Eco-cities in China: a new agenda of planning for sustainable urban development

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Outline

- Key urban development challenges
- Recent policy changes
- Cases of emerging eco-cities planning
- The rational and challenges of eco-city movement
- Conclusions
Rapid urbanisation

- Urban growth path with three phases:
  - Industrialising
  - Transforming
  - Modernising

- Property-led urban redevelopment

- Urban village redevelopment
The expansion of the built-up area in the Taihu area, Jiangsu Province

(Source: Qiu Baoxing, 2007)
Unsustainable economy model

- Exported-oriented and cheap labour economy
- Over supply, low-value added.
- Environmental costing
- Massive foreign exchange reserve (~$4 tn by 04/2014)
China’s environmental problems from rapid economic growth

- CO2 emission (by 2007)
- Energy demand and inefficiency
- Traffic congestion
- Water pollution and scarcity
- Air pollution
- Waste

10,000 trucks, 100km long, 9 days...

Guiyu, Guangdong

“Green bloom”, Qingdao in 2008

Beijing, 2010

Graph source: Climate Connect
Air pollution

Fewer than 1% of China's 500 largest cities met the air quality standards recommended by WHO (PM2.5 <25 μg/m3)
Economic cost to the environment in 2011

% of GNI (Gross National Income)

- China: 8.9%
- India: 8.8%
- Brazil: 5.3%
- US: 2.4%
- S Korea: 0.7%
- Japan: 0.5%
- Germany: 0.5%

China's 8.9% of GNI = $650bn, More than GNI of Austria and Portugal combine

Source: World Development Indicators, World Bank, Shi M.J. & Ma G.X.
The ratio of the rural households income to that of urban households declined.
Governance challenge

- Fierce inter-city competition
- GDP growth-oriented promotion mechanism
- Property-led redevelopment, rising housing price
- Land sale is local government income source, as engine of economy growth
- Social inequity

“Nail house” on 24/11/2012

“Nail house” on 01/12/2012
<table>
<thead>
<tr>
<th>City</th>
<th>Land revenue</th>
<th>Budgetary local revenue</th>
<th>The percentage of land revenue to the local revenue</th>
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<tbody>
<tr>
<td>Hangzhou</td>
<td>105.4</td>
<td>101.9</td>
<td>103.39</td>
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<tr>
<td>Shanghai</td>
<td>104.3</td>
<td>254.0</td>
<td>41.06</td>
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<td>Beijing</td>
<td>92.8</td>
<td>202.7</td>
<td>45.79</td>
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<td>Tianjin</td>
<td>73.2</td>
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<td>Wuhan</td>
<td>36.1</td>
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<td>Chengdu</td>
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<td>84.6</td>
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<tr>
<td>Xiamen</td>
<td>30.3</td>
<td>45.1</td>
<td>67.12</td>
</tr>
</tbody>
</table>

Source: Yuan, 2010: p.159; Xinhua News (www.xinhua.com: 10 Jan 2010)
Recent China third plenum (08-12/11/2013)

"The core issue is to straighten out the relationship between government and the market, allowing the market to play a decisive role in allocating resources and improving the government's role." (11/2013)

China third plenum statement

- Awareness of environmental cost
- Shift discourse in policy formulation: Changing ethos from “growth first” to “scientific development”, “better first and then faster”;
- Developing “green economy”
- Land regulation tightening
- Development of “harmonious society”.
Key reform issues

- Financial sector liberalisation
- State-owned enterprises
- "Hukou" household registration system
- Land reform
- Local government funding
- The environment
- Energy prices and utilities
- Innovation
Driving forces for eco-city development in China

- Climate change and CO2 emission reduction (International / the central government pressures);
- Population growth and rapid urbanisation;
- Environment degradation;
- Business development: eco-innovation opportunities;
- Rising income; cultural/life style change;
- The capacities of municipal finance;
- ......
Eco-city concept

“originating from the fundamental objective of sustainability and the application of ecological principles to urban planning, design and management” (Register, 1987).

“Sustainability”:
- Different agricultural systems (suburbs or centre)
- Renewable energy resources;
- Green building and energy efficiency
- Next generation of infrastructure systems (i.e. transportation, water, and energy)
- Waste recycling

“Sustainable city” is organized so as to enable all its citizens to meet their own needs and to enhance their well-being without damaging the natural world or endangering the living conditions of other people, now or in the future (Girardet, 1999)
Dongtan Eco-city

- Aimed to be ‘The world’s first eco-city’
- 84 km², planned 10,000 people by 2010; 80,000 by 2020; 500,000 by 2050. Land leased to SIIC.
- Designed by Arup, contracted by Shanghai Industrial Investment Corporation (SIIC)
- “Compact city”: work in Chongming Island
- “Green city”: carbon neutral
Dongtan in dream

in reality......

Photographed on 08 Nov 2010

Thames Gateway
Lessons from Dongtan

- A planning rather than development project without having a business plan in advance;
- Eco-cities are quite expensive to build; relying on advanced technology development.
- Having land ownership but without the development quota to convert ‘agricultural land’ to ‘non-agricultural land’.
- It is a ‘mega-project’, which highly depends upon local politics (former Mayor was jailed because of politics and corruption)
- Whether is it economic feasible for SIIC? Who live there, local villagers or ‘new rich’? Where are the jobs?
Sino-Singapore Tianjin Eco-city

- 30 km², 350,000 population by 2020
- Between Hangu (20 km²) and Tanggu (10 km²),
- A joint investment of 30 billion yuan
- 50-50% joint investment company
- Non-arable land: 1/3 saltpan, 1/3 deserted beach, 1/3 polluted water surface
- Neighbourhood unit, eco-cell social housing, 100% green building
- 26 Key Performance indicators
- Industrial parks and producer services

(Source: news.sohu.com, 2009)
Nature of Tianjin eco-city

- A city-scale development project on derelict land
- Strong municipal and central support,
- A more comprehensive development (more than residential development, involving new industrial sectors)
- Government-led and market-driven project.
- Target to be implemented, replicated and promoted.
A new model of industrial development?

- With clear investment opportunities (EIP model) for Singapore enterprises, like an enterprise zone but with ‘eco-city’ planning guidance.
- Master plan absorbed the lesson from Singapore Urban Redevelopment Authority.
- 6,000 residents by 10/2013, but was targeted for 80,000
- 1,000 small business, no large business to support the development.
Caofeidian International eco-city

- Relocation of Capital Steel
- 74.3 km², population 800,000 by 2050.
- SWECO designed the plan
- Key state enterprises
- Very detailed 109 planning indicators and 32 management indicators

(Source: people.com)

A new industrializing city?
Shenzhen Guangming New District

- 2007, merge between Guangming and Gongming two street districts
- 156 km²,
- 2010, low-carbon city example by MHRUC
- Industrial clusters, eg. LED
- “Eco high-tech new town”
- A new industrial zone, upgraded manufacturing.

Source: sznews.com
Over 100 eco-city planning projects are booming in China
Dynamics of eco-city development

- Various motivations, depending upon projects

- At the national level there is a strong support for economic upgrading, innovation and reducing emission and promote energy saving, promoting living standards.

- Pilot project as an innovative replicable model for wider application;
But, more importantly at the local level,

- Local initiatives to promote innovative environmental solutions, reaction to the central government’s call for sustainable development;

- An attempt from the local level to balance economic growth and environmental problem (‘Green GDP’);

- Local entrepreneurship, using ‘ecological development’ to initiate new development, as a strategy of place promotion
Conclusions

- Eco-cities in China: as a new agenda of planning for sustainable urban development

- Eco-city project as urban innovation process: top-down & bottom-up, roles of state and market on innovation

- Development model: Upgrading or new development. Should cities invest in new eco-city project or focus on improving residential options in existing cities?

- The booming of eco-city movement in China offers great business opportunities and learning process for global SUD

- Most of eco-city projects still remain at a planning stage, sufficient government management and affordable technologies will turn the dream into reality.
Challenges for sustainable urban development

- Actors: central/local government + investors + international consultant companies + local communities?

- The political economy of unsustainable growth needs to be changed: from “Intercity competition – growth machine – fiscal arrangement – cadre promotion” to “Green GDP – balance – harmony”.

- “Eco-branding”: place promotion, Is it an innovative label for new development?

- The eco-cities should be ‘sustainable places’, but for Who? ‘enclaves’ of the rich’? (Caprotti, 2014)

- International standard measurement? (Joss, 2013)