

## **Local Food Systems: Opportunities and Threats in creation of local model in Lombardy (IT)**

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**Abstract:** Due to population growth on a global scale and changing of food habits in developing countries (food transition), the growing demands for food raw materials could lead to a different system of trade flows of food products and each country could be called upon to contribute more heavily to the production of food for domestic consumption. Several countries are designing policies to foster proximity agricultural production in order to meet local demand and capable to structure new models of short chains on a regional scale. Local Food Systems (LFSs) can be defined as alternatives to globalized food model that are based on complex relationships between agricultural production, processing, distribution and consumption in a given area. The main aim of the research is to analyze both demand and supply in the food chain addressed to mass catering in Lombardy, the most populated Italian region. The research was based, with regard to the school catering, on a questionnaire sent to all the Municipalities of Lombardy. In Italy, the municipalities are responsible for providing canteen service in primary schools. The questionnaire was created through a participatory approach with all the stakeholders involved in the regional food systems (Local Authorities at regional and local administrative level, Non State Actor and private sector, namely catering companies) under the supervision of the research group of the University, as leader of the project. The questionnaire allowed to collect a huge quantity of data as the number of meals provided, the frequency distribution of 47 products and their origin (from conventional, sustainable or organic agriculture). With regard to the other types of institutional catering (hospitals, kindergartens, day-care institute etc...) an average diet for each type of mass catering was calculated, referring also to national and regional guidelines. The present work has the objective of studying the dynamics of agricultural production and consumption for the over 212 million meals per year for schools, hospitals, nursing homes, etc.. Through the use of a Geographical Information Systems software the major constraints to the implementation of LFS model were studied and it has been proposed an evaluation approach of the concept of "local" for the different stakeholders involved, on different scales.

**Keywords:** Local Food System, participatory approach, demand driven, regional scale

### **Introduction**

The growing interest for food quality and for its relations with all aspects of human life and habitats is accompanied by an increased awareness that food - or rather the food cycle - is a strategic point of view to understand and direct some of the main elements of our models of development, which structure could be affected at local, regional and global levels by simple changes of lifestyles and consumption patterns of single consumers. Lifestyles incorporate and influence environmental, social and ethical issues. Among these issues some of them are healthy food, quality

standards for agricultural products, improvement of environmental performance, land care, social cohesion, the reconnection of urban and country areas, the rational use of energy resources and means of production, and much more (Bocchi et al., 2001).

Given the primary relevance of the agrifood system, the farming community nowadays experience, even in the Italian and Lombardy context, a phase of strong economic difficulty and loss of identity, which requires a rethinking of some of its key constituents to find systemic solutions to reverse the trend of this structural crisis which bad externalities reflect on other economic and social sectors.

The research project Bioregione<sup>291</sup> has set itself the goal of developing approaches and tools to design a regional food systems capable of economic self-sustaining in order to generate systemic positive effects, a similar process are undergoing in different areas of the world with the so-called experiences of local food systems, now depicted also by academic research (Feagan, 2007). The general objectives of the research are to improve the sustainability of agrifood cycles in Lombardy enabling the conditions for a virtuous meeting between an organized demand of quality foods and different types of local sustainable production. The final goal is to promote a change in agricultural production and its sustainability over time. This will become a baseline condition for an overall improvement of the environment and landscape and for the preservation of an equilibrium between urban and rural areas.

### **Local and sustainable agrifood system: an overview**

In Western countries, agriculture mainly produces goods (commodities) for the global market and for the agribusiness sector, according to a dominant model which is highly centralized, consisting of large food processing and marketing companies that are increasingly operating on a global scale (Van Der Ploeg, 2008).

The effects of globalization are particularly acute in agriculture, especially in Europe with a significant increase of the “food miles”, which represent the distance between the point of production and the point of consumption as recently stated in 2012 by the report “Agricoltori e filiera corta (Farmers and Short Food Supply Chain)” of Italian National Institute of Agricultural Economy.

At the same time several stakeholders have highlighted the unfair situations between the food industry and farmers, in fact the latter retain a limited amount (16%) of the added value produced by the entire food chain, while higher percentages are the prerogative of the other relevant actors (Nomisma, 2008).

In addition, the cost for long-range transports of goods, especially of that agricultural commodities characterized by low prices, represent a limitation that in the future could be binding; moreover they generate a negative externality in terms of fossil fuels consumption, increase Green House Gases (GHG) and therefore the total environmental impact of the entire cycle (production - consumption – waste). This approach has its roots in the increasing demand for food commodities, as determined by major population surge on a global scale and by the change of the consumption habits of the middle and higher class of developing countries (nutrition transition), which could lead in the future to a different system of trade of food products and each country

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could be called upon to contribute to a greater extent in the production of food for domestic consumption, some countries such as Russia, Japan, China and the MENA region are acting according to Food Security Plans, which led different answers to the same question to secure national food consumption, such as cultivation of new lands, tariffs on imported food commodities, land grabbing in African countries, etc.

All these reasons seem to push towards the development of local agrifood system in order to meet local demand and to structure new models of short chains on a regional scale. These will also help to rebuild multifunctional agrarian regions with high ecological and environmental values through the enhancement of agroecosystems services (reduction of GHG, mitigation of microclimate, ecological corridors, High Natural Value Farmland).

Local Food Systems (LFSs) can be an important tool for local development as they are able to locally retain a significant share of added value and LFS may be the driving force for local development under different aspects: territorial, economic, employment, social, cultural and environmental.

Local Food Systems can be defined as alternative model to the current globalized one. LFSs rely on complex and deep relationships between agricultural production, processing, distribution and consumption in a specific place (Dunn et al., 2010).

At this point a better insight on what is meant by the term "local" and what characteristics and perceptions of the different actors attribute to him, should be undertaken.

Unlike organic farming, there is no universally accepted definition or regulation of the terms "local food/local production". In part, it is definitely a geographical concept related to the distance between producers and consumers. But in addition to the geographic proximity between producers and consumers, however, local food can also be defined in terms of social relations and food supply chain that it generates. Geographical proximity is thus only one component of the definition of "local" (Thompson et al., 2008). There are several other features that consumers usually associate with the definition of local food systems, in particular methods of production. For example, sustainable production and distribution practices aimed at reducing the use of pesticides, fertilizers and energy, protecting the environment, and promoting the protection of biodiversity and agrobiodiversity. Some consumers extend the definition of sustainable agricultural production to include fair labor practices and animal welfare.

In January 2011, the EU Committee of the Regions has forcefully place the LFSs issue to the attention of the EU institutions, through a formal request for an outlook opinion to the EU Commissioner for Agriculture Dacian Cioloş. In the document, the rapporteur, Lenie Dwarshus-Van de Beek, (Official European Journal, 2011) member of the provincial government of South Holland, setting out the issues and problems of European agriculture in light of the challenges of the new CAP (Common Agriculture Policy) and proposed support for LFSs as a tool for the development of agriculture and rural areas.

In the United States, with a certain advance on Europe, the issue of LFSs was analyzed in May 2010 by means of a report by the USDA (United States Department of Agriculture) which outlined the concepts, impacts and consequences, anticipated in July 2007 by a report of the NACO - National Association of Counties on the same issue (Martinez, 2010).

The processing and distribution of food, although heavily influenced by tradition, have seen intensive innovations, leading to changes in the way individuals consume. One of these changes is the consistent growth of the habit of eating out of home. Consuming food outside the home involves a number of practices such as eating at commercial establishments that are specialize in food (restaurants, fast food restaurants and cafeteria) and those that offer food as a part of their

services (school, hospitals, retirement home, hotels, in-flight meals), and non-commercial alternatives such as the homes of relatives and friends.

The institutional catering, and the school in particular, represent an important meeting point between production and consumption, which invest Public Administration and School Board with great responsibilities because allows parents and citizens to participate in choices and responsibilities, moreover is an interesting market for producers.

## **Materials and Methods**

These research activities (2012-2015) was designed starting on the peculiarities of the Italian Institutional School Catering System which is managed by the municipalities that can provide the school meals in-house or through a call for tender (almost 100%). The first analysis was carried out on the mass catering system of public schools in Lombardy, using a questionnaire created by a working group selected among the stakeholders of this system (representative of Local Authorities, private catering companies, farmers, parents etc.) and with the support of the university. The questionnaire included a qualitative part (15 questions to detect the type of service, the presence and the checks carried out by the canteen responsible designed by each schools, perspective on the policies and directions of Municipalities, aimed to understand the will of increasing or decrease the purchase of organic and/or local food) and a quantitative part (number of meals provided per day, data on the frequency and distribution and types of food products of 47 references related to fruits, vegetables, milk and dairy products, meat and meat products, cereals and cereal products, vegetables and other foods). The questionnaire was delivered to all the 1544 municipalities in Lombardy of which 40% of municipalities answered by completing the questionnaire, accounting for 71.2% of the total population of Lombardy (about 10 million inhabitants). The sample data account for about 6.22 million meals per month. Extrapolating the data to all the municipalities in the Lombardy school canteens are delivered more than 9,000,000 meals per month, which means about 450,000 meals per day. This survey allowed us to measure the volumes of food products consumed in the schools systems.

For the other type of public mass catering system an indirect methodology was carried out using data of the National or Regional Statistical systems in order to estimate the number of meals consumed per day in hospitals, kindergartens, day-care institute etc..., and an average diet was used as a benchmark in order to estimate the volume of food product consumed.

The evaluation of the agricultural sector potentialities was carried out using the data of the Land Use provided by the Regional DG Agriculture office, according to CAP subsidizing schemes and National Agricultural Census.

## **Results**

### **The distribution channels in the LFS**

The market typology of the agricultural products can be either direct selling or through middlemen, a comprehensive comparison matrix is reported in table 1. Direct sale to the consumer is the distribution channel, often called "farm to fork", the different types of activities belong to this channel includes: farmers who direct sell their products (farmers' markets), Community Supported Agriculture CSA and pick your own experiences.

The sale through middlemen is the distribution channel which includes the sale to retail chains and catering companies. The target market for the first is again the single consumer while for the latter are the public and private institutions, such as schools and hospitals, company canteens and cafeteria etc. The public mass catering, especially in urban areas, provides a high number of daily

meals and therefore requires a sufficiently broad and organized supply to meet that demand. Furthermore, the contracts of public procurement are defined by specifications and tenders which require supplies of medium-term (several years).

Table 1: Comparison Matrix

| <b>Market Typology</b> | <b>Channel</b>  | <b>Level of Organization</b> | <b>Potential Demand</b> | <b>N of farms involved</b> | <b>Marketing Strategy</b> | <b>Territorial benefit</b> | <b>Dimension of area involved</b> |
|------------------------|-----------------|------------------------------|-------------------------|----------------------------|---------------------------|----------------------------|-----------------------------------|
| Direct sale            | Direct          | Low                          | Low                     | One                        | Private                   | Low                        | Local                             |
| Pick your own          | Direct          | Low                          | Low                     | One                        | Private                   | Low                        | Local                             |
| Farmers' Market        | Direct          | Average                      | Average                 | From Few to Many           | Private and Public        | Average                    | Municipality/ province            |
| CSA                    | Direct          | Average                      | Average Low             | From one to Many           | Private                   | Average-Low                | Mainly Local                      |
| GAS                    | Direct Indirect | Average                      | Average Low             | From Few to Many           | Private                   | Variable                   | Variable                          |
| Large Scale Retail     | Indirect        | High                         | High                    | Many                       | Private and Public        | High                       | province/ Region                  |
| HoReCa                 | Indirect        | Average                      | Average/ high           | From one to Many           | Private                   | Average                    | Municipality/ province/ Region    |
| Public catering system | Indirect        | High                         | High                    | Many                       | Public                    | High                       | province/ Region                  |

From the research carried out by the project clearly emerges that the demands from the municipalities, which manage in-house or in outsourcing the tenders for school catering service in primary and secondary schools, and in most of the nursery schools, are oriented to implement the purchase of products from controlled supply chain (organic and/or integrated agriculture, PDO and PGI products, fair-trade). This trend is accompanied by a constant reduction of the products from conventional agriculture, as well as, in the last years, by a significant increase in demand for local products.

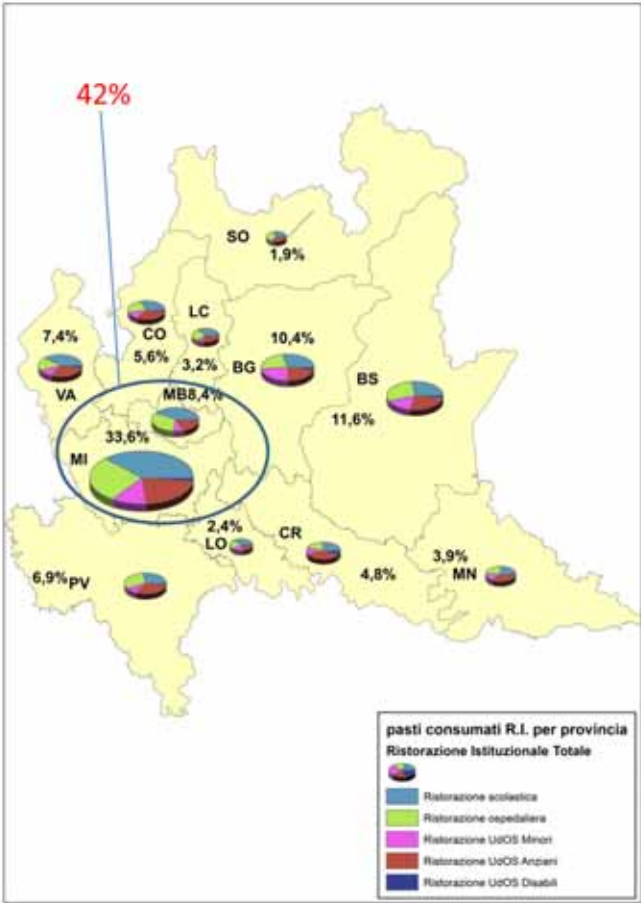
Data collected through direct survey, relating to the demand for food by the institutional catering, were compared with the land currently under cultivation. In particular, the research has focused on organic production. With an annual demand of 65 tons of organic bread, 113 tons of organic pasta, organic 42 tons of organic rice and 12 tons of organic flour the total current organic cereals acreage appears to be enough to satisfy the needs. It is concentrated in the province of Pavia. The annual demand for organic fruit is about 690 tons, of which more than 250 are citrus fruits and bananas, which cannot be cultivated in the region. So the demand to be satisfied is about 440 tons. The area cultivated with organic fruit can currently provide the current needs. The annual demand for organic vegetables is around 510 tons, of which more than 140 tons consist of frozen vegetables. The area cultivated with organic vegetables can currently provide more than double the requirements. The annual demand for organic beef and pork is quite limited. The first amounts to about 45 tons, which would require about 150 heads of cattle per year to be slaughtered. The more than 8,500 animals bred, of which at least 15% are for meat, are more than enough to fill the needs. The second is about 23 tons, which would require about 250 head of livestock per year to be slaughtered. The 21,000 animals bred are more than enough to fill the needs. Faced with an

annual demand of slightly more than 6 tons of organic dried pulses, organic pulses acreage appears to be far enough to satisfy the needs. An example of the analysis carried is reports in paragraph 3.2 as a GIS-based comparison of the LFS nexus.

**The nexus between production and consumption**

This distribution channel is currently of greatest interest to the LFSs for their direct relationship between local production and public administration/catering companies.

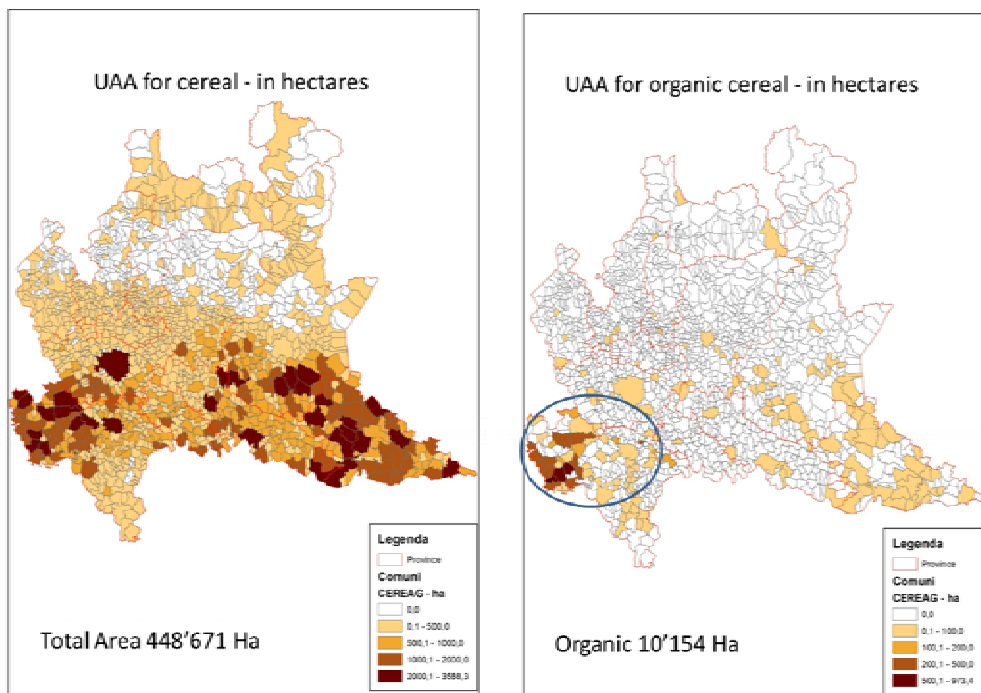
Figure 1: Annual meal consumed in Institutional Mass Catering systems, referred to the different type of bodies (Schools, Hospitals etc.).



This sector accounts for a relative large share of the demand for food and also this demand is homogeneous and seasonal according to menus that facilitate a direct relationship with local production. Annually in Lombardy are consumed about 212 million meals, almost half are concentrated in the metropolitan area of Milan (fig 1). These different populations’ densities force to carefully evaluate the definition of local in call for tender if the only parameters taken into account are the food miles.

The production systems (fig 2) showed how different food products, the following example was the one of cereals, the production isn’t homogenously distributed in each municipality, and moreover the organic production is concentrated of specific area of the Region.

Figure 2: Utilized Agricultural Area for Cereals, conventional on the left and organic on the right



### The trend in organic and local products in School Canteen

In Italy, most regions (actually 8) have produced specific laws and/or guidelines to drive and encourage the development of a quality school catering system, focused in particular to the procurement of organic and typical products. As a result, the municipalities introduce frequently organic and typical products in their menu and ask companies managing catering services to procure them.

Between two subsequent surveys it was found a significant increase in demand for products by short supply chain, which was almost zero in 2006, but in 2009 it was found in 23% of cases.

Another interesting issue is that the use of the expression "short supply chain" is sometimes reported in the call for tenders with several allocation such as: zero km, local/regional products, number of steps in the supply chain. An objective and measurable indicator for these concepts should be developed at research or policy maker level, such as for the US rules for local products that define a spatial approach (400 miles or in the boundaries of the State)

Also emerges that several stakeholders consider key issues: a) to reduce the number of intermediaries between producers and final consumers, b) to shorten the food chain and c) to enhance the linkage between the food consumed and the territory.

As for Lombardy, two thirds of the municipalities that responded to the survey say they intend to increase or maintain unchanged the amount of organic products bought. No one claims to want to reduce that amount. Only 6.2% say they do not think to introduce the purchase of organic products, much lower than the municipalities that currently do not have this type of product in the menu. This means that several municipalities that do not require the organic products in the tender now are thinking about introducing them in the future.

From the survey data on local products, over two thirds of the municipalities (68.7%) who responded to this question say they intend to increase or maintain unchanged the amount of regional and/or local products. One claims to want them to reduce.

Only 2.5% say they do not involve the purchase of regional and / or local, a percentage much lower than that for municipalities that currently do not have this type of product in the menu. This means that almost all the municipalities that do not now require regional and / or local are planning to introduce it in the future. Analyzing the data by classes of the population, usually are the biggest cities tend to have an increasing interest in this kind of products.

## Conclusions

In conclusion, the different channels and different forms of distribution that may underlie the development of LFSs represent attractive market models that shorten the supply chains ousting intermediaries that hold a significant share of added value and create local development through the redefinition of farming systems, but none of them alone is a recipe for a strategic rural development of a territory. First, the Italian production system is extremely complex and different business types coexist in the same territory by size, type of production, earning capacity, etc...

The LFS cannot be read as a model of development in contrast with the actual agrifood model, which represents a significant share of national GDP and is capable of expressing excellence recognized worldwide, but rather as an alternative and an opportunity especially for those farmers that are currently in a state of marginality that require high investments to increase the company's competitiveness.

What appears obvious is the lack of tools to support the development of LFS by Community Policies and local regulations. The Regions in particular, through the RDP could be the promoters of territorial development that is based on: local actors (farmers), support the strengthening of the agricultural sector and small business transformation and awareness-raising campaigns to inform the consumers about LFSs.

The institutional catering sector and especially the school canteen system may be the first and essential step for the creation of LFS for several reasons:

- the school catering sector has high concentration of demand that can be managed and supported directly by local authorities (municipalities);
- the school is the principal subject of tutoring and education in which campaigns relating to nutrition and local production can be easily conveyed;
- the menus are standard and contain many seasonal products;
- a growing tendency by municipalities to purchase local products was detected.

Finally, in industrialized countries a sustainable food planning and management is an uprising issues that should be incorporated in several policy maker's agenda based on the four pillars of urban food policy (Viljoen & Wiskerke, 2012): **confidence** (civil society and consumers trust agrifood chain), **sustainability** (civil society and consumers are aware of environmental impact on natural resources), **health** (food born disease, obesity etc.) and **fairness** (fair trade not only North-South, but North-North).



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