Eco city development in China; The case of the Sino-Dutch Shenzhen Low Carbon City
Contents

• The eco city concept
• Examples of eco cities
• The context of Shenzhen and Longgang
• Specificities of the Chinese context
• Our proposal for a masterplan for Pingdi
• Decision process 2010-2014
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Imagine this. Wildlife grazing and romping in green glades filled with birdsong. People working at home or in business parks to which they can stroll or cycle. And residents need only a three-minute walk to reach a park wherever they live.

It's not a description for a utopia but the blueprint for Wanzhuang, one of China's first planned eco-city developments.

In September 2005, Chinese President Hu Jintao paid a visit to the United Kingdom, during which a series of agreements were signed; among them is a deal between Shanghai Industrial Investment Corporate (SIIC) and UK-based Arup to transform Dongtan in Shanghai into China's first eco-city. And now they have begun a second project in Wanzhuang, northwest of the prefecture level city of Langfang and an important junction connecting Beijing, Tianjin and Hebei.
Register’s original eco-city
Register’s eco-city

- Only pedestrians, bikes and trains
- Many high-rise buildings with lifts
- Green roofs and galleries
- Many open spaces
- Parks and trees wherever possible
- Urban agricultural production
- Fancy decoration inside flats
- Respectful of original geography
Newman’s eco-city
Newman’s eco-city

- Urban form has decisive impact on mobility and resource consumption
- Look at ecological footprint
- Cities are only sustainable if they operate like eco-systems
- Take biodiversity as inspiration
- Planning only works if done in integrated and participatory ways
World Bank’s eco-city

Eco² Cities
Ecological Cities as Economic Cities
World Bank’s eco-city

Four main principles:

1. A city-based approach
2. An expanded platform for collaborative design and decision-making
3. A one-system approach with sophisticated decision-support tools
4. An investment framework that values sustainability and resilience
Solar panels in Germany
Wind turbines in Denmark
Smart grid in Colorado, USA

Just connect the dots: (1) weather, (2) power service, (3) industry, (4) business, (5) residence.
Water treatment in Singapore
Closed urban food loop in NYC
Sustainable transport in Brazil
Urban agriculture in Cuba
Eco-efficient Tower in Abu Dhabi
High urban density in Hong Kong
Sense of place in Italy
Eco-cities: Chinese dream
Huangbaiyu: Failed!
Dongtan: Never realised
Tianjin-Binhai: In process
Tangshan-Caofeidian: Aborted?
Suzhou industrial park: Successful
Dezhou and Rizhao: Successful solar/wind cities
Chinese particularism

- The importance of G2G relations
- GDP as a yardstick for all assessments
- Living standards prevail over ecology
- Difficulty of inter-municipal collaboration
- Low civil participation and strong hierarchy
- Thrift and image prevail over quality
- Enormous ambition and will-power
- Extreme belief in power of technology
The road to relevant guanxi
Guangming and Longgang
The one month-misunderstanding
Can Shenzhen do it?
Outline of the Pearl River Delta

Guangzhou, Foshan & Zhaoqin metropolitan circle

Zhuhai, Zhongshan & Jiangmen metropolitan circle

Shenzhen, Dongguan & Huizhou metropolitan circle

Hong Kong
Pingdi, Xinxu and Qingxi
Basic information about Gaoqiao Industrial Zone in Pingdi

Natural Environment

1. Good ecological environment
2. Surround by mountains in three direction
3. Ding Shan River pass across the region in the center
The threat of urban sprawl

160,000 INHABITANTS

320,000 INHABITANTS

480,000 + INHABITANTS

EXISTING FABRIC

TYPICAL CITY EXPANSION

UNCONTROLLED EXPANSION WHERE SURROUNDING NATURE DISAPPEARS
Images of Pingdi
Industrial activities in various subdistricts

- Electric equipment manufacturing
- Garments production
- Metal and plastic toy production
- Fruit and vegetable production base

- Computer manufacturing
- IT chain
- Electrical machine assembling
- Metal product

- High-tech manufacture
- R&D
- Electronic technology

- Electric equipment manufacturing
- Metal and plastic product
- Clothing production

- New energy vehicles (BYD)
- Electronic information
- Biomedical
- Equipment manufacturing

- Processing trade
- Clothing and footwear production
- Electronic information

- Integrated circuit (IC)
- Electronic communication
- Automobile manufacture
- Mechanical manufacturing
The way forward for Shenzhen’s eco-city?

- Connect with existing economic trends
- Shift from manufacturing to services
- Push forward with R&D focus: eco-science park/open innovation campus
- Cosmopolitan environment
- International transparent quality checks
- Chinese version of stakeholder involvement
- Our vision: Eco-2-city/zone
Vision

Knowledge-based ECO-zone with a strong identity

- Elaborating on existing cultural heritage
- Based on realism of regional economic trends
- Utilizing and protecting green assets as spatial quality
- Building smart and sustainable infrastructures
- Attracting highly educated knowledge workers
- Developing hi-tech service-oriented clusters
- Safeguarding interests of current inhabitants by transforming them into green collar workers
Vision

Knowledge-based, because:

- Manufacturing industry is becoming less prominent
- Universities and research centers will attract innovative economic clusters around them
- Value added is highest in high-tech services
- Industry and agriculture in the area both need to be systematically upgraded
- State-of-the-art communication and other infrastructures attract most talented people
Vision

ECO-zone, because:

- Green areas attract knowledge workers more
- Eco-cities are only sustainable if based on a strong and credible economic structure
- Regional governance can prevent urban sprawl and preserve natural beauty more effectively
- Combining Special ECONomic Zone and ECO-City implies attractiveness for industries, but also strict enforcement of environmental regulation
Vision

Strong identity, because:

• Modernized interpretation of Hakka heritage reaffirms understanding and pride of lost treasures
• Promotion of a fully **bilingual zone** attracts both progressive Chinese and entrepreneurial foreigners
• Universities and research centers focus on green and clean technologies and form a **living laboratory**
• **Smart and sustainable** ICT, energy and transport infrastructures will reinforce this image
• Each **sphere-shaped town** will have its own specific urban structure and character
ECOlogical quality

ECO-2-Zone will offer high quality living environment:

- restoration and protection of precious nature and green landscapes, including mountain slopes, water reservoirs and agricultural land use
- ample green space for sports and recreation close to homes and office buildings; minimize hard surface
- ensure clean air, clean soil, clean water, clean energy, eco-efficient building and transportation
ECOnomic growth potential

ECO-2-Zone promotes a knowledge driven service economy with high growth potential:

• Quality – not quantity
• Better space – not more space
• High value added – not volume
• Knowledge intensive – not labor intensive
• Service industry – not manufacturing industry
• Attracting highly educated and talented people
• Creating new job perspectives for the less educated: green collar jobs, personal services

➢ Industries to be selected for high future growth potential, based on demographic, economic and consumption trends
Innovative spatial planning concept

Pingdi ECO-2-ZONE prevents sprawl and respects nature:

- spatial planning in *spheres*
- spheres will foster strong communities
- green corridors in between
- nature re-entering the city
- healthy habitats by combining ‘wild’ and man-made nature
- agricultural buffer zones for landscaping and safe food supply
MINIMAL HARD SURFACE
交织 + 分支
Interlaced + directed

极力强调通过“定向开发”实现相邻发展。尽管如此，混合使用同样也应用在同一条功能带中，通过不同功能的交织实现一些中介地带，诸如在工业区与高校之间安插研发功能。
Strong cultural identity

The ECO-2-Zone will establish a strong cultural identity:
• building on the local Kejia (Hakka) culture and architecture
• giving the local people a sense of pride and ownership
• making Pingdi stand out among competing eco-city initiatives elsewhere in China: preserving Kejia heritage, modern landmark buildings in Kejia style, cultural center
• creating a unique hub of local and modern culture to become an international magnet for talented young people
Bilingualism and multi-culturality

Bilingual education at all levels, attracting progressive nationals and entrepreneurial foreigners
Quality of Public Service

The ECO-2 Zone is being designed to offer high quality public services:

• with intelligent next generation infrastructures providing smart, affordable and accessible, eco-efficient services
• excellent education, health care, sports and culture
• seamless connections to Shenzhen and Hongkong international airports
• healthy living: walking, biking in green environment
• ubiquitous broadband internet access - free WiFi
• affordable high quality housing and offices, built according to latest principles of eco-efficiency
Clean technologies, smart grids and smart services

The ECO-2 Zone will be a living laboratory for intelligent infrastructures, smart services and clean technologies:
- Mobile smart grid
- Internet-of-things
- Real-time multi-modal travel information
- Resource recovery and waste-to-energy
- In-situ soil remediation
- Waste and water treatment
- Energy-efficient building
- Smart water management
Brainpark Eindhoven

Two open campuses with top-notch international research centers in sustainable high-technology cross-fertilizing and sharing facilities.

- Facilities for car pooling
- Excellent connections to public transport
- Campus bikes to move around the site
- Cold and heat storage system
Criteria for industrial selection

• matching the features and existing strengths of the different sub-districts in the region
• high-tech oriented and offering high-value added
• service-oriented and clean
• having high future growth potential because of demographic, economic and consumption trends.
Profile of open campus near Gaoqiao industrial park

Five sub-clusters:

- Electronics, electronic information, information technologies, Internet of Things (laboratories), service and systems design, simulation and demonstration
- Product design, technology for music and entertainment, culture, fashion
- Biotechnology, medical technology, pharmaceuticals
- Internet-Of-Things based applications to energy (smart grids), transport (on-line and real-time information systems), water, waste, green buildings and other social systems
- Technology and novel applications for energy, transport, water, waste and green buildings for eco-cities
Profile of open campus near Xinxu border

Three subclusters:

• Agricultural technology, food technology, biotechnology, health foods
• Sports and sports technology (materials research), medical technology
• Sports and sport training, revalidation and wellness (spa)
Ping-Qing-Xin’s governance model

If the three cities share the same ECO-2-ZONE vision, we propose the following institutional arrangement:

1. Specific and separate regional planning and regulation authority for the entire ECO-2-ZONE
2. With budget discretion of its own, able to receive local, provincial and national funds
3. With a Special Purpose Vehicle attached to it, which can act as a super-developer and investor
4. With a strong enforcement body attached to it, to secure ecological stricture on behalf of the planning authority
5. With one customer-friendly regional office for investors and companies for all information and permits
Financing Scheme

Special Purpose Vehicle

Money

Authority

- Regulatory Authority
- Municipality

- Public funding
- Loans
- Equity
- Etc.

Knowledge/support

- Financial institutions
- Public support
- Universities (TU Delft, Shenzen)
- Private sector

Funds

Investment projects

Return On Investments

“Incubators”

Knowledge campus

Transport

Park/greenfield

Social activities

Retail

Offices

Parking

Leisure

Housing

“Money-makers”

Money-makers

Money-makers

Money-makers

Money-makers
New Pingdi, from Modest Beginnings

To a City of the Future...
Adoption by Longgang, Shenzhen and NDRC
What happens if the Dutch government gets involved?