

**WestminsterResearch**

<http://www.westminster.ac.uk/westminsterresearch>

**Assessing local food systems in China for building healthy mega-cities**

**Verdini, G.**

This is the final version of the following book chapter, Verdini, G. (2015) Assessing local food systems in China for building healthy mega-cities, published in: Better planning, Healthier Cities, Suzhou Soochow University Press pp. 264-276 .

---

The WestminsterResearch online digital archive at the University of Westminster aims to make the research output of the University available to a wider audience. Copyright and Moral Rights remain with the authors and/or copyright owners.

---

Whilst further distribution of specific materials from within this archive is forbidden, you may freely distribute the URL of WestminsterResearch: (<http://westminsterresearch.wmin.ac.uk/>).

In case of abuse or copyright appearing without permission e-mail [repository@westminster.ac.uk](mailto:repository@westminster.ac.uk)

# **Assessing local food systems in China for building healthy mega-cities**

**Giulio Verdini\***

\*Co-Director of the Research Institute of Urbanisation  
Associate Professor at the Department of Urban Planning & Design  
Xi'an Jiaotong - Liverpool University  
Giulio.verdini@xjtlu.edu.cn

Correct quotation: Verdini, G. (2014), Assessing local food systems in China for building healthy mega-cities, in 'Better planning, healthier cities', edited by J. Zhou. Suzhou: Soochow University Press, pp. 264-276.

## **ABSTRACT**

Despite the long-lasting concern for food security in China at the national level, policy attempts to cope with this issue have often resulted to be ineffective. More importantly, they have rarely addressed the question from a local perspective. International experiences of urban food strategies proved to be quite efficacious in enhancing the local provision of food and improving the overall city sustainability by shortening the supply chain, preserving peri-urban areas and improving the nutrition of citizens.

By reviewing existing practices of city farming in China, mainly ascribable to urban agriculture experiences, the intention of this paper is to reflect upon the challenges of implementing more comprehensive local food systems. In the conclusion the paper argues that, given the current institutional, socio-economic, and environmental constraints of Chinese cities there is a need of introducing holistic planning tool to assess local food systems in order to ensure the building of real healthy cities.

## **KEYWORDS**

Local food systems, urban agriculture, healthy city, China

## INTRODUCTION

Food security has been considered for long time a strategic issue in China. This is mainly due to the massive trend of urbanisation especially affecting the most fertile areas of the country in the east coast. The National Congress of the Communist Party of China, in November 2012, already advocated for a better urban-rural integration and the support of the city to the rural areas (NCCP, 2012), while more recently the National Urbanisation Plan (2014-2020) clearly states that there is an urgent need to ensure national food security and effective supply of agricultural good (SCPRC, 2014).

In China policies have been already applied to limit the city size, to preserve the peri-urban farmlands or to establish agricultural parks at the urban fringe, but less has been done to support and facilitate the development of integrated local food systems. According to some International Organization, like FAO, a coordinated governance of local food systems and the improvement of the local food chain, from both the demand and supply side, could enhance the overall sustainability of cities, shortening the food supply chain, preserving the peri-urban open space and improving the nutrition quality of citizens. Effective forms of governance for local food systems could give an important contribution to building healthy cities.

In general terms the planning practice in China has statutorily limited influence in fostering effective forms of urban agriculture, not to mention to strengthen city or regional local food systems. Few attempts have been made in this direction although there are signals of change from different parts of the country.

Based on the review of the existing practices in China, mainly ascribable to local urban agriculture experiments, the primary intention of this paper is to outline current limitations in order to foster, in the future, a wider application of such practices.

However, regardless or whether or not policies for urban agriculture and local food systems have been employed, existing planning instruments sill need to be updated to contextual problems. In fact, the pattern of development of Chinese mega-cities,

especially in the coast, has been mainly characterized by scattered industrialization, often threatening the quality of agricultural land. Thus the paper will argue in the conclusion that there is an urgent need of introducing integrated framework for environmental impact assessment of local food systems, for evaluating under which conditions such systems in China can ensure the building of healthy cities.

## FOOD AND THE CITY

In the international debate farmland reduction is widely acknowledged as the side effect of urban growth together with a series of interrelated problems such as unsustainable urban sprawl, loss of environmental quality, rural landscape transformations and, eventually, shortage of local food supply (Altermann, 1997, Pendall, 1999, Morgan, 2009).

Halweil and Nierenberg (2007) suggest that city farming can enhance food security by ensuring a more regular supply of food; especially for some cities with the fastest growing population such as the Chinese ones, urban agriculture is “more of a necessity than an option” (Sonnino, 2009).

Given this scenario the strengthening of local food systems around the Chinese cities in the future could be considered as a strategic policy to reconnect the urban demand of food with the need of preserving the farmlands, especially the ones located in peri-urban areas and threatened by the process of urbanization.

In recent years there is an increasing international attention in exploring the potentiality of local food systems in emerging countries, involving international organizations like FAO or UN Habitat (Argenti, Marocchino, 2008). This is due to the evident opportunities given by local food systems in achieving a model of sustainable local development more socially just, especially for peri-urban farmers, and moreover for the potential role they can play in preserving peri-urban open space (Sonnino, 2009). Urban citizens demand more differentiated food, and they cannot rely on self-production. Moreover, according to FAO, the local food demand and

supply follows global consumers behaviours, thus reducing the demand of simple staple food and increasing that of proteins. Urban elites increasingly seek local productions, reconnecting their urban life with traditions or a variety of quality and diverse food (organic food for example). Therefore, the convergence of rural and urban issues on matters of food planning appear to be a necessary step for sustainable urban development, for social and spatial justice and for building healthy cities (CITIES, 2013).

## CAN WE TALK ABOUT LOCAL FOOD SYSTEMS IN CHINA?

Urban growth in China has become in recent years the object of interest of several disciplines especially for the tremendous and unprecedented trend of development, and for the severe social and environmental implications of such trend. The loss of farmland is clearly one the main costs (Song & Ding, 2007). To make an example although it is difficult to determine exactly how much farmland was lost prior to 1996, estimates of gross cropland losses between 1987 and 1995 run on the order of 5.7–8.4 million hectares while the rate of cropland loss speeded up since 1995: net losses of cropland between 1996 and 2003 amounted to 5.4 million hectares. These data are reported in Lichtenberg & Ding (2008), based on a rich literature review.

This widespread concern is also reflected in the evolution of the political discourse in China, which is now seeing an increase in advocacy for a paradigm shift in the process of modernising the country. In the “Report to the 18th National Congress of the Communist Party of China” in November 2012, the term “urbanisation” is widely associated with the need for “accelerating the improvement of the socialist market economy and change to the growth model”. One of the strategic directions outlined to reach a more sustainable model of urbanisation is to “integrate urban and rural development”, encouraging cities to support rural areas, and targeting the improvement of the economic condition of rural areas (NCCP, 2012). The document identifies moreover the national food security as one of the main strategic policy

goals for the future of China, especially in fertile agricultural areas like the Yangtze or Pearl River Delta, reaffirming a long-lasting concern regarding the shortage of agricultural land over the last two decades (Chen, 2007).

In addition to that the discourse reveals a departure from the traditional dichotomy between urban and rural areas stressing the importance of building linkage between the two environments. Overall, this can be regarded as a promising direction to reconsider the urban and the rural as two sides of the same coin of the East Asian urbanisation process, as previously conceptualised by academic scholars (McGee, 1991).

Nowadays food security is clearly an important issue in China for several reasons. According to the official data, in 2011, the migrant populations in China reached 230 million, increasing by 8.28 million from the previous year, which brings a significant reduction in labour force in the countryside. When in the 1980s China was facing a problem of redundant workforce in rural areas and alternatives to farming under-employment were encouraged, the rate of rural-urban migration poses serious threats to some regional farming structures. In addition to this, in each year from 1997 to 2007, there were 755,000 hectares farmlands lost in China mostly due to the purpose of development. Putting all the numbers together, it can be seen that the situation of food issues in China is extremely fragile (Fanfani & Brasili, 2005).

On the other hand China has been nearly unique with regard to the employment of policies for food self-sufficiency and for the preservation of agricultural land around cities. Supra-level quotas for rural to urban conversion have been employed and several rigid planning controls have been applied, such as intensive and high-density land use, restriction of new development permissions, city size control, urban growth boundary and greenbelts but very often they have been ineffective (Zhao, 2011). Moreover, this policy framework has not prevented the urban growth to affect the peri-urban livelihood, often resulting in unaccounted social costs (Verdini, 2014).

Besides the planning strategies so far adopted, investment in R&D and technologies in agriculture have also been significantly suggested to cope with crops reduction

(Zhu, 2010). Being China is in the process of rapid industrialization and urbanization, it is almost inevitable that cultivated land is gradually declining (Yang & Li, 2000). This brought some scholars to the conclusion that the rural areas of the most urbanised coastal areas of China are more suitable for non-agricultural economic development, or for increasing the output value per unit of land, through the conversion into orchards and fish ponds (Feng, 1998; Smil, 1999), while the western part of China might be more suitable for raising agricultural productivity, thus achieving the national goal of food security (Long et al., 2010).

If food security is not yet a national emergency, China is losing its most fertile areas and this could cause a loss in productive capacity in the near future (Liechtenberg & Ding, 2006). Moreover the rationalistic quantitative goal of food security does not take in account the potential environmental and social benefits of keeping alive local food systems. In the international debate the strengthening of local food systems via urban food strategies is increasingly seen as a tool for achieving a more sustainable pattern of urbanization for the mutual benefit obtained by preserving peri-urban farmlands, supporting small and medium rural enterprises, and lowering the carbon footprint of the food chain (Morgan, 2009).

In China a balanced food strategy combining national and local goals could be surely considered a forward-looking integrated policy aimed at guarantee food provision but also overall sustainable urban development paths.

In literature an unsophisticated method to assess comparatively the reliance of a city on local food is the “Self-sufficiency ratio”, namely the percentage of food consumed and produced within a defined administrative boundary. A recent comparative study on Chengdu, Nanjing, Shanghai and Shenzhen have been published employing the “self-sufficient ratio” and this is probably one of the first attempt done to evaluate the sustainability of some Chinese cities in respect to local food provision and demand (Lang and Miao, 2013).

However some scholars have warned in drawing too optimistic conclusion, due to the potential risk of the so-called “local trap”. By “local trap” they refer to the fact that

lack of integrated and comparative assessment could bring to the misleading conclusion that a high self-sufficient ratio is beneficial by definition, while several studies have proved that the presence of local production doesn't necessarily ensure the city to be more sustainable from an environmental and socio-economic perspective, and even more to be healthy (Born & Purcell, 2006). A local food system is in fact a complex system comprising different dimensions: environment, social issues, governance systems, local/rural development, nutrition factors, food security, food quality. Each dimension is the result of different and sometimes conflictive policy outcomes. For example, the goal of food security, that is a pure quantitative target, doesn't necessarily imply that the food is healthy or, similarly, economic support for local producers doesn't necessarily mean less environmental pollution. In China overall there is a lack (or even absence) of comparative and holistic studies assessing the real sustainability of these local food systems (De Zeeuw & Wenming, 2013).

## A REVIEW OF EXISTING PRACTICES

If it is quite evident that it is still not appropriate to talk about local food systems in China, despite the existence of a relative high "Self-sufficiency ratio" in some fast-growing cities of the country. As far as we know from existing literature review, none of the Chinese cities are today addressing holistically the implementation of a local food system or are employing comprehensive urban food strategies. However, some seeds of change are emerging in respect to urban agriculture experimentations, although these are very scattered and diverse, and they have never been systematise.

In summary urban agriculture in China can be divided into *intra-urban farming* and *peri-urban farming*, primarily differentiated by a different land tenure system: state owned land in the former case, while collectively owned in the latter (Verdini, 2013). Intra-urban farming is currently either an illegal or planned practice. In the first case it is practiced by dispossessed farmers, relocated into modern city neighbourhoods



but still retaining strong attachment to their previous main source of livelihood (Fig.1). New relocation areas don't allow farming as the inner-city urban greenery has a pure decorative function, according to the national planning regulation. In this respect there is a growing concern among planners and academics regarding the gap between the current policy framework and the real need of dispossessed farmers: they could benefit from a policy relaxation, although their practices would possibly conflict with the new urban image of modern China (Geng, 2014).



Figure 1. Small-scale farming activities illegally practiced in Lotus Village in Suzhou Industrial Park, Jiangsu Province (Source: Author).

Cases of planned farming activities within the urban boundaries are quite diverse. They might be scattered and rather elitist small-scale initiatives (such as roof farming, balconies or roadsides farming) mainly practiced by urban wealthy sectors

for leisure time, but with negligible effects in term of food provision, or they might be formal experiences of agricultural parks, part of the overall urban green system of Chinese cities. In this particular case these areas are conceived as urban parks with the goal of supporting local food production and agro-business and promote tourism. However local tourism is still the main motivation behind their establishment (Lang and Miao, 2013), although it is surely a promising initiative reinforced by the growing presence of farmer's market (Fig. 2).



<http://www.chinaagriworld.com/>



Home About Us Facilities & Services Agro-Business Agro-Tourism Contact Us Site Map  
 October 5, 2013 中文版

# AGRIWORLD

## A LEADING AGRICULTURAL PARK IN CHINA

### Agro-Business: Trade & Investment



### Agro-Tourism

Agriworld – Suzhou prime spot for Agrotourism; Most popular activity holiday spot; Top 300 eco-agrotourism attractions in China as selected by China National Tourism Board



Figure 2. An Agricultural Park at the fringe of Suzhou in the Jiangsu Province. Source: <http://www.chinaagriworld.com>

Farming activities happening beyond the urban boundary, in areas statutorily classified as rural from the national planning code, can be considered peri-urban activities (partially or entirely) contributing to the provision of food for the nearby city.

## DISCUSSION & CONCLUSION

In general terms existing activities in Chinese cities ascribable to urban agriculture are still rather scattered. The current planning practices in China allow to establish agricultural parks within the city perimeter, although their effect is still very limited. They normally tend to be more profitable tourist attraction rather than reservoir of food for the city. On the other hand inner-city farming is not allowed preventing relocated farmers to get access to a potential form of extra livelihood or simply to an alternative form of leisure time activity. Notwithstanding the contradictions potentially embedded in this model, recent studies mentioned above can prove that the self-sufficient ratio of fast-urbanising cities, namely the quota of consumed food that is produced within the municipality, is still quite high. This might bring to the conclusion that in China there are local food system de-facto.

However peri-urban farming is facing several challenges that should not be underestimated. In particular, in order to achieve a more holistic understanding of the current trends it seems worthwhile to mention the fact that:

- The Chinese model of urbanisation is highly land-consuming due to the existing local financing system heavily relying on land sell (Ran, 2012);
- The costs of urban growth at the fringe of Chinese cities, given the current policy framework, are often hidden, so it is difficult to appreciate how more sustainable patterns of development would bring to long-term benefits (Verdini, 2014);
- The urban containment strategies in place are still mainly top-down and very often relying on purely regulative command-control instruments, lacking of

meaningful stakeholders involvement and market-based mechanisms to curb sprawl (Bengston et al., 2004; Zhao, 2011);

- The industrialization of the countryside that happened during the 80s and 90s, especially in the most dynamic coastal areas of China (Friedmann, 2005) has determined a scattered presence of polluted sites in rural areas potentially undermining the quality of peri-urban farmlands and consequently the quality of healthy food.

In summary the institutional, socio-economic, and especially the environmental constraints of peri-urban farmlands here depicted (Fig. 3), advise against any easy shortcuts in evaluating the current Chinese situation. Rather, it advocates for a deeper understanding on whether or not the provision of local food could be safe and could be sufficient in the medium-long term.



Figure 3. Tension between urban growth and farming activities at the fringe of Suzhou (Source: Author).

## CONCLUSION

In order to provide a holistic framework for assessing the sustainability of a local food system it is necessary to evaluate its distinct dimensions in a comparative way. Attempts to define the concept of sustainability and its dimensions (ecological, social and economic) can be dated back to the “Earth Summit” in 1992, the United Nations Conference on Environment and Development (UNCED) and attempts to apply such framework to local food systems have been already tested in the West (Schonhart et al., 2009).

However research in this directions would require to understand the key role played by the institutions for urban development in achieving the goal of effective sustainability, especially for cities in emerging countries like China (Bolay & Thai Thi, 1999; Bolay, 2011). The goal of implementing local food systems for better and healthier cities in China requires a strong commitment of local governments and possibly a real willingness to reform current institutional settings still too much driven by economic reasons.

## ACKNOWLEDGEMENT

This paper is the outcome of a research grant from the Suzhou Municipal Philosophy and Social Science Foundation, 2012 Social Science Program of Suzhou, titled: "Planning a local food system in Suzhou. Analysing the demand for quality of food and agriculture" (在苏州规划“本地食品系统”分析食品 and 农产品的质量需求 (SSSP 12-D-56).

A preliminary version of this paper was presented at the China Agricultural University in Beijing, in October 2013, when I was invited by the Delegation of the European Union to China and Mongolia (欧洲联盟驻华代表团) to deliver a presentation on “Urban Agriculture: socio-economic aspects and urban greening” at the Joint EU-China experts’ seminar on developing a joint initiative for cooperation in research and innovation on food, agriculture and biotechnologies. The kind advices received from Dr. Francesca Frassoldati and Prof. Jean-Claude Bolay are gratefully acknowledged.

## REFERENCES

- Altermann, R. (1997), The challenge of farmland preservation: lessons from six-nation comparison, *Journal of the American Planning Association*, 63, 221-243.
- Argenti, O. and Marocchino, C. (2008), Urban food supply and distribution in developing countries and countries in transition. A guide for planners, Agricultural Management, marketing and finance, Occasional Paper, Rome: FAO.
- Bengston, D., Fletcher, J. O. and Nelson, K.C (2004), Public policies for managing urban growth and protecting open space: policy instruments and lessons learned in the United States, *Landscape and Urban Planning*, 69, 271–86.
- Bolay, J.C. and Thai Thi, N.D. (1999), Sustainable Development, Urbanization and Environmental Risks: The Priority of Local Actions in Ho Chi Minh City, Vietnam, *Journal of Urban Technology*, 6, 65-85.
- Bolay, J.C. (2011), What sustainable development for the cities of the South? Urban issues for a third millennium, *International Journal of Urban Sustainable Development*, 4, 76-93.
- Born, B. and Purcell, M. (2006), Avoiding the local trap. Scale and Food Systems in Planning Research, *Journal of Planning Education and Research*, 26, 195-207.
- CITIES (2013), Farming the city. Food as a tool for today's urbanisation, Amsterdam: Robstolk.
- Chen, J. (2007), Rapid urbanization in China: a real challenge to soil protection and food security, *Catena*, 69, 1-15.
- de Zeeuw, H. and Wenming, L. (2013), "Draft Report on Urban Agriculture" (Summary Report of the Session B3 on Urban Agriculture of the Experts' Seminar on Developing a Joint Initiative for Cooperation in Research and Innovation on Food, Agriculture and Biotechnologies), Beijing. Available at:

[http://eeas.europa.eu/delegations/china/documents/eu\\_china/science\\_tech\\_environment/20131108\\_3.8\\_2.pdf](http://eeas.europa.eu/delegations/china/documents/eu_china/science_tech_environment/20131108_3.8_2.pdf) (accessed 23 October 2014).

- Fanfani, R. and Brasili, C. (2005), Regional differences in land holdings and land use. Analyzing the First Agricultural Census, in P. Ho (ed.), *Developmental Dilemmas. Land reform and institutional change in China*, Abingdon: Routledge.
- Feng, L. (1998), Grain versus food: A hidden issue in China's food policy debate, *World Development*, 26, 1641-1652.
- Friedmann, J. (2005), *China's Urban transition*, Minneapolis-London: University of Minnesota Press.
- Geng, R. (2014), To Explore the Perspective gaps of Urban Agriculture between Policy and Real needs and to Figure Out the Suitable Urban Agriculture Policy Framework in Relocation Community of China, Unpublished Undergraduate Dissertation, Suzhou: Xi'an Jiaotong – Liverpool University.
- Halweil, B. and Nierenberg, D. (2007), Farming the Cities, in The Worldwatch Institute, *State of the World 2007* (Chapter 3), pp. 48-65, New York: Norton & Company.
- Lang, G. and Miao, B. (2013), Food Security for China's Cities, *International Planning Studies*, 18, 5-20.
- Lichtenberg, E. and Ding, C. (2006), Assessing farmland protection policy in China, *Land Use Policy*, 25, 59-68.
- Long, H., Liu, Y., Li, X. and Chen, Y. (2010), Building new countryside in China: A geographical perspective, *Land Use Policy*, 27, 457-470.
- McGee, T.G. (1991), The emergence of desakota regions in Asia: expanding a hypothesis, in N. Ginsburg, B. Koppel and T.G. McGee (Eds), *The Extended Metropolis: Settlements transition in Asia*, Honolulu: University of Hawaii Press.

- NCCP (2012), Report to the 18th National Congress of the Communist Party of China, 8th November, National Congress of the Communist Party of China, Beijing.
- Morgan, K. (2009), Feeding the city: the challenge of urban food planning, *International Planning Studies*, 14, 425-435.
- Pendall, R. (1999), Do land use control cause sprawl?, *Environment and Planning: B*, 26, 555-571.
- Ran, T. (2012), The issues of land in China's transition and urbanization, Lincoln Institute of Land Policy Working Paper, WP13TR1.
- Schonhart, M., Penker, M., and Schmid, E. (2009), Sustainable local food production and consumption. Challenges for implementation and research, *Outlook On Agriculture*, 38, 175-182.
- Smil, V. (1999), China's agricultural land, *The China Quarterly*, 158, 414-429.
- Song, Y. and Ding, C. (2007) (Eds), *Urbanization in China. Critical issues in an era of rapid growth*, Lincoln Institute of Land Policy, Cambridge: Massachusetts.
- Sonnino, R. (2009), Feeding the city. Towards a New Research and Planning Agenda, *International Planning Studies*, 14, 425-435.
- SCPRC (State Council of the People's Republic of China) (2014), *New Urbanization Plan, 2014-2020*, 16 March. (In Chinese: Guojia Xinxing Chengzhenhua Guihua 2014-2020).

Available at: <http://politics.people.com.cn/n/2014/0317/c1001-24649809.html> (accessed 22 October 2014).

- Verdini, G. (2013), Urban Agriculture: socio economic aspects and urban greening (Paper presented at the "Experts' Seminar on Developing a Joint Initiative for Cooperation in Research and Innovation on Food, Agriculture and Biotechnologies, European Commission and the Chinese Academy of Agricultural Sciences (CAAS), China Agricultural University (CAU), Beijing, 10<sup>th</sup> -11<sup>th</sup>



October). Available at:

[http://eeas.europa.eu/delegations/china/press\\_corner/all\\_news/news/2013/20131108\\_en.htm](http://eeas.europa.eu/delegations/china/press_corner/all_news/news/2013/20131108_en.htm) (accessed 23 October 2014).

- Verdini, G. (2014), The costs of urban growth at the fringe of a Chinese city. Evidence from Jinshi Village around Suzhou, *International Development Planning Review*, 36, 413-434.
- Zhao, P. (2011), Managing urban growth in a transforming China: Evidence from Beijing, *Land Use Policy*, 28, 96-109.
- Zhu, L. (2010), Grain Production and Food Security in the Course of China's Urbanization, *Economics Perspective*, 09 (In Chinese).
- Yang, H., and Li, X. (2000), Cultivated land and food supply in China, *Land use policy*, 17, 73-88.