Metropolitan Agriculture and its implication on China

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Content:

- Concept: metropolitan agriculture
- Trend of urbanisation
- The linkage between urban with agriculture
- Cases in China and in Netherlands
- Challenge questions for China
<table>
<thead>
<tr>
<th>Type</th>
<th>Focus</th>
<th>Main actor</th>
<th>Orientation</th>
<th>Scale</th>
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</thead>
<tbody>
<tr>
<td>Subsistence farming</td>
<td>Subsistence</td>
<td>Rural poor</td>
<td>Own field</td>
<td>Small, rural</td>
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<tr>
<td>Traditional agriculture</td>
<td>Production efficiency</td>
<td>Farmers</td>
<td>Next link in production chain</td>
<td>Medium-large, peri-urban</td>
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<tr>
<td>Urban agriculture</td>
<td>Subsistence/self consumption</td>
<td>Urban poor</td>
<td>• Own field</td>
<td>Small Intra-urban</td>
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<td></td>
<td>Hobby gardens</td>
<td>Urban middle class</td>
<td>• Some integration with urban ecosystem</td>
<td></td>
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<td></td>
<td>multifunctional farming</td>
<td></td>
<td>• education</td>
<td></td>
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<tr>
<td>Metropolitan agriculture</td>
<td>Production efficiency</td>
<td>Agricultural entrepreneurs</td>
<td>• Market oriented</td>
<td>Medium-large, Intra-urban/peri-urban</td>
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<td></td>
<td>Multiple value creation</td>
<td></td>
<td>• Full integration in total value chain &amp; food system</td>
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Elaboration in subsistence and traditional agriculture

Subsistence farmer:

Traditional agriculture:

- input
- production
- processing
- distribution
- market
Elaboration in metropolitan agriculture

- Import of basic fodder
- Feed production

- (co-)fermentation
- Livestock farming

- Import of co-products
- Livestock

- Slaughterhouse
- Meat

- Vegetables-growing
- Animals

- Drying
- Co-digestion plant

- Composting
- Solid manure

- Urine fraction

- Nitrogen concentrate for agriculture

- Electricity

- Mushrooms

- Compost

- Heat

- CO₂
Elaboration in metropolitan agriculture
Urbanization trend: Globally

Source: World Urbanisation Prospects, 2005
China urbanisation

70% of Chinese will live in cities with more than 1 million people

46% of Indians will live in cities with more than 1 million people

IN 2025

SPEED OF URBANIZATION BY 2030

CHINA

221 number of cities with more than 1 million people

China will add 400 million city dwellers

INDIA

68 number of cities with more than 1 million people

India will add 215 million city dwellers

more than U.S. population

more than population of Spain
People, people and still people....
TOP 10 Megacities in China

1. 上海 Shanghai
2. 北京 Beijing
3. 广州 Guangzhou
4. 深圳 Shenzhen
5. 天津 Tianjin
6. 重庆 Chongqing
7. 香港 Hong Kong
8. 东莞 Dongguan
9. 南京 Nanjing
10. 武汉 Wuhan
Linkage: urbanization and agriculture

- Li Keqiang, vice Premier of the State Council:

‘The process of Chinese urbanization goes hand in hand with agriculture modernization.’
Diversification of demand in Metropoles

- Energy and building
  - Fuel
  - Fibers

- Food
  - Fodder
  - Food Crops
  - Vegetables
  - Fruits

- Fashion
  - Flowers
  - Flavours
  - Flagrances

- Pharmaceuticals
  - Functional Foods
  - Pharmaceuticals
Agropark: An innovation in horizontal and vertical chain integration

- Spatial clustering of different agro-production chains
- Application of the C2C principle: waste is a valuable resource
- Spatial combination of agro- and non-agro functions (buildings, industrial and city waste, etc.).
- Scale increase through industrial production and processing
- Reduction of transport and by doing this: reduction of veterinary risks
- Essence: clustering offers conditions for sustainable development of agriculture and food supply
Chinese cases

- MoA perceives modern agriculture as:
  - Large scale
  - Mechanization
  - Standardization
  - Industrialization

- Wish that agricultural park, demonstration zones, science and technology parks, etc., can help the process

- Main promoters: Ministry of Agriculture (MoA) and Ministry of Science and Technology (MoST).
Objectives of agropark in China:

- Ensuring food security and safety
- Introducing and demonstrating new varieties, new technology, and new facilities
- Incubating modern farmers (nurturing, training)
- Multifunctionality of agriculture (ecologic protection, leisure, tourism, etc).
- Scientific innovation between industry, university and research institutes
Typology of agricultural parks/zones

- Food security focused zones: grain, cotton, oil & sugar. Located in major favorable production areas (优势农产品区)

- Vegetable basket focused zones: vegetables, fruits and flowers. Located in major cities. (大城市区)

- Unique local focused zones: silk, herbs, tea, etc. located in less developed areas. (特色农产品区)
Development status

- By MoA:
  - 2010: first verified agricultural demonstration park numbered 50

- By MoST:
  - 27 verified parks in 2010
  - 15 verified parks in 2002
  - 21 verified parks in 2000

- Provincial level: 406 (1999 data); county level: more than 3000 (2002 data)
Chinese Case 1: The Yangling Agricultural Hi-tech Industries Demonstration Zone

- Located in Shaanxi Province
- Covers 5500 ha
- Industrial distribution
  - Modern agricultural demonstration park
  - Low-carbon agriculture-related industries park
  - Grain and oil logistic park
  - Feed industries park
  - Science and education industries park
Case 2: Shanghai Sunqiao Modern Agriculture Development Zone

- Founded in 1994 with planning area of 4 square kilometers
- 六大产业 Six Industries
  - 种子种苗产业 Seeds and Seedlings
  - 温室工程安装与制造产业 Manufacture and Installation of Green Houses
  - 设施农业产业 Agricultural Production with Facilities
  - 农产品加工产业 Processing and Marketing of Agricultural Products
  - 生物技术产业 Biotechnology
  - 旅游观光产业 Sightseeing Tours and Education on Popularizing Science and Technology
Dutch case 1: Greenport Venlo

- Serving 7 million Germans
- Greenhouse area,
- Consolidation centre
- Large pig farms
- Large chicken farm
- Large dairy farm
- Harbour
- Serving a metropolitan market of 7 million German consumers.
Case 2: Merging between agro-industry and greenhouses: Biopark Terneuzen

- Agropark in sea harbour
- Primary agricultural production through industrial ecology connected to agro-industry
- Focus on sustainable development of bio-energy production
- In operation
Case 3: Agriport A7

- Centre for growing vegetables, agribusiness industry and logistics, 30 minutes from Amsterdam

Primary production:
- Large scale glasshouses: 500 ha growing to 1,000 ha
- Open field crops: 40,000 ha

Vegetables industry, logistics and services
- Business park: 70 ha

To be added
- Closed fish production and processing
- ICT-server centre
## Comparison between Dutch and Chinese cases

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<thead>
<tr>
<th></th>
<th>Dutch</th>
<th>Chinese</th>
</tr>
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<tbody>
<tr>
<td><strong>Initiator</strong></td>
<td>Private sectors look for each other (organically grown)</td>
<td>Chinese government promoting (designed)</td>
</tr>
<tr>
<td><strong>Chain integration</strong></td>
<td>Best vertical and horizontal integration within and between chains</td>
<td>Demo, show case, mostly loosing connections</td>
</tr>
<tr>
<td><strong>Scale</strong></td>
<td>Handful of large parks</td>
<td>Thousands parks, most small</td>
</tr>
<tr>
<td><strong>Identification</strong></td>
<td>Each has a unique character</td>
<td>Similar amongst each other</td>
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Challenge questions

- How to address these challenges facing Chinese metropolitan agriculture?
  - Lack of economical viability
  - Balance between commercial production and recreation/agro-tourism
  - Why is the chain integration on the Chinese agroparks so low?
  - The balance of individual companies within the parks between autonomy and interdependence.
Thanks

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