SUSTAINABLE CITY PROJECT: AGRICULTURE AS A KEY ELEMENT FOR IMPROVING URBAN QUALITY

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Abstract

In the globalization era urban growth represents the result of economic system transformation. The reorganization of territories and the creation of new central areas cause irregular occupation of space especially in peri-urban areas and in the countryside where the sprawl brings important environmental problems. This paper focuses on the benefits of integrating urban agriculture into urban planning. The design of green spaces, in fact, is important in sustainable urban development and urban agriculture is one of the principal strategies in contemporary urban and architectural policy. Urban and peri-urban agriculture plays an important role in the definition of contemporary development city models because produces "new green landscapes" in which are integrated new economies and new forms of social spaces.

Keywords: Peri-urban rural landscape, urban agriculture, sustainability, planning.

1. INTRODUCTION

"People will be live in the city: it's an universal evolution process of human societies, of which engine is the research of better life to social and economic reasons. This transformation imply that the city respond well this ambition, where agriculture – side by side of forest and acquatic spaces – play and will be play an important role". (Donadieu, Fleury, 19 [1])

Figure 1. Earth's city lights, image by Craig Mayhew and Robert Simmon, NASA, GSFC.

Currently, 47,9% of the population of the world is considered rural; it means that 3.341.579 inhabitants are located in rural areas.
By the year 2030, it is expected that about 60% of the world's population will be living in cities. The increasing of urban population is a phenomenon characteristic of developing countries as a result of the immigration from poor rural areas. The rapid growth of cities represents one of the greatest problems of contemporary planning. In particular, in the last thirty years the sprawl phenomenon has represented the principal cause of environmental problems and the governments have been investigating about that.
Irregular occupation of the countryside has created new "hybrid landscapes" where the traditional distinction between urban and rural can't be recognized.
In North America the low-density model of urbanization has been predominant model of urbanization while in Europe this is still limited, even though in the last decades the important increase of the "diffused city" has necessarily made necessary the adoption of new strategies. In this sense, it is important the *European Spatial Development Perspective* (ESPD), adopted by the Ministers for Spatial Planning at the Potsdam Council in 1999. To respond to irregular occupation problems of territories the document identifies three principal objectives: the establishment of a polycentric and balanced urban system; the promotion of integrated transport and communications concepts offering equality access to infrastructure; the development and conservation of the natural and cultural heritage. [2]
Later the report *Urban sprawl in Europe - The ignored challenge* drafted by the European Environment Agency (EEA) in 2006 described the patterns of European urban sprawl and examined the principles that could underpin the framework for action at EU level to face urban sprawl. [3]
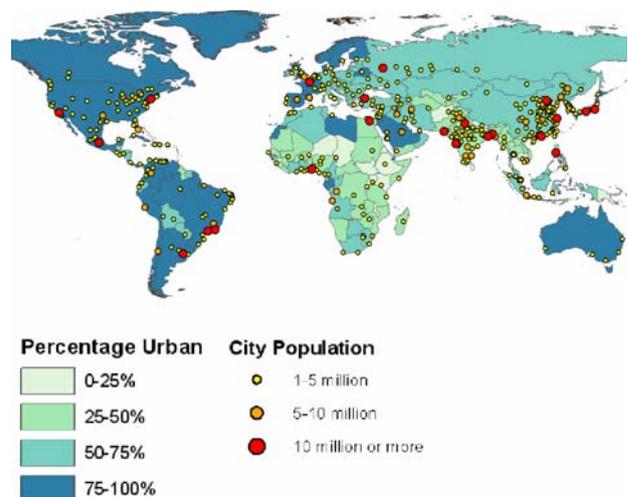
Figure 2. Percentage of urban population and agglomerations by size class, source: UN, World Urbanization Prospects, the 2011 Revision. New York 2012

Table 1. Population of Urban and Rural Areas and Percentage Urban, data source: UN, World Urbanization Prospects, the 2011 Revision. New York 2012

Major area, region, country or area	Urban	Rural	Urban (%)
World	3.632.457	3.341.579	52,1
Africa	413.880	632.043	39,6
Asia	1.895.307	2.312.140	45
Europe	539.010	200.289	72,9
Latin America and Carribean	472.175	124.454	79,1
Northen America	285.805	61.758	82,2
Oceania	26.280	10.895	70,7
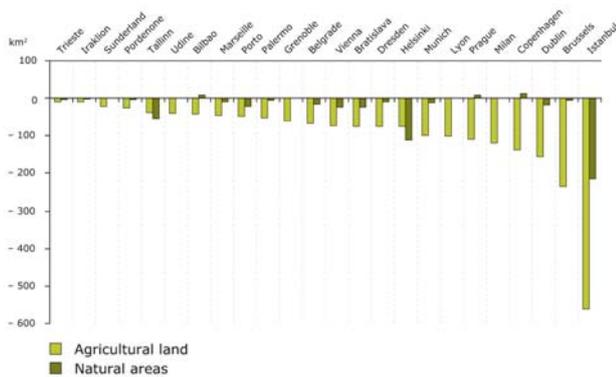
Figure 3. Sprawl impacts on agricultural land and natural areas, selected European cities, EEA Report 10/2006.

2. MATERIALS AND METHODS

Urban sprawl is the major threat to biodiversity, also because urbanization close to green areas outside cities have big value. In some countries more than 10% of Natura 2000 sites are in peri-urban areas.

To preserve environmental heritage and to invest of green areas, local and regional authorities integrate biodiversity in urban and spatial planning.

The European Commission recognizes the important role that local authorities play in the improvement of the environment: in 2010 has conceived the *European Green Capital Award*, an annual award for the European city that "provide[s] us with valuable real-life examples of how respect for the environment, excellent quality of life and economic growth can all be successfully combined" (Mr. Janez Potočnik, EU Commissioner for the Environment) and "can act as a role model to inspire other cities and promote best practices to all other European cities." [4]

In the vision of a sustainable urban future based on the planned green space, cities have been employing various politicies and models to control urban development and to safeguard the green landscape. The city of

Copenhagen, for example, *European Green Capital* for the year 2014, has a long history of green planning.

In 2004 the city of Copenhagen published the *Park Policy - The Green Copenhagen* to create a common foundation for the management of the city's green areas and to integrate development and maintenance of the city's green areas in municipal planning. In 2007 the city adopted the program *Eco-metropolis - Our vision for Copenhagen 2015* to ensure involvement of the city's green structure, in agreement with *Finger Plan 2007*, a national planning directive for the Greater Copenhagen area which aims to create a Green Structure through rural–urban fingers, maintaining the principles of *Finger Plan* of 1947, the historical plan for the Greater Copenhagen Region. In 2009 the city of Copenhagen published the action plan *Pocket parks, trees and other green areas* that focuses on the development of the city's green networks and its urban landscape architecture and, following the strategy in 2010, Copenhagen launched the project *Copenhagen is taking root* to plant 100.000 new trees up to 2025.
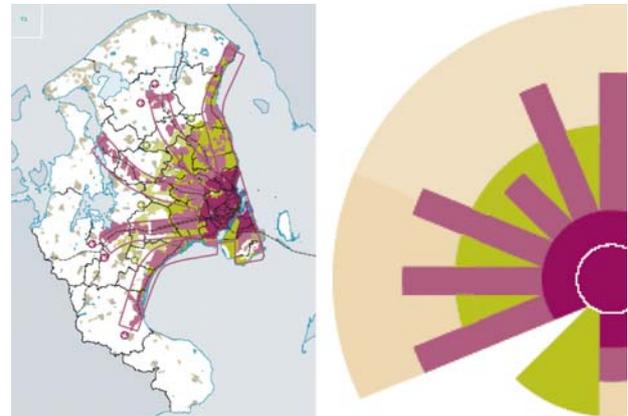
Figure 4. "Finger Plan"(2007) a vision for greater Copenhagen in 2017, source: http://ec.europa.eu/environment/europeangreencapital/

3. RESULTS

In the sustainable approach of planning and design, strategies to limit urban expansion and to increase green system include urban and peri - urban agriculture as the opportunity to promote health, to ensure adequate food supply, to support economic development and to improve the urban environment.

Moreover, agricultural activities are important to enhance the quality of urban life, because they promote social relationships and increase the public spirit. The "agri-civism", as it has been called by Richard Ingersoll in *Sprawltown: Looking for the City on its Edges* [5], is fundamental for the creation of new urban-rural communities and for the increasing of local identity.

Cities support programs for rural development and propose a new rural-urban partnership, based on balance between built-up area and open spaces.

Agricultural planning reintegrates agriculture in the city through projects that promote the creation of parks, social gardens and other forms of green spaces that

combine food production with development of public space.

Many projects explore the role of urban agriculture within urban design as an essential element of sustainable urban infrastructure, capable of providing design strategies to improve quality in urban and peri-urban areas and to "[r]ejoin in a single design system, city and country, architecture and agriculture" (Agri-tecture, 96 [6]).

Urban and peri-urban agriculture design and planning produces new green landscapes on different scales.

In dense urban areas of big cities, where the only building direction is the high, developing vertical urban farm, through green roofs and vertically vegetated surfaces and structures, increases green space, provides food and reduces climate control costs. In Milan the project *Bosco verticale* ("Vertical Forest", by Boeri Studio), now on site, proposes a strategy for metropolitan reforestation that mixes green with agricultural production. [7]
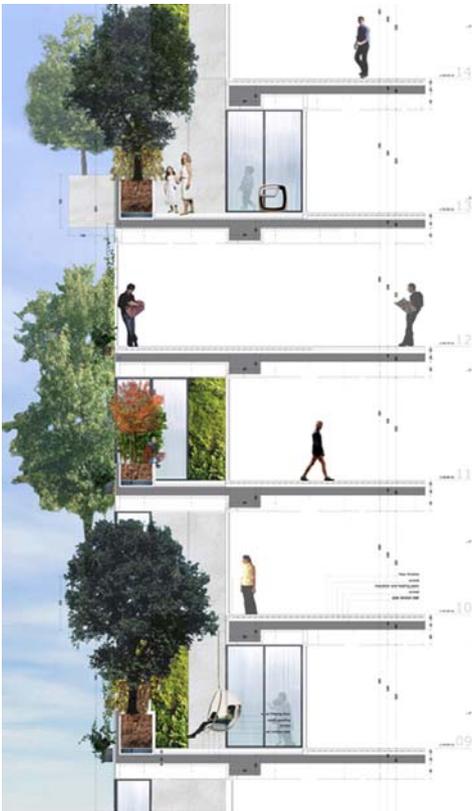
Figure 5. Bosco Verticale, Stefano Boeri

The vertical densification of nature within the city made by towers that integrate new urban rural function on various levels are explored by *Foodprint Manhattan* (Why Factory, MVRDV, Stroom), a research project commissioned by Droog Design and presented at Pioneers of Change, a festival of Dutch design, fashion and architecture on New York's Governors Island in 2009. The study examines how much space is needed to produce food for the entire population of Manhattan and proposes innovative vertical farming. [8]

Another study about how many spaces are needed to make a city self-sustainable is *Hanging gardens of*

Barcelona, which, with an utopian vision of the city, illustrates the massive scale of intervention required to achieve even a small percentage of self-reliance in food production in Barcelona. [9]


Figure 6. Foodprint Manhattan, source: http://www.thewhyfactory.com/?page=project&project=29 &type=future

Figure 7. Hanging gardens of Barcelona - Self-reliant cities. WHY Factory: Nicola Placella, Magnus Svensson

Another possibility to operate in a compact city is designing urban voids. An interesting example are the results of *URBAN VOIDS: grounds for changes*, International Design Ideas Competition promoted in 2005 by City Parks Association as the second phase of the Philadelphia LAND visions initiative. Participants are invited to suggest ideas for Philadelphia's vacant land, that in Philadelphia represents over 40,000 properties and includes nearly 1,000 acres, with long-term solutions. Most of the projects have proposed the introduction of rural elements into abandoned parcels in

the city of Philadelphia, like *Farmadelphia* (Front Studio, 2006), second phase finalist project, which has created a juxtaposition between farm and city, transforming vacant lands into a fruitful farmland. [10]
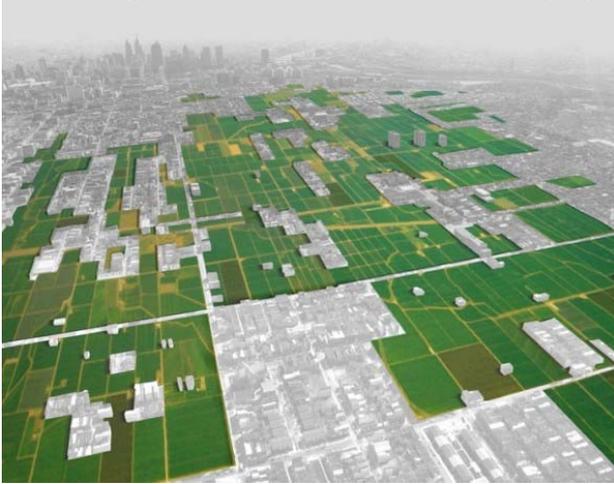
Figure 8. "Urban Voids: Grounds for Change": Famadelphia

Different scales and possibilities provide the project of agriculture in peri-urban areas where green productive landscape represents an important strategy supporting the sustainable requalification of the territory.

Figure 9. Huertas in Sociopolis, Valencia 2003

The project of *Sociopolis* (by Vicente Guallart), promoted by the Generalitat Valenciana and presented at the Valencia Biennial in 2003, proposes a new model neighborhood of social housing in a peripheral area of Valencia that configures a micro-city, characterized by an integrated urban-rural settlement system. *Sociopolis* creates an ideal living space whit green spaces and agricultural environment which encourages social interaction. The development area is realized through the penetration of agriculture plot in urban structure, removing the gap between city and countryside. Urban transformation follows also the preservation project of historic Huertas, traditional rural areas of Valencia's periphery. [11]

In this way the design of green (and social) spaces becomes a possibility to define a new urban language, capable to connect conservation and transformation.

4. ACKNOWLEDGMENTS

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