



# RSIS COMMENTARIES

RSIS Commentaries are intended to provide timely and, where appropriate, policy relevant background and analysis of contemporary developments. The views of the authors are their own and do not represent the official position of the S.Rajaratnam School of International Studies, NTU. These commentaries may be reproduced electronically or in print with prior permission from RSIS. Due recognition must be given to the author or authors and RSIS. Please email: [RSISPublication@ntu.edu.sg](mailto:RSISPublication@ntu.edu.sg) or call (+65) 6790 6982 to speak to the Editor RSIS Commentaries, Yang Razali Kassim.

No. 142/2012 dated 3 August 2012

## FOOD SECURITY: Cities as part of the solution and not the problem

By Paul S. Teng

### **Synopsis**

*As the world becomes increasingly urban, food demand will come mainly from people living in cities while there will be fewer rural farmers producing food on less land with less water. Cities can play a bigger role in food security. But to accomplish this requires new thinking and new policies by policy makers and politicians, and new technologies from R&D by scientists.*

### **Commentary**

SINCE 2008, more people in the world are living in cities than in the countryside! In Asia, with an anticipated two-thirds of its people living in cities by 2050, fewer people will be left in the countryside to grow food, while the aged population will be increasing.

The locus of poverty will shift dramatically in the coming years from rural to urban, with major slum areas predicted in big cities. And because cities in the current scenario have not developed the capacity to produce significant amounts of food, price volatility will likely drive many poor urban dwellers to become food insecure. As 2007-08 showed, hungry people in cities resort to civil disobedience resulting in food riots in 47 countries.

Over the mid to longer term, climate change, the decline in farm productivity growth, degradation of land and water resources, loss of farm land, all mean that more food has to be produced in the countryside with less land, less water and less labour. Nevertheless, the countryside will remain the main supplier of food to the cities, especially for staples like rice, wheat and corn. The important question which planners and policy makers have to ask is what role cities can play to supply food for their citizenry.

### **What do we know of growing food in cities?**

The UN Food and Agriculture Organization (FAO), estimates that currently, 15-20% of global food production is from the area within city limits. Should cities be viewed as part of the problem in the world's quest for food security or as an untapped potential that can be part of the solution?

In centuries past, cities were limited in size by the distance from the food source due to the lack of proper preservation methods during transportation. Today, small to mid-sized cities in developing countries still have substantial parts of their landscape occupied by farming activities. Hanoi reportedly produces up to 80% of fresh vegetables, 50% of pork, poultry and fresh water fish, and 40% of eggs from the city's environment.

Shanghai likewise reportedly supplies the bulk of its needs for vegetables, milk, eggs, pork and poultry.

The Resource Centres on Urban Agriculture and Food Security, (RUAF Foundation - <http://www.ruaf.org/>) has categorized urban farming activities in developing countries into household farms, city community gardens, rooftop gardening, unused city space, small-scale commercial horticulture, small-scale commercial livestock and aquatic farming, specialized urban agriculture and forestry production, large-scale agro-enterprises and multifunctional farms.

Apart from their contribution to food security, urban farms are known to have important aesthetic, therapeutic as well as education value. In recent times, there has emerged increased interest to develop technology-based urban farming in large, modern cities using a slate of modern technologies which include hydroponics (growing plants in water), aeroponics (growing plants suspended in air), and aquaponics (combining vegetable hydroponics with fish culture). Commercial aeroponic vegetable farms are in production in China and Singapore.

Cities like Beijing and Shanghai, as well as second tiered cities in China have incorporated space in the cityscape for urban farming in appreciation of the added “green” value of such space. Many examples exist of roof top vegetable farms and in Zhejiang Province, China, one rooftop rice farm has yielded over 9 tons per hectare. With much proven practice and technology, why then is city farming not more frequent?

### **What is possible: Imagining the future?**

For urban farming to have an impactful role in alleviating food insecurity and poverty in cities, space must be found that justifies its use in the face of huge opportunity costs associated with limited space in cities. Urban farming can be done in space currently unutilized, on rooftops, in subterranean caverns, city water bodies or in special agro-parks within a city's limits. Various estimates have put the amount of rooftop area for possible farming at 235 sq km in Seoul and over 600 hectares in Singapore. Various technologies have been deployed to create greenhouse farms and vertical farms. Singapore had its first vertical vegetable farm using stacked rotating trays launched this year. The Rural Development Authority Korea has constructed, south of Seoul, a dedicated multi-storeyed building to be a prototype vertical farm using the latest in growing technology, lighting and electronics.

Almost all the investment in farming by national governments, the private sector and international donors has focused, rightly, on rural agriculture. If urban space is to be viewed as an untapped potential, then more R&D needs to begin on the economics, science and technology for urban farms. Breakthrough technologies are needed in new light sources, breeds of plants and animals which thrive in limited space and light, irrigation techniques, waste management technologies and approaches to manage the interfaces between the urban landscape, waterscape and airscape.

Mindset changes and supportive policies are key to catalyze a major, meaningful effort in this direction. The translation of policy into action, such as the introduction of an urban agricultural extension service, will do much to provide confidence to would-be new urban farmers and households embarking on growing vegetables to meet part of their needs. To make urban farming a reality, thought leaders are needed to add credence, substance and momentum to a growing movement by gathering, analyzing, sharing, and creating new knowledge on urban farming.

With more than half the world's megacities expected to be in Asia in less than 40 years, it is important that policies and financial support be provided for Asia-originated approaches which move urban farming from ad hoc to mainstream activities, and in the process, make cities part of the solution for food security. Urban farming provides many opportunities for “first mover” initiatives which value add to current efforts aimed at poverty alleviation and livelihood creation in urban environments.

*Professor Paul S.Teng is respectively, Adjunct Senior Fellow, Centre for Non-Traditional Security Studies, S. Rajaratnam School of International Studies (RSIS), and Dean, Graduate Studies & Professional Learning, National Institute of Education, Nanyang Technological University, Singapore.*