and management, also becoming the driving force for innovation in the surrounding area.

Indeed, the food system design, and particularly the food urban design, can be seen as tools for the citizens' engagement and involvement in the revitalization of collective spaces and for the development of more shared design approaches. The foodscapes' integration and innovation will be a fundamental element in the design perspectives: social integration, food security, resilience, and adaptation to climate change are values built on the next urban design viewpoint. Urban agriculture could be a source of job creation, both in the production and tourism sector; of enhancement of environmental and ecosystem services; and of supply of local products throughout the food value chain. In this framework, the food system should be managed more sustainably to create a circular economy for the urban regeneration of collective spaces. Designing and planning a foodscape is a new field of investigation on which to apply citizens' engagement in climate adaptation; the aim of the research in this field should be the construction of a comprehensive and flexible framework to guide cities to implement adapted projects about multifunctional use at different scales.

The complexity of the conditions to be considered for holistic and sensitive food urban and landscape planning and design should be supported by the integrated methodological process proposed by the interdisciplinary research team of this contribution. The case study of L'Ortazzo represents the first experimental attempt to empirically apply this integrated procedure. What emerges is that planning and designing Food Hubs for territories of proximity can be assessed through the spatial, ecological, and cultural potentials of places based on a multiple-criteria decision support system. The integration of a data-driven approach based on mathematical models and GIS data could offer qualitative and quantitative decision support for urban design, landscape architecture, and architecture based on a sensitive human and intertwined cohabitation and not anymore based on a speculative urban development. Lastly, AFNs could be considered a contemporary form of land care, to protect, valorize, and make the ecosystems productive.

In the quantitative approach to the Food Hub location problem, we collected subjective judgments of experts on attributes and alternatives. Nevertheless, we reached an impasse when it was required to quantify the weights of the three main criteria: people, planet, and profit. One way to tackle this problem, loosely inspired by Laplace's principle of insufficient

reason, was to assign equal weights. This was coupled with an analysis of the weakest aspects of each alternative. Nevertheless, the choice of assigning equal weights remained arbitrary and easily criticized. Hence, we suggested an alternative approach based on a Monte Carlo simulation to create an explicit sensitivity analysis, and we represent it in Figure 12. We believe that this second approach, thanks to the use of a ternary plot, is a more informative tool that can be used to rule out dominated alternatives and foster the discussion on the most relevant ones, making clear which one of planet, people, and profit each alternative favors.

6. Final Remarks and Outlook

Planners, particularly those involved in food system planning, transportation, economic development, and neighborhood planning, should become familiar with Food Hubs given the various important roles and opportunities they present. Particularly as cities and regions seek to relocate their food systems, these tools will need to be considered more frequently and rigorously. While assisting communities to create or enhance Food Hubs, planners can help others involved understand the broad range of potential Food Hubs. They can assist in matching existing community needs and assets to the type of Food Hub most likely to achieve desired outcomes. The role of planners is increasingly critical as more and more municipalities engage in Food Hub development through policymaking, planning, program development, and/or partnerships.

The proposed contribution is intended as an experimental methodological procedure tested in 2023 to operative support of a local association of citizens. It demonstrates the importance of designing, sustaining, and managing landscape and social infrastructure to make food circular sustainability more shared and practicable. To promote these changes, it is necessary to work with a multiscale and multilevel approach, by being aware and sensitive to the local geographical, social, economic, and environmental conditions. Each territory is unique. Each community can contribute to enlarging a context-specific approach where all actors are included. Based on that, the proposed methodological procedure aims to suggest a possible pathway to shortening the supply chain as well as to open new research perspectives to be explored. As mentioned, the case study of "L'Ortazzo" represents the first experimental attempt to empirically apply this integrated procedure. Due to time constraints, we tested this method only with this association and we did not have the chance to confront other groups. Possible further development should be the adoption of the method and the comparison of results also in other international contexts. Future research could be conducted starting from the results presented in this contribution in terms of scaling the procedures and supporting public administrations or private investors in evaluating through landscape perspectives the implementation of productive systems as part of regenerative, resilient, and integrated foodscapes.

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