Metropolitan Agriculture and Nature-Based Solutions

edited by
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FrancoAngeli

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Index

Preface

MADRE project (Metropolitan Agriculture for Developing an innovative, sustainable and Responsible Economy) is one of the 14 projects under the umbrella of the MED Green Growth community, in the framework of the Interreg MED programme.

The Interreg MED Green Growth Community is a community of projects that promotes a sustainable development in the Mediterranean area, based on the sound management of the natural resources thanks to innovation, and who takes into account the effects on the labor market by promoting social justice and green jobs.

The community acts as a dynamic network of key groups of the Quadruple helix of the green growth sector to support MED stakeholders and create a fruitful and collaborative environment for all implicated bodies. Moreover, results from all projects are unified to produce solid proposals for environmental policies and to communicate Green Growth to a larger audience in a more efficient way.

One of the major themes on the MED Green Growth community is agrofood. The high density of population in cities is placing vast demands on urban food supply systems. At the same time, citizens are becoming more aware of the importance of a sustainable production and consumption of local food products, and therefore, its demand might increase in the near future. Then, urban and peri-urban agriculture becomes a key sector to rethink the food supply system in metropolitan areas. The importance of urban agriculture is increasingly being recognised by international organisations like UN-Habitat and FAO. As RUAF Foundation stated, urban agriculture not only provides fresh food and improves the urban environmental management and greening of the cities, but also contributes to local economic development and is an important strategy for social inclusion.

MADRE project is therefore, a valuable example of transnational cooperation in the Mediterranean region to foster a change in the urban food supply model. MADRE is capitalizing on knowledge and best practices of metropolitan and peri-urban agriculture in 5 MED countries in order to optimize its environmental, economical, and social impact.

The MED Green Growth community has facilitated synergies with other projects from the community in order to incorporate MADRE's methodology, best practices on innovation in agrofood systems, and pilot actions as an example for them. Moreover, the MED Green Growth community supports the dissemination of results of MADRE project and awareness-raising activities on the topic of urban agriculture, such it was advertised during the

Interreg MED "MADE in MED" event in Rome (April 2018). In the near future, the community will integrate MADRE's results with the findings of other projects in order to create policy recommendations on this topic.

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Introduction

The aim of the book is to analyse the social and relational impact of agriculture into the city and the territory. In the last years, we can observe many initiatives devoted to introduce green gardens, local markets, proposals for quality food in urban contexts. The rural perspective invades the city but the metropolitan areas give another sense to the farmer's traditional activities. The concrete work, the manual jobs represent a way to enter in a closer relation with each other, to built a new form of community, a different approach to the social issues and to the challenges of a globalized world.

This book tries to present different points of view and methodologies to give suggestions and indications for the city and urban areas innovation, especially in the mediterranean european countries.

The first chapter briefly describes the MADRE (Metropolitan Agriculture for Developing an innovative, sustainable and Responsible Economy) project, its theoretical premises and main objectives, as well as its operative framework, highlighting the role of the urban and peri-urban agriculture (UPA) to face tomorrow's challenges. Starting from this perspective, the authors introduce the specific point of view of the Metropolitan Agriculture (MA), considered as an "infrastructure" for the up-coming sustainable cities. This infrastructure needs to fit each specific environmental and socio-economic context. For this reason, the rest of the chapter delineates an overview on the specific territorial and socio-economic system of the Metropolitan area of Bologna, from the specific perspective of MA. In particular, they describe the background context of the Metropolitan area of Bologna considering the possible development of the innovation capacity of the territory in the field of MA.

The contribution in the second chapter aims to illustrate the preliminary results concerning the Metropolitan area of Bologna (Italy) of the MADRE project, founded by Interreg MED Program. As the acronym suggests, the main purpose of this project is to explore the models of Metropolitan and peri-urban agriculture (MPA) in different Mediterranean countries, in order to better understand and support its possible role in the sustainable development of the cities. To pursue this purpose, the traditional conflict between "urban" and "rural" must be revisited: not in a conflictual way, but as an opportunity of "synergic transformation" within a "rural-urban continuum". In this continuum, different actors can constantly find new opportunities of comparison and collaboration, toward a synthesis of their needs. Therefore, according to the innovative approach of the MADRE project, the stakeholders of the "quadruple helix" have been involved and consulted, in order to identify some of the most important best practices of the territory and their specific innovative dimensions, highlighting the main aspects of the MPA "innovation system" of Bologna.

In the third chapter we want to point out, at a theoretical level of analysis, the connection between urban agriculture, territorial development and social innovation.

Defining the link between social innovation and territorial development, urban agriculture can be considered a field of integrated and multidimensional transformations, through the project "Salus W space", funded by the European program "Urban innovation action". The project aims to the regeneration of a former private hospital called Villa Salus, abandoned for many years, to convert it into an innovative space, open to inhabitants of neighborhood, refugees and disadvantaged families, based on three main pillars: intercultural Wellbeing, Welfare and Welcoming. Finally, the contribution proposes a framework of analysis that takes into account the *governance* as a key dimension of policies innovation.

The fourth chapter is focused on the relations between Urban, Peri-Urban Agriculture and Nature-Based Solutions. As urban migration increases faster and faster, cities are looking for providing more greenery and assure safe food supply. Being close to nature is good for people and for urban resilience too. Urban and peri-urban agriculture - cultivate crops into or close to cities - represents a relevant and priority nature-based solution, becoming essential in the public policy agenda, for cities which would reach the Sustainable Development Goals in the 2030 Agenda. A positive effect of agriculture use as part of nature-based solutions is to stimulate local economy and create green collar jobs, with benefits for low income citizens and stressing the process of place making. Several good practices are emerging in Europe, in the Mediterranean, and worldwide, from micro to large scale.

In the fifth chapter we summarize an international debate on the metropolitan agriculture trying to focus the social and communicative aspects of the projects and the common actions undertaken by citizens-consumers.

The literature review revealed that Urban and Peri-urban Agriculture plays an important role in addressing some of the major challenges that the world population must overcome; like the environmental emergency, the scarcity of resources, the population explosion, the growing concentration of the global population within urban areas. Notwithstanding, Urban and Peri-urban Agriculture can represent a new way, a paradigm, able to mend social and urban fabric of the metropolises, going beyond the traditional contrast between rural and urban contest, towards a rural-urban continuum, considered as an infrastructure for a new, sustainable city.

The MPA (Metropolitan and Peri-urban Agriculture) is considered as an important component of security and safety within the urban areas. It was noted, in developed countries, that MPA is related to environment and well-being issues; it is part of the strategy for the sustainable development of cities, that consider three main dimensions: the economic, the environmental and the social ones.

Finally, we present here a *manifesto* for the new agro ecological city. Agriculture interacts with a complex system which comprises environment, feeding, production and human beings until find an internal consistency. The medium size cities, more than one million globally, and the metropolies rapresent an opportunity to re-balance rural-urban dimension thanks to a new agri-food policy system. The proposal involves a self-regulated collective governance, through which reframing the territory and rethinking the agri-food sector. This considered as a means to merge producers and citizens goals and to promote shared knowledge and food awareness. A proposal of policy is developed and contains suggestions regarding the space consumption and the access to lands for newcomers, green space management as tools for lands protection, to promote collaboration between farmers and school cafeterias in order to upgrate the local production and consumption. Besides the policy has to support a bioregional supply chain and climate change and mitigation.

Through the connection between a new concept of agriculture in the city and the circular economy, we can generate new jobs and businesses based on "Nature-Based Solution" approach. So we can indentify new pathways for green development, smart cities and inclusive growth in the local areas and communities. But we can also, at the same time, improve communication, social relations and quality of city life in the metropolis.

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Chapter 1

MADRE project and Metropolitan Agriculture in the territorial system of Bologna: a socio-cultural overview

Stefano Spillare, Roberta Paltrinieri, Marino Cavallo

1. Introduction: premises and main objectives of MADRE

In the wide Latin area of Mediterranean, the word MADRE means (or evokes) the term "mother" (as in Italian language) and it is often also used to describe the fertile soil of Earth, metaphorically assimilated to a mother's womb, able to receive and make the seeds of Life grow. Therefore, it is not a coincidence if the project we are illustrating was called MADRE. It concerns, indeed, Mediterranean agriculture. More specifically, the MADRE project concerns *Urban and Peri-urban Agriculture* (UPA) or, as its full name well specifies, the "*Metropolitan Agriculture*" (MA). In fact, MADRE is just an acronym that means *Metropolitan Agriculture for Developing an innovative, sustainable and Responsible Economy*. It is an European project financed by the *Interreg MED Programme*, which has the overall aim to develop and share knowledge on specific themes of strategic interest, especially targeted for the area of Mediterranean. The MADRE project is specifically referred to the *priority axis 1* of the program, that is "*innovation for a green growth*", and its specific aim concerns the development of transnational networking capacity on key sectors of the MED area[1]. Therefore, the main aims of this specific project are mostly related to the strengthening of cooperation and the exchange of knowledge, policies and best practices on MA among the partner cities and countries.

The MADRE project has lasted 18 months, and it has involved six partners institutions from six different cities in five different countries of the Mediterranean area (see *Tab. 1*). These institutions had the common aims to create a network among the main MA stakeholders, identifying and evaluating the economic, environmental and social factors that affect MA development in the Mediterranean area, in order to improve its innovation capacity.

1 The *priority axis 1* of the *Interreg MED Program* claims "*Promoting Mediterranean innovation capacities to develop smart and sustainable growth*"; and its first aim is "*1.1 To increase transnational activity of innovative clusters and networks of key sectors of the MED area*" (Source: *https://interreg-med.eu/explore/our-thematics*).

The EU attention for the Mediterranean area has several reasons, such as: the strategic role of this area in the food production, or the possible deficit in innovation ability of many countries of the MED area, due to the more difficulties to face and overtake the recent economic crisis. However, the most important reason probably concerns the fragility of the area in facing the climate changes[2]. In fact, the Mediterranean area is considered a "*climate change hot spot*" (Aguilera, Guzmàn 2012) in which the arid climate of Northern Africa, with its typical tropical processes, bumps into the temperate and raining weather of Central Europe. In this situation, also little changes in the atmosphere dynamics may immediately affect the climate conditions of the whole area.

Tab. 1 – MADRE project partners

Name	*Role*	*Description*	*City*	*Country*
AviTeM	Lead partner	Agency for Sustainable Mediterranean Cities and Territories	Marseille	France
ANIMA	Partner	Investment network	Marseille	France
CIHEAM-MAIM	Partner	International Center for Advanced Mediterranean Agronomic Studies-Mediterranean Agronomic Institute of Montpellier	Montpellier	France
MedCities	Partner	Mediterranean Network for Urban Sustainable Development	Barcelona	Spain
Metropolitan City of Bologna	Partner	Metropolitan City of Bologna	Bologna	Italy
Aristotele University	Partner	Aristotele University of Thessaloniki	Thessaloniki	Greece
Agricultural University	Partner	Agricultural University of Tirana	Tirana	Albania

The forecasting models used to simulate the consequences of the climate warming on this area suggest that there will be an increasing temperature with a loss of rains able to significantly affect hydric resources. The scenario implies a tropicalization of the climate, with the multiplication of extreme climatic events and a general desertification of the fertile soil (Aguilera, Guzmàn 2012).

This peculiar condition thus justifies the implementation of a more sustainable agriculture strategy for the Mediterranean area.

2 This the case, for example, of the PRIMA Programme (Partnership for Research and Innovation in the Mediterranean Area). This is a joint programme focused on the development and application of solutions for food systems and water resources in the Mediterranean basin (ec.europa.eu/research/environment/index.cfm?pg=prima).

Agriculture, indeed, has a central role *in* and *against* climate change. This is because it is one of the main causes of climate change but, at the same time, also the sector mainly able to contrast and mitigate the worst consequences of global warming (IPCC 2007). Moreover, agriculture is also a key sector to reach most of the UN *Sustainable Development Goals* (SDGs), because of its role to face nutritional and health issues, contrasting poverty and contributing to the conservation of natural and heritage resources (Canavan *et al.* 2016).

Reaching these goals is getting more urgent because humanity is facing challenges never seen before. The demographic trend, for instance, shows an exponentially growing world population. According to recent estimates, the world's population could touch the record roof of about 9 billion people in 2050 (Brawn 2012). This is an unprecedented demographic increase in human history, which immediately poses the issue on the limited resources, firstly the vital ones such as food and water. Actually, human beings are already consuming Earth resources faster than the ability of ecosystems to regenerate them (WWF 2016). This implies a progressive depletion of the available resources by the current world population and it represents a substantial mortgage for the next generations.

Moreover, the above-mentioned challenges are related to the concentration of human population in urban areas. This is a phenomenon that began with the Industrial Revolution, but nowadays it has reached unthinkable levels even up to a few decades ago.

In the world, indeed, the population of people living in urban areas is now well above 50% and by 2050 the overwhelming percentage of the urban population will be concentrated in huge urban agglomerations (UN 2016). Already today, the world's largest global megalopolis includes a population of 10 million or more, with huge food supply issues (UN 2016). Indeed, at least 250 million people living in cities have no access to food or enough quality of food (FAO 2008). This is because "urban metabolism" (Gandy 2004) is functionally dependent on rural areas for what concerns food supply. Therefore, the traditional divide between rural and urban areas is proportionally increasing along with the uncontrolled growth of cities. The result is some more and more unsustainable cities, from both perspectives, the ecological and the social ones.

2. From Urban and Peri-urban Agriculture, to Metropolitan agriculture concept

Facing the above-mentioned huge challenges, it becomes quite clear that UPA represents a more and more fundamental component of future sustainable cities. The development of UPA, indeed, has important consequences on food safety and food security, especially in developing countries where UPA is already involving more than 800 million people, contributing to their food self-sufficiency (FAO 2008).

But, what is exactly UPA? FAO (1999), for instance, has generically defined UPA as the agriculture activity that "*occurs within and surrounding the boundaries of cities throughout the world and includes products from crop and livestock agriculture, fisheries and forestry in the urban and peri-urban area. It also includes non-wood forest products, as well as ecological services provided by agriculture, fisheries and forestry*". FAO has also specified that "often multiple farming and gardening systems exist in and near a single city", highlighting the differentiated and fragmented landscape of experiences that usually characterized UPA.

This is the reason why a plurality of UPA definitions thus exists and each of them emphasizes different features and dimensions. Nevertheless, some recurring aspects are commonly highlighted. They usually concern, for instance: 1) orographic or territorial localization of agricultural activities compared to urban boundaries; 2) competition for resources, and therefore possible conflicts/synergies between urban and agricultural needs; and, finally, 3) different non-food functions of UPA (ecosystem services, sustainability, welfare and well-being, etc.).

A more recent definition, for example, considers UPA as a "*multi-actor, multifunction, multi-scale agriculture based on the provision of food and fiber supplies along with environmental and social services. The final aim is to satisfy urban and rural societal demands locally, or in other words, the demands of the new rurban community*" (Galli, Marraccini, Bonari 2010, p. 11).

This definition also stresses on the differentiation of experiences that characterized the agriculture in and around the cities, emphasizing the different needs and functions it is called to respond. However, the reference to the "*new rurban communities*" emphasizes the need to consider rural and urban dimensions as a "*continuum*" within the whole Metropolitan area, as also required by MADRE.

In the theoretical and operative framework of the project, indeed, the term MA is preferred to UPA, because it is specifically referred to a paradigm that goes beyond the traditional conflict between rural and urban areas, as well

as beyond the mere food production and food supply function of agriculture. According to Wascher *et al.* (2007), the concept of MA is rather an *open concept* especially used with reference to the *innovation* for the sustainable development of the cities.

From the point of view of MA, the main way to develop a more sustainable agriculture is concentrating the efforts "not just on economic profitability but also on environmental and sociocultural aspects", creating "an opening in which separate strategies (focusing on profitability, the environment and social considerations) are able to learn from each other and can possibly be combined" (Steekelenburg, Latesteijn 2012, p. 13).

According to this perspective, we assume that the MA development strategy is mostly based on a *multi-stakeholder approach* and it is focused on the *co-innovation capability* of each specific Metropolitan *territorial system*.

3. The operative framework of MADRE and the context analysis of the Metropolitan area of Bologna

Given the premises above, the operative framework of MADRE has planned to involve the MA stakeholders of each Metropolitan area, in order to identify those good practices that are characterized by specific potentialities of innovation.

The stakeholders are thus selected among the so-called *quadruplex helix*, which includes: 1) *Academic and research*, 2) *Farmers*, 3) *Consumers & Civil society*, 4) *Public local authorities* (Yawson 2009; Arnkil *et al.* 2010), and involved in two consecutive auditions in which they have presented their organizations and the main MA-related activities. The selected cases and good practices, as well as the peculiar "*innovation system*" of the Metropolitan city of Bologna, will be illustrated in a specific chapter in this same publication, while the main aim of this chapter is to illustrate the results of the preliminary analysis of the Metropolitan context of Bologna.

The development of the MA, indeed, is strictly *local context-dependent*, and every innovation may be established and improved starting with the specific characteristics of every singular Metropolitan context, such as, for instance: 1) the territorial characteristics of the areas involved; 2) the type of economic activity and 3) the production models (scale); 4) product categories and 5) their destinations (Mougeot 2000).

Therefore, before the stakeholders' auditions and the selection of the good practices, the scientific unit of the Metropolitan city of Bologna has decided to carry out also a preliminary background analysis of the context

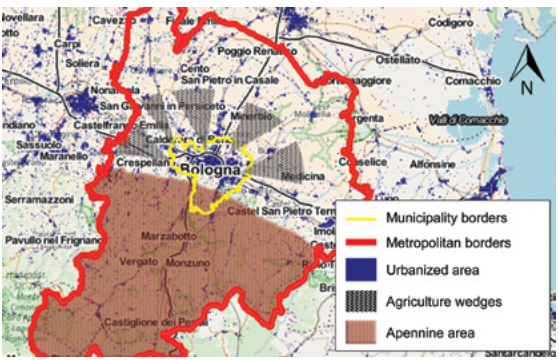
of the Metropolitan area of Bologna and its agriculture-related matters. Doing so, it is possible to better understand the context where the stakeholders usually operate and in which one the selected good practices have been able to emerge and develop themselves. Therefore, we have considered some socio-demographic trends of the Metropolitan area of Bologna, especially investigating its economic, institutional and environmental sub-systems from the MA point of view.

All the considered sub-systems are, indeed, reciprocally related, influencing each other. For instance, the orographic characteristics of the environment surely influence both, agriculture and urban development, meanwhile, from its part, the history of urban development is influenced by urban planning at political and institutional level. This is also the reason why it is important to previously define the geographic, cultural and socio-economic features, as well as the current policies of the considered "*territorial system*".

4. The territorial system of the Metropolitan area of Bologna

The city of Bologna has a typical Medieval heritage, with one of the most important historical city-center for integrity in Italy. Urban development thus has not heavily corrupted the center, and the city has grown externally, mostly towards the wide Po valley at North, because of the long mountain range of Apennine at South/South-west.

Fig. 1 – Metropolitan area of the city of Bologna (Source: personal elaboration)

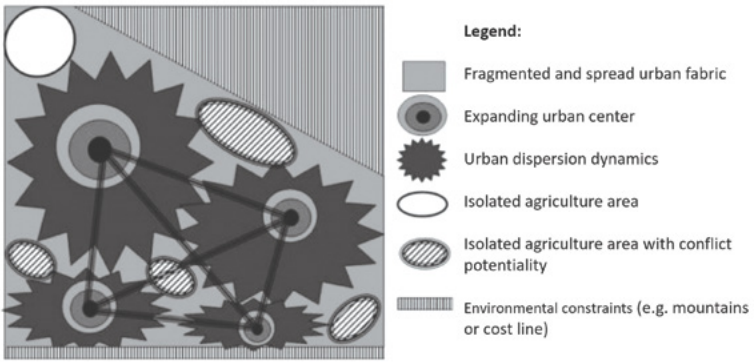


The *Fig. 1* shows the map of the Metropolitan area of Bologna. The more external line represents the wider institutional borders of the Metropolitan city, while the internal line delimitates the Municipality borders. In the picture the Apennine and the shape of urban extension that characterized the de-

velopment of the city are also highlighted. All the Municipality areas among the urban extensions are considered peri-urban areas, competed between urban functions and the need to preserve the landscape, while external areas are mostly industrial and agricultural areas, this latter has different crops vocations. The Apennine area has also its specific characteristics.

Trying to summarize the different options of the urban fabric development in respect to the surrounding rural fabric and its specific characteristics, Galli *et al.* (2010) have proposed three macro-typologies of territorial systems, useful also to describe the territorial system of the Metropolitan area of Bologna. These are: 1) *territorial systems with a widespread and scattered urban fabric*; 2) *territorial systems with an urban fabric organized in poles and axis*; 3) *territorial systems with prevailing rural fabric*.

Fig. 2 – Territorial systems with a widespread and scattered urban fabric (Source: Galli et al. 2010)



The first case (*Fig. 2*) is represented by an almost uninterrupted urban fabric, with some small scattered and non-communicating agriculture areas. This typology recurring in areas with several environmental constrains (mountains range; cost line, etc.) or with a quick and ungoverned urban expansion.

In this case agriculture may be defined as "intra-urban" and it has mostly landscape and environmental function (conservation of residual habitat).

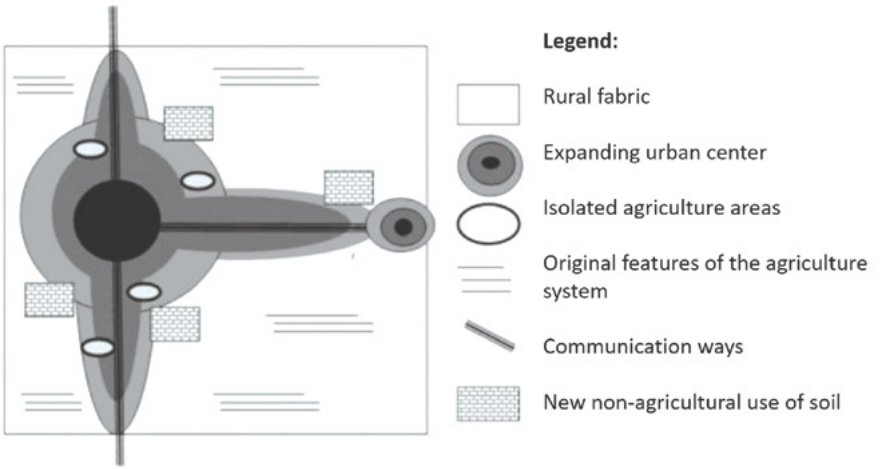
The deep inclusion among urban dimension emphasizes also its social functions, limiting its potential productive function, mostly suited to fruit crops or horticulture. The competition for the use of soil push land price up, hindering the residual agriculture activity.

In the second typology (*Fig. 3*), the urban settlements are limited to some poles or alongside few main axis (usually the main transport routes). In this case rural fabric is intact enough and agriculture areas have a significant continuity, interrupted just from limited urban frontline.

In this kind of territorial systems, the peculiar rural identity grows proportionally to the distance from urban areas and transport routes. Closer to these areas the situation is similar to the previous typology, while going further, the function of non-urbanized places turns from a "rural proximity" with recreational function, to fully agriculture functionalities.

The case of the Metropolitan area of Bologna (*Fig. 1*) may be considered a compromise between the two typologies just described above (*Fig. 2* and *3*). Indeed, urban development has met an environmental constraint in the Apennine range mountains at South-West, forcing it towards the open Po valley by the other side. Especially, the urban growth has stretched towards the close urban satellites of San Lazzaro di Savena at South-Est, and Casalecchio di Reno at Northern-West, which are already considered a sort of continuance of the urban fabric of Bologna.

Fig. 3 – Territorial systems with an urban fabric organized in poles and axis (Source: Galli et al. 2010)



However, the development of the urban fabric has been also established in a precise way, *i.e.* alongside the main communication routes, leaving traces of the previous rural fabric within the so-called "*agricultural-wedges*". These wedges represent "compensation zones" within the specific urban development of the city, in which promoting agriculture-related services for both, urban population (recreational or educational services) and ecosystem (*ecosystem services*). The remaining Metropolitan areas, far from urban settlement, are competing with agro-industrial or manufacturing companies and local high-quality small food productions, mostly addressed to an urban consumption (which is the specific target of the MA sustainable concept).

5. The MA-related policies in the Metropolitan area of Bologna

Regional legislation and the policies concerning urban-rural system planning at the local level are mostly aimed to 1) the economic, social and cultural development of the population; 2) improve the quality of life and 3) a conscious and appropriate use of renewable resources[3].

Based on these generic objectives, the Municipality of Bologna has defined, in 2007, its own *Municipal Structural Plan* (MSP), which "has the overall strategic goal of integrating policies of natural, environmental and landscape safeguard, with the development of sustainable agricultural activities"[4].

The MSP has been overcome by the *Metropolitan Strategic Plan* (MSP), which expressly envisages a MA project. This project aims to systematically face the several MA-related issues within the Metropolitan area of Bologna, such as the protection of land and landscape, urban horticulture, food supply and food sovereignty, the quality products and the renewable energies[5].

Especially, the MSP in Bologna explicitly speaks of "*neo-agriculture*" with reference to the new consumption needs expressed predominantly by the urban context, namely the demand for local, sustainable and quality products. The challenge, therefore, concerns the necessity of embedding these needs within a new competitive business fabric, capable of exploiting the technological evolution and multifunctionality of the farm.

The main purpose of this effort is to manage, organize and strengthening the agricultural sector, with a specific focus on the rural-urban relationship. Specifically, the MA policy still has four programmatic elements:

1. Promotion of existing and potential chains in the respect of territorial vocational skills;
2. Promotion of related activities to consolidate multifunctional agricultural activity;
3. Adequate management of the territory through an ordinary maintenance that can prevent and contain damage from hydrogeological failure;
4. Protection of the landscape and the rural territory from urbanization and consumption of soil.

3 Common driving guides for urban and rural development of the whole area are referred to the Regional law n. 20/2000, which represents the main regulatory reference for metropolitan programming until 2020.

4 An *Illustrative Report* of the MSP is available at the web site of the Municipality of Bologna (*www.comune.bologna.it/psc/documenti/848*).

5 The *Strategic Metropolitan Plan* of the city of Bologna is available online at the following link: *http://psm.bologna.it/Engine/RAServeFile.php/f/documenti/Documento-di-piano.pdf* (10/04/2018).

While in the field of strategic planning, MSP provides:

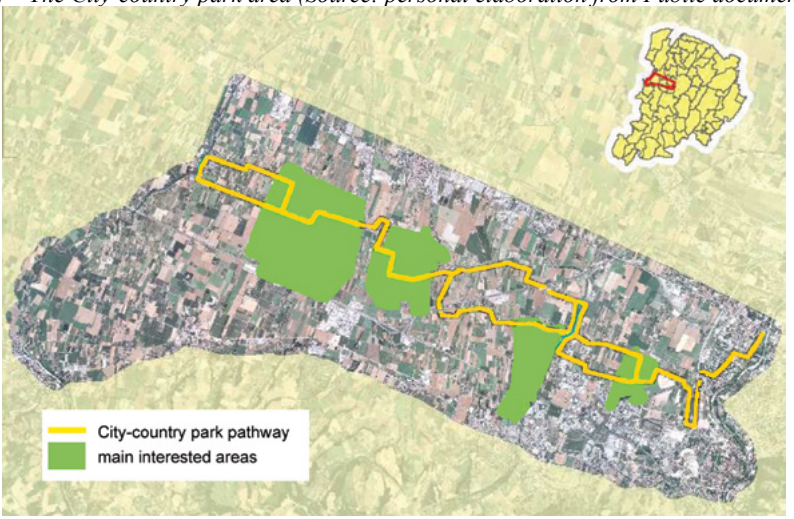
1. The identification of the peri-urban area as a "buffer" area between urban and rural needs, developing a sustainable mobility system to connect the city with the nearby countryside and in which to promote typical and high-quality production (like organic and biodynamic agriculture), direct selling and the local supply chains, as well as specific social and educational services, like, for instance, social farms and rural-society museums.
2. The promotion of a Bolognese Agricultural District, in order to provide to the territory a well-recognized European-level governance tool, capable of aggregating the metropolitan agricultural realities as a single interlocutor in respect to the Public Administration.

These policy addresses find their best concretization, for example, in the so-called "*City-country park*" concept, which represents the referring model of development for the peri-urban area of Bologna.

6. The City-country park concept: a way to valorize local "agri-culture"

The "*City-country park*" is a project of "valorization of the landscapes networks" around the urban fabric, providing an integration of the ecological and environmental high added-value areas located in the West end-side of the city, between the Reno and Samoggia rivers.

Fig. 4 – The City-country park area (Source: personal elaboration from Public documents)



The primary objectives of the project are:

1. The preservation of the traditional agricultural vocation of the territory;
2. The organization and enhancement of the recreational tourism of the area;
3. The definition of a network of cycle and pedestrian routes within the area;
4. The development of new projects integrated with, and respectful of, the landscape features of the area;
5. The strengthening of the local ecological network.

The entire area (about 7300 *ha*) has historical and heritage connotation, with several *Ville* (country houses of ancient aristocrats of the city) and it is mostly dedicated to agriculture, with more than 400 farms that cultivate mostly cereals, grapevine and other fruit and vegetable crops (*www.cittametropolitana.bo.it*).

Especially, the Samoggia Valley is a wide rural area with a precise "*agri-culture*" (Pretty 2013), that is a specific rural and agricultural identity, mainly rooted in the principles and values of the organic agriculture. In this part of the Metropolitan territory, indeed, the Italian organic movement was founded and developed. The *Italian Association of Organic Agriculture* (AIAB), for instance, was born in 1982 in Vignola, the hearth of Samoggia Valley, starting from the commission "What is organic" (Paltrinieri, Spillare 2015).

This part of the Metropolitan rural area is thus devoted to a high-quality agriculture that finds in the urban consumers its privileged purchasing channel. In this way, the specific *agri-culture* of the area meets civic movements for "food sovereignty" and associations for the rights of small-scale and local producers (against the neo-liberalism logic), which help farmers to arrange and organize several farmers' markets within the urban area. This is the case, for instance, of *Campi aperti* association or *Mercato Ritrovato*, the most famous farmer's market of the city, that was originally established as a *Slow Food* market.

In urban contexts, indeed - and especially in Bologna - there is an increasing desire for food quality among the urban consumers, which shows to prefer more and more organic and local food, including craft productions (for instance craft beer). Consequently, the farmers' markets above-mentioned are thus growing up too within and surround the city and they are getting very attractive mostly for the peri-urban areas of Val Samoggia and the Apennine.

7. Tourism and agriculture as assets of a "positive development circuit" for the Apennine area

Similar arguments are also valid for the Apennine area, which has recently been at the center of a meeting of both the Public authorities of the only two adjoining Italian Metropolitan cities, Bologna and Firenze. The aim of the meeting concerned the common strategy for the Apennine area, including agriculture activities. As a matter of fact, Apennine area is considered a "fragile contexts", because of depopulation and socio-economic constraints that traditionally affect mountains areas. Also in this case the strategy has focused on the development of the commercial relations between urban and Apennine context, levering the touristic attraction of the two cities.

The tourist attraction of the city of Bologna is recently growing up, also thanks to the driver of food-related strategies, like, for instance, the city branding "*Bologna City of Food*" or the opening of *Eataly World*, the biggest thematic shopping park related to food and agriculture in Italy.

The good touristic performances of the city have had good consequences on services related to food and hospitality, like, for instance agritourism hotel, which are increased more than 6% during last year (*www.ucer.camcom.it*).

Extending these advantages to the Apennine is the specific purpose of the Metropolitan policies concerning this area, and especially for the area of Bolognese Apennine is possible to suppose something like a *positive development circuit* based on the strategic double-axis of *high-quality food productions* and *tourism*.

In fact, in the mountain environment, with its opportunities but also with its extreme difficulties, it is not possible avoiding to use all the dimensions of its territorial capital, mixing them together in synergic ways. *Human capital* (knowledge, skills, skills, etc.), *infrastructural capital* (roads, buildings, bridges, etc.), *natural capital* (forests, lakes, etc.), *cultural capital* (heritage, traditions, etc.) and, finally, *social capital* (relationships, bonds, trust, norms, etc.), are all present in different shapes and sizes on the territory and they must be combined in a synergistic way to produce value for the local community. Concretely, it is a question of offering, together with agricultural production, other related-services with a high added-value, such as (agri-) tourism, but also person-based services (social and education farming), useful for tourists, as well as for locals.

On the base of these assets it is possible to build effective business opportunity and socio-related services for the entire local communities, exploiting the opportunities of the *multi-functional agriculture*. From the agriculture production perspective, instead, it is necessary to focus the efforts on those local

environmental characteristics that can most be developed in order to synergistically meet the main consumption trends. In particular, the scarcely polluted environment of the Apennine mountain is ideally for typical organic productions, able to satisfy the "healthy" and "local" consumption trends. However, these type of agriculture practices are often work-intensive and risk to need added efforts in an already difficult economic condition. This is the reason why a well-planned strategy need probably innovative models of production and promotion like, for instance, those provided by the pilot project *AppenBio*, promoted by a famous organic brand of Bologna. This project aims to test "new entrepreneurial models of well-balanced and reproducible agriculture and breeding, which can be widely disseminated" (*www.appenbio.eu*).

The ability to develop together and in a sustainable way the main assets of the Apennine economy, food production and tourism, is thus the key factor for the future development of the area.

8. The urban-side of the MA: agri-civism and the quality of urban life

According to Richard Ingersoll (2004), the term "*agri-civism*" is usually used with reference to all those agriculture activities which are carried out in the city mostly to improve the quality of urban life.

Despite urban agriculture is usually considered a "residual" activity, carried out during the leisure time, often in "unconventional" places (urban flowerbeds, balconies, roofs, tiny plots of land among buildings, etc.), it fulfills instead very important social and environmental functions. For instance, green spaces are more and more necessary within the urban fabric to control the urban micro-climate or, for instance, to absorb carbon or other kind of pollution. Moreover, cultivated green spaces may help the management of rain water, avoiding landslides or flooding, and they help to preserve the fertility of urban soil, biodiversity and the recycling of food waste (Deelstra, Girardet 2000). For these reasons urban green spaces and their uses, should be accurately spatially planned, as well as for what concerns the typologies of plants and greenery, in order to ensure, for instance, ecological pathways within the city (Orsini *et al.* 2017).

Together with the *ecosystem services* and environmental benefits that cultivated green spaces may offer, urban agriculture has also a specific socio-economic dimension, promoting public engagement and the revitalization of the social fabric of the city.

Finally, urban agriculture can be used, obviously, to produce edible crops, even if this latter function is more and more drops, proportionally with the

increasing urban-rural divide and the rise of the modern food industry. The most recent examples of a wide-spread urban agriculture for food reasons had taken place during the Second World War, with the diffusion of the so-called "war vegetable-gardens" (Lawson 2005). In that case the flourishing of urban agriculture was a response to the lack of food because of the conflict. When this need stopped also the need to cultivate within the city went to vanishing, proportionally to the increasing economic well-being.

During the 1970s, instead, the rising ecologic movement and the increasing desire for nature promoted a revival of the urban farming with, for instance, the famous *community gardens* of New York (Lawson 2005). In this case, urban farming represented – and continues to represent – mostly "*a tangible response to intangible needs*" (Paltrinieri, Spillare 2015, p. 140), that is a practical activity that helps to physically change the face of the city, as well as to enhance its social and relational fabric. The chronic lack of free soil in urban areas, drives people to share same plots of land, encouraging socialization, against the iper-individualized model of the modern cities.

Starting from this socialization, urban agriculture might become the glimmer for different social and civic initiatives: from mere children's birthday parties to extemporary educational courses about Nature, seasonality and Ecology, or until to establish an insurgent civic movement for the re-appropriation of urban spaces (Hou 2010). This is precisely the sense of the *agri-civism*, which leverages the ability of agriculture, and especially of urban farming, to promote civic engagement, creating a *community* of people where there were just *individuals* before.

The role of Public Administration is thus essential. Not just to well-plan green spaces and related activities, but also to encourage civic engagement, promoting the taking care of commons by citizens. From this perspective, indeed, shared urban gardens may become real "enduring civic labs" (Bartoletti 2012), that are symbolic places for a long-lasting informal dialogue with Public authorities.

To say the truth, this dialogue is not always idyllic. In the main Italian cities, indeed, the relationship among the grassroots urban agriculture movements and city administrations is very different. For instance, in recent years the Municipality of Milan has started an experimental initiative of common gardens in Public lands in cooperation with a citizens' association. Conversely, in Rome the several grassroot initiatives on this topic seem not to be recognized by the Public authorities (Bartoletti 2012; Musarò, Bartoletti 2013). In the case of Bologna, the main difficulties in the management of its more than 2700 Public vegetable-gardens, are mostly related to the different traditions and needs in the use of these common lands, which are parceled from the Public administration and freely assigned to citizens that request them.

The Bolognese experience has been traditionally related to the need of retired people to spend their leisure time and self-consumption production. Therefore, socialization was left for a long time to the spontaneous arrangement of the practices within these spaces, without a serious incentive for a different use of them. Neither different kinds of aggregations have been promoted.

More recently, the Municipality of Bologna has modified its policy, providing specific quotas for young people, even if the generational alternating should not be taken for granted and it is not easy at all. Indeed, despite a growing resident population (that reached about 1 million people in 2016) mostly due to the foreign component (about 117.000 in 2016), the average age is more and more increasing (people over 65 years old were 24,3% in 2016).

In a close next future Public Administration will call to face an increasing demographic revolution[6], with a deep change in the socio-economic composition of the urban population with an uncertain scenario of available resources[7]. In order to face these social challenges, also the effervescences of the urban *agri-civism* should be better recognized and implemented, in order to try to seriously transform voluntary practices of activism in concrete *multifunctional urban farming* opportunities.

Actually, the most of *insurgent* or just "alternative" *civic activism* related to urban farming – like, for instance, the association *TrameUrbane* or the *guerrilla gardening* group called *Terre di Nettuno* - seems still far from a positive appropriation of, at least, a part of the thousands of Public vegetable-gardens of the city.

However, a change in the use and management of vegetable-gardens seems desirable, especially for what concerns the development of innovative ways to socialize green spaces (aiming, for instance, inter-generational socialization and foreigners' integration) and, why not, to produce and commercialize food in cities.

From this latter point of view, an interesting pilot project concerning a hydroponic rooftop-garden was conducted from 2012 to 2016 by *BiodiverCity*, an association founded by a group of academics and scholars of the Agriculture Department of the University of Bologna. It has been, probably, the most important innovative experimentation of urban farming of the city. The experience, indeed, became a useful case study to attempt quantification of the potentiality of rooftop vegetable production in the city of Bologna.

6 The *ageing population index* shows there are 186.1 elders per 100 young people, while the *structural dependency index* indicates that there are 59.9 retired people or students per 100 employees (Istat).

7 *Public Investigation on Welfare: Economic and social scenario analysis*, Municipality of Bologna (*www.comune.bologna.it/istruttoriawelfare*).

The study highlighted how - thanks to more than 80 *ha* of the flat building-roofs surfaces in Bologna - a systematic wide-spread of this kind of soilless vegetables production could satisfy almost 77% of the urban need of vegetables, with an evident contribution to city food security (Orsini *et al.* 2014).

Unfortunately, the experimental rooftop-gardens was neglected by the Public Administration of Bologna and dismantled.

9. Conclusions

MADRE has offered to the MA stakeholders of the Metropolitan City of Bologna the opportunity to exchange knowledge and know-how among them and with different stakeholders of the Mediterranean basin, reflecting on the need to improve city sustainability, as well as on the opportunities and difficulties related to the MA development.

Sharing knowledge, networking ability and collaboration are the basis of co-innovation capacity, and this latter is surely a key factor to face the huge challenges of tomorrow. However, the potentialities of innovation are also related to the specific context in which different stakeholders do act, which include environmental, socio-economic and institutional constraints.

For this reason, the effort of this chapter has been aimed to illustrate the specific *territorial system* of the Metropolitan area of Bologna, providing a context analysis that includes the main MA-related matters.

First of all, taking into account the development of the urban fabric in respect to the rural one, the territorial system of Bologna has been considered a "mixed model", in which a quite scattered urban fabric delimitated by environmental constraints (in particular the Apennine range mountains at the shoulders of urban area), is however growing alongside specific axis. This peculiar urban development has facilitated the preservation of several peri-urban "wedges", in which urban and rural fabric might imagine to coexist quite harmoniously. Within these areas, there is room to valorize the needs of both, the urban and the rural fabric (such as in the case of the *City-country park* concept).

Especially in this peri-urban wedges, as well as within the first peri-urban belt (including the Apennine area), agriculture is characterized by several small and medium farms, usually quality-oriented and ideally joined by a common *agri-culture* (mostly rooted in the values of organic movement). For a number of these farmers urban fabric often represents their "natural" end-market, also because of the support of several associations and groups of citizen-consumers, which arrange for farmers' markets or solidarity purchasing groups.

Regional and local policies, from their part, seem quite advanced in recognition of strategic asset of MA, even if further efforts could be probably profused to better recognize and connect the several social initiatives related to agriculture within a *structural model*, able to take together crops production and welfare services within and surrounding urban area.

From a *social* point of view, indeed, the Metropolitan area of Bologna already has more than 60 social farms, which offer very important education and welfare services. In order to enhance these important agriculture-related services, National Parliament has recently promulgated a regulatory law on social farming (n. 141/2015), establishing the *National Observatory on Social Farming* and inviting Regional Parliaments to implement regional guide lines. Therefore, these could be the first steps toward a real Metropolitan *civic agriculture* (Di Iacovo, Fonte, Galasso 2014), mainly considered as a *service-based multifunctional agriculture* and fulfilled integrated with the Metropolitan welfare system.

References

Aguilera E., Guzmàn G. (2012). Adapting to Climate Change in the Mediterranean Region: the Potential benefits of Organic Agricolture. *Organic Agriculture. A strategy for Climate Change Adaptation*. Dossier Ifoam, Belgium.

Arnkil R., Järvensivu A., Koski P. and Piirainen T. (2010). Exploring Quadruple Helix Outlining user-oriented innovation models. *Final Report on Quadruple Helix Research for the CLIQ project*, under the Interreg IVC Programme.

Bartoletti R. (2012). Orti e giardini collettivi: pratiche grassroots e politiche urbane. *Autonomie locali e servizi sociali*, 3: 427-444.

Brawn L. (2012). *Full Planet, Empty Plates. The New Geopolitics of Food Scarcity*. Norton & C., New-York - London.

Canavan C.R., Graybill L., Fawzi W., Kinabo J. (2016). The SDGs will require integrated agriculture, nutrition, and health at the community level. *Food and nutrition bulletin*, 37(1): 112-115.

Deelstra T., Girardet H. (2000). Urban agriculture and sustainable cities. In: Bakker N., Dubbeling M., Gündel S., Sabel-Koshella U., de Zeeuw H. *Growing cities, growing food. Urban agriculture on the policy agenda*. Feldafing, Germany: Zentralstelle für Ernährung und Landwirtschaft (ZEL).

Di Iacovo F., Fonte M., Galasso A. (2014). Agricoltura civica e filiera corta.

Nuove pratiche d'impresa e relazioni tra produttori e consumatori, *Working paper*, Luglio, Gruppo 2013, n. 22.
FAO (1999). *The State of Food Insecurity in the World*. FAO Pubblishing. Rome.
FAO (2008). *Urban and Peri-Urban Agriculture (UPA) for Sustainable Poverty Alleviation and Food Security*. Position paper. Available at: *http://www.fao.org/urban-agriculture/en/*.
Galli M., Maracchini E., Lardon S., Bonari E. (2010). Il progetto agro-urbano: una riflessione sulle prospettive di sviluppo. *Agriregionieuropa*, 6(20). Available at: *https://agriregionieuropa.univpm.it/it/content/article/31/20/il-progetto-agro-urbano-una-riflessione-sulle-prospettive-di-sviluppo* (29/30/2018).
Galli M., Marraccini E., Bonari E. (edited by) (2010). *Agricultural management in peri-urban areas: the experience of an international workshop*. Ghezzano: Felici Editore.
Gandy M. (2004). Rethinking urban metabolism: water, space and the modern city. *City*, 8(3), 363-379.
Hou J. (2010) (eds). *Insurgent public space. Guerrilla urbanism and the remaking of contemporary cities*. Routledge, London.
Ingersol R. (2004). *Sprawltown*. Meltemi, Roma.
IPCC (2007). Summary for policymakers. In: *Climate Change 2007. Impacts, Adaptation and Vulnerability. Contribution of Working Group III to the Fourth Assessment Report on the Intergovernmental Panel on Climate Change*. University Press: Cambridge.
Lawson L. (2005). *City Bountiful: a century Gardening in America*. University of California Press, Berkley (USA).
Mougeot L.J.A. (2000). Urban Agriculture: Definition, Presence, Potentials and Risks. *International Workshop on Growing Cities Growing Food: Urban Agriculture on the Policy Agenda*. La Habana, Cuba. October 11-15, 1999.
Musarò P., Bartoletti R. (2013). "Community garden e crowdmapping: scenari per l'agricoltura urbana in Italia". In: *La smart city al servizio del cittadino*. Forum PA: Bologna.
Orsini F., Dubbeling M., de Zeeuw H., Gianquinto G. (2017) (eds). *Rooftop Urban Agriculture*. Springer, Cham.
Orsini F., Gasperi D., Marchetti L., Piovene C., Draghetti S., Ramazzotti S., Bazzocchi G., Gianquinto G. (2014). Exploring the production capacity of rooftop gardens (RTGs) in urban agriculture: the potential impact on food and nutrition security, biodiversity and other ecosystem services in the city of Bologna. *Food Security*, 6(6): 781-792.

Paltrinieri R., Spillare S. (2015). *L'Italia del biologico. Un fenomeno sociale dal campo alla città*. Edizioni Ambiente, Milano.

Pretty J. (2013). *Agri-culture: reconnecting people, land and nature*. Routledge, London.

Steekelenburg (van) M., Latesteijn (van) H.C. (2012). *Metropolitan Agriculture: Space for the Future*. TransForum. Value Mediation Partners. Available at: *http://www.metropolitanagriculture.com/resources/Metropolitan-agriculture---Space-for-the-Future.pdf.*

UN (2016). *The World's Cities in 2016* - Data Booklet. Department of Economic and Social Affairs - Population Division. Available at: *https://goo.gl/T3nHmB*.

Wascher, D. M., Agricola, H., Breman, B., & Anderson, B. J. (2007). Innovation Characteristics for Sustainable Metropolitan Agriculture. *SUSMETRO Phase 1 Final Report*, Wageningen University and TransForum. Available at: *http://edepot.wur.nl/161515* (26/04/2018).

WWF (2016). *Living Planet Report 2016. Risk and resilience in a new era.* WWF International, Gland (Switzerland).

Yawson R.M. (2009). The Ecological System of Innovation: A New Architectural Framework for a Functional Evidence-Based Platform for Science and Innovation Policy. *The Future of Innovation Proceedings of the XXIV ISPIM 2009 Conference*. Vienna, Austria, June 21–24, 2009.

Chapter 2

Sustainable innovation in Metropolitan Agriculture of Bologna: Good Practices and Innovation System

Stefano Spillare

1. Introduction. The MADRE framework and the role of Metropolitan agriculture in sustainable innovation of the cities

This chapter aims to illustrate some of the main results of the analysis carried out in the Metropolitan area of Bologna (a city in Central-Northern Italy) during the scientific support offered to the MADRE project implementation.

MADRE is an acronym for "*Metropolitan Agriculture for Developing an innovative, sustainable and Responsible Economy*"[1] and it is an *Interreg MED project*. The general aim of this European programme is to "*help regional and local governments across Europe to develop and deliver better policies [...] all lead to integrated and sustainable impact for people and place*" [2], developing and sharing knowledge on specific strategic topics in different European countries.

Especially, MADRE is focused on the developing of a strategic asset for *Metropolitan Agriculture* (MA) innovation in the Mediterranean area, with the explicit aim of improving the *networking capacity* of this area. This is because the reflexive *co-learning* is implicitly considered a key factor in *co-innovation* capacity (Brunori *et al.* 2013; Moschitz *et al.* 2015), and this latter is considered a key factor in developing *sustainable* and *resilient* cities.

The concept of MA, similarly to *Urban and Peri-urban Agriculture* (UPA), concerns all kind of agriculture activities carried on within or around the urban areas. In developed countries these kinds of practices are mostly related to environmental and well-being issues and UPA is mainly considered a way to reduce land consumption or other negative consequences of urbanization and a way to improve social capital and civic engagement. In other words, by mutual consent, in developed countries UPA is fully a part of the strategy for the sustainable development of the cities (Golden 2013; Hamilton *et al.* 2013; Mok *et al.* 2014; Zeeuw, Drechsel 2015).

1 For further information, you can see the MADRE website at: *https://madre.interreg-med.eu.*
2 What is Interreg Europe? (*www.interregeurope.eu/about-us/what-is-interreg-europe*).

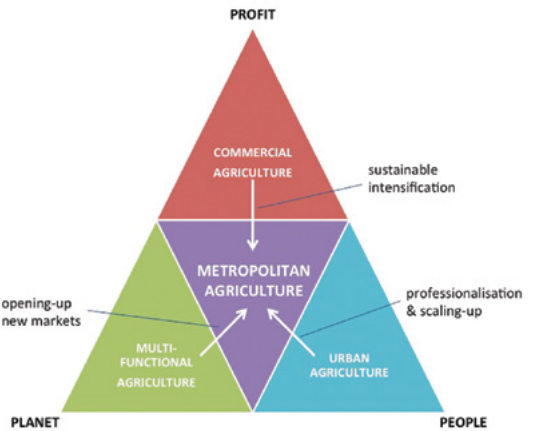
According with this perspective, the MA paradigm mostly emphasizes the need to consider urban and rural fabric alongside a *continuum* of sustainable development (Wascher *et al.* 2007).

According with the theoretical and operative framework of MADRE, MA may be specifically considered as an "*infrastructure for a newsustainable city*", able to promote several new features and objectives, such as:

- Renewal of producer-consumer links by local food systems, peri-urban agriculture;
- Intra-urban agricultural activities (for leisure and/or for commercial purposes) diversifying urban food sources and income opportunities;
- The design of a new "urban agricultural planning" suitable for integrating agriculture into urban development;
- Adapting cities to climate change by multi-functional landscape management;
- Maintaining open green spaces, enhancing vegetation cover and water infiltration;
- Contributing to sustainable water and natural resource management;
- Improving air quality, reducing urban warming, and enhancing urban biodiversity by urban forestry and agriculture.

In order to reach these objectives, the traditional small-scale of MA needs to scale-up, improving the professional ability of little farmers and their multifunctional capacity to open-up new markets. At the same time, conventional agriculture needs to improve its sustainability (*Fig. 1*).

Fig. 1 – Pyramid of sustainable MPA development (Source: www.metropolitanagriculture.com)



Despite its potential role, MA is often still considered - at least since the end of the Second World War - a way to better spend spare time (such as case of ur-

ban gardens managed from retired people) or just a way to improve educational programs in schools (like the case of didactic farms). In order to seriously consider MA as a way for a real *transition* towards sustainable cities it is necessary to focus on the *co-innovation* process concerning "*urban metabolism*" and its relations with agriculture and food supply (Gandy 2004; Dogliotti *et al.* 2014; Esparcia 2014; Fearne *et al.* 2013; Klerkx, Aarts, Leeuwis 2010). The process of *co-innovation* is mainly considered as the result of a convergence of different kinds of innovations: *technological*, *social* and *institutional* (Klerkx, Leeuwis 2009). These innovations usually never occur separately, rather, they are parts of a "*knowledge infrastructure*" in which different elements are mutually related and co-evolving (Moulaert, Hamdouch 2006; Brunori *et al.* 2013; Moschitz *et al.* 2015). In the case of agriculture, different factors are recently contributing to the agriculture productivity, shifting the attention from the mere *input* intensification (*technological innovation*) to other benefit, like, for instance, environmental and socio-relational ones (*institutional* and *social innovation*).

Especially in the last two decades, the newest and complex functionalities that consumers ascribe to agriculture, have facilitated the emergence of new innovative dimensions, which concern, for instance, *common goods* and the related *collective action* (Esposti 2012). These are mostly *social* and *organizational innovations*, before than *technological* ones. These innovations thus pertain the turn toward the *multifunctionality* of agriculture (Renting *et al.* 2009) and an increasing *civic* role of agriculture (Lyson 2012, Di Iacovo, Fonte, Galasso 2014). This latter provides positive externalities that usually are not considered as balancing factors in the so-called *agricultural productivity slowdown*, and they are not taken into account in the calculation of the *Total Factors Productivity* (TFP) of agriculture (Esposti 2015). Nevertheless, they are more and more important assets, especially in relation with the innovative potentiality of agriculture in urban and peri-urban areas.

For this reason, concerning MA is more appropriate to consider the "*innovation system*" of the area (Klerkx, Leeuwis 2009; Jacobsson, Bergek 2011), rather than to point the attention just on a single innovation or a narrow set of innovation.

According to the World Bank (2006), the MADRE framework considers *innovation system* as *"a network of organizations, enterprises, and individuals focused on bringing new products, new processes and new forms of organization into economic use, together with the institutions and policies that affect their behavior and performance*" (p. 5).

In few words, looking at the territorial *innovation system* means considering innovation in a *multi-perspective* way, necessarily adopting a *multi-stakeholders approach*.

2. The operative framework of MADRE

According to this scenario, the framework of MADRE considers the plurality of functions that agriculture can carry out in Metropolitan areas (*multi-functionality*), as well as the plurality of stakeholders involved (*multi-stakeholder approach*), focusing on different aspects and features of innovation (*multi-perspective approach*).

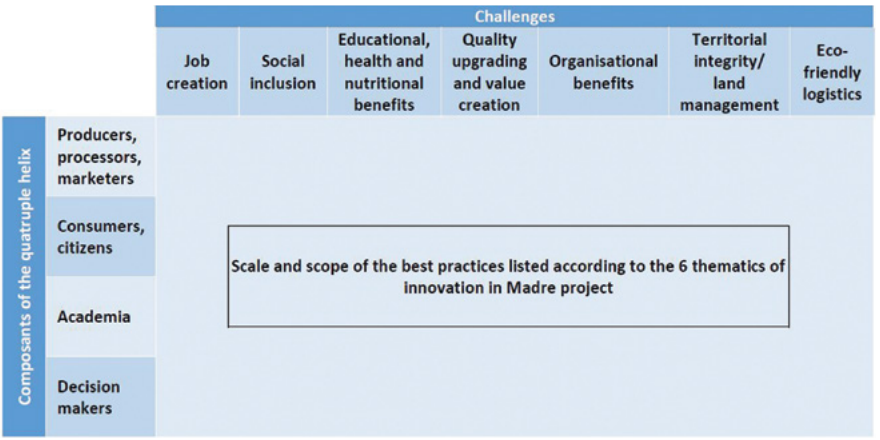
Especially, the theoretical and operative framework of the project considers six specific "*innovation themes*": 1) *Farmers' innovation* (concerning farming techniques, organization and marketing), 2) *Academic research*, 3) *Territorial innovation* (concerning policy at Metropolitan, regional and national level), 4) *Social innovation* (concerning vulnerable populations), 5) *Consumer innovation*, 6) *Transnational innovation* (concerning transnational networking).

These innovation themes are thus investigated and tested on different good practices, which are selected within the so-called "*quadruple helix*" (Yawson 2009; Arnkil *et al.* 2010), which include: 1) *Academic and research*, 2) *Farmers/producers/SME*, 3) *Consumers/Civil society*, 4) *Public local/metropolitan authorities*.

In the case of the Metropolitan city of Bologna, the stakeholders were selected through the so-called "snowball sampling" and invited to participate at two local meetings, in order to illustrate their own organizations, their role in the development of the MA and the good practices put in place.

The selected cases and good practices are thus investigated with the *case study* methodology (Yin 2009), mostly using a *document analysis*, as well as the evidences emerged by the above-mentioned meetings.

Fig. 2 – MADRE methodological matrix (Source: MADRE project methodology report)



Furthermore, each selected case and good practice have been assessed in the light of a common scheme (*Fig. 2*), especially emphasizing the contribution to the eight specific challenges taken into account by the project framework. These are the following:

a) *job creation* (concreate opportunity of employment);
b) *social inclusion* (the involvement of large community without discriminations, facilitating integration of vulnerable people);
c) *educational, health and nutritional benefits* (urban and peri-urban agriculture is a good way to educate children and people in general to environment protection and healthy and sustainable lifestyles);
d) *quality upgrading and value creation* (an upgrading in quality of products/production, more or less certified by labels and able to bring along higher value within the local food chain. Direct selling and short circuits provide a higher share of this value);
e) *organizational benefits* (actors can develop collaborative business models or innovative and more effective organizational practices);
f) *territorial integrity/land management* (facing urbanization and construction speculation, urban and peri-urban agriculture can contribute to territorial integrity and different uses of soil. Often with the Public administration support);
g) *environmental benefits* (different agriculture techniques, such as organic, permaculture, agroecology, ensure environmental benefit within urban and peri-urban areas);
h) *synergies* (with different actors of the quadruple helix).

In order to offer a useful way to inform the decision makers, a score in a scale from 0=*no contribution*, to 3=*high contribution* (1=*low contribution*, 2=*medium contribution*) has been assigned to each challenge. The scores are assigned mostly on the basis of evaluations concerning both, the more or less *direct*/*indirect* and *actual*/*potential* contribution to the challenges, as well as the *generic* nature of the contribution, rather than a *well-localized* one. Therefore, the more the contribution is directly related to a challenge and focalized on the Metropolitan area of Bologna the higher is the assigned score.

For the eighth challenge, concerning *synergies*, the rating takes into account the number of stakeholder categories involved in the good practice: 0 for one stakeholder category only (the initiative leader), 1 for two stakeholder categories (one more different stakeholder in respect to the initiative leader), 2 for three stakeholder categories and 3 if four stakeholder categories are represented. To say the truth, most of the selected stakeholders can be categorized in more than one category and, often, their role or contribution is transversal.

Moreover, the inclusion in a certain category, rather than another, was assessed on the base of the concreate role or activities of the considered stakeholder as "*innovation agents*" (Bessant, Rush 2000; Moulaert, Hamdouch 2006), rather than on the base of its explicit category (e.g. association, rather than enterprises).

In the next paragraph, for each actors of the *quadruple helix*, the selected cases and good practices are thus briefly illustrated, highlighting the related innovation themes and the challenges contribution. The results are summarized in synoptic tables.

Finally, in the last paragraph a synoptic table of all the selected cases and good practices is also provided, in order to try to synthesize the main dimensions of the MA *innovation system* in the Metropolitan area of Bologna.

3. The selected good practices and their main innovative dimensions

3.1. Academic and research

ResCUE-AB

ResCUE-AB (*Research Environment Center in Urban Agriculture and Biodiversity* - Agricultural Faculty of the University of Bologna) is one of the most important Research Center of the University of Bologna concerning studies and activities related with the theme of urban agriculture and agriculture-related sustainable solution for resilient cities. Its objective is setting up a "widespread" eco-laboratory, able to coordinate a social and more sustainable crops production in the urban and peri-urban area, promoting biodiversity, agro-ecology and green infrastructure.

Probably, the most important experimentations and studies concerning UPA are related to the development of the potentiality of hydroponic rooftop vegetable-gardens, the promotion of a socio-organic proximity farming for the inclusion of vulnerable people, studies on heavy metals contaminants in urban districts and the urban planning of green corridors to safeguard biodiversity in urban areas.

Moreover, they have implemented a wide-spread international network of development cooperation (Brazil, Peru, Mauritanie, Myanmar, etc.).

The contribution to MA innovation of *ResCUE-AB* is thus very important. It mostly concerns *academic research*, *farmers' innovation* (e.g. hydroponic), *territorial innovation* (e.g. the need to planning ecosystems corridors) and *transnational innovation*, responding to several challenges mostly

related to *quality upgrading and value creation*, *territorial integrity and land management*, *environmental benefits*, but also concerning *educational benefit* and the creation of *synergies* on the territory.

Ces.co.com.

Ces.co.com. is the *Center for Advanced Studies on Consumption and Communication* at the Department of Sociology and Economic Law of the University of Bologna. This social science Research Center, aims to deeply analyze and promote the culture of sustainability and responsible consumption through its education and research activities.

Its main research topics concern, for instance, social responsibility of firms (CSR), political consumerism, collaborative economy and collaborative consumption, organic consumption and the New Food Economy, food-waste reduction practices, social farming and the inclusion of vulnerable people, social and humanitarian communication, etc.

Moreover, *Ces.Co.Com.* promotes a Master course in *Enogastronomy and hopitality* and a course of high-education in *social faming* and collaborates with the *Humus* network, the Italian network for the development of a social bioagriculture, contributing to develop consumers' engagement (see the project below in the *Public local/Metropolitan authorities* section).

Most recently, *Ces.Co.Com.*, in collaboration with the Municipality of Bologna, is promoting the civic engagement through the arrangement of participative pathways for the restoration of degraded urban spaces. A significative example is the project *Salus W Space*, that consists in a restoration of a building for hosting asylum seekers. The project also provides common vegetable-gardens (see the project below in the *Public local/Metropolitan authorities* section).

The contribution to MA innovation of *Ces.Co.Com.* mostly concerns *academic research* and *consumer innovation*, responding to the challenges related to *educational benefit*, *social inclusion* and the creation of *synergies* on the territory.

Future Food Institute

The *Future Food Institute* represents a hybrid concept between productive and applied research world. It may be interpreted as a *hub on food innovation*, aiming to promote the connection of local territory with the global innovation networks.

Its main pillars are: *Education*, *Entrepreneurship*, *Innovation* and *Food Valley*. This latter is the area of the wide Po Valley between the cities of Parma

and Piacenza, one of the most important area of high-quality food production of the Emilia-Romagna Region. Therefore, the *Institute* is raised up in Bologna, the capital city of Emilia-Romagna and the famous "*city of food*" (this is also the explicit city branding of Bologna, promoted by local authorities).

With its several initiatives and the numerous international training projects, the *Future Food Institute* "provide a true platform of positive cross-pollination and constant inspiration" (*futurefood.network*).

The *Future Food Institute* is also a business "accelerator", that "supports food corps and institutions on the paths towards open innovation, as well as training startup, nurturing communities of young entrepreneurs and scientists with 'disruptive' ideas through laboratories" (*futurefood.network*).

One of the most recent project of the *Future Food Institute* is the *Future Farm*: "70 hectares of land dedicated to combine farming traditions (protection of biodiversity and organic production of old variety of seeds), and new technologies and materials for the development of waste" (*futurefood.network*).

Recently, the *Future Food Institute* has improved a collaboration with a famous students' restaurant and bar, in the hearth of the University area of Bologna, currently dedicated to the "future food". The contribution to MA innovation of the *Future Food Institute* is mostly related to *consumer innovation* and *transnational innovation*, responding to the challenges related to *educational, health and nutritional benefit* (thanks to its courses or events) and, with its activities, indirectly related to *job creation*, and more directly related to *quality upgrading and value creation*, *organizational benefits* and *synergies*.

World Food Research and Innovation Forum

The *World Food Research and Innovation Forum* is a permanent platform available to National and international policy makers, the science, research, business and finance community, which is intended to define shared strategies and effective initiatives for the future supply of food for the planet.

The *Forum* is promoted by Emilia-Romagna Region, Entrepreneurs' associations, Exhibitions Regional System and Regional Research System.

Its main objectives are to establish an international biennial event dedicated to food-related issues and launching a platform attracting all the key stakeholders' experiences and expertise, designed to host the legacy of EXPO Milano 2015 on food safety and research.

"*Feeding the Planet. Energy for Life*", was indeed the claim of Milano EXPO, which means addressing the issue of the universal right to food: a challenge that involves States, international organizations, rules and regulations, economics, scientific progress, stakeholders and local communities.

Despite the Forum activities are not specifically focused on the MA matters, it is surely an important reference for the agriculture policies. Its main contribution to MA innovation thus may be related to *academic research*, *territorial innovation* and *transnational innovation*, creating *synergies* and indirectly responding to the challenges related to *educational, health and nutritional benefit*, *quality upgrading and value creation*, and *environmental benefits*.

Tab. 1 – Innovation themes and challenges rating of Academic and research

CASES/ GOOD PRACTICES	*INNOVATION THEMES**						*CHALLENGES RATING***							
	1	*2*	*3*	*4*	*5*	*6*	*a*	*b*	*c*	*d*	*e*	*f*	*g*	*h*
ResCUE-AB	●	●	●			●	0	2	3	3	3	3	3	3
CesCoCom		●		●	●		0	2	3	0	0	0	0	3
Future Food Institute					●	●	1	0	3	3	3	0	1	3
World Food Research and Innovation Forum		●	●			●	0	0	1	1	0	0	2	2
TOT./AVERAGES	1	3	2	1	2	3	0	1	3	2	2	1	2	3

**1=Farmers' innovation; 2=Academic research; 3=Territorial innovation; 4=Social innovation; 5=Consumer innovation; 6=Transnational innovation.*
***a=job creation; b=social inclusion; c=educational, health and nutritional benefits; d=quality upgrading and value creation; e=organizational benefits; f=territorial integrity/ land management; g=environmental benefits; h=synergies.*

On the base of the identified innovation themes and the assigned scores to the challenges contribution (*Tab. 1*), the stakeholders of *Academic and research* are mostly involved in *research* and *transnational innovation* (thanks to their wide range of international relations and projects). While they seem less directly involved in the innovation capacity of the Metropolitan area (except for ResCUE-AB, which has lead several projects in Bologna).

However, they strongly contribute to *education* (with several courses and sensitization activities) and *synergies* creation within the territory, often with the function of "binding agents".

3.2 Farmers/producers/SME

Mercato Ritrovato

Mercato Ritrovato is one of the most famous and populated farmers' market of Bologna. It takes place in the *Film Library* area of Bologna, close to the *School of Communication* of the University of Bologna and a big green park in the middle of a wide pedestrian area. At the beginning, the market was born as *Mercato della Terra* by *Slow Food*, but now it is an independent business-oriented association of producers that, nevertheless,

equally maintain the same values and care for food and farmers. Its mission explicitly concerns the environment protection and the promotion of local and seasonal food products, supporting local economy.

Mercato Ritrovato is not just a marketplace, but rather a relational place in which people can socialize to each other, as well as with the local farmers and their products (from max 40 km far), improving awareness and the culture for good and safety food within consumers.

The contribution to MA innovation of *Mercato Ritrovato* is quite important, not only because of its support to about 40 local high-quality farmers, but also for its capability to involve people, promoting local food and productions.

The main innovative dimension of *Mercato Ritrovato* thus concerns *consumer innovation* and indirectly *territorial innovation*, mostly responding to the challenges related to *educational, health and nutritional benefits*, *quality upgrading and value creation*, *organizational benefits*, *synergies*, while, indirectly, it contributes to *job creation*, *territorial integrity*, *environmental benefits*, creating *synergies*.

AppenBio

AppenBio is a seminal project financed by the Program for Rural Development of Emilia-Romagna Region and EU founds and focused on the development of agriculture within the specific area of Bolognese Apennine. This is a mountain area affected by depopulation and economic issues.

The project is carried on by some farms from the Apennine and supported by one of the most famous organic brand in Italy (which gathers more than one thousand organic farmers), Sant'Orsola Hospital of Bologna and the University of Bologna.

All the involved subjects do contribute to achieve three main objectives: 1) produce healthier food; 2) create a profitable entrepreneurial model; 3) replicate and wide-spread the model.

AppenBio aims to give back value and competitiveness to the Apennine area through high-quality food production, especially selected cereals and agriculture and livestock sustainable and innovative practices.

For these reasons, the project is mostly related to *farmers* and, *territorial innovation*, as well as *consumer innovation*, because it will be also a new label-brand to characterize the Apennine products. Therefore, *AppenBio* mostly contribute to the *quality upgrading and value creation*, promoting *territorial integrity* and producing *organizational*, *environmental* and *health and nutritional benefits*. Potentially, if the project will be replicated, this might contribute to *job creation*.

Local-to-You

Local-to-You was born in 2016 and it is a young enterprise that gathers several social cooperatives of the Metropolitan area of Bologna, fostering work inclusion for vulnerable people (people with disabilities, asylum seekers and refugees, unemployed, etc.), with a peculiar attention to ethics in crops production practices of farmers. Thanks to this initiative 23 people are currently employed and 8 of them are refugees.

Local-to-You is inspired to a *vision* in which agriculture is mostly considered as a high-impact social responsible activity. This vision is thus rooted in the multi-functionality concept of agriculture, which means not only a differentiation of economic activities of farms, but also a strategic contribution of agriculture to environmental and social benefit. Therefore, *Local-to-You* does not consider land and food just as commodities to exploit but, rather, as common goods to valorize.

The main service of *Local-to-You* consists in a "*next-day*" delivery of fresh vegetable thanks to a digital platform (*www.localtoyou.it*) on which customers can order the so-called *local-boxes* of products. Digital order is not the only way to order food. *Local-to-You*, indeed, is rather a *multi-channel* platform. They are physically located in five local farmers' market within the Metropolitan area of Bologna and they are developing a very interesting experimentation of *corporate purchasing groups* as a way to implement *corporate welfare*.

All the partners have carried out sustainable cultivation practices (organic and integrated agriculture) and *Local-to-You* assumes the commitment for a fair retribution of products and farmers, also involving very small farmers that spend their efforts to safeguard specific traditional or rare crops – the so-called "*custodian farmers*" – in order to protect biodiversity. For these reasons, *Local-to-You* is also certified "*B corporation*".

The main three key words that better describe *Local-to-You* are: "quality", "local" and "ethics", but a well-planned organization is also important, since serves about 450-500 families for week, just with the home-delivering service.

Local-to-You is growing and wide-spreading in the entire Emilia-Romagna Region, but its business model wants to be "replicable" rather than "scalable".

The contribution of *Local-to-You* to MA innovation is clearly very important. It represents, indeed, a real innovative ICT-based model to organize a local short supply chain and the delivery of local food, with the added-value of the promotion of social inclusion. It is thus a concreate example of *social* and *consumer innovation*, able to well-responding to several challenges, such as *job creation*, *social inclusion*, *quality upgrading and value creation*,

with clear *organizational benefits*. Its attention to the environment issues and local territory indirectly involves also the dimensions of *territorial integrity/ land management* and *environmental benefits*.

Le Serre/Community gARTen

Le Serre is a regenerated site (the former municipal greenhouses) dealing with *social innovation* and, in part, of urban agriculture, with its "*Community gARTen*". It is a project promoted by *Kilowatt* and coordinated by the Municipality of Bologna with the support of the Emilia-Romagna Region, *Golinelli Foundation* and ASTER, the *Consortium for Innovation and Technology Transfer* of the Emilia-Romagna Region.

Kilowatt is a network of professional freelancers, SMEs, associations and cultural organizations which won the call for tender of the Municipality of Bologna in 2013 for revitalizing this site and managing it at least for 15 years. The governance model includes profit and no-profit activities (co-working space, education services, summer season events, a *Solidarity Purchasing Group*, etc.), in order to guarantee a highest social impact and the economic sustainability of the project.

The most important MA-related project promoted by *Kilowatt* in the site of *Le Serre* remains its *Community gARTen*, a 600 mq of vegetable-garden in which more than 293 members of the community and two high schools involved in work-linked training, participate to the every two months events on farming and other several events organized in the area.

Since 2017, the community garden is daily managed by a professional gardener who is available for training the community on organic farming techniques. A small part of crops is dedicated to the inside bistrot, while the remaining part is for the community activities. *Le Serre* and its *Community gARTen* represent a real *innovation hub*, mostly related to *territorial* and *consumer innovation*, facing the challenges related to *job creation*, *educational benefits*, *territorial integrity*, *organizational benefits* and creation of *synergies*.

Spazio Battirame/EtaBetaBio

Spazio Battirame is a place of socio-recreational and educational activities created and developed as a urban regeneration project by the social cooperative *Eta Beta*. In *Spazio Battirame* a professional kitchen serves a bar-restaurant and it is used for cooking courses and food-related activities, an out-side cover space for cultural events, craft-production activities and concerts, and overall a wide open space (about 4 *he*) dedicated to vegetable-gardens.

The vegetable-gardens are established on a Public land in collaboration with the Municipality and the School of Agriculture of the University of Bologna. This latter has contributed to create a circular synergistic vegetable-garden, and two different organic areas that allow to alternate crops and a field cultivated with cereals and legumes.

Thanks to these cultivation *Eta Beta* has developed the *EtaBetaBio* project, in order to deliver its products to families and GASes of the urban area, with the aim of creating employment opportunities for vulnerable people.

For these reasons, *Eta Beta* co-op, with its *Spazio Battirame* and the *EtaBetaBio* project, are mostly related to *farmers*, *territorial* and *social innovation,* while they better respond to the challenges related to *job creation*, *social inclusion*, *educational benefits*, *quality upgrading and value creation* and *land management*.

Circolo La Fattoria

Circolo La Fattoria is an urban farm established in Bologna since 1967 in the heart of a problematic neighborhood called *Pilastro*, in the periphery of the city. One of the first aims of the *Circolo La Fattoria* is thus contributing to the re-qualification of the area, strengthening the existing social ties of the communitarian social fabric of the area.

The main activities of *La Fattoria* consists in educational courses for schools, in order to promote ecologic awareness and knowledge on environment and natural cycles among children. Furthermore, *La Fattoria* is also a reference point for adults and the entire community. Indeed, it also organizes informatics courses for elder people, courses of Italian language for foreigners, dancing lessons and many others.

La Fattoria is thus an example of *social* and *territorial innovation*, able to face the challenges related to *social inclusion* and *educational benefits*.

SolcoTalenti

SolcoTalenti is a social cooperative addressed to social inclusion and job placement of people with psychiatric disabilities.

Its main activities are carried out in San Pietro in Casale, a small town in the Metropolitan rural area of Bologna. Cooperative activities concern educational and training courses, services for school canteens, gardening for Public and private subjects, etc.Its main MA-related activity concern the safeguard of a traditional rural area of almost 4 hectares and a small farm called *Podere Zabina*, in which the cooperative is implementing a social

farming project. It aims to create favorable conditions for social and work inclusion of people with disabilities.

The social co-op *SolcoTalenti* is a typical example of *social* and *territorial innovation*, able to face the challenges of *social inclusion*, *educational, health and nutritional benefits* and *territorial integrity/land management*.

Tab. 2 – Innovation themes and challenges rating of Farmers/Producers/SME

CASES/ GOOD PRACTICES	*INNOVATION THEMES**						*CHALLENGES RATING***							
	1	*2*	*3*	*4*	*5*	*6*	*a*	*b*	*c*	*d*	*e*	*f*	*g*	*h*
Mercato Ritrovato			●		●		2	0	2	2	3	2	2	3
AppenBio	●		●		●		1	0	2	3	3	3	3	3
Local to You				●	●		3	3	1	3	3	2	2	2
Le Serre community gARTen			●		●		3	0	2	3	3	2	1	2
Spazio Battirame/EtaBetaBio	●		●	●			2	2	2	2	1	3	2	2
Circolo La Fattoria			●	●			1	3	3	0	0	2	1	2
Solco Talenti			●	●			2	3	3	1	0	3	1	2
TOT./AVERAGES	2	0	6	4	4	0	2	2	2	2	2	2	2	2

**1=Farmers' innovation; 2=Academic research; 3=Territorial innovation; 4=Social innovation; 5=Consumer innovation; 6=Transnational innovation.*
***a=job creation; b=social inclusion; c=educational, health and nutritional benefits; d=quality upgrading and value creation; e=organizational benefits; f=territorial integrity/ land management; g=environmental benefits; h=synergies.*

The situation for the *Farmers/Producers/SME* sector (*Tab. 2*) is quite differentiated and it considers mostly *territorial*, *social* and *consumer innovation*, equally facing, at a medium level, all the different kinds of challenges taken into account.

3.3. Consumers/Civil society

Arvaia

The case of *Arvaia* represents an example of the better integration of enterprise logic and consumer collaboration. *Arvaia* is indeed an agricultural cooperative of consumers established in 2013 in Bologna thanks to the support of the Municipality (which has freely granted the land).

Its main feature "*is the independent production of food directly by consumers, in compliance with the principles of food sovereignty, i.e. the right of people to define their own food systems*" (cit. President of *Arvaia*).

There are more than twenty founding members of *Arvaia*. They are mainly activists in local associations (often stemming from the same local

SPG network) who actually support the production costs through a solidarity-based system ("*richer people can acquire a larger share*"). Thus, production is planned and mainly directed to the consumption requirements of the members.

Briefly, in *Arvaia*, citizen-consumers are the founders of the farm and the main consumers of the produced crops (weekly distributed). Self-consumption and *coincidence of the role of both producers and consumers represents an immediate guarantee of food quality for the members* (cit. President of *Arvaia*).

Moreover, the cooperative organizes training courses on social and agro-ecological practices explicitly alternative to the agro-business model[3]. Moreover, common economic ventures involve members of *Arvaia*, "*furthering ideological reasons*" and reinforcing the original common values and trust relationship.

The engagement of members in the management of the cooperative traces a clear "boundary" of mutual identity among them, without affecting their networking ability. From a multifunctional perspective, *Arvaia* has expanded its own activities to different fields such as ecological communication, education and "agro-fitness" activities.

This experiment demonstrates that collaboration among consumers may establish real alternatives to agro-business. Indeed, *Arvaia* is becoming a benchmark and an inspiring good practice for several other consumers' groups and associations of the city (and beyond), representing "*a concrete and reproducible experiment of an agro-ecological autonomy system*" (cit. President of *Arvaia*).

Arvaia is thus one of the best examples of innovation, because it summarizes several dimensions of innovation: *farmers*, *territorial* and *consumer innovation*, facing several challenges too, such as *educational, health and nutritional benefits*, *quality upgrading and value creation*, *territorial integrity/land management*, *organizational* and *environmental benefits*, creating strong *synergies* on the local territory.

Campi aperti

Campi aperti is an association established in Bologna, which has managed and organized at least six farmers' markets in the urban area of Bologna, aiming to create a network of local farmers joined by a common "*political and agricultural path*" towards "food sovereignty". This path covers several social aspects and it is based on shared values of sustainability and solidarity.

3 For example, chemical herbicides are banned, weeds are eliminated by hand or integrated into the crop, while edible species are sown.

In particular it is characterized by a "*strong opposition to neoliberal global market principles*" (cit. person in charge of *Campi Aperti*). This is also the main difference between farmers' markets of *Campi aperti* and most of the traditional ones. Especially, one of its main political claim aims "*to provide support to very small farmers, those who practice agriculture more as a form of income support than a full-time job*" (person in charge of *Campi aperti*). Indeed, the National food safety law is considered too restrictive for household producers.

Thanks to the political mediation of *Campi aperti*, the issue of food safety in household production was recently taken into account by the Regional Parliament and included in the Regional legislation about the "*Solidarity Economy Networks*".

Furthermore, Public authorities are usually involved in the promotion of the markets, meanwhile, farmers have a large part in the management of them, often in cooperation with consumers. These latter are considered indeed "co-producers", a term which explicitly "*highlights the active role played by consumers in supporting producers*" (cit. person in charge of Campi Aperti). In this way consumers have "*the co-responsibility of a common development project of a local and more sustainable agro-economy* (cit. person in charge of *Campi Aperti*). The involvement of consumers finds its concretization also in a *Participatory Guarantee System* (PGS) in which consumers participate to the collective check and control of products and production methods.

Campi Aperti is an example of *social* and *consumer innovation*, as well as *territorial innovation* (because of their contribution to the development of farmers' market around Bologna). Thanks to its activities, the association can directly face several challenges, such as *social inclusion* and *educational* and *organizational benefit*. It has also strong *synergies* with other associations and also with *Public administration*.

Alchemilla GAS/Camilla

Alchemilla GAS is one of the main *Solidarity Purchasing Group* (GAS in Italian) of Bologna.

Similarly to the American *Community Supported Agriculture* (CSA) or the French *Association pour le Maintien d'une Agriculture Paysanne* (AMAP), also in the case of Italian GASes we are facing mostly "grass-root" collaborative food networks often based on values related to the environment protection, healthy life styles and, in general, on the need of a re-appropriation of control on food production and supply chain by local communities (*food sovereignty*). They are usually against agro-business and the neo-liberal logic of global food market (Grasseni, Forno, Signori 2013).

GASes are characterized by an active participation of the members, based on mutuality and solidarity principles between farmers and consumers. Members of GASes, indeed, usually support small or medium-size organic and sustainable farmers buying their products at a fair price, often helping them to plan production or absorbing exceeded production that risk wasting.

Alchemilla is one of these organization established in Bologna in 2013 by a group of young women as "*a mean in the hands of all the people that believe in the potentiality of the critical consumption*" (*alchemillagas.noblogs.org*).

In a close collaboration with *Campi aperti*, *Alchemilla GAS* has recently developed a *community shop* project called *Camilla*. This will be probably a cooperative completely managed by members who are also the main customers of the shop. This will offer to members an easy access to a wide range of sustainable food products coming from participated local short chains.

The most contribution to MA innovation of *Alchemilla GAS* thus concerns *consumer* and *social innovation*, responding to the challenges related to *organizational benefits*, *educational and health benefit*, *social inclusion*.

Humus network

Humus is the *social network for the Italian bio-agriculture*, established by several organic farms, cooperatives and associations – including the Regional department of AIAB (*Italian Association Organic Agriculture*) and the University of Bologna. Its main aim is "*to increase both the vitality and the credibility of Italian organic agriculture, highlighting its environmental, health and solidarity connotations*" (*www.retehumus.it*).

Especially, *Humus* refers to the principles of organic agriculture established by IFOAM (*International Federation of Organic Agriculture Movements*) in Adelaide (AUS) in 2005 and it is partner of the *Leading Organic Alliance* (LOA), the network of European organizations who hold national organic farming standards. Furthermore, *Humus* promote the values that animate the Italian solidarity economy and *Fair Trade* movement. The network has developed the "*Humus Network Charter of principles and best practices*", in order to relaunch – in a moment of great success of organic products - the full substance of organic agriculture and its value, especially the environmental, health and solidarity implications of organic agriculture and of its products. Doing so, the *Humus* network would be a sharing place of discussion and mutual collaboration among all the social actors involved: agricultural producers, processors, distributors and consumers.

The vision and mission of *Humus* network is in line with the vision and mission of the international organic movement (ideally recognize in the IF-

OAM organization) which is planning to relaunch organic beyond the current phase of mass market development, towards the "third phase" of organic development (the so-called "*organic 3.0*").

The commitment of *Humus* in organic farming thus include the increasing environmental sustainability of organic agriculture practices and their social dimension. For instance, fighting against criminality practices of exploiting in agriculture (e.g. the phenomenon of the so-called "caporalato"), but also protecting local values and identity, safeguarding "*forms of family and handcrafted work, as well as the traditional model of 'inclusive' agricultural company, that includes workers and consumers/co-producers, satisfying ethically all life and work needs*" (*www.retehumus.it*).

Humus is not an enterprise but just a network of economic and social actors, therefore it does not contribute directly to the promotion of employment, but rather to create the condition for a forward-looking competitive organic agriculture development, protecting, at the same time, the environment and the rural social fabric.

Therefore, the main innovation dimensions promoted by the *Humus* network are *farmers*, *territorial*, *social*, *transnational* and *consumer innovation* (this latter for the effort to involve consumers). While, the challenges that the specific innovations of *Humus* can help to face are mostly related to *organizational* and *environmental benefits*, *territorial integrity/land management*, *quality upgrading and value creation* and *social inclusion* (this latter mostly for the effort of the networks to contrast the exploitation of agriculture workers). Nevertheless, the direct relation of *Humus* actions with the Metropolitan area of Bologna is subordinated to the enlargement of network's subscribers of the territory.

Eco Association /Community Synergistic vegetable-garden

Eco Association was born in Bologna in 1999 with the main aims to promote ecologic culture and networking capacity of different actors throughout information and cultural events.

Eco Association is a member of AIAB and over the years it has created other two more distinctive branches in Lugo and Budrio, two small towns in the Metropolitan area of Bologna.

The Budrio branch has carried out important projects for the community. First of all, in 2009, the *Community Synergistic vegetable-garden* on a Municipal land, which produces vegetables and social life for the associated citizens. They can thus cultivate not just a series of small individual gardens but, rather a large collective area in a participatory manner, following the

prescriptions of Emilia Hazelip, initiator of the synergistic agriculture, as well as the inspiration and the indications of the natural agriculture principles of Masanobu Fukuoca.

The main aims of the initiative are thus the same collective participation of the community to the management and cultivation of a common vegetable-garden, and the education capacity of the project, in order to teach people different ways to produce and consume their own food together.

For these reasons, the main innovative dimensions involved are *farmers' innovation* (because of the synergistic approach) and *territorial innovation* (because of the alternative use of soil and the collective dimension of the practices). While the main challenges dimensions are related to *educational benefits*, *territorial integrity/land management*, *environmental benefits* and the development of *synergies*.

Regional Forum of Social Farming

The *Regional Forum of Social Farming* is the local side of the *National Forum of Social Farming*, which was born in 2011 in Florence during the *Terrafutura* festival.

The *National Forum* represents the coagulation of the several Italian experiences of social farming and it was the first promoter of the National law on social farming emanated by the Italian Parliament in 2015.

The *Regional Forum*, for its part, substantially coordinates a network which gathers together ten social cooperatives and farms in the Emilia-Romagna Region (included four important social co-op of Bologna).

Its main aim is the management of the common activities of the network, supporting the Regional Parliament in the implementation of the National law at local level.

The relevance of the *Regional Forum of Social Farming* is related to *social* and *territorial innovation*, directly contributing to *organizational benefits, value creation* and *synergies* while, indirectly, to *educational benefit* and *social inclusion*.

With reference to the cases and good practices concerning *Consumers/ Civil society*, *Tab. 3* highlights how the most recurring innovation themes regard mostly *territorial*, *social* and *consumer innovation*, while they equally face all the challenges, except for the ability to directly create *job opportunities*, even if they strongly support the producers in creating new business opportunities for them.

Tab. 3 – Innovation themes and challenges rating of Consumers/Civil society

CASES/ GOOD PRACTICES	*INNOVATION THEMES*[*]						*CHALLENGES RATING*[**]							
	1	*2*	*3*	*4*	*5*	*6*	*a*	*b*	*c*	*d*	*e*	*f*	*g*	*h*
Arvaia	●		●		●		1	0	3	3	3	3	3	2
Campi Aperti			●	●	●		1	2	2	2	3	2	2	2
Alchemilla GAS/Camilla shop				●	●		0	2	1	1	2	1	2	2
Humus network	●		●	●	●	●	1	2	2	2	2	2	2	3
Eco ass./Community synergistic vegetable-garden	●		●				0	1	3	0	1	2	2	1
Regional Forum of Social Farming			●	●			0	2	2	2	3	1	1	3
TOT./AVERAGES	3	0	5	4	4	1	1	2	2	2	2	2	2	2

[*]*1=Farmers' innovation; 2=Academic research; 3=Territorial innovation; 4=Social innovation; 5=Consumer innovation; 6=Transnational innovation.*
[**]*a=job creation; b=social inclusion; c=educational, health and nutritional benefits; d=quality upgrading and value creation; e=organizational benefits; f=territorial integrity/ land management; g=environmental benefits; h=synergies.*

3.4. Public local/Metropolitan authorities

Villa Ghigi Foundation/Park

The *Villa Ghigi Foundation* was established in 2001 by the Municipality, the Province and the University of Bologna, with the contribution of the Emilia-Romagna Region. The headquarter of the *Foundation* is an ancient rural building inside *Villa Ghigi Park*. This latter is a public green space in the first belt hills of Bologna. The Villa and its Park are one of the main references for environmental education in the regional panorama and an important interlocutor of Public administrations for the natural, environmental and landscape aspects of the territory, with numerous contributions in the field of dissemination, analysis and environmental planning.

The *Villa Ghigi Park* covers about 30 hectares and it is a perfect opportunity to promote natural education in schools. Educational and recreational are the main functions of the park, along with the preservation of the traditional environment and landscape. The presence of an educational vegetable-garden for school children (called "*Orto del Becco*") has become also an opportunity to promote the vegetable-garden therapy, an issue on which the *Villa Ghigi Foundation* has launched a series of collaborations and experiments along with health facilities, social cooperatives, and associations. The activity of *Villa Ghigi Foundation* with its *Park* is mostly related to *territorial innovation*,

protecting *territorial integrity*, with *educational* functions and a great capacity to develop *synergies*.

City-country park

The *City-country park* is a project carried out and approved in 2010 by the Metropolitan City of Bologna with the main aims to enhance the landscape network of the closest Southern-West countryside of the urban area, as well as to enhance the integration of the different features of an high ecological and environmental value areas located between the Reno and Samoggia rivers.

Especially, the explicit objectives contained in the approved document are:

1) *the preservation of the traditional agricultural vocation of the territory*;
2) *the organization and enhancement of the recreational tourism of the area*;
3) *the definition of a network of cycle and pedestrian routes within the area*;
4) *the development of new projects integrated with, and respectful of, the landscape features of the area*;
5) *the strengthening of the local ecological network*.

The project has been developed in coherence with landscape and environmental strategic planning promoted by the local Public authorities and it represents the common reference to address and implement future transformations of peri-urban areas of the Metropolitan City of Bologna.

The recent *Metropolitan Strategic Plan* defined by the Metropolitan City of Bologna, indeed, explicitly recognize the development of the MA as a strategic asset to integrate urban and rural areas in a common dimension of sustainable development. Therefore, the *City-country park* is a perfect benchmark towards this direction.

Promoting the multi-functionality of agriculture the *City-country park* project incentives *farmers' innovation* and indirectly also the economic development of the area with the possibility to increase *job opportunity*. However, its main goal concerns mostly *territorial innovation*, contributing to *territorial integrity* and *value creation*, promoting *environmental benefit* and increasing *synergies* among farmers and urban consumers.

Salus W Space

Salus W Space is a project of urban regeneration carried on by the Municipality of Bologna thanks to a European call for proposal concerning Urban Innovation Action (U.I.A. project) and it is co-financed by the European Regional and Development Fund. The project consists in the renewal of

the areas and building of the ex-clinic "*Villa Salus*", which have been in a state of abandonment and decay for years. The project involves a zero consumption of the territory, using the regeneration of the properties as an experimental site that aims to boost the local economy, to create occupation for disadvantaged groups and to train them professionally to manage the centre and to create entrepreneurial activities for the benefit of the local area.

The "W" of the name has a triple meaning: "*Wellbeing*", "*Welfare*" and "*Welcome*". The latter mostly concerns the definition of "*an innovative and replicable model of reception and integration for refugees, able to be used also in other European contexts*" (*www.saluspace.eu*)

The entire process presumes participation of the citizens to the decision-making process and, especially for what concern the MA matters, all the involved actors will co-design three different kind of vegetables-gardens, each one with different functions:

- a *community garden*: to cultivate together;
- a *training garden*: to learn and experiment cultivation techniques, replicable in different contexts (taking also into consideration the refugees home countries);
- an *inclusive garden*: to promote integration and welcoming practices.

The creation of gardens will directly involve the inhabitants of *Salus W Space* in an experiential training course, potentially getting them able to manage and care for green spaces, and to start a business on their own. Cultivation of gardens will also involve the citizens of the district, promoting socialization and exchange of different practices.

Tab. 4 – Innovation themes and challenges rating of Public local/Metropolitan

CASES/ GOOD PRACTICES	*INNOVATION THEMES**						*CHALLENGES RATING***							
	1	*2*	*3*	*4*	*5*	*6*	*a*	*b*	*c*	*d*	*e*	*f*	*g*	*h*
Villa Ghigi Foundation/Park			●				0	0	3	1	0	3	2	2
City-country park	●		●				1	0	2	2	2	3	2	3
Salus W Space			●	●		●	0	3	2	0	0	3	1	2
TOT./AVERAGE	1	0	3	1	0	1	0	1	2	1	1	3	2	3

**1=Farmers' innovation; 2=Academic research; 3=Territorial innovation; 4=Social innovation; 5=Consumer innovation; 6=Transnational innovation.*
***a=job creation; b=social inclusion; c=educational, health and nutritional benefits; d=quality upgrading and value creation; e=organizational benefits; f=territorial integrity/ land management; g=environmental benefits; h=synergies.*

The *Salus W Space* project is a clear example of *social*, *territorial* and *transnational innovation*. This latter is due to its European dimension and the contri-

bution to a replicable model of welcoming and integration of immigrants and refugees. The project thus contributes mostly to *territorial integrity* and *social inclusion*, with important added *environmental* and *educational benefit*. In the case of *Public local/Metropolitan authorities*, the *Tab. 4* show a clear prevalence of the *territorial innovation* theme, with a consequent prevailing of the challenges related with *territorial integrity* and an high ability to create *synergies*.

4. The Innovation system of the Metropolitan area of Bologna

Tab. 5 – Summary table

	CASES/GOOD PRACTICES	*INNOVATION THEMES*[*]						*CHALLENGES RATING*[**]							
		1	*2*	*3*	*4*	*5*	*6*	*a*	*b*	*c*	*d*	*e*	*f*	*g*	*h*
Academic/ research	*ResCUE-AB*	●	●	●			●	0	2	3	3	3	3	3	3
	CesCoCom		●		●	●		0	2	3	0	0	0	0	3
	Future Food Institute					●	●	1	0	3	3	3	0	1	3
	World Food Research and Innovation Forum		●	●			●	0	0	1	1	0	0	2	2
Farmers/ producers	*Mercato Ritrovato*			●		●		2	0	2	2	3	1	1	3
	AppenBio	●		●		●		1	0	2	3	3	3	3	3
	Local to You				●	●		3	3	1	3	3	2	2	2
	Le Serre community gARTen			●		●		3	0	2	3	3	2	1	2
	Spazio Battirame/EtaBetaBio	●		●	●			2	2	2	2	1	3	2	2
	Circolo La Fattoria			●	●			1	3	3	0	0	1	1	2
	Solco Talenti			●	●			2	3	3	1	0	3	1	2
Consumers/ Civil society	*Arvaia*	●		●		●		1	0	3	3	3	3	3	2
	Campi Aperti			●	●	●		1	2	2	2	3	1	1	2
	Alchemilla GAS/Camilla community shop				●	●		0	2	1	1	2	0	0	2
	Humus network	●		●	●	●	●	1	2	2	2	2	2	2	3
	Eco Ass./Community synergistic vegetable-garden	●		●				0	1	3	0	0	2	2	1
	Regional Forum of Social Farming			●	●			0	2	2	2	3	0	0	3
Public auth.es	*Villa Ghigi Foundation/ Park*			●				0	0	3	1	0	3	2	2
	City-country park	●		●				1	0	2	2	2	3	2	3
	Salus W Space			●	●		●	0	3	2	0	0	3	1	2
TOT./AVERAGES		7	3	16	10	10	5	1	1	2	2	2	2	2	2

[*] *1=Farmers' innovation; 2=Academic research; 3=Territorial innovation; 4=Social innovation; 5=Consumer innovation; 6=Transnational innovation.*

[**] *a=job creation; b=social inclusion; c=educational, health and nutritional benefits; d=quality upgrading and value creation; e=organizational benefits; f=territorial integrity/land management; g=environmental benefits; h=synergies.*

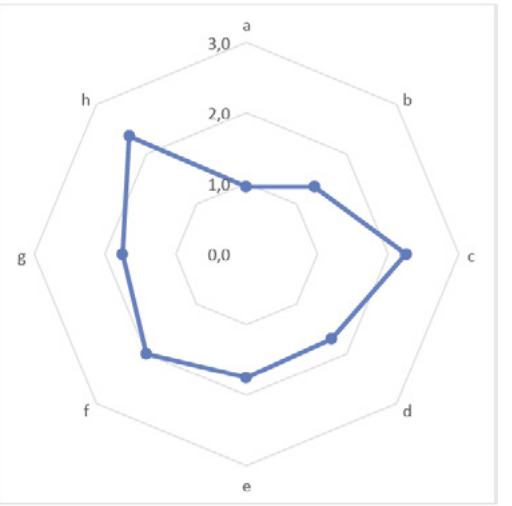
In this paragraph a summary analysis of the partial results already reported in the previous part of the chapter is provided, in order to outline the *innovation system* of the MA in the Metropolitan area of Bologna.

Using the same method, in the *Tab. 5* all the selected cases and good practices are thus summarized. For each one the main innovation themes and the respective challenges rating are indicated. The most recurring innovation themes and the average value of each challenge are finally reported at the bottom line of the table.

These indicators have a general informational value, suggesting which are the main innovation themes and to which challenges the most innovative practices are mostly able to respond. These information thus help to delineate the "*direction*" and the "*depth*" of the MA-related innovation in the Metropolitan area of Bologna, and they may be considered as *proxies* of the "structure" of its *innovation system*.

Therefore, for what concern the "direction" of the innovation, the results suggest it seems quite unbalanced towards *territorial* and *consumer innovation* themes. While, concerning challenges, as the following chart illustrates (*Fig. 3*), all the challenges are equally distributed, given us back an average *medium* score. Except for what concern *job creation* (a) and *social inclusion* (b).

*Fig. 3 – A representation of the challenges rating distribution**



**a=job creation; b=social inclusion; c=educational, health and nutritional benefits; d=quality upgrading and value creation; e=organizational benefits; f=territorial integrity/ land management; g=environmental benefits; h=synergies.*

5. Conclusions

In the Metropolitan area of Bologna, agriculture is widely considered as a strategic asset for the development of the territory, from both perspectives: landscape and environmental management, as well as economic development.

Most of the selected stakeholders are directly engaged in the promotion of the small-scale and sustainable farmers of the Metropolitan area, contributing in their economic sustainability and, consequently, the sustainability of the MA in the area. However, despite a strong capacity to *co-innovate* by the different "*innovation agents*" (the value concerning *synergies* is indeed the most relevant) and despite the presence of important *technological* and *organizational innovation* (such as, for instance, *Local-to-You*), the whole *innovation system* seems not able to up-grade the MA beyond a small scale yet.

This is probably because innovation in MA is still aimed mostly to the *protection* and *conservation* of the territory (and this is also the assigned meaning to *territorial innovation*), instead of focusing the efforts on a *promotion* of the territory able to really scaling-up the small scale of the sustainable MA agriculture practices.

However, there is a clear awareness about the key role of demand, especially about the new trends in urban consumption (e.g. healthy and sustainable eating). From the *consumer innovation* side, indeed there is a peculiar attention for the involvement of consumer (e.g. the "co-producer" concept) also in social aspects related to food (e.g. "caporalato" or the inclusion of vulnerable people). Even if, despite the cross-cutting relevance attributed to the theme of *social innovation*, this seems mostly unbalanced towards education and promotion of civic engagement and community participation, rather than turning into concrete actions of empowerment and inclusion for vulnerable people. And this is the reason for an average low rating of this challenge (except for some relevant cases, such as, for instance, *Salus W Space*, *Local-to-You* and *Solco Talenti*).

Finally, is important to highlight how this analysis represents just a sort of "frozen picture" of the evolving scenario of MA innovation, this latter an innovative concept itself. Despite good premises, is thus quite normal to face a not completely mature landscape yet.

References

Arnkil R., Järvensivu A., Koski P. and Piirainen T. (2010). Exploring Quadruple Helix Outlining user-oriented innovation models. *Final Report on Quadruple Helix Research for the CLIQ project*. Available at: *https://tampub.uta.fi/bitstream/handle/10024/65758/978-951-44-8209-0.pdf?sequence=1&isAllowed=y* (27/04/2018).

Bessant J., Rush H. (2000). Innovation agents and technology transfer. In: Boden M., Miles I. (eds.) (2000). *Services and the Knowledge-based Economy*, London, NY: Routledge.

Brunori G., Barjolle D., Dockes A.C., Helmle S., Ingram J., Klerkx L., Moschitz H, Nemes G, Tisenkopfs T. (2013). CAP reform and innovation: the role of learning and innovation networks. *EuroChoices*, 12(2): 27-33.

Di Iacovo F., Fonte M., Galasso A. (2014). Agricoltura civica e filiera corta. Nuove pratiche d'impresa e relazioni tra produttori e consumatori, *Working paper*, Luglio, Gruppo 2013, n. 22 (Available at: *http://www.gruppo2013.it/working-paper/Documents/WORKING%20PAPER%2022_luglio%202014.pdf* (26/04/2018).

Dogliotti S., García M.C., Peluffo S., Dieste J.P., Pedemonte A.J., Bacigalupe G.F., Scarlato M., Alliaume F., Alvarez J., Chiappe M., Rossing, W.A.H. (2014). Co-innovation of family farm systems: A systems approach to sustainable agriculture. *Agricultural Systems*, 126: 76-86.

Esparcia J. (2014). Innovation and networks in rural areas. An analysis from European innovative projects. *Journal of Rural Studies*, 34: 1-14.

Esposti R. (2012). Knowledge, Technology and Innovations for a Bio-based Economy: Lesson from the Past, Challenges for the Future. *Bio-based and Applied Economics*, 1(3): 231-268.

Esposti R. (2015). Eppur si muove: il paradosso dell'innovazione e della produttività agricola. *Agrimarcheuropa*, 6. Available at: *http://agrimarcheuropa.univpm.it/it/content/eppur-si-muove-il-paradosso-dell%E2%80%99innovazione-e-della-produttivit%C3%A0-agricola* (04/04/2018).

Fearne A., María García Álvarez-Coque J., López-García Usach Mercedes T., García S. (2013). Innovative firms and the urban/rural divide: the case of agro-food system. *Management Decision*, 51(6): 1293-1310.

Gandy M. (2004). Rethinking urban metabolism: water, space and the modern city. *City*, 8(3), 363-379.

Golden S. (2013). *Urban Agriculture Impacts: Social, Health and Economic: a Literature Review*. ANR Report. Available at: *http://asi.ucdavis.edu/programs/sarep/publications/food-and-society/ualitreview-2013.pdf* (27/04/2018).

Grasseni C., Forno F., Signori S. (2013). Beyond Alternative Food Networks: An Agenda for Comparative Analysis of Italy's Solidarity Purchase Groups (GAS) and Districts of Solidarity Economy (DES) vis-à-vis US Community Economies. *Draft paper prepared for the UNRISD Conference 'Potential and Limits of Social and Solidarity Economy'*. 6–8 May 2013. Geneva (Switzerland). (Available at: *https://goo.gl/FZdE3E*).

Hamilton A.J., Burry K., Mok H.F., Barker F., Grove J.R., Williamson V.G. (2013). Give peas a chance? Urban agriculture in developing countries. A review. *Agronomy for Sustainable Development*. 34(1): 45-73.

Jacobsson S., Bergek A. (2011). Innovation system analyses and sustainability transitions: Contributions and suggestions for research. *Environmental Innovation and Societal Transitions*, 1(1): 41-57.

Klerkx L., Materia V.C. (2015). Co-creazione di innovazione per un'agricoltura sostenibile: recenti esperienze e implicazioni per le politiche europee. *Agriregionieuropa*, 11(42). Available at: *https://agriregionieuropa.univpm.it/it/content/article/31/42/co-creazione-di-innovazione-unagricoltura-sostenibile-recenti-esperienze-e* (29/03/2018).

Klerkx L.W.A., Leeuwis C. (2009). The emergence and embedding of innovation brokers at different innovation system levels: Insights from the Dutch agricultural sector. *Technological Forecasting and Social Change*, 76: 849-860.

Klerkx L., Aarts N., Leeuwis C. (2010). Adaptive management in agricultural innovation systems: The interactions between innovation networks and their environment. *Agricultural systems*, 103(6): 390-400.

Lyson, T. A. (2012). *Civic agriculture: Reconnecting farm, food, and community*. UPNE.

Mok H.F., Williamson V.G., Grove J.R., Burry K., Barker S.F., Hamilton A.J. (2014). Strawberry fields forever? Urban agriculture in developed countries: a review. *Agronomy for sustainable development*, *34*(1), 21-43.

Moschitz H., Roep D., Brunori G., Tisenkopfs T. (2015) Learning and Innovation Networks for Sustainable Agriculture: Processes of Co-evolution, Joint Reflection and Facilitation. *The Journal of Agricultural Education and Extension*, 21(1): 1-11. DOI: 10.1080/1389224X.2014.991111.

Moulaert F., Hamdouch A. (2006). New views of innovation systems: agents, rationales, networks and spatial scales in the knowledge infrastructure. *Innovation: The European journal of social science research*, 19(1): 11-24.

Renting H., Rossing W.A.H., Groot J.C.J., Van der Ploeg J.D., Laurent C., Perraud D., Stobbelaar D.J., Van Ittersum, M. K. (2009). Exploring multifunctional agriculture. A review of conceptual approaches and prospects for an integrative transitional framework. *Journal of environmental management*, 90: 112-123.

Wascher D.M., Agricola H., Breman B., Anderson B.J. (2007). Innovation Characteristics for Sustainable Metropolitan Agriculture. *SUSMETRO Phase 1 Final Report*, Wageningen University and TransForum. Available at: *http://edepot.wur.nl/161515* (26/04/2018).

World Bank (2006). *Enhancing Agricultural Innovation: How to Go Beyond the Strengthening of Research Systems*, Washington D.C. Available online: *https://goo.gl/YASj6M* (26/04/2018).

Yawson R.M. (2009). The Ecological System of Innovation: A New Architectural Framework for a Functional Evidence-Based Platform for Science and Innovation Policy. *The Future of Innovation Proceedings of the XXIV ISPIM 2009 Conference*. Vienna, Austria, June 21–24, 2009.

Yin K. R. (2009). *Case Study Research. Design and Methods*. London-New Dheli Sage.

Zeeuw (de) H., Drechsel P. (Eds.) (2015). *Cities and agriculture: Developing resilient urban food systems*. Routledge.

Chapter 3

Urban agriculture and social innovation. The case of the "Salus W Space" project in the city of Bologna

Giulia Allegrini

1. Introduction. Social innovation, territorial and people centered development

Social innovation has come to prominence in the last 15 years in many fields. As Moulaert points out, «the return of social innovation, both in scientific literature and political practice, is demonstrated by the use of the concept as an alternative to the logic of the market, and to the generalized privatization movement that affects most systems of economic allocation; it is expressed in terms of solidarity and reciprocity» (MacCallum, Moulaert, Hillier, Vicari Haddock 2009, p.14).

The debate and the literature on social innovation in contemporary social sciences crosses many fields of study.

In this contribution we take an approach of analysis that considers social innovation as a process which is not limited to technological and organizational innovation, instead it is viewed as a process that encompasses a more comprehensive societal transformation of human relations and practices (Moulaert, Nussbaumer 2008).

In this sense social innovation «means fostering inclusion and wellbeing through improving social relation and empowerment process» (Moulaert *et al.* 2013, p. 16).

Furthermore, social innovation is framed as interconnected with a model of territorial development based on two key dimensions: the "local" and the "integration" dimension, that together define an Integrated Area Development approach (Moulaert *et al*. 2005, p.1974):

> Integrated Area Development was defined as an alternative to sectoral, ahistorical and top-down strategies for local development—especially neighbourhood development. For local development to be successful, various domains of intervention (economy, housing, education and training, local democracy, culture, etc.) had to be integrated; but the agencies and the spatial scales of intervention needed to be articulated in territori-

al social networks, often consolidated in territorial pacts or agreements. The integrating dynamics had to come from 'social innovation' in at least two senses: social innovation through the satisfaction of unsatisfied or alienated human needs; and, innovation in the social relations between individuals and groups in neighborhoods and the wider territories embedding them.

Satisfying unmeet needs can be pursued by strategies of neighborhood development, through innovation in governance relations in the neighborhood and the wider communities. As Lowendes e Sullivan (2007) point out «neighborhoods are the focus of considerable policy attention across Europe, identified as appropriate sites for innovation in both governance and service design» (p. 53).

Innovation in governance coincides with a «governance beyond the state» (Rosol 2013 p.549), along with the transition of government to governance, that brings «to an increasing importance of non-state actors and to a transformation of roles, responsibilities and institutional configurations of the (local) state and citizens in urban spatial politics».

Complementary to this tendency is «the *rising importance of civic engagement* and a new focus on territorially defined local communities as a relevant actor in urban governance» (*ibid*).

This process of "localization" can be read in connection with the territorial planning and urban regeneration approach which, from the '90s, started to be characterized by a close attention to the social dimension, listening to the inhabitants and enhancing their knowledges and capabilities.

More in general, this approach identifies the "local" as the *scale* of intervention and the neighborhood not merely as a "administrative level" or a "terminal" of an intervention, but as *spatial and territorial scale* where economic, social, political dynamics are at stake, in terms of «modification of relationship between politics, market and society» (D'Albergo, 2014 p. 248)[1], and thus becoming a place for citizens' participation and experimentation of new forms of social cohesion and community participation.

In this frame social innovation is *contingent and territorially dependent.* It is «locally or regionally specific, or/and spatially negotiated between agents and institutions that have a strong territorial affiliation», and implies an institutional and cultural change.

Moreover, this idea of development, in the frame of social innovation, is based on a multidimensional idea of wellbeing, as well as the development and support of capabilities (Sen 2000; Nusambuam 2012; Appadurai 2011)

1 The concept of scale overcomes the more neutral concept of «local level», concerning the relation between territory, interests and representation of interests (Moini, 2012).

and empowerment, on participation in the public sphere as a process to combine needs, rights and capabilities together.

The basic assumption of this idea of development is therefore that the quality of urban life is based «on social cohesion and satisfaction of basic human needs such as work, house, health, participation in the public sphere, recognition of cultural diversities, and on economical and social mobilization of resources to satisfy those needs and the creation of intermediate institution for participation and democratic management» (Vicari Haddock, Moulaert 2009, p. 58).

The focus on empowerment matches with a "people centered development" (PCD) approach[2] that can be defined as «an attempt to realize many of the basic features of social innovation, by changing the oppressive social relations that are barriers to social injustice and human dignity trough participatory process» (Hulgard, Shajahan 2013, p. 93).

PCD is therefore connected to social innovation trough «its emphasis on empowerment as intrinsic to the development process» (*ivi*, p. 95).

To summarize, we can finally say that social innovation, through the lens of territorial development and human centered approach, is a process which is able to combine the following main dimensions (MacCallum, Moulaert, Hillier, Vicari Haddock 2009; Moulaert *et al.* 2013): the satisfaction of alienated human needs through the transformation of social relations and empowerment, the creation of new governance structures and organizations, the transformation of social relations in space:

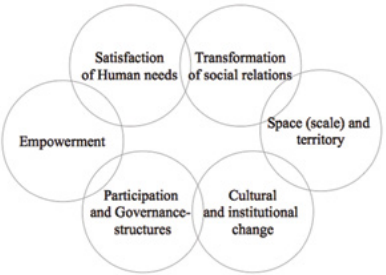
> […] transformations which 'improve' the governance systems that guide and regulate the allocation of goods and services meant to satisfy those needs, and which establish new governance structures and organizations (discussion fora, political decision-making systems, firms, interfaces, allocation systems, and so on). Territorially speaking, this means that social innovation involves, among others, the transformation of social relations in space, the reproduction of place-bound and spatially exchanged identities and culture, and the establishment of place-based and scale-related governance structures (MacCallum, Moulaert, Hillier, Vicari Haddock 2009, p.12).

All of these dimensions are interconnected and they influence each other, as showed in the following image[3].

2 PCD is a framework developed by the Tata Institute of Social Sciences in Mumbai.

3 Author elaboration, based on MacCallum, Moulaert, Hillier, Vicari Haddock 2009; Moulaert et al 2013.

Fig. 1 – Social innovation interconnected dimensions



2. Urban agriculture and community gardens

In this part of our contribution we point out some coordinates to frame our work and introduce UA as a field of social innovation, without the ambition of a detailed description of the different ages of development of UA, or doing an accurate literature review of this field of study.

In order to identify some characteristics of UA, we can firstly mention two definitions frequently used in the debate and in the literature. The first is elaborated by Smit (2001) in the frame of the United Nations Development Program (UNDP) as a contribution to the Habitat II Conference of UN:

> an industry that produces, processes, and markets food, fuel, and other outputs, largely in response to the daily demand of consumers within a town, city, or metropolis, on many types of privately and publicly held land and water bodies found throughout intra-urban and peri-urban areas. Typically urban agriculture applies intensive production methods, frequently using and reusing natural resources and urban wastes, to yield a diverse array of land-, water-, and air-based fauna and flora, contributing to the food security, health, livelihood, and environment of the individual, household, and community (Smit *et al.*, 2001, p. 1).

The second one is elaborated by Mougeot (2000):

> Urban agriculture is located within (intra-urban) or on the fringe (peri-urban) of a town, a city or a metropolis, and grows or raises, processes and distributes a diversity of food and non-food products, (re-)uses largely human and material resources, products and services found in and around that urban area, and in turn supplies human and material resources, products and services largely to that urban area (Mougeot, 2000, p. 4)

Considering both the definitions we can say that UA is defined by the *actors* involved, the type of *activities*, the *aims and destinations*, the type of *products*, the *location*, and is mainly based on *local resources*.

In literature there are three others key aspects used to frame contemporary UA. The first is the *scale and the market/non market orientation*. The most relevant attempt of classification of the various forms of UA in Europe is the model proposed by the COST ACTION Urban Agriculture Europe[4] (Lohrberg et al., 2016), that makes a distinction essentially between two kinds of UA practices:

a) Urban food gardening: as a "domestic" and non professional kind of practice. This category usually includes, non market oriented practices, and self- consumption and generally social, educational, or therapeutic practices. Simon-Rojo *et al.* (2016) propose a distinction among these practices between an individual or collective orientation in the production:

Fig. 2 – Urban food gardening practices

b) Urban farming: professional and market oriented practices, in which Simon-Rojo et al. (2016) include practices with different functions, making a distinction between two main groups of practices. One implies the provision of on-site services, the other one provides benefits through material or environmental flows, connected to the urban metabolism and to the urban environment.

Fig. 3 – Urban farming

4 A networking project funded by the European Cooperation for Science and Technology (COST).

The second aspect concerns the *spatial dimension* of UA as the definition of Mougeot (2000) has anticipated. The author clearly describes this aspect in this way:

> The lead feature of UA which distinguishes it from RA is its integration into the urban economic and ecological system [...] It is not its urban location which distinguishes UA from RA but the fact that it is embedded in AND interacting with the urban eco-system (Richter et al., 1995: 6). Integration into the urban system has been crucial to the persistence of UA, more so to its technological and economic influence over RA throughout history (p. 10).

The integration of UA in urban eco- system is also underlined by Vejre et al (2016), in the frame of the research already mentioned of the COST ACTION group:

> all actors, communities, activities, places, and economies that focus on biological production in a spatial context, which – according to local standards – is categorized as "urban". Urban agriculture takes place in intra – and periurban areas, and one of its key characteristics is that it is more deeply integrated in the urban system compared to other agriculture. Urban Agriculture is structurally embedded in the urban fabric; it is integrated into social and cultural life, the economics, and the metabolism of the city (p. 21).

Finally, the third aspect that we want to mention here is the progressive transition from a mainly productive function of horticulture and allotment gardens in the city to *a multifunctional role,* that involves ecological-environmental, recreational, educational, social and therapeutic functions. In this shift we can also define UA as e *field of civic engagement and social inclusion* (Bartoletti 2013), particularly for the first category of "urban food gardening".

This transition can be seen by looking at the changing role of UA throughout history. The most significant change in the UA occurred with the industrial revolution of the 19th century, with migration from rural territories to the urban areas. The so called "migrant gardens" or "poor gardens" were used in this period as an answer to the dramatic socio-economic conditions of worker and their families, often in situation of malnutrition. The gardens were created in lands belonging to local administrations, factories or religious communities to cultivate vegetables and to breed small animals (Tei e Gianquinto, 2010). Examples are the peace of land for horticulture assigned by the Allotment Act

in 1922 in United Kingdom, as well *jardins ouvriers* and *jardins familiaux* in France, or the *"villaggi operai"* in Italy promoted by industrial entrepreneurs.

The availability of vegetables and farmyard livestock from those gardens became even more important, during the two wars, in the first half of XX century, when towns were isolated from the countryside and food deficiency occurred.

After the II World War, with the reconstruction of the cities, the growing of the occupation, the changing lifestyle, determined an apparent decreasing of urban gardens. In reality, gardens started to appear increasingly in peripheries where farmers, shepherds, become workers in the new big factories, using the garden to integrate a law salary. During the '50s and '60s this phenomenon increased in the peri-urban areas and even more during the '60s and '70s in north Italy, due to the increasing expansion of industries and urban drift, with a massive migration from the south to the north. Along with an agro-productive function the garden started to assume a role in maintaining an identity, values and costumes, in the migration process, from the south to the north and from the work in farms to the work in industries, starting to be seen as a tool for inclusion of marginalized groups.

As Bartoletti (2013) argues these kinds of gardens with social function constitute a tentative of social inclusion, but with a paternalistic approach to social problems. In this perspective a new era for urban horticulture is represented by *community gardens,* which originated in '70s in US as a way to re- appropriate of space for life, for sociality, for expression, against the abandonment by administration or housing market.

The author recalls another more recent experience of community garden: the *jardins partagés* in Paris, assigned by the public administration to citizens organized in association. They are public and collective oriented and they are meant to be a way to promote sociability as well environmental taking care in urban spaces in transition. The community gardens in New York as well the *jardins partagés* in Paris mark a shift from an individual to a collective practice of UA, which starts in this way to assume a multiplicity of new meanings. However, the first is a kind of political and grassroots and collective action against social and environmental decease, the second is an institutionalization of possible spontaneous and bottom up practices (Bartoletti 2013). In Italy the experiences of UA in terms of urban gardens range from traditional and institutionalized practices of urban horticulture to grassroots experiences, still not so diffused. Considering the context of the city of Bologna we can briefly recall some steps of the evolution of these practices.

During the '80s the municipality started to assign the management of municipal gardens to a specific social group- elderly people- as a way to

foster their socialization and provide an active role in urban life. From 2009 the Municipality started to include residents who are over 18 years old.

The municipal gardens are given to individuals and not to groups. However, there is a coordination (ANCeSCAO)[5] of the several gardens and sometimes they organize social animation activities.

There are also other kind of urban garden practices, promoted by the municipality orientated to community building and to foster social relations, often in peripheral area of the city[6] and other grass roots experiences[7].

A new possibility of encounter between top down and bottom up practices, was opened in 2014 by the municipality of bologna through a Regulation on collaboration between citizens and the city for the care and regeneration of urban commons[8] that foresees the possibility of a collective and community management of public spaces with the signing of a pact of collaboration, and in the name of a collective and general interest. The regulation is an institutional innovation that can positively influence new practices in the field of UA.

Finally, all of these practices of contemporary UA can be framed in what Ingersoll (2012) defines as a "coming back to lands" to compensate social and environmental problems created by the industrialization, and not really motivated by the necessity of increasing food availability. Instead, the renascence of UA is connected to «social aims, such as recreation, health, education and the improvement of urban environment» (p.105).

The author defines also the UA as a way to contrast the process of urban sprawl and to improve urban environment:

> One improvement that would be relatively easy to implement and could quality with important social ramifications is the insertion of agriculture into urban situations. Until a hundred years ago, the medium-size cities of Europe, cities of fewer than a hundred thousand inhabitants, maintained a clear visual order of built fabric and agricultural landscape. The equilibrium of medieval nucleus and cultivated fields was essential to the basic figure and ground reading of the cityscape [...] The productive

5 At the website http://www.ancescao-bologna.it/ is possible to have an overview of the history and numbers as well of activities connected to the municipal gardens.

6 Among many, an example is given by a rooftop urban garden in social housing- The "Green Housing" project. The project has been promoted by the Municipality of Bologna and ACER, the institution responsible for the maintenance, restoration and qualification of lodging for public housings in Emilia-Romagna, with the involvement of the University of Bologna and the association BiodiverCity.

7 An example is "RappOrto", promoted by the collective "Trame Urbane. For an overview of urban and community gardens practices see http://www.gramignamap.it/. For a specific analysis of some practices in the city of Bologna Gasperi et al 2016.

8 http://comunita.comune.bologna.it/sites/comunita/files/allegati_blog/bolognaregulation.pdf.

landscape was isometric with the walled city. Today, more than ever, the agricultural terrain at the edge of cities has been compromised and put at risk. Suburbs have literally eaten the orchards. Land has more value for settlement than for food production.

If the return to urban agriculture cannot be "the" solution of a complex kind of environmental crisis, on the other side the UA can be a field for practicing the participation of citizens in terms of an "agri- civism", ables to promote not only an "ecological consciousness" but also a taking care of civic relations:

> The insistence on urban agriculture can be given the categorical name "agri-civism." The term derives from the practice of agri-tourism, introduced in the 1980s in the farming lands of Italy, where hospitality functions helped to support the economy of working farms and thus to conserve the agricultural landscape. The urban version, which would involve the participation of self-motivated urban farmers and gardeners, would have a different social meaning, tied to the conservation of civic relationships. The so-called green spaces in non-central districts of cities are noman's-lands, and there is a palpable feeling of danger. The presence of urban farmers would give green spaces a better sense of surveillance and guarantee the presence of citizens who have a proprietary tie to the land. Agri-civism would not necessarily be aimed at occasional visitors or tourists, but tied to the constant civic need for education, recreation, and the maintenance of greenery[...] Agri-civism would be an analogous attempt to cross agricultural activities with urban life» (Ingersoll, 2006 p.155- 156).

This excursus of key concepts of UA, with a particular attention to the social and community dimension of urban gardening, reveals some elements of these practices, which are also constitutive of social innovation in an integrated territorial and human centered approach: the role of spatial dimension, the transformation of civic and social relations, as well the multidimensional role that UA can play in urban life, and finally the UA as a field of participation and possible innovation in the governance. We now turn to look at these dimensions in the "Salus Space" project.

3. The "Salus space" project in the city of Bologna

In this part of the contribution we propose a reading of UA in the frame of social innovation and territorial development, through the presentation and

analysis of the project "S.A.L.U.S. 'W' Space - "Villa SALUS as a new *Sustainable Accessible Livable Usable Social* space for intercultural Wellbeing, Welfare and Welcoming in the metropolitan City of Bologna". The project is coordinated by the Municipality of Bologna (Institution for Social and Community Inclusion Don Paolo Serra Zanetti, International Relations and Projects Office, Public Works), in partnership with many actors, among associations, social cooperatives and universities with expertise in community engagement, education and training, in social entrepreneurship and micro-finance, in agriculture, multicultural restoration, art and craft[9].

The project has been selected by the European call "Urban Innovation Actions" (UIA). The main goal of UIA programme is the identification and testing of new solutions which address issues related to sustainable urban development. The projects proposals have to be «innovative, of good quality, designed and implemented with the involvement of key stakeholders, result oriented and transferable»[10].

The main aim of the project is converting Villa Salus, a former elderly care hospital- an abandoned building for over a decade- into an innovative space for the social, cultural and economic inclusion and welcoming of migrants/ refugees and people with housing needs and as multilevel services facility to the whole metropolitan area of Bologna (around 1 million inhabitants).

The project embraces a wider vision of intercultural welfare and urban regeneration, based on integration of living, working and culture and leisure on the site. The space will include a social enterprise restaurant, horticulture, handicraft workshops and art and cultural activities.

Before to present the concept of regeneration and the system set up by the project we want to give some data to understand the social and economical challenges addressed by the project at city level, in particular in relation to the refugee flow in Bologna in the last four years and the poverty and the type of vulnerabilities.

9 The partners of the project are: ACLI Bologna, Antoniano Onlus, ASP Città di Bologna, Cooperativa Sociale Camelot Officine Cooperative, Associazione Cantieri Meticci, CEFAL Emilia Romagna Società Cooperativa, CIOFS FP Emilia Romagna, CSAPSA Cooperativa, Eta Beta Cooperativa Sociale Onlus, ICIE Istituto Cooperativo per l'Innovazione Società Cooperativa, IRS Istituto per la ricerca sociale, Microfinanza Srl, Associazione Mondo Donna Onlus, Open Group Cooperativa Sociale Onlus, Società Dolce coop., Ufficio Relazioni e Progetti Internazionali del Comune di Bologna, UNIBO, CES.CO.COM, UNIBO, Dipartimento di Scienze Agrarie. The analysis is based on a direct involvement of the author in one of the WP of the project, in particular in the co- design process and Think Tank, on the official documentations available on the website Www.saluspace.eu on documents presented in public meetings with citizens, on the active participation in many meetings and working sessions between partners. It is therefore also thanks to them that has been possible to elaborate this contribution. The contribution as a whole is a personal elaboration and analysis.

10 http://www.uia-initiative.eu/en.

Tab. 1 – Refugees flow in Bologna (at 31.11.2016, data from Prefecture of Bologna)

People arrived in 2014	2581 (weekly average: 108)
People arrived in 2015	9172 (weekly average: 176)
People arrived in 2016	10973 (weekly average: 249,39)
People arrived in 2017	7838 (weekly average: 151)

Regarding poverty in the metropolitan city of Bologna it is estimated that there are 165.000 people at risk of poverty, and 64.00 in the city Bologna, where there has been a + 30% of number of families, since 2005, who turns to the social services[11].

There are an estimated 10.000 families in Bologna living in conditions of absolute poverty, which make up 5% of the total number of families, while 113.000 people resident in Bologna declare an income lower then 12.656 euro (out of a total of 296.000), thus living in conditions of poverty or relative poverty. Moreover, 980 people in Bologna declared zero income[12].

Considering all these data, we can say that there is almost a 40% of taxpayers – equivalent to the 30% of residents in the city– that live in conditions of pronounced economic difficulty verging on a condition of poverty.

Moreover, new categories of poverty are emerging and increasing: unoccupied women after the maternity leaving; unemployed people, laid-off workers and temporary and unstable employee with low income; young people (aged 15 - 17) who have dropped out of school[13], young people (aged 18-35) looking for their first employment; unaccompanied minors; refugees or long-term immigrants that have lost their permit to stay after losing their job; people over 50 age often considered as no more competitive in the changing labour market[14].

3.1 The eco- system of social innovation and the role of urban agriculture

The project identifies the following drivers of urban and social regeneration.

a) *Sustainable:* socially, in terms of impact on urban context, thanks to cross-sector participatory planning processes; economically, adopting self –financing and self-sustaining models; environmentally, through energy efficiency technologies and ecological regeneration of the green area.

11 http://www.comune.bologna.it/sportellosociale/notizie/2731/93977.

12 Data form the Ministry of Finance in 2015.

13 17% of students drop out of school in the passage from the primary to the secondary school. They are often son and daughter of migrants and adults with a low level of instruction and professional qualification and without a relational background (relational poverty).

14 All the data here mentioned are from the Rsearch Report of Istituto Carlo Cattaneo, *La situazione economica e sociale Bolognese*, edited by Ardeni, Leoni. The report use data from the Municipality of Bologna, and from the survey of ISTAT *La povertà in Italia*, of July 2016.

b) *Accessible*: a place open to migrants and local citizens, built upon a reversible project with the possibility of evolving according to the changing needs of vulnerable social groups.
c) *Livable*: a livable, pleasant and attractive place.
d) *Usable*: the space is designed according to usability and universal design criteria, and targeting a wide diverse range of users and beneficiaries of the community.
e) *Social:* a place where is possible to experiment sociability and cultural exchange, and promote a generative and intercultural welfare system, connected to the territory.

To better understand what described here and in order to frame and understand the project in the perspective of social innovation we need to look at the *complex ecosystem* set up by the project. The project is based on three main pillars or macro actions: Wellbeing, Welfare and Welcoming.

Wellbeing: the first macro-action[15] aims to define the concept of the project, which includes *all aspects of Wellbeing.* It is in fact based on the experimentation of new housing solutions for a creative and social Living, green spaces for agriculture and education, start-up of creative enterprises and arts and crafts activities. The concept has been defined through a co- design process among partners, and engaging the inhabitants of the neighborhood, refugees and local stakeholders. All the process of designing is accompanied by a "Think Tank" with the role of studying new intercultural welfare practices and models, to build up possible and innovative solutions of welcoming and hospitality, based on an active social inclusion model.

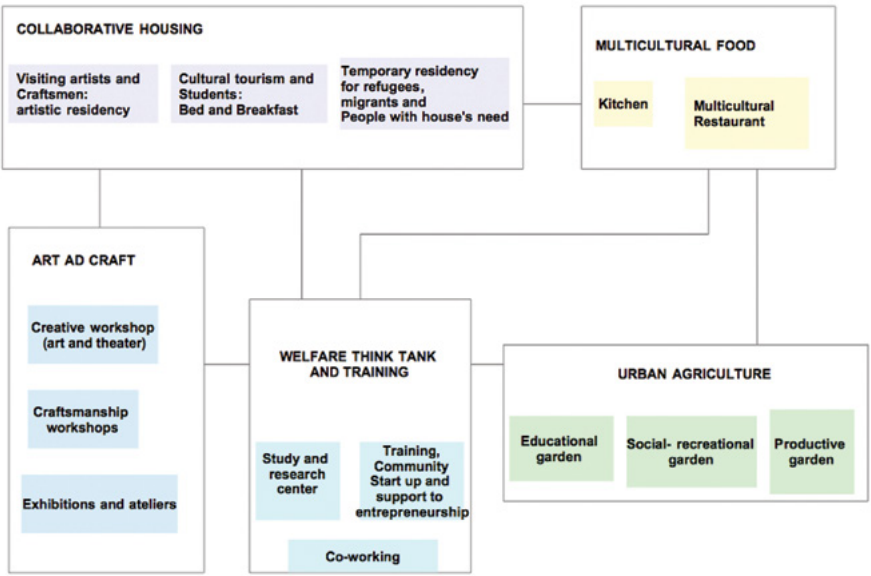
Welfare: the second macro-action aims to achieve a *generative welfare* model through practical training opportunities and creation of professional teams of artists, artisans and maintenance technicians, which will be able to manage the new Villa Salus when the project is completed and to provide facilities to the neighborhood. In this phase migrants and refugees will be guided in the development of a start-up of social enterprises, strongly linked to the territorial needs, through field training, internships and job placements, as well creation of artistic professional teams and of handcraft professional teams, training for accommodation, restoration and green maintenance facilities and with a support to micro- entrepreneurship.

Welcome: the third macro-action aims to manage all new services and facilities provided within the new Villa Salus, with a direct role of the social enterprises to welcome guests and citizens in this new space. This action

15 The three actions are in part consequential. The partners have just concluded this first macro action, and they are now starting to implement the second one, while defining also the social and community management model as described in third action.

foresees an experimentation of a model of *Social and Community Management,* through a co-designed approach with local stakeholders and engaging actively refugees and asylum seekers, according to a model of active participation, empowerment and reciprocity. Through this action the project will give birth to a Collaborative social housing community startup, an Incoming startup (catering), a Gardens startups (kitchen garden and gardens care) and Art and Crafts startups and a Co-working space, conceived as a place to share skills, ideas, time and resources. The following scheme is a visual representation of the whole ecosystem, showing the *interconnections* between activities and functions described above:

Fig. 4 – Urban agriculture and the ecosystem of functions[16]



The scheme above underlies the multidimensional idea of wellbeing guiding the project, in coherence with the definition of development that we have seen in the first part of our contribution.

The project is also clearly oriented to the search for solutions for unmeet basic human needs, such as housing, foods, jobs. In this perspective can be identified an innovation in the "product" itself, in the kind of answer to a critical challenge such as the welcome of migrants and refugees, promoting a process that combines two aspects.

16 Author elaboration based on a scheme elaborated by the project's partner ICIE, after the co-design process conducted by the author as a member of Ces.Co.Com. project's partner.

The first concerns *integration*, as showed by the combination of different functions presented in the scheme: social housing, accommodation, restoration, public facilities, arts and crafts factory, urban horticulture. Is therefore a solution that tries to go beyond a fragmented answer to a temporary emergency situation. As emerged in the analysis done by the partners involved in the first macro- action and by the coordinator, at european level there are some good practices, but they are normally focused on just one function, such as accommodation, employment placements, or community services[17], and they depend almost on public funding. On the contrary, "Salus space" project, aims at an economic sustainability, by producing goods and services with an economic value and allowing to pay the maintenance costs and providing an income to refugees. The aspect of integration in the eco-system of innovation of "Salus space" has to be framed also in the kind of transformation of social relations that the project aims to promote, creating a space for dialogue and encounter, a social mixing, and connections between the community of inhabitants of "Salus space" and the inhabitants of neighborhood and city.

The second dimension concern the *autonomy* in a welcoming centre where the refugees are at the same time beneficiaries and service's providers to the local community, establishing a reciprocal collaboration with the citizens living in the surrounding area. Is therefore based on a capability (empowerment) approach (Sen 2000, Nussbaum 2012), in terms of social and collective development of capabilities (Bifulco 2012) and as a cultural capability of "aspire" (Appadurai 2011), which concerns what is considered as desirable for the future by human beings.

All these elements- human needs satisfaction, transformation of social relations, and empowerment are, as we have seen, key dimensions of social innovation.

We now turn to focus specifically on UA. As showed here in the scheme UA is clearly conceived not as single "independent" activity but as a part of ecosystem of innovation just described, with a more direct connection with the multicultural food activities. It has three main *functions*:

- *To harvest*: a 400 sqm wide garden with a dual function: self- food production, also improving the family nutrition, and income generation, selling the surplus at the Salus space restaurant. The aim is to identify innovative forms of urban agriculture enterprises applying advanced cultivation systems and techniques, as well as applying community horticulture principles and management.

17 Examples are: the refugees hotel in Wien, the Migration Hub for Start ups in Berlin, the job matching mobile platform for refugees in Germany. At local level has to be mentioned the project "Bolognaccoglie". For an explanation of the regional and city system of refugees' hosting: www.bolognacares.it.

- *To learn:* 100 sqm wide didactic home garden, as a place for education and training in Urban Horticulture and Agriculture, open to different kind of beneficiaries: vulnerable families of the district, immigrants and refugees, citizens, schools, students, all people interested. Is conceived to test different types of gardens and to train technicians who can provide assistance within the production garden and develop skills for the future even in the country of origin. Will be a place for learning about urban horticulture techniques, and also more in general about biodiversity, ecology, as well as cultural diversity.
- *To live:* 160 sqm wide garden, an "open space" where vulnerable families of the district, immigrants and refugees, citizens, schools, students, all people interested, tourists, hosts at the B&B, visitors and the inhabitants of the neighborhood can learn together about home garden management techniques, biodiversity, vegetables and flowers growing and conservation, in link with the Garden to Learn. A place for inclusion and socialization and to share experiences and practices of gardening.

All of the three gardens include a detailed garden project accessible also to people with disabilities.

The three gardens can be seen as another eco- system based on human centered development and on a economical, environmental and social sustainability. Each garden is also functionally connected with the other one.

To frame the role of UA in "Salus space" project and its ecosystem we need to pay attention also to the *spatial- territorial dimension,* which is another dimension implied in the social innovation as well in the UA in general.

There are three possible ways to look at the link of UA and spatial dimension in the perspective of Social innovation and territorial development. The first concerns the *role of UA in creating a sustainable environmen*t inside the "Salus space", but with an impact in the surrounding area and possibly in the neighborhood as well. The project in fact foresees an *environmental regeneration* of the outdoor green area of the "Villa", restoring a deteriorated landscape, due to a longtime lack of maintenance and chaotic growth of vegetation. The three gardens described above are a key component of this retrofitting action of the landscape. The gardens are also part of new and wider outdoor area for social gathering and open air activities (for example artistic events, and in spring and summer time restoration activities).

Furthermore, the cultivation system is part of a complex intervention that foresees a system of rainwater recollection, as well green roofs and vertical green system, and solar screens.

The second interpretation of UA in relation to the spatial and territorial dimension is the integration of "Salus space" and in particular of UA in the wider urban and social context in different ways. Firstly, setting up a system of accessibility, based on idea of openness and permeability. Is indeed part of the intervention of regeneration, the creation of an itinerary to enter in the space, composed by different kind of mobility: for pedestrian, bike and car. The basic idea is to create a permeable open system connected with the alternative routes and greenways already existing and foreseen by the Municipality urban department plans. Considering moreover that UA in the project will be open to many different targets, people of different ages, and to whole community, this spatial dimensional plays a fundamental role for the social value of UA. Secondly, UA in the "Salus space" is located in an area that was previously dedicated to agriculture, a peri-urban area, where the landscape as been progressively modified and eroded and consumed by the process of urbanization - between the '50 and '70 - and with the creation of highway and bypasses and many new buildings for public housing.

To better understand what has just been underlined, the following picture (*Fig. 5*) shows the location of "Salus space" and the surrounding area of the project:

Fig. 5 – Location and surrounding area

The location of "Salus space" project is in some way challenging considering this kind of territorial separation with the necessity to work on the accessibility and attractiveness of the place, and that the "Savena" district of the city of Bologna is characterized by high rate of elderly in respect of the rest of other districts and the city, with an old-age index 298,7, higher then the average of the city (218,1)[18]. On the other side the district and the surrounding area have many green areas (such as public parks), there are sport facilities, a social center that is also the coordinator of the social gardens' network managed mainly by elderly people in the district. In this perspec-

18 Data from the Statistic Office of the Municipality, 31/12/2015.

tive the Salus space and UA in particular can be seen as a way to "repair" a landscape and can be an opportunity for a social and territorial integration.

The development of local networks and connections is one of the aims of the participatory planning activities carried out along with the project implementation, as presented in the following section.

3.2 Process innovation: participation and governance

The Salus space project can be framed in the perspective of "process innovation". The project is in fact based on participation in many ways. Firstly, through a participatory process articulated in the following actions:

1. Co- design

Different co-design sessions have been carried out among partners, to share a vision and a concept. Another co-design activity has been realized specifically for urban agriculture with citizens and migrants.

2. Listening and activating the community and the territory

In the first phase of the project an outreach activity has been realized to map the territories, the local actors and define possible social and territorial connections as well as to start to engage the inhabitants. There has been realized interviews, informal meetings (committees of inhabitants, migrants, associations). After this first engagement has been created two groups of interested citizens: a participatory editorial staff to communicate the project, to make visible what happens in the neighborhood and to create a "critical" community story telling of the project; a participatory evaluation group, to monitor the project. Finally, social ad recreational activities are accompanying the process.

3. Information and communication

This action is crosscutting all the project phases. Many "face to face" activities have been realized, such as a meeting with the local council (district- political level), many public meetings with citizens and associations in different times to share the advancement of the project, to receive critical observations and suggestions, to identify interconnections within the social and urban context. The project has also a website and a blog where citizens involved in the participatory journalism group write their articles and share information.

The processed just described has been fundamental for two main reasons: to guarantee a real integrated vision of the "Salus Space" and to create a base for reciprocal trust particularly between the inhabitants of the surrounding area and the public administration. Considering that the issue of refugees and migrants can encounter very often hostile reactions and that in this case the inhabitants have a memory of long term abandonment by the public administration in that area, the participatory process assumes a key role. At the moment some of citizens are engaged in the the participatory journalism, evaluation and gardening groups, together with migrants and refugees. This is a way to create that conditions for a reciprocal trust able to promote collective civic actions (Sampson 2012).

Participation is also strictly connected with the development of governance system. From this point of view we can stress that it has been set up a system where many kind of actors interact:

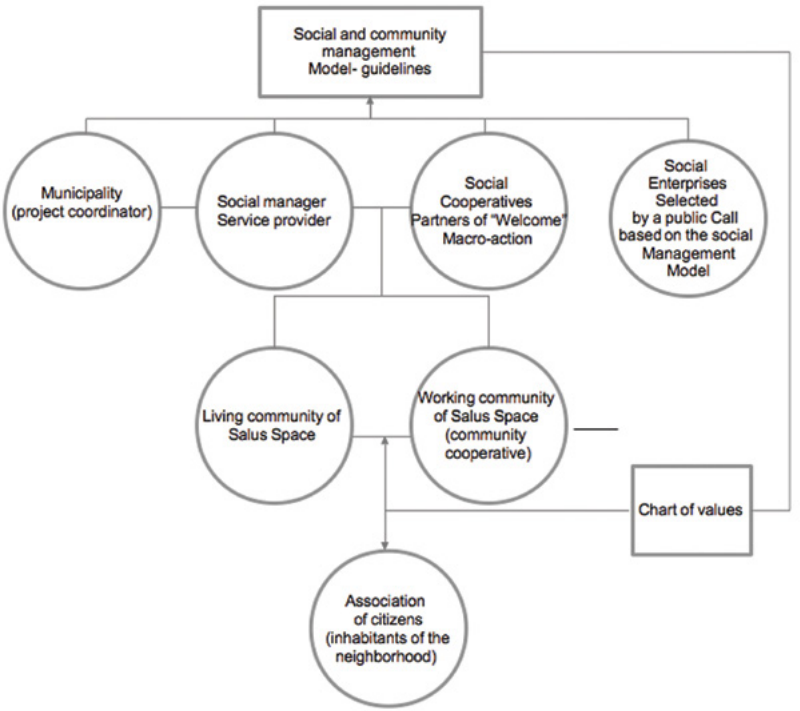
- The future living a working community of "Salus Space"
- Neighborhood inhabitants
- Committee for promotion and guarantee made by institutional stakeholders (Emilia Romagna region, Prefecture of Bologna, Metropolitan City of Bologna, Municipality of Bologna, Savena district)
- 17 Partners of the projects (composed by 3 main Categories: municipality, cooperatives and association, universities and social research institutes) and the Technical coordination committee made by delivery partnersLocal stakeholders group: SPRAR (National Protection System); Azienda USL (National Health Service); CGIL, CISL e UIL (Trade Unions); Confindustria Bologna (industry); CNA Bologna (enterprises); Lega Coop Bologna (cooperatives); Urban Center Bologna (a Foundation for the urban innovation); Arcidiocesi (Catholic Church); Comunità musulmana (muslim community); Comunità ebraica (jewish community).

We argue that the core of innovation in governance can be identified in the "Salus space community" governance. As already underlined all the services and facilities- the gardens, the restoration, the art and craft activities and so on- will be managed with a community approach, based on empowerment of the Salus future inhabitants. This approach is based on some pillars and interactions between different levels and actors.

As shown in the picture the system is based on two key tools. The social and community management model and guidelines, which will be also the framework to select future social cooperatives. This model is co- designed by the municipality, the social manger that coordinates the "Wellcome" mac-

ro action, and the social cooperatives partner of the projects. The Guidelines will be the framework for the selection of social enterprises after the project ending. The second tool is the chart of values that will be elaborated by the community of "Salus space" and through a dialogue with the inhabitants of the neighborhood. The process of elaboration of the chart will be itself a community building process, to share ideas, visions, responsibilities and create an intercultural exchange. Two important bodies are also foreseen: the community cooperative (as a long-term result of the start ups of the Salus community) and the association of citizens, to be created along the project, thanks to the participatory process described above.

Fig. 6 – Salus space community governance



In general terms we argue that this process can be framed in a *participative-collaborative governance approach,* which is based of the following key elements.

Tab. 2 – Participative – collaborative Governance [19]

Participative- Collaborative Governance	
Premises	• From the top down definition of needs to an interpretation of need and capabilities development. • Continuative listening activity. Not limited to a time and space
Relationships	• Circular subsidiarity • Collaborative and dialogic process which foresees: ✓ an *accountable autonomy of the beneficiaries* ✓ a learning context to develop *collaborative capabilities* ✓ a space to *negotiate rules and values*
Organization	• From a hierarchical/ authoritative to participative-collaborative model • From a predictive process to an adaptive one • Commons oriented • Institutional change based on the possibility of changing the "rule in use" • Role of neighborhood organization for collective civic actions
Forms of Responsibility	• From direct responsibility to process based responsibility • Shared social responsibility
Public administration in collaboration with civil society organizations, social enterprises	• Remove barriers • Create condition (enabling) • Knowledges and capabilities networking • Mobilization of potentialities
Role of primary beneficiaries	• From "passive target" to active protagonist • Co- decision in community governance process • *Multipliers* of others empowering process and social relation transformation
Role of citizens-neighborhood inhabitants	• "Local allies" in responding to contemporary urban challenges • Co- decision in community governance process

4. Conclusion

In this final part of our contribution we would like to underline some challenges, that our case study suggests in relation to social innovation, territorial development and UA. Each challenge represents a field of exploration of innovative solutions.

The first concerns the community dimension itself and the governance dimension. "Salus space" started as a top down project, promoted by a public institution in partnership with associations and social cooperatives, aiming at

19 Author elaboration based on the following author: Borghi (2006); Fung (2004); Sennet (2012); Lowendes *et al*. (2006); Bekker *et al*. 2012. It is also based on Sampson (2005, 2012), Ostrom (1995), Boal (1974).

fostering a collaborative process, and creating an open space for the activation and the proliferation of new bottom up practices.

The facilitative role of a public institution, as enabler, is fundamental, but it is complex and has to face critical aspects. First of all, the neighborhood inhabitants have to feel that the project can really belong to them in some way. Moreover, there is a delicate equilibrium between two dimensions: temporariness and sustainability. The project in fact foresees a temporary kind of residency but aims at an economic and social sustainability. The question to be addressed is how to guarantee the engagement of the "Salus space" inhabitants as well as a continuous collaborative process between the Salus space living and working community and the wider community and the city, and where all the actors can really be protagonists.

From the social innovation perspective, we can say that there is an opportunity for innovation in governance, as we saw, in particular with the creation of a "space" and instruments to negotiate rules and values, and with a space for "doing together" (Sennet 2014) and learning together, where UA can play a key role. Community, however, is not something fix, it changes in time and space, it has to be considered as a process, instead of a "product" and as a dynamic place where new meanings can be generated (Ciaffi, Mela 2006).

Moreover, following Sampson (2012), it is necessary to consider the organizational capability of neighborhood, its organization at different levels, that impact the "collective efficacy", in terms of «conjoint capability for action to achieve an intended effect, and hence an active sense of collective engagement on the part of residents to solve problems» (Sampson 2005, p.676).

A further challenge is represented by yet another polarity: attractiveness *vs* inclusion. Urban and environmental regeneration on one side can foster local economy and social relations, but on the other hand, as has happened in many european cities, this can lead to a gentrification process that creates exclusion rather than inclusion.

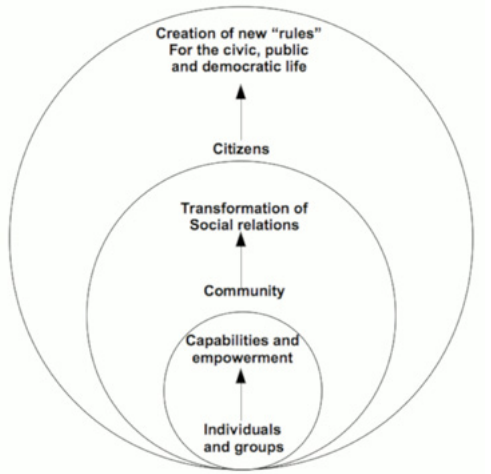
UA in this sense, can be an opportunity to experiment with an integrated territorial development that seeks to avoid this risk.

A third kind of challenge concerns the scaling up of innovation. We have seen that UA is often analyzed along a continuum of practices described as "domestic" or "professional", individual or collective, market or non market oriented. UA in the "Salus space" is already innovative in this sense. It is aiming to overcome these dichotomies, with the simultaneous creation of gardens with different functions inside an "eco-system".

The question here is if it is possible to adapt this multidimensional model to a wider scale, also at city level, and in terms of a new UA policy approach and urban planning.

Finally, the scaling up can be seen in a broader and a more complex view in terms of social transformations fostered by an innovation process, which can be represented in the following way[20]:

Fig. 7 – Scales of social change



The Salus space project is trying to respond to a critical challenge- welcoming the refugees- implementing solidarity, promoting an economical, environmental and social wellbeing and welfare based on social and community management models.

UA framed in a territorial and human centered development approach can play a significant role in this challenge.

The ultimate goal of this approach is represented by the external circle in this image, and regards the possibility of "becoming a citizen". Recalling Boal's (1974) words, a citizen is not just a person who lives in a society but a person who transforms that society.

References

Allegrini G. (2016), *Consumo collaborativo e governance dei beni comuni*, in *Consumption, Communication, Futures: Conceptual and Practical Sociological Challenges*, Milano, FrancoAngeli, pp. 103 – 118.

Allegrini G. (2016 a), *Prove di democrazia. Partecipazione e cittadinanza attiva tra pratiche di impegno civico collettivo e collaborazione informale nella rigenerazione di beni comuni urbani.* Tesi di dottorato, Università di Bologna.

20 Author elaboration.

Ansell C., Gash A. (2007), *Collaborative governance in theory and practice, Journal of public administration research*, pp. 543- 571, Oxford University Press.
Appadurai A. (2011), *Le aspirazioni nutrono la democrazia,* et al Edizioni, Milano.
Ardeni P.G., Leone L. (2017), *La situazione economica e sociale Bolognese*, Research Report, Istituto Carlo Cattaneo.
Bakker J., Denters B., (2012), "Citizens' Initiatives: how Local governments fill their facilitative role", *Local Government studies*, vol. 38, n. 4, pp. 395-414.
Bartoletti R., (2013) *Pratiche di consumo e civic engagement: il consumo impegnato di natura in città,* in Bartoletti R., Faccioli F., (2013), *Comunicazione e civic engagement*, FrancoAngeli, Milano.
Bendta P., Barthel S., Colding J., (2013) "Civic greening and environmental learning in public-access community gardens in Berlin", in *Landscape and Urban Planning,* January 2013, www.elsevier.com/locate/landurbplan.
Bifulco L. (Novembre 2012) "Citizen participation, agency and voice", in *European Journal of Social Theory.*
Boal A. (1974), *Teatro do Oprimido e outra politicas*, De la Flor, Buenos Aires.
Borghi V. (2006), "Tra cittadini e istituzioni. Riflessioni sull'introduzione di dispositivi partecipativi nelle pratiche istituzionali locali", *Rivista delle Politiche Sociali*, n. 2 Aprile- Giugno, pp. 147- 181.
Castrignanò M. (2012), *Comunità, capitale sociale, quartiere*, FrancoAngeli, Milano.
Ciaffi M., Mela A., (2006), *La Partecipazione. Dimensioni, spazi, strumenti,* Carocci, Roma.
D'Albergo E. (2014), *Sociologia della politica. Attori, strutture, interessi, idee,* Carocci, Roma.
Dahlgren (2013), *Reinventare la partecipazione. Civic agency e mondo della rete*, in Bartoletti R., Faccioli F. (a cura di), *Comunicazione e civic engagement*, FrancoAngeli, Milano.
Fung A. (2004), *Empowered Participation. Reinventing Urban Democracy,* Princeton University Press, Princeton.
Fung A., Wright E. O. (2003), Deepening democracy. Institutional innovation in empowered governance, London/New York.
Gottero E. (2017), A*gricoltura metropolitana. Politiche, pratiche e opportunit. per l'innovazione territoriale nel torinese*, IRES, Torino.
Hulgard, Shajahan , 2013, *Social Innovation for People – Centered Development*, in Moulaert F., MacCallum D., Mehmood A., Hamdouch, A. (eds.) (2013), *The International Handbook On Social Innovation: Collective*

Action, Social Learning and Transdisciplinary Research, Edward Elgar, Cheltenham.
Ingersoll R. (2006), *Sprawltown: Looking for the City on Its Edges*, Princeton Architectural Press, New York.
Ingersoll R. (2012), *Urban Agriculture*, Lotus, 149: 74, p. 105-117.
Lohrberg F., Licka L., Scazzosi L., Timpe A.(eds.), (2016), *Urban Agriculture Europe*, Jovis Verlag, Berlin.
Lowndes V., Sullivan H. (2007), "How low can you go? Rationales and challenges for neighborhood governance", *Public Administration*, vol. 86, n. 1, pp. 53-74.
MacCallum D., Moulaert F., Hillier J., Vicari Haddock S., (edited by) (2009) *Social Innovation and Territorial Development*, Ashgate Publishing, Farnham.
Moini G. (2012), *Teoria critica della partecipazione. Un approccio sociologico.* FrancoAngeli, Milano.
Moualert F., Martinelli F., Swyngedouw E., González S. (2005), "Towards Alternative Model(s) of Local Innovation", in *Urban Studies*, vol. 42, n.11, pp. 1969-1990.
Moulaert F., Martinelli F., González S., Swyngedouw E., (2007), "Introduction:social innovation and governance in european cities urban development between path dependency and radical innovation", in *European Urban and Regional Studies* 14(3): 195–209, SAGE Publications, London.
Moulaert F., Nussbaumer, J. (2008), *La logique spatiale du développement territorial ,* Presses Universitaires du Québec*,* Sainte-Foye.
Moulaert F., MacCallum D., Mehmood A., Hamdouch, A. (eds.) (2013), *The International Handbook on Social Innovation: Collective Action, Social Learning and Transdisciplinary Research*, Edward Elgar, Cheltenham.
Mougeot L, Urban Agriculture: Definition, Presence, Potentials and Risks, and Policy Challenges, Cities Feeding People Series Report 31, November 2000, http://www.idrc.ca/cfp.
Mougeot L., 2000, Urban Agriculture: Concept and definition, UA Magazine,1, July 2000.
Newamn J. et. al. (2004) "Public participation and collaborative governance", *Journal os social policy,* 33 (2), pp. 203-223, Open University Repository.
Nussbaum M. C. (2012), Creare capacità, il Mulino, Bologna.
Ostrom E. (2006), *Governare i beni collettivi*, Marsilio, Venezia.
Paltrinieri R. (2012), *Felicità responsabile*, FrancoAngeli, Milano.
Rosol M. (2010), "Public Participation in Post-Fordist Urban Green Space Governance: The Case of Community Gardens in Berlin," in *Internation-*

al Journal of Urban and Regional Research, n. 34., pp. 548–563.
Sampson R.J. et el. (2005), "Civil society reconsidered: The durable nature and community structure of collective civic action", *American Journal of Sociology* 111, n. 3, pp. 673-714.
Sampson R. J. (2012), *Great American City. Chicago and the Enduring Neighborhood Effect*, University of Chicago Press, Chigago, London.
Sen A. (2000), *Lo sviluppo è libertà*, Arnoldo Mondadori Editore, Milano.
Sennet R. (2012), *Insieme. Rituali, piacere, politiche della collaborazione*, Feltrinelli, Milano.
Simon-Rojo M. Et al (2016), *From Urban Food gardening to Urban Farming*, in Lohrberg F., Licka L., Scazzosi L., Timpe A.(eds.), (2016), *Urban Agriculture Europe*, Jovis Verlag, Berlin, pp. 22-28.
Smit J., Ratta A., Nasr J., (Eds) (2001,) *Urban agriculture: food, jobs and sustainable cities,* 2001 Edition, The Urban Agriculture Network, Inc., Available in: http://www.jacsmit.com/book.html.
Tei F., Gianquinto G., (2010), "Origini, Diffusione e ruolo multifunzionale dell'orticoltura urbana amatoriale", in *Review - Italus Hortus* n. 11: 59-73.
Vejre H. et al (2016), *Can agriculture be Urban?*, in Lohrberg F., Licka L., Scazzosi L., Timpe A.(eds.), 2016, *Urban Agriculture Europe*, Jovis Verlag, Berlin, pp. 18-21.
Vicari Haddock S., Moulaert F. (2009), *Rigenerare la città*, Il Mulino, Bologna.

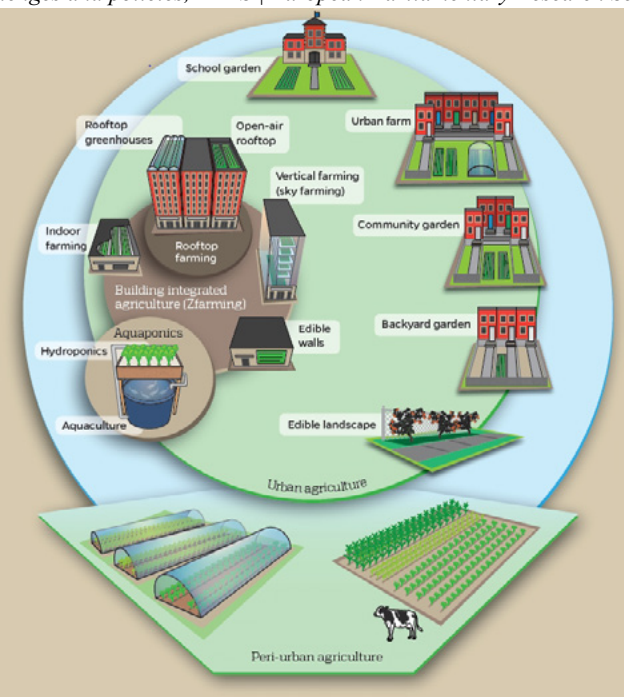
Chapter 4

Cultivating nature-based solutions. Urban and peri-urban agriculture: a business opportunity good for cities and communities

Valeria Stacchini

As urban migration increases (the proportion of the global population living in urban areas has risen from half in 2000 to 55 percent now, and is predicted to reach two-thirds by 2050), cities are searching for ways to provide more greenery. Moreover, growing urbanization means growing concentrated consumer demand of food. There is scientific evidence that being close to nature is good for people. And it is good for urban resilience too: vegetation also sucks up planet-warming carbon dioxide, and this is key to efforts to combat climate change.

Fig. 1 – Scope of Urban Agriculture. (Source: J. McEldowney, urban Agriculture in Europe.) Patterns, challenges and policies, EPRS | European Parliamentary Research Service, 2017



Nature-based solutions are actions to protect, sustainably manage and restore ecosystems by combining natural features and processes with economic growth, improved well-being, and social benefits. Public park, green roofs, street trees, and urban forests are intensively studied as essential components of urban green infrastructures. In comparison, the role of farmland has been mostly neglected (Bartesaghi et al. 2016). The omission of farmland is surprising, given that agricultural land dominates many European urban areas (EEA, 2013) and urban gardening has a strong continuous culture in the Mediterranean.

Urban and peri-urban agriculture - cultivate crops into or close to cities[1] - could take many different forms: commercial farms, agricultural parks, urban gardens (private, municipal, social, school, etc.), vertical farming, but also that set of multiform of residual horticulture, practiced in public and private spaces, ranging from terraces , roofs, gardens, flower beds, river banks, greenhouses, up to initiatives such as guerrilla gardening (Tornaghi, 2013). To this second group, especially in developed countries, an added value of environmental, landscape and social type is agreed, more than economic in the strict sense, contrary to what happens for peri-urban agriculture, whose productive value, albeit in a logic of multi-functionality, it is much more pronounced. Peri-urban agriculture in particular could be defined as a residual form of agriculture at the fringes of the cities, in areas that may be described as transition zones; such areas suffer from urban pressures but also benefits from proximity to urban areas and markets.

As a consequence of the economic crisis, however, urban agriculture has re-acquired a greater role in food supply too. Example set by former First Lady Michelle Obama, who, together with a group of fifth graders, planted a vegetable garden, the first of its kind for nearly 60 years, in the ground of the White House, well photographs this trend.

Urban agriculture differs from conventional or traditional agriculture in the engagement with the technologies of growing, using alternatives to soil based practices (including hydroponics and acquaponics). Urban agriculture scale is relatively small, and this generates difficulties in competing against industrialised production on a purely economic basis.

1 Mougeot (2000) defines urban and peri-urban agriculture as "within (intra-urban) or on the fringe (peri-urban) of a town, a city, or metropolis that grows or raises, processes and distributes a diversity of food and non-food products, (re-)uses largely human and material resources, products and services found in and around that urban area, and in turn supplies human and material resources, products and services largely to that urban area". More recently Roggema (2016) defines it as "... the growing, processing and distribution of food or livestock within and around urban centres with goal of regenerating income", emphasizing the economic model.

Estimating the phenomenon - and even more quantifying the economic contribution - to food needs is not easy, even considering that most of the practices present a high degree of informality. However, scientific research and public body are paying increasing attention to the topic, because of environmental and social considerations of the sustainable development paradigm. Moreover, in recent years nature-based solutions and urban agriculture become essential in the public policy agenda, for cities which would reach the Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development. Urban agriculture also encounters the desire of multiple stakeholders to develop local initiatives pleading for a return to the proximity between city and nature, between city and agriculture, between city and food.

Urban agriculture is a multi-purpose, multi-functional activity well integrated in urban functions. A positive effect of agriculture use as part of nature-based solutions, is to stimulate local economy and create green collar jobs, such as organic farming. Furthermore, it provides spaces for food production and lower food costs, with benefits for low income citizens and stresses the process of place making (socio-emotional appropriation of the space).

1. Urban agriculture: a green productive infrastructure

Gotham Greens' boxed lettuces with names like "Windy City Crunch," "Queens Crisp," and "Blooming Brooklyn Iceberg" appeared on the shelves of high-end grocers in New York and the Upper Midwest since 2009. Grown in hydroponic greenhouses on the rooftops of buildings in New York and Chicago, the greens are shipped to nearby stores and restaurants within hours of being harvested. That means a fresher product, less spoilage, and lower transportation emissions than a similar rural operation might have—plus, for the customer, the warm feeling of participating in a local food network. However, evidence that urban agriculture is good for the environment has been harder to pin down. In Europe, where the agriculture tradition and food culture are eradicated, different initiatives, more related to heritage preservation, are growing, like farmers' markets, collective outlet, buying groups, urban gardens and urban farms. "Chez le Producteurs" is a collective outlet born in 2015 in Aubagne (near Marseille), bringing together 26 local producers selling their own products, and contributing to democratising the consumption of local, seasonal and quality food through direct relationship between consumers and producers. Bologna and the Emilia-Romagna Region have a rich network of Solidarity Purchasing Groups (GAS in Italian), as well as of farmer's mar-

ket and garden community. Campi Aperti, for example, since 2007 sets up and manages 6 farmer's markets to facilitate the direct sale of food from its 82 members to citizens, and creating favourable condition for organic farmers and seed conservation. Another good practice from Bologna is Arvaia, a cooperative with more than 420 members. In 2013 Arvaia gave new momentum to the concept of Purchasing Groups, towards Community Supported Agriculture (CSA). In 2015 the Municipality of Bologna assigned 47 ha to Arvaia for developing a multifunctional farm. The initiative is shaped by sustainability concept, from management to production and distribution: agroecology and environment protection, short-circuits and 0km approach, deliveries with cargo bike, zero packing for product distribution. Arvaia developed a great distribution network (483 quintals, 45 types of vegetables, 8 distribution points), and involves citizens and institutions in the conservation of the rural culture and landscape. it is innovative in various areas: its CSA organisation and management structures, self-financed (the main sources are own funds and investments of members in 3-years bonds remunerated at a 2% rate) and well integrated in the solidarity-based economy. It involves a wide spectrum of stakeholders, from local to European level.

The aims of all these initiatives are clear: enhancement of local products and quality, involvement of local communities, environmental protection, new business opportunities development. Promoting not only green, but also green productive infrastructures (combining food growing with other green land uses) will have multiple sustainability benefits. Greening through horticulture production or orchards contribute to higher food self-sufficiency, lower costs, or even profit making. Horticultural production is interactive and point the way to the socially inclusive governance of the urban green infrastructures. We certainly need to distinguish between small case gardening activities and large scale, commercial farming, although there are many overlaps and hybrids, and pay attention to the quality of food, problem of soil contamination and urban pollution.

2. From micro to large case business opportunities in Europe and in the Mediterranean

A study in Slovenia analyzed the phenomena of urban gardening as a business model for small family home or allotment gardens (M. Glavan, et all., 2016). The results offer evidences of high potential for families to be self-sufficient; moreover, there is also plenty of room and opportunity to earn from surpluses: for example, if a family of two retired members have

an average garden of 136 m^2, they can produce vegetables for four people; consequent surpluses for two family members can be sold for extra money. The gross margin from surpluses sold was approximately 135.17€/year for the average gardener (4.29 €/m^2 or 1.26 €/kg). Urban agriculture allows to create value from nature-based solutions, providing marketable products that can be privately appropriated. The business model should be more promoted among urban gardeners as it can offer additional income and in certain case, new job opportunities. Other forms of business should also be highlighted: in the lack of public urban garden plots, citizens hire privately owned fields dividing them into smaller plots. For example, in Ljubljana (M. Glavan, et all., 2016) areas of this type represent 87% (138ha) of all urban allotment garden areas (158 ha). This demonstrate the urban agriculture is really interesting also for entrepreneurship initiatives originating from the urban food chain (production and sale), which could improve self-provision and the long-term food resilience of the city.

Another good example of agriculture nature-based solutions within metropolitan areas deals with farming models which are related to the maintenance of cultural heritage, conservation of agro-diversity and biodiversity, such as explicit environmental friendly production and/or landscape preservation, often linked with the marketing of high value products including the provision of other cultural and social values.

A great example on a larger scale is the Baix Llobregat Agriculture Park, which is located in the Llobregat Delta, 10 minutes west of Barcelona. It was founded in 1998 by a diverse group of organizations seeking to ensure the continuity of sustainable agriculture on Barcelona's urban fringe in order to preserve this area (3,490 hectares, spread over 14 municipalities) from the great urban pressure. The Park hosts more than 200 businesses, whose 85% of the production is dedicated to the Metropolitan Area of Barcelona.

The park is managed by a Consortium that promotes specific programs to conserve production, ecological and cultural values in the agrarian space. The Park is also aimed at developing the economic, environmental and social roles in a framework of sustainable agriculture integrated into the territory and in harmony with the natural environment. Thanks to its successful public-private model and the strong political will of local authorities involved, the Park achieved to preserve the productive, ecological and cultural values of the Llobregat and Barcelona area.

Wolf Lorleberg (the COST project, 2016), based on an analysis of more than 100 case studies of urban agriculture enterprises over three years, demonstrated how urban and peri-urban agriculture entrepreneurs are, or have the potential to become, the "hidden champions" of an urban green

development strategy. COST working group found a range of five diverse and successful business strategies as potential blueprints for innovation: cost reduction, differentiation, diversification, shared economy, and experiment and experience. Many of the practices analyzed address more strategies at the same time. These findings demonstrate how urban agriculture has to adjust to the local urban environments. Some businesses build on existing opportunities, such as proximity to customers. Others are able to differentiate their products from the main (e.g. organic culture, recovery of native species, etc.) building on their direct links to the consumer (e.g. farmer markets, buying groups, etc.). Urban farms can diversify their business by offering services for example: agro-tourism, social care, kindergarten farms or nursery-school services.

3. Revitalization of brownfields

Tirana, for example, is working toward the revitalizing brownfields. In 2016 the Municipality launched the Plan "Tirana 2030" by Stefano Boeri Architetti, UNLAB and IND, which includes the rehabilitation of clear cut and degradated forests in the Green Belt of Tirana through planting 50 hectares of fruit trees. In this way the city aim to establish a functional Green Belt in the outskirt, to improve air quality, maintain biodiversity, enabling the development of recreational areas. The project involves the planting of shrubs and fruit trees to control soil erosion, steep slope works, also generating jobs and business opportunities. Moreover, in common agreement with the inhabitants, the municipality is financing the plantation of fruit trees on the private gardens.

Urban agriculture could also reflect also desired direction in the development of green infrastructures (R. Cvejic et all., 2015): revitalization of brownfields - also through temporary use of suitable degraded spaces-, transferal of responsibility for green areas, increasing the number of gardens in the city center and self-efficiency. Citizens who perceive green areas as part of their living space and gain sense of ownership take better care of these areas and bring life to them (Nastra & Regina, 2015).

Results from a spatial analysis from Southern Germany (R. Werner et all., 2018), in the peri-urban regions of the three largest and expanding cities of Bavaria, Munich, Nuremberg and Augsburg, show that the contribution of low-intensity farmland (with emphasis on grassland systems) to overall connectivity (the study focus on social connectivity with respect to the accessibility of recreation, analyzing structural connectivity as a surrogate

for functional connectivity, neglecting ecological or abiotic connectivity) is significant, even higher than of forests and of green urban structures (such as parks) and water bodies (such as river and lakes). Switching scale and looking at the three cities solely, the situation changes a little bit: here the contribution of green urban structures is highest; nevertheless, the contribution of low-intensity farmland to structural connectivity is more significant than forest structures in two of three cases. Farmlands are primary along the edge of the cities, as part of the adjacent open landscape, hence the accessibility is less, for fewer neighborhoods. Emphasize should also be put in the importance of farmers as partners in both the planning, development and management of urban green infrastructures.

In Bologna, you should find a innovative revitalization experiment. The former municipal greenhouse had been abandoned for 10 years. Kilowatt association project was selected trough a call for tenders in 2013 to take part to the transformation of the site into a place of experimentation and a new platform for many local activities, including urban agriculture, circular economy, training, entrepreneurship and innovation. The space assigned to Kilowatt is a multi-functional space, made of a 600 sqm communit garden (gARTen), a natural eating bistro (VETRO), a solidarity purchasing group (kwGAS), a co-working space, a daycare centre (kwBABY) and summer events location (kwSUMMER). Le Serre is a collaborative public space where private actors, public bodies and civil society successfully coexist for developing new services for the community. Innovation is also in the management model: a mix of entrepreneurial spirit, social innovation and community building. Since 2016, Le Serre has organized 150 free cultural events and hosted more than 55,000 visitors. Since 2017 the community garden is managed by a professional gardener whose daily mission is to train the community on organic farming techniques. A small part of the crops is dedicated to VETRO bistro. Kilowatt also develops social and art activities with associations established in the neighborhood.

In the outskirts of Montpellier, the "Ferme Urbaine Collective de la Condamine" is a growing urban farm managed by young people which will preserve the land through the regeneration of abandoned hectares assigned by the municipality.

4. Urban agriculture policies: from creative solutions to green city planning

In policy terms, urban agriculture appears to fall between different policy areas.

Fig. 2 – Policy areas of potential impact from UA activities (Data source: EPRS adaptation from C. Prové, 'The role of urban agriculture in Philadelphia: A sociological analysis from a city perspective', summary report, 2015)

Role of urban agriculture: policy areas of potential impact		
Health	Poverty	Food production
Nutrition	Social inclusion	Sustainable / profitable
Education	Racial integration	agriculture
Culture	Community development	Local economy
Recreation	Crime Reduction	Environment
		Food Access

In 2004, the European Economic and Social Committee (EESC) adopted the "Opinion on Agriculture in Peri-urban Areas" which played to increase awareness of agriculture's role in the relationship between city and its countryside. One decade later, the economic and political context has changed. Since 2008 economic crises, food security has re-entered the political agenda, at both international and local agenda. Furthermore, consumption patterns have changed: today many cities go far beyond land planning and are promoting integrated food strategies. The European Commission recognize that "city farms" could have a positive impact on the environment, depending on the farming practices adopted. Even if current Common Agricultural Policy does not address directly urban agriculture, rural development programmes 2014-2020 could be used for the benefit of urban and peri-urban agriculture. Looking to the future, the challenge for urban agriculture is how to achieve the necessary integration across all EU policy areas over the next programming period, post-2020.

The Milan Urban Food Policy Pact (MUFPP) is the most important legacy of Expo Milan 2015: 160 cities from all over the world signed a non-binding agreement, fostering an integrated approach and advocating at global level the role of cities in tackling food issues. MUFPP recommended actions for food production are strictly related to urban and peri-urban agriculture.

If in Europe the sale of surplus can help the family economy, this is even more important in low-income countries where urban poor spend most of their income just to feed themselves. The concept of "green cities" - designed for resilience and social, economic and environmental sustainability - it is usually associated with high-tech eco-architecture, greenways, zero-waste and "closed loop" industries" in northern countries. In low-income developing countries, greener cities principles could guide urban development - ensuring food security, decent work and income, a clean environment and good governance - starting from integrating into urban policy many of the creative solutions that poor themselves have developed. According to FAO one of those solutions - and an essential feature of green city planning in developed,

and a growing number of developing, countries - is urban and peri-urban horticulture. The FAO programme, and similar initiatives by partner organizations, have demonstrated how horticulture helps empower the urban poor, and contributes to their food security and nutrition. But it can also help grow greener cities that are better able to cope with social and environmental challenges, from poor neighborhoods improvement and management of urban wastes to job creation and community development.

A recent analysis of urban agriculture's global potential (M. Georgescu, 2017), published in the journal *Earth's Future*, using Google's Earth Engine software, as well as population, meteorological, and other datasets, determinates that fully implemented in cities around the world, urban agriculture could produce as much as 180 million metric tons of food a year—perhaps 10 percent of the global output of legumes, roots and tubers, and vegetable crops. The study also looks at "ecosystem services" associated with urban agriculture, including reduction of the urban heat-island effect, avoided storm water runoff, nitrogen fixation, pest control, and energy savings. The researchers estimated that fully-realized urban agriculture could provide as much as 15 billion kilowatt hours of annual energy savings worldwide—equivalent to nearly half the power generated by solar panels in the U.S. It could also sequester up to 170,000 tons of nitrogen and prevent as much as 57 billion cubic meters of storm water runoff, a major source of pollution in rivers and streams. Taken together, these additional benefits make urban agriculture worth as much as $160 billion annually around the globe.

Urban agriculture will never feed the world, and this research confirms that, but the key point is that natural capital in cities can be vastly improved and this would produce a range of benefits.

5. And other benefits, from environmental and social perspective

Detractors of urban farming often scramble to point out that the production potential of urban farms is so minimal as to be insignificant. However, it is to be taken into consideration also the cumulative social benefit of cultivating what we eat. The invaluable "product" of human-centered endeavors like farm stands and school and urban gardens lies in weaving communities together and building a foundation for food education.

Other related environmental benefits offered by urban agriculture are related to Climate change, by which cities are increasingly impacted. The preservation, inclusion and widening of grassland or horticulture could help mitigate the "urban heat island effect", where cities are often several degrees

warmer than nearby rural areas due to heat trapped by dark-colored roads and buildings. Urban farms can also lower the risk of flooding during heavy downpours, as well helping retaining water in dry area: vegetation collects and retains precipitation, reducing storm-water run-off into urban waterways. Moreover it could impact on waste recycling (e.g. rooftop gardens and vertical farms could re-use waste water, waste heat and organic waste), air quality, carbon sequestration (as vegetation filters certain airborne pollutants) and biodiversity (through the provision of habits and forage for bees).

The table below summarizes documented environmental benefits of urban agriculture based on a report from the Johns Hopkins Center for a Livable Future.

Fig. 3 – Urban agriculture: summary of environmental benefits. (Source: Source: J. McEldowney, urban Agriculture in Europe.) Patterns, challenges and policies, EPRS | EuropeanParliamentary Research Service, 2017

Reported benefits	*Reported limitations*
Local ecosystem services	
Increased biodiversity Habitat for pollinators Reduction in 'urban heat island effect' Increased rainwater drainage, reducing risk of flooding, ground water contamination and groundwater depletion Recycling of organic waste	Soil management, irrigation and fertilizer use practices by UA growers may not be ecologically sound
Climate change mitigation	
Potential reduction in greenhouse gas (GHG) emissions Carbon sequestration by vegetation and crops Potentially reduced energy and resource inputs using some technological UA operations Adds to collective memory of food production and protects urban green spaces reinforcing cities' capacity to produce food in times of crisis	If plants are grown in energy or resource intensive locations, this may increase GHG emissions Small-scale, fragmented UA may be less efficient in resource use and transport emissions than conventional agriculture If UA became ubiquitous in cities, it could reduce population density, requiring more driving and greenhouse gas emissions than the current system.

The same report however points to a number of environmental limitations, including the issue of contaminated land and loss of scale economies. Anyway, if we would look towards circular cities, creating "circular metabolism", to succeed we need to re-introduce primary production (auto-trophic assimilation) into cities.

Research also highlights the potential social impact of urban agriculture. Access to nature and green spaces provides an array of health and wellbeing benefits, from psychological and physical, particularly in westernized soci-

eties, where quite chronic health consequences associated with city living - obesity, mental illness, diabetes, for instance -, are increasing. Making more room for nature in cities brings multiple advantages for residents and the environment. Using urban agriculture to enhance neighborhood spaces can stimulate healthy physical activity and promote the development of social ties. There are examples of urban agriculture project that include vulnerable target groups, such as drugs addicts, juvenile offenders and immigrations, who are at risk of social exclusion. In Bologna, urban gardens have an educational and social inclusion vocation since the '60s. In Badia del Valles (Barcelona), the agriculture experimentations of one urban orchard is linked to social housing and a strong social inclusion component. Still in Barcelona, Can Pinyol Community Gardens (Sant Boi de Llobregat) is a project initiated in the framework of the European project SIDIG-MED were collective gardening is used as an instrument of community building and self-confidence improvement, addressing in particular people in disadvantaged situations such as unemployed, psychical disabilities and mental disorders. In Greece, the Municipality of Neapoli-Sykies decided in 2012 to assign for free small plots to vulnerable households to produce fresh and healthy food for self-consumption. They can grow any variety, but according to organic methods, with the help of experts. The municipalities provide them also with water, seeds, plants and tool for free. Beneficiaries just have to give 10% of their harvest to the local Social Grocery Store.

In all these experiences, it is to be noted how a higher social inclusion helps to develop co-responsibility for the living environment, and social interaction are intensified. Moreover, disadvantaged people could have access to food quality: urban agriculture helps to diversify nutrition, development of local business, regulate poverty and social inclusion of underprivileged groups.

Urban agriculture has shown its potential ability to strengthen social inclusion, local economic development (creating job opportunities), and community development (increasing community ownership and responsibility for their environment). From a social integration perspective, urban agriculture can help to build bridges within local communities between people from different age groups, backgrounds and cultures, enhance the construction of a sense of belonging to a place.

Social benefits also include participation, education, creation of jobs, intercultural communication, and - strategically interesting - an increased resilience to economic and political crises.

6. Connecting nature: bringing cities to life, bringing life into cities

This paper presents the initial research and reflection that the Metropolitan City of Bologna is developing within the Horizon2020 project "Connecting Nature". Coordinated by Trinity College Dublin, Connecting Nature is a partnership of 29 organizations from 16 countries which includes local authorities, communities, SMEs, NGOs and academics. The aim of the project is to measure the impact of nature-based projects in urban settings: how the impact on climate change adaptation, health and well-being, social cohesion and sustainable economic development in the cities involved. Innovative actions to foster the start-up and growth of commercial and social enterprises active in producing nature-based solutions and products will also be an integral part of our work.

The Metropolitan City of Bologna in particular has chosen to address urban agriculture and circular economy to nurture the local innovation system and build a green focused local economy.

References

Bartesaghi, K.C., Osmond, P., Peters, A., 2016. Towards a comprehensive green infrastructure typology. A systematic review of approaches, methods and typologies. Urban Ecosyst. 1–21. http://dx.doi.org/10.1007/s11252-016-0578-5.

Gasperi D., Pennisi G., Rizzati N., Magrefi F., Bazzocchi G., Mezzacapo U., Centrone Stefani M., Sanyé-Mengual E., Orsini F., Gianquinto G. (2016). Towards Regenerated and Productive Vacant Areas through Urban Horticulture: Lessons from Bologna, Italy. Sustainability. 8. 1347. 10.3390/su8121347.

Glavan M. , Istenič M. C., Cvejić R. and Pintar M. (2016). Urban Gardening: From Cost Avoidance to Profit Making — Example from Ljubljana, Slovenia, Urban Agriculture, Associate Prof. Mohamed Samer (Ed.), InTech, DOI: 10.5772/62301. Available from: https://mts.intechopen.com/books/urban-agriculture/urban-gardening-from-cost-avoidance-to-profit-making-example-from-ljubljana-slovenia.

Lapujade J. et all., MADRE Good Practices Catalogue, Anima Invest Network, 2018.

Lin B.B., Philpott S.M., Jha S., Liere H. (2017) Urban Agriculture as a Productive Green Infrastructure for Environmental and Social Well-Being. In: Tan P., Jim C. (eds) Greening Cities. Advances in 21st Century Human Settlements. Springer, Singapore.

Lohrberg F., L. Licka, L. Scazzosi, A. Timpe (eds.), European Cooperation in Science and Technology (COST), Urban Agriculture Europe, Berlin, Jovis, 2016.
Martinez-Juan, A., 'Urban and peri-urban agriculture', European Parliamentary Research Service Keysource, June 2014.
Polling B. et all, Business models in urban farming: A comparative analysis of case studies from Spain, Italy and Germany, Moravian Geographical Reports, 2017.
Roggema R. (ed.), Sustainable urban agriculture and food planning, Routledge Studies in Food, Society and Environment, London, Routledge, 2016.
Rolf W., Peters D., Lenz R., Pauleit S. (2017). Farmland – an Elephant in the Room of Urban Green Infrastructure? Lessons learned from connectivity analysis in three German cities. Ecological Indicators. 10.1016/j.ecolind.2017.06.055.
Santo R. et all., Vacant Lots to Vibrant Plots. A review of benefits and limitations of urban agriculture, 2016.
Tornaghi C. Urban Agriculture in the Food-Disabling City: (Re)defining Urban Food Justice, Reimagining a Politics of Empowerment, 2016.
Towards an EU Research and Innovation policy agenda for Nature-Based Solutions & Re-Naturing Cities, European Commission, 2015.
Viljoen A., Wiskerke Johannes S.C. (eds.), Sustainable food planning: evolving theory and practice, Wageningen Academic Publishers, February 2016.
Zeunert J., Urban Agriculture up-scaled: economically and socially productive public green space, 2016.

On line references

https://agupubs.onlinelibrary.wiley.com/doi/abs/10.1002/2017EF000536
http://meetingoftheminds.org/sustainable-cities-require-urban-agriculture-20941
https://www.citylab.com/environment/2018/02/big-data-suggests-big-potential-for-urban-farming/552770/
https://www.nationalgeographic.com/environment/urban-expeditions/austin/caleb-harper-innovation-in-urban-agriculture-important-because-of-climate-change/
http://urbandesignlab.columbia.edu/files/2015/04/4_urban_agriculture_nyc.pdf
https://www.thenatureofcities.com/2016/06/30/urban-agriculture-has-many-benefits-is-one-of-them-a-contribution-to-urban-sustainability/
http://www.cityfarmer.org/alexandraUA.html

https://urbanomnibus.net/2012/02/seeing-green-urban-agriculture-as-green-infrastructure/
https://theecologist.org/2014/dec/03/making-cities-sustainable-urban-agriculture
http://sustainablefoodtrust.org/articles/feeding-cities-urban-agriculture/
http://www.jacsmit.com/book/Chap02.pdf
https://www.ilvo.vlaanderen.be/language/en-US/EN/Home.aspx

Chapter 5

Metropolitan Agriculture and Social Involvement. An international debate

Marino Cavallo, Giuseppe Rainieri

1. Framework of Metropolitan and Peri-urban Agriculture

Food is an amazing opportunity for discover any kind of culture, think of China, often if we know a culture it is because we ate at ethnic restaurants.

Anyway, if we want to talk about agriculture, we cannot omit its origins, its cultural and identity value.

In effect, agriculture can be also considered from a heritage value perspective. How reported Mohammed Elrazzaz, "the heritage distils the past" and condenses it "into icon of identity". These icons of identity bind us with the past, with ourselves and with the future generation.

The story of agriculture started in Mesopotamia some ten thousand years ago. The prehistoric communities settled around fertile areas, around the rivers, river valleys, basins and deltas. And these communities eventually developed into tiny villages, then towns, then cities. We are talking about agriculture as the preconditions of a civilization, and that is why it should not be surprising that eventually, millennia later, we have the first great civilization in the Mediterranean basin.

Agriculture has also elicited the need for knowledge and innovation; people started paying more and more attention to natural and cosmic phenomena. They became more interested and more systematic in observing such phenomena as the succession of seasons, the equinoxes, the summer and winter solstices, the constellations in the night sky: because agriculture depended on these phenomena.

Considering the UNESCO world's heritage list, we can detect some of the most extraordinary cultural landscape, that is a natural landscape that has been transformed significantly by the intervention of human activity; so, nature is the medium, culture is the agent and the cultural landscape is the product. In light of the above challenges and opportunities, certainly, the existing farm-related metropolitan activities and those that could arise, need undertake a process of innovation and need support from private, public, profit and non-profit institutions.

The small farms need to improve their professional abilities and functional capacities to open up new markets and help overcome the challenges presented. At the same time, conventional agriculture needs to improve its sustainability.

Finally, regard innovation, we can identify some specific themes where to act, which also suggest who are the protagonists who participate in the innovative implementation of metropolitan agriculture: farmers' innovation, concerning farming techniques, organization and marketing; academic research; territorial innovation, concerning policies at metropolitan, regional and national level; social innovation, concerning mostly vulnerable population; consumers' innovation. The transnational innovation can be added too.

Below, are some examples and ways to support the urban and peri-urban agriculture in innovative manner in different fields.

2. Transnational innovation and MPA accelerator

When the Expo was hosted in Milan in 2015, the event offered to the city to start working at a local level, by introducing food policies, and at an international level, by calling upon other cities from all over the world to join, in order to enhance the role of cities in the domain of food policies.

We are talking about the Milan Urban Food Policy Pact (MUFPP)[1], the first international agreement concerning food policies, in which have joined 160 cities from 62 countries. The Pact, considering food at the meantime as a crossroad of many different challenges and part of the solution, promotes an integrated approach to food issues: a multilevel approach (city, regional, national and global system), and a multiparty approach, that must to engage all the stakeholders: producers, consumers, business, NGO, academia, practitioners.

The Pact comprise a framework of action in which some actions about food production appears: promote and strengthen urban and peri-urban food production; seek coherence between the city and nearby rural food production; protect and enable secure access and tenure to land; help provide services to food producers in and around cities; support short food chains.

Besides, the Pact has its main activity in promoting collection and exchange of solutions. In order to reach it is promoted the Milan Pact Awards, purely associated with transnational innovation. Each year are selected 2 winners, an absolute winner and a winner in challenging environment, who receive a monetary prize. This prize is used to transfer the good practice

1 http://www.milanurbanfoodpolicypact.org.

to another signing city. With the FAO[2] They are working on a monitoring framework for the progresses made by cities, also they are setting up indicators, and an urban food action platform.

Franca Roiatti, the responsible for the communication of MUFPP, affirmed that cities are not really an actor in the global agriculture policies, but their role is to be somehow the director; this is an example of what is happening about MPA in the field of transnational relationship and what it can do for agricultural innovation and for best practice exchange.

More about innovation, the manner of food is grown, packaged, distributed and so on, can create a positive or negative impact on the health of people, on the environment and on the economy of a country.[3]

These are the reasons that have pushed to engaged in food research and support processes the founders of the Future Food Institute.

The Institute, inspired by the Californian Institute for the Future, consists in a non-profit organization, focused in innovation, community and education, also an opportunity to accelerate metropolitan agriculture. It is based on two fundamental aspects for creativity: a making approach, typical of the FabLabs [4], and the concept of open innovation, the fact of making innovation collaborating with others. The Future Food Institute can be considered as an innovative way to support the MPA innovation process.

3. Socio-Economical Production Models

"The conventional agriculture systems are at the end, the farmers cannot survive in that environment, led by huge industrial farm systems that are throwing out the small farmers from the systems" Antonio Compagnoni said, introducing Humus Network[5], a network of organization from all over Italy. Most of them are cooperatives or associations, one, for instance, is a cooperative of small producers that sell their products directly and are organized in a way to exchange their products from their farms, another is a pasta factory in which farmers cultivate the wheat and then producing the pasta.

In the exposure of Compagnoni, two themes were emerged as fundamental: the producers' responsibility and the quality assessment.

First of all, he said there is a great risk of conventionalization, that is the risk that the legal requirements cut the larger sustainability efforts and values

2 http://www.fao.org/home/en/.

3 http://futurefood.network/institute.

4 A Fab Lab is small-scale workshop which offers tools for digital and innovative fabrications.

5 http://www.retehumus.it.

of the organic farmers. Regulations, bureaucracies and conventional markets decrease the possibilities to grow in a healthy and sustainable way. Therefore, the farmers have the responsibility to create a new innovative system, in which four principles: health, fairness, ecology and care interact in short supply chain development.

Resisting standardization introduces the second theme. There is the need of a participatory approach for the quality verification, that engages also consumers, citizen, civil society and technician experts. This process goes further on sustainable development, in order to reach price fairness, social and economic relations, social and territorial responsibility, quality of the products, goodness and taste of food.

Another advantageous model to support the MPA is the removal of intermediaries, promoting short circuits. This is the way taken by Chez les Producteurs[6], a farmers' association that, organizing producers to share resources, tend to generalize the consumption of local grown food.

The association, born from a collective farm, become a collective outlet, which is managed by farmers themselves.

What is innovative in this initiative is farmers' organization: they got together and decided to create it. Even though they received support from the institutions (only from the beginning), it's their own initiative. It has a social role, since it strengthens the local community of farmers: it's a way for them to meet and exchange about their products, their practices and so on. Finally, its' a model of food distribution that combines economic value (the price is at-farm-get prices), nutritional benefits, and collective dimension.

Chez la Producteurs support the transition to organic farming through quality and ethics, negotiating and enhancing visibility of the MPA. Furthermore, it encourages the setting up of new organic and short chain farms in the area.

When eight young workers, from different discipline, work together in the spirit of dialogue and complementarity with a cross-cultural approach, they could create an innovative enterprise.

This is exactly what happened in Montpellier, about the collective urban farm of Condamine[7]. The Farm, started in May 2017, is a collective initiative responding to a call for projects. The activity concerns the agriculture production and protection of biodiversity, through which providing healthy and local food for the greatest number of metropolitan citizens. Thanks to catering activity they diversify the activities, reduce losses, increase public awareness of high quality food and support employment. Notwithstanding,

6 http://jardinsdupaysdaubagne.com/producteur/chez-les-producteurs/.
7 https://www.facebook.com/lafermeurbainecollectivedelacondamine/.

they promote the agricultural heritage and landscape management with an agro-ecological design which effect is the preservation of the landscape and culture heritage.

A strong desire to network with local partners led to foster social cohesion in relation to nature, also thanks to the direct and short marketing channels, involving social and solidarity economy, and enhances popular education. Another aim was respond to climate change and strengthen the link between town and countryside.

Finally, this activity provides a window through which to observe a good land management that also respond to climate change and provide environmental benefits.

4. Peri-urban system and Social-Models

The green urban and peri-urban areas, can offer citizens activities of volunteering, leisure, learning and research (to students), becoming points in which people of different social extractions, but united by the restorative action of nature, meet each other's.

The Villa Ghigi Foundation[8], offers the opportunity to manage a garden in the context of peri-urban system. The garden is an ancient agricultural estate and preserves many elements of the past use. Maria Teresa Guerra, park's worker, states that the park is actually an open-air museum, with hundreds of fruit trees, some even centuries old, many of which now unavailable and endangered.

The Foundation provides educational opportunities for citizenship and students, through the relationship with green and publications on the topics related to the natural, historical, cultural and landscape aspects. Also, welfare activities are carry on by well attended tracking experiences and horticultural therapy. The garden's spaces are besides used for marketplace, strengthening the relationship with local farms.

So, Villa Ghigi sets the path by which the community can participate in the conservation of the cultural elements of the territory, creating a synergy with them and the local producers.

In Thessaloniki it can be found two interesting activities, carried out thanks to the contribution of the Aristotle University of Thessaloniki , both tend to use the derelict and deserted green areas, activating the neighbourhood and community of citizens, in order to support the activities and life's standard of social patient groups and risk groups.

8 https://www.fondazionevillaghigi.it.

One of that is the urban vineyard, created in 2013 on the initiative of local public administration, private wine producers group and of the department of agriculture of the Aristotle University of Thessaloniki[9]. Here, voluntary teams and schools participating not only in the vine harvest, but in all the activities that have to do with the vineyard. Also, are organized outdoor dining with the presence of traditional dance groups. The wine was offered at a charity dinner, and the income was donated to volunteer groups.

When neighbourhood parks are shaped by the direct involvement of the residents and their active cooperation with the state, they acquire a distinct character, which is aptly adapted to each case. This creates an environment of public space that reflects the peculiarities and needs of the people to whom it is addressed and in which they can develop relationships, communicate and interact. This happened thanks to the urban vegetable garden, evolved as a neighbourhood workshop called Kipos 3[10]. The garden's rules, encouraging sharing and empowered work, allows that the products are used by those who cultivate them.

The outcome were opportunities for environmental and social actions and active involvement of citizens in urban green areas, thanks to an area where are provided leisure, educational and training opportunities for all ages. Furthermore, it leads to create environmental awareness, as an educational dimension.

With actions to raise awareness among citizens through workshops, community gardening, cultural events and pupil workshops is reach the social purpose, that is: cohesion, interaction and community building.

Eleni Sakali from the department of urban environment management[11] [12], which offered this testimony, said: "as far as the innovation of the activities are concerned, we know that parks and green areas of the city are, for a large number of people, especially for children and adolescents, the most intimate experience of interaction with nature." Again, we want to underline the importance of these realities for education, as they host university courses, also in cooperation with some colleges.

5. Consumption Model and Citizen Involvement

An innovative consumption model might be focused on reducing waste, on providing what is required, and involving consumers themselves.

9 https://www.auth.gr/en/.
10 https://www.facebook.com/cityasaresource/.
11 https://www.gtp.gr/TDirectoryDetails.asp?ID=202.
12 http://ingreenci.eu/?lang=en.

Arvaia[13], an activity of self-production of food by citizens, implement a model that combines a cooperative system, in which farmers and cooperative members are equally involved, with an efficient logistics management.

There, no one sell something, but both farmer and citizen are members of the cooperative and compete together to the aim of producing good food. The organization, leaving the market, allows direct financing of all production. That is, at the beginning of year, a designated assembly fixes the budget, therefore speculates the costs, then all members pay an equal share. The finished product is distributed weekly, in equal parts among all the members.

This method interrupts the usual agricultural system, in which the farmer must anticipate the money and try to provide a product that is competitive on the market. There are no boxes reserved, but a list indicates the amount that is allowed to take for each type of vegetables. Every member takes what is expected, weigh it and put it in their bag.

This means no packaging and no waste of time to make by farmers. As well as in the short chain, the product is extremely fresh, because it is harvested in the morning and distributed in the afternoon. Moreover, there is no food waste, because what it is collected weekly, is divided by the number of citizens.

The attention of the farmer is not addressed to the cosmetics of the product, but to the goodness, freshness and taste of it.

At last, this method implies a form of self-education to healthy eating and the role of the relationship (there are no controls on the quantity taken, but it is regulated by the strength of the relationship between citizens).

In Cesena, an Emilia-Romagna town, in the context of URBACT programme[14], it was desired to aim the jobs creation in peri-urban areas in the agri-food sector; the solution was to create district markets of the short supply chain type. To achieve this result, local stakeholders (public authority, trade-associations of agriculture, enterprises, training institute and research, small farm and educational farms) were invited around a table.

The Human Centered Design is one of the principles of ergonomics, and it consist with designing systems, focusing on the person, involving them to understand needs, threats and opportunities.

Anyway, not all the meetings were held in the municipality, but they went outside to visit the stakeholders, to meet the farmers and learn their needs.

Finally, the role of Elena Giovannini, who exposed these topics, was to be like a bridge, between stakeholders and politicians, like a negotiator of proposal and legal frameworks.

13 http://www.arvaia.it.

14 http://urbact.eu/agri-urban.

Much of the academic research works by involving the community to collect data useful for scientific discover, as well as to design shared, targeted systems that reflect the citizens' needs.

What is reported exemplify the academies contribution to understand trends, difficulties and opportunities that characterize the territory. So, the Agricultural University of Tirana[15] disseminated a short questionnaire among the Tirana consumers, to see what's their perception of urban agriculture.

The questions concerned if the citizens had heard about urban agriculture (54% answered yes), if they had any previous experience about it (24% answered yes), what was their perception of the economic effect that urban agriculture could bring to their lives (highly ranked was that urban agriculture should increase food safety), what kind of products they would like to have (highly ranked were the vegetables), if they were willing to do urban agriculture themselves (90% answered no). About the last question, the majority said they were involved in other activities and were not interested. Others said it was needed a really big initial investment, and they had the feeling that agriculture was not a safe job. Also, they were not sure about the support that state, lenders or bank would give them. Those who responded yes specified that they would do urban agriculture "for fun" and to do physical activity for their pleasure.

This last intervention, by Ana Kapaj, together with the others, helps to understand the importance of the citizen involvement at every level of the system's design and execution: from the conception of activity, to planning, implementation and daily action.

6. Agriculture as a Social Leverage

The urban and peri-urban agriculture can also play a specifically role in social field.

As reported by Patrizia Preti, the president of the Orti Salgari association[16] , the gardens "are green squares"; for Italian culture, the square is the place where people meet each other, strengthen the relationships and where projects are exposed. So, at social level vegetable gardens hold great importance.

Orti Salgari, located in Bologna city, are 420 vegetable plot gardens of about 40/50 square meters each. Few areas are autonomous, but most are linked to social centres. Moreover, there are obstacles regard economic and communication between areas.

15 http://ubt.edu.al.

16 http://www.ancescao-bologna.it/gli-orti/menu-orti-urbani-citta-bologna/335-associazione-orti-via-salgari.html.

More, the Orti Salgari born in a historically difficult neighbourhood, designed as a ghetto, where there are still great difficulties. The gardens help to unite the social fabric, where people learn how to cultivate organically, the elderly help to keep the memory of the past; in short, they are places in which to live healthy with nature.

Finally, Can Pinyol[17] social garden was born for foster intercultural dialogue related to the use of urban agriculture, with a very strong focus on governance models and the topic of social inclusion.

It was realized thanks to the collaboration and the agreement among the Metropolitan City of Barcelona, the Municipality of Sant Boi and a NGO that manage the day to day activities. To assure the social inclusion component was stressed that people from different conditions and ages, women, men, from a different country and social condition was been mixed.

Conclusions

What is above mentioned, although introduced as best practices to support the implementation of MPAs in an innovative way, can now be observed by turning it upside down; that is: the agriculture can innovate the urban and peri-urban areas in different fields.

Precisely, what it means is that agriculture should not be interpreted only as a primary sector dimension, but a way to act in the social, environment, health, urban and economic sectors.

The MPA is an innovative method to supply food to the cities, to ensure the food quality, to preserve and manage the environment with responsibility, to connect various actors in network collaborative activities, to bring people together and create good relationships and to create a continuum between rural-urban areas.

The activities presented in this chapter facilitate the conditions to regenerate the urban area, improving well-being and offering ecological and economic co-benefits. The MPA can be used in order to mitigate the effects of climate change and to make better insurance value of ecosystems. Moreover, to set up green areas around coasts, like those of the Mediterranean, can lead to economic and social benefits: to attract tourists, to become a meeting places and to protect against floods and erosion.

Finally, the MPAs can also be considered as Nature-Based Solutions (NbS), a concept that is one of the pillars of the European Horizon 2020 pro-

17 It was developed within the SIDIG MED project, financed by the INTERREG MED programme, involving the metropolitan areas of Barcelona, Rome, Mahdia in Tunisia, and Al-Balqa in Jordan. The project took place from November 2013 to November 2015.

gram[18] [19]. NbS are defined by the European Commission as "actions which are inspired by, supported by or copied from nature", and they aim to help societies address a variety of environmental, social and economic challenges in sustainable ways. It can be identified some examples: sustainable architecture, circular economy, green space and, of course, metropolitan and peri-urban agriculture.

References

Anima Investment Network (2014). Sector Action Plans: Agri-food. Anima.

Elrazzaz, M. (in press). The Mediterranean: A Shared Heritage. EMUNI book series.

European Union (2015). Nature-Based Solutions & Re-Naturing Cities, Final Report of the Horizon 2020 Expert Group on 'Nature-Based Solutions and Re-Naturing Cities' (full version). Publications Office of the European Union. Luxembourg.

Gavrilidou, E., Kleinmann, H., Oureilidou, E. & Zafeiropoulos, S. G. Z. (2015). Urban Agriculture in Thessaloniki. An Academic Project Meets Reality. Ri-vista, pp. 60 - 85.

Lapujade, J., Lafitte, C. & Aune, N. (2018). Urban and Peri-Urban Agricolture Best Practice Catalogue. Interreg MED programme, France, FR.

Lidwell, W., Holden, K. & Butler, J. (2010). Universal principles of design (revised and updated) (2. Ed.). Rockport Publishers. Beverly (MA).

Orsini, F., Gianquinto, G., Georgiadis, T., Tempesta, M., D'Arco, M., Michelon, N. & Pennisi, G. (2017). International Symposium of Greener Cities, Book of abstracts. Bologna, IT.

Paltrinieri, R. & Spillare, S. (2015). Well-being Shift through Healthy Eating. From Organic Consumption to a Paradigm of Alternative Local Development. RIVISTA DI STUDI SULLA SOSTENIBILITA', P. 83-94. FrancoAngeli.

Spillare, S. (2016) a. Agro-ecological Consumerism between System Response and Glocal Reflexivity: the example of Organic Food Consumpion, in: Supplement of Quality-Access to Success, Vol. 17, S2, May 2016 - Contents, 2016, 17, pp. 580 - 584.

Spillare, S. (2016) b. Sustainable development and the agency of citizen-consumers: between systemic reflexivity and common good. International Journal of Public and Private Management, 3(1), pp. 54 - 70.

18 https://ec.europa.eu/programmes/horizon2020/.

19 https://ec.europa.eu/research/environment/index.cfm?pg=nbs.

Chapter 6

Manifesto for the new agro ecological city[1]. Strategies for overcoming rural-urban cleavage in medium-size cities

Alessandro Pirani

1. Fertilizing cities. Scenario

Western countries have experienced in the last ten years one of the worst economic crisis of the recent past. This has led to a general awareness of how the dominant development model won't be sustainable without a deep change in the logics and governance models we use to thrive. Much of this very change has to do with the impacts post-industrial production models produce at a wide range on the environment and therefore on human beings.

A transition is now needed in organizational models we choose for our territories and how they interact with every adaptive human activity such as industrial production - including agricultural - and settlement.

Now, the first signs of recovery indicate a perspective where after years of emergency management, we can return to invest and think strategically. This has to be understood as an invitation to deeply go back to basics, rethinking the idea of growth in more ecological and not merely economic terms, looking at the primary sector as the ideal grounds for experimenting new possible pacts of citizenship.

All demographic indicators describe a centripetal trajectory towards the large urban agglomerations, which on a global scale is producing an unprecedented number of megalopolis. This tendency has got its exceptions. Europe for instance is facing a partially diverse tendency in which large agglomerations are losing inhabitants for the benefit of more liveable situations, more

1 This paper, to be intended as a first release of a working paper, is the result of the workshop that was held in Reggio Emilia within the activities of Agripride (http://futurefood.network/events/agripride/), first international meeting conceived by the Future Food Institute on the future of rural city. Active participants to the workshop were students from local universities and some distinguished international scholars: Sibella Kraus (SAGE, Bay Area, California), Debbie Field (Ryerson University, Toronto Canada), Alberto Mataràn (Universidad de Granada, Spain), Eleonora Morganti (University of Leeds, UK), Jan Willem van der Schans (Wageningen University, Netherlands). To them goes our warm thanks for having contributed in starting this.

human-scale settlements where residents can build communities that make it easier to reconnect with the human condition.

The European model - and the Italian in particular - has its own peculiarities, one in which the medium-size cities are growing again due to the greater availability of alternative solutions to mobility. Medium-size cities (i.e. pop ~100.000 - ~250.000) that are located in the middle of intensive (or highly productive) agricultural areas represent a unique opportunity to re-balance rural-urban connectivity at a provincial scale. This model can hold particularly important implications as there are more than 1 million cities this size globally.

Megalopolis (or metro-regions) with significant regional agriculture face their own challenges, albeit within a larger geography, of reconnecting to the ecology and culture of their surrounding countryside. Successes of the medium size cities may also provide useful models for these larger megalopolis.

2. Agri-food as a nexus. The issue

There's a gap that must be filled concerning how to balance medium-size cities and the surrounding agricultural areas. This has to do with how we integrate mutual productive functions coping with the idea of an ecologically and inclusive space. These different and often conflicting uses of space seek policies to repair the very idea of *territory as a commons* in which rights and duties work under the same framework.

Given such a reframing of territory, cities must acquire the tools to govern it: the challenge is first of all cultural, and asks for a deep change in the mindset of the inhabitants, city users and organizations (local government, trade unions, social organizations and others).

Once we have become able to recognize this 'naturally promiscuous' use of the territory, we can start rethink to how to bridge this gap with strategic leverages. In this perspective, the agri-food sector can be seen as an engine of the economy - a 'primary system' understood as the heart not only of production but more generally of the social and political system.

It's therefore possible to conceive a system which environment, feeding, production and human beings find an internal consistency. This leads to rethinking of the *agri-food sector as a means to integrate city and surrounding rural areas using its functionings*[2].

2 In the capability approach (Amartya Sen) functionings are the "states and activities constitutive of a person's being". In a broader sense, they can be applied to the territory. Examples of functionings can vary from elementary things, such as being healthy, having a good job, and being safe, to more complex states, such as being happy, having self-respect, and

The territory can be read as a system in which different assets are overlapped and mutually interdependent. Assets understandable *as commons*, "systems of co-existence between humans and natural resources that are based on self-regulated collective governance"[3], in search of a valorisation where agriculture is once again thought of as a vector of integration between different uses of space, becomes an essential nexus. We can constitute systems of coexistence between humans and natural resources that are based on self-regulated collective governance, and not on market mechanisms or state regulation.

Those resources are governed in this way because they are deemed essential to individual and community survival. Moreover, the commons steward the resources for future generations, enable direct democratic processes and value resources in non-monetized ways (value-in-use; universal accessibility; environmental sustainability).

3. The role of cities. Coping with this challenge

Medium size cities have grown their boundaries from the countryside. On the one hand, the inner settlement, lived by the inhabitants, on the other the outside fields, the farms, the real engine of the city. Middle-sized cities often struggle to have good balance in the food supply chain, as logistic flows tend not to consider everything below a given scale.

Medium size cities can help to play a role in leading a new movement. Emilia-Romagna region can be to this extent a perfect *en plein air* workshop to test it. Experience produced in cities like Reggio Emilia can provide an important model for medium-size rural cities, e its successes codified in order to be scaled a possible recipe about how to obtain the alignment of the actors around a model of collective action. Farmers and citizens are finding new paths to integrate their visions, finding several good points of agreement of mutual benefits.

This leads to think about policies intended as a system of *selective incentives* in which each of the actors finds a reason to participate. This leads as well to rethink governance systems, building brand new constituencies to handle the topic. A possible framework for "From Field To Table"[4] a

being calm. Functionings are crucial to an adequate understanding of the capability approach; capability is conceptualized as a reflection of the freedom to achieve valuable functionings.

3 Tomaso Ferrando and Jose Luis Vivero-Pol (2017) *Commons and 'commoning': a 'new' old narrative to enrich the food sovereignty and right to food claims*, in right to food and nutrition watch, The World Food Crisis: The Way Out (pag. 52).

4 Field to Table was first developed by Canadians Mary Lou Morgan and Ursula Lipski for the Toronto Food Policy Council in 1991 to describe programs that more directly link the "farm" around the metropolitan city to the residents or eaters "the table" of the City.

Sustainable Food manifesto for Medium Size Cities comes from the idea of establishing "food districts", a new legislative tool to guarantee further resources and opportunities for the growth and revitalization of supply chains and territories at national level. An opportunity can come from the long awaited overcoming of provinces, intermediate level of governance, for a skills harmonization within the region.

The case of raising metropolitan cities is useful to foresee this possible scenario where competences and ownership over agri-food issues stays in medium size cities (provincial capitals and not).

4. A possible future. A call for policies

Together we can reb the rebuild conditions to enhance every territorial experience. Below are some trajectories for a public policy on the agricultural town. For each of the keywords are some possible policies to be implemented by the local authorities in order to incrementally build this brand new actor in the policy-scape.

1. Commons

Cities should contain all new housing and industrial growth within the current urban footprint; project such growth over at least 10 - 25 years and plan for any additional infrastructure needs (e.g. utilities, transportation, schools, medical facilities, etc.).

Cities should contain all new housing and industrial growth within the current urban footprint; project such growth over at least 10 - 25 years and plan for any additional infrastructure needs (e.g. utilities, transportation, schools, medical facilities, etc.).

Cities must define the planning and management tools for land protection (including agricultural parks, but not only).

2. Openness

Foster knowledge sharing, collaboration, and dissemination of exemplary case studies with other municipalities and provinces.

We need to scale-up and to scale-out all the initiatives that are developing at local level a sustainable transition in the agriculture and food sectors.

3. Health

The health of all school aged children is enhanced by focusing on increasing locally grown vegetables and fruits served in school cafeterias and at school. The health of the overall population is improved by increasing the access to fresh food and the food culture, including knowing the origin of the food or even growing their own crops.

To increase the health of the next generation, reduce diet-related illnesses, and promote local agriculture, the City government would partner with school boards, farmers, parents and children to commit to improving school food. Knowing the importance of increasing consumption of vegetables and fruit to a healthy diet, chefs would be invited to provide delicious child and youth-friendly recipes and students themselves would be asked to lead the development and implementation of the process. Farmers would be paid the full cost of their products, with the difference being made up by support from the local government.

4. Diversity

Determine the amount of locally-produced food that is locally consumed (or amount of local consumption that is locally produced) and consider costs, benefits, and strategies for increasing amount of locally produced food that is locally consumed.

Cities should assess the food system and develop an action plan for the long-term economic viability of the agricultural sector and more broadly of the bioregional food supply chain. This action plan could be developed as a dynamic, collective impact model that is performance-based and that engages a range of rural and urban actors (e.g. businesses, government, NGO's, institutions). Examples from the US: Vermont's Farm2Plate, Relish Rhody. (The suggested policies below, could all be part of this strategic action plan.

Cities need to ensure that a certain percentage of land around the city is kept for agriculture productions.

Cities large[5] and small around the world have done this, most recently Reggio Emilia. To ensure proper food supply, cities also need to make sure there is a place where local food can be stored and sold whether it be "food terminals" or permanent farmer's market locations.

Incentivize agricultural multifunctionality and sustainable agricultural practices that address climate change adaptation and mitigation (e.g. carbon sequestration, water conservation, biodiversity enhancement).

5 Ontario Greenbelt http://www.mah.gov.on.ca/Page13783.aspx.

References

Cox E and Longlands S (2016) *City systems: The role of small and medium-sized towns and cities in growing the northern powerhouse*, IPPR North.

Matarán Ruiz A. (2013) *Social participation in an active protection of peri-urban agrarian spaces: state of the question*, Boletín de la Asociaciòn de Geògrafos Españoles.

Roberts W. (2014) *Food for City Building: A Field Guide for Planners, Actionists & Entrepreneurs*.

Sen, Amartya (2009), *The idea of justice*, The Belknap Press of Harvard University Press Cambridge, Massachusetts.

Sustainable Agriculture Education (SAGE) and American Farmland Trust (AFT) for the Association of Bay Area Governments, Comprehensive Economic Development Strategy (2013). *The Bay Area Food Economy: Existing Conditions and Strategies for Resilience.*

Vivero-Pol J. L. (2017), The idea of food as commons or commodity in academia. A systematic review of English scholarly texts, Journal of Rural Studies Volume 53, July 2017, Pages 182-201.

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Linking a new concept of agriculture in the city and the circular economy, we will be able to imagine a new way to design the urban environment and boost new businesses focused on "Nature-Based Solutions" approach. Therefore, we can identify new pathways for green development, smart cities and inclusive growth . At the same time, we can improve communication, social relations and quality of life in metropolises.

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