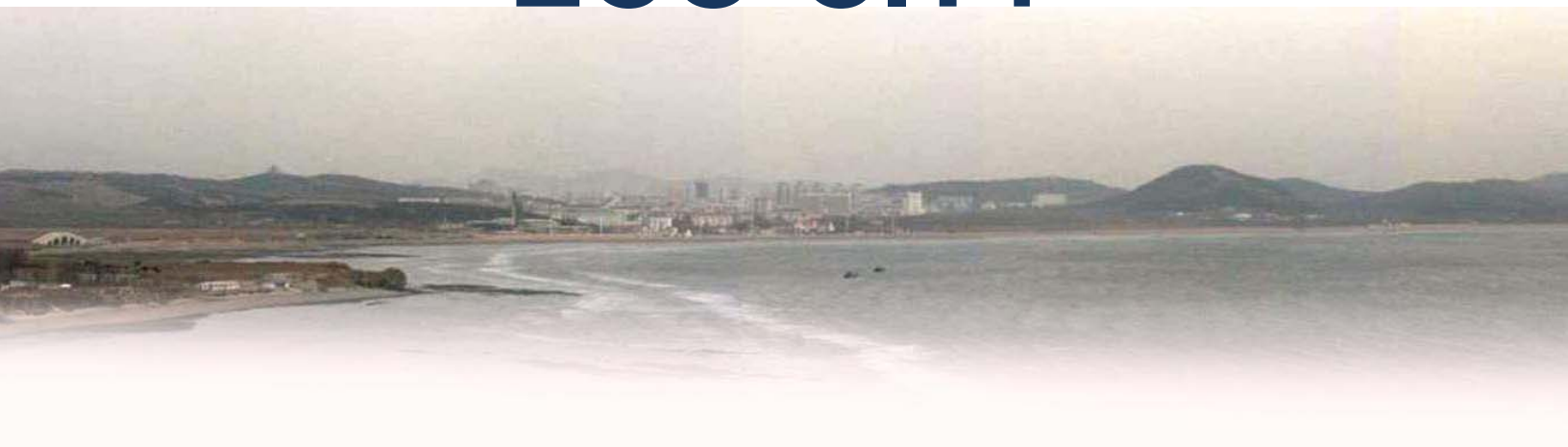




PROFESSIONAL WORKSHOP OF PLANNING AND URBAN DESIGN

MARCH 2009

DESIGNING AN **ECO-CITY**



PROPOSAL FOR HU LU DAO, CHINA

PRESENTATION OF THE PROBLEMATIC

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Introduction

The College of Architecture and Urban Planning at Tongji University in Shanghai (CAUP) is currently performing a research program on the role of Urban Morphology of Chinese Eco-cities, in collaboration with the CSTB – the French Scientific and Technical Building Centre - International Urban Morphologies Laboratory.

So as to make a step forward in CAUP's research program and use the first results of the studies that have been realized, the non-profit organization of les ateliers has been asked to coordinate an *International Workshop of Planning and Urban Design* on Chinese 'Eco-cities'.

It is anticipated that collaboration with CSTB's expertise in sustainable design, technologies and assessment, its close ties with French building companies, along with les ateliers' experience in addressing urban challenges, will enable comprehensive design proposals.

CAUP has selected the municipality of Hu Lu Dao to host the workshop and be the "case study" of this research program. The Municipality of Hu Lu Dao is now experiencing major development due to the Chinese Government's decision to redevelop north-east China's old industrial base and welcome around 1 million new inhabitants. It is set to become '*the centre of North-East China facing North-East Asia*', and with the Chinese government's key priority of "harmonious development" in mind, Les Ateliers, the CSTB, the Municipality of Hu Lu Dao and Shanghai Tongji University have together proposed Hu Lu Dao's development as an 'Eco-city'.

Thus this workshop is essentially a proposal for a prototype of the 'Eco-city' of the future, aiming towards a zero-energy approach to urban design and planning.

Key Partners

This Workshop will be run through the existing partnership agreements of Les Ateliers de Cergy and the CSTB, with Tongji University College of Architecture and Urban Planning:



The College of Architecture and Urban Planning of Tongji University, created in the 1950s, encompasses departments of Architecture, Urban Planning, Industrial Design, Landscape Science and Tourism, as well as several research institutes. The topic of Eco-city is one of its priority development areas.



The Scientific and Technical Building Center was created in 1947 as a French governmental organization aiming at carrying out research programs for building and housing trade, in order to improve well-being and safety in buildings.



Les Ateliers is a non-profit organization consisting of an international network of universities, professionals and decision-makers related to Urban Planning & Design. It has been organizing studios for students and professionals since 1982.

Overall Organisation

This Urban Design Workshop is the first step to designing an Eco-city prototype for Hu Lu Dao, China. Following our initial urban design proposals will be their extensive development and analysis through computer modelling and the incorporation of sustainable technologies.

Step 1: International Urban Design Workshop

The Workshop will consist of a 2-week intensive urban design studio in Hu Lu Dao, China, gathering 3 multi-disciplinary teams of professionals from around the world. Using the latest in Urban Morphology research, urban design issues of building heights, arrangements, block proportions, and street networks will be addressed. 3 innovative Eco-city design proposals for Hu Lu Dao will be realised.

Step 2: Computer Modelling & Urban Design Analysis

The 3 proposals will then be analyzed for their energy efficiency by the CSTB's Urban Morphologies Laboratory, together with CAUP Tongji and Cornell University. 3D computer modelling using CAD and GIS software will be used to assess the strategies in terms of energy consumption, travel requirements, accessibility and their optimal use of sunlight, allowing the most energy-efficient solutions to be recognised.

Step 3: Sustainable Technologies Studio

In a further workshop, young Engineers from the "International Advanced Master in Environmental Management", led by Tsinghua University China and Les Mines France, will bring their technical expertise on renewable energies and eco-management of urban services. The latest energy-saving technologies will be integrated into the designs, at both building and city scale. The proposals will also utilise French industrial expertise in sustainable building technologies and energy, water and waste services.

Workshop Synthesis

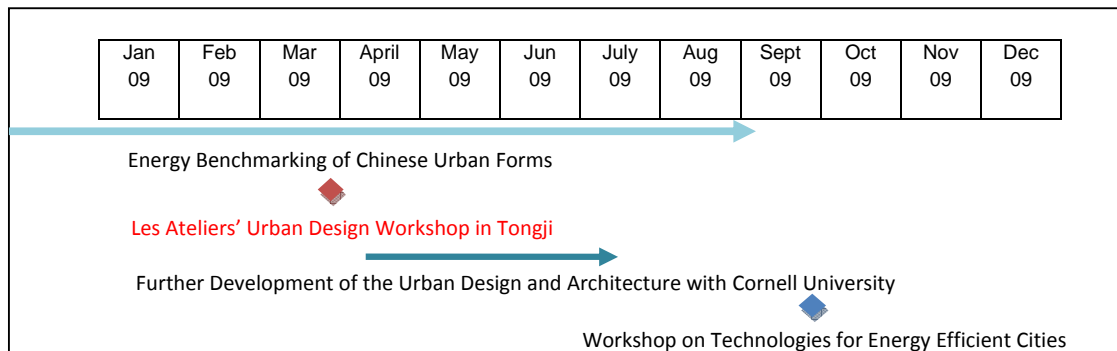
les ateliers will produce an overall document of synthesis, gathering the important issues that have been addressed throughout the workshop.

Overall Output

The output of the whole process will be:

- 3 development scenarios for the design of Eco city + neighborhoods
- 3D models which will be used for the energy performance analysis
- A comprehensive report on Eco-city design principles

Overall Timeline



About Hu Lu Dao

Hu Lu Dao, Liaoning Province



Hu Lu Dao is a heavily-industrialised city situated near one of the most beautiful coastal landscapes, in a region of great history: Liaoning Province

Liaoning Province has played many defining moments in China's history. It has been alternately ruled by Han and non-Han people, the most famous being the Manchus who ruled most of modern China from Shenyang in the XVIIth Century.

Xingcheng, a city belonging to the Hu Lu Dao prefecture, and a key element of the project, still hosts a fortified medieval district, one of the last Ming strongholds to fall to the Manchus. The Great Wall of China ends in Shanghai Pass, just south of Hu Lu Dao.

Japan and Russia battled in Liaoning during the 1904-1905 wars, Japan invaded the region from 1931 to 1945 and created the Manchukuo puppet state. Since then the province has seen a strong development under the impulse of industrialisation.



The fortified city of Xingcheng

Industrialisation of Hu Lu Dao



Dwellings next to the industrial district

Liaoning was one of the first provinces in China to industrialize, first under Japanese occupation, and then even more in the 1950s and 1960s. The city of Anshan, for example, is home to one of the largest iron and steel complexes in China. In recent years this early focus on heavy industry has become a liability, as many of the large state-run enterprises have experienced economic difficulties.

As an important part of Bohai Economic Rim, Hu Lu Dao links together the developed Jing-Jin-Tang and Liaodong Peninsula Economic Zone together. With 18 large enterprises, including 3 extra-large ones, Hu Lu Dao is one of the country's heavy industry base.

An industrial structure consisting of a combination of heavy and light industries has been set up, with the petrochemical industry as its main body, and the metallurgy, building material, machinery, ship building, and power generation industries, as its key sectors.

There is an interactive network of underground pipelines in the area, of which two (one from Daqing to Qinhuangdao, the other from Panjin to Hu Lu Dao) carry crude oil here, adding vigor to the old petrochemical basis. Hu Lu Dao Shipyard is the building site of Chinese nuclear submarines.

Why Hu Lu Dao?

Revitalization of the North-east

Recognizing the special difficulties faced by Liaoning and other provinces in Northeast China because of their heritage of heavy industry, the Chinese central government launched in 2003 a "Revitalize the Northeast" Campaign, which aims to reform and privatize state-owned enterprises, boost infrastructure, and modernize targeted industrial sectors.

Hu Lu Dao, along with other cities in the province, has benefited from the "Revitalize the North-east" Campaign, and more recently Hu Lu Dao's 'Northern Harbour Industrial Zone' was earmarked for development under the "Five Points One Line" strategy proposed in 2006 by the provincial Party Secretary. This plan has already triggered 42 investment projects worth 9.81 billion yuan in Hu Lu Dao to expand its shipbuilding production and enhance the strength of its petroleum and metal processing industries.

More importantly, the "One Line" is a motorway which will join the coastal cities, whereas currently the main link goes through Shenyang well into the inner land.



The "Five Points One Line" Strategy

Proposal for Re-development

Today the competition amongst Hu Lu Dao and the other sister cities around the Bohai Sea is fierce, and new and innovative projects are needed to attract national and international investment. The City of Hu Lu Dao and the Province of Liaoning are committed to redeveloping Hu Lu Dao into a city of health and well-being, catering for a future population of 1 million inhabitants in the next 10 years. The proposal is to extend the existing city by creating a new Central Business District, in order to boost the city's economy and its attractiveness as a tourist destination. A specific area of 17 km² within the boundaries of the Municipality has already been allocated for sustainable development.

A Future Sustainable Vision

The vision is for Hu Lu Dao to become "the centre of North-East China facing North-East Asia", and its development as an innovative leader in sustainability will help to achieve this vision. Not only will it dramatically reduce energy usage and carbon emissions, and improve the quality of its natural environment, but in return will offer an outstanding quality of life to its inhabitants and visitors, realising the City of Hu Lu Dao's vision of health and well-being, and the Chinese Government's key aim for "harmonious development".

An Urban Marketing Strategy

In the face of fierce regional and global competition, such an innovative proposal will not only increase the attractiveness of Hu Lu Dao to inhabitants and tourists, but to national and international investors. The successful design of an Eco-city can only boost the City of Hu Lu Dao's economy.

Issues to Address

Urban Challenges in China

China alone is set to urbanize an additional 400 million people in the next few decades and the need for housing is urgent. This process of urbanization will be rapid, and responding to its needs is a necessity. In addition, an increasingly-aging population will place new demands on city planning: enhanced accessibility of public facilities, health services, and mixed-activities will be crucial.

Environmental Challenges

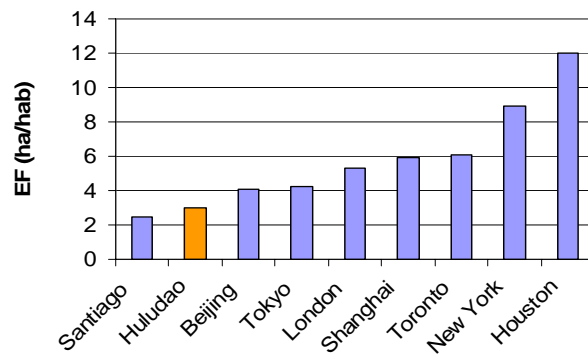
There are currently two main threats to our planet: global warming; and the increasing lack of our natural resources. These constraints of our global ecosystem must be integrated into urban design. Emissions of NO_x , CO_2 , and SO_2 are growing rapidly in China, and threaten the urban dweller's health. There is an urgent need to reduce our energy usage and carbon emissions at the urban scale.

Ecological Footprint:

Like most cities around the world, Hu Lu Dao's ecological footprint exceeds its bio-capacity. In order to have the ecological capacity to support future generations, its sustainable development is crucial.

Addressing these Challenges

Compared to many other countries, the Chinese government has the ability to make rapid change. Environmental protection is an opportunity for China to lead the world by example. Such a transformation will require an interdisciplinary whole systems approach that considers natural systems, energy resources, design and development policies. The sustainability triangle is secured by "3 E's": Equity, Economy and Ecology. China must develop an economic strategy that is aligned with higher environmental standards. It must pursue development activities that accommodate people at different income levels and needs. However, China must go one step further, by adding a fourth "E" for education, in order to ensure that these policies can be maintained and adopted over time. The time is now for China to become a world leader in sustainability.



Workshop Aims

Role of the Workshop

This Workshop in Hu Lu Dao will provide the opportunity to research the topic of large-scale sustainable development for a rapidly-growing urban population in the context of strong industrialization, as well as to address the urgent need for 'healthy' cities in heavily-polluted environments.

Scientific Basis: Urban Morphology and Energy-efficiency

Implementing the latest research from CSTB and Tongji University's Urban Morphology research program, the Urban Design Workshop aims to greatly contribute to sustainable urban design through the proposal and development of more energy-efficient urban forms.

(see Appendix 1: Urban Morphology)

The Workshop will develop urban design proposals based upon the scientific parameters of bioclimatic design and energy efficiency.

An Integrative Approach

All parts of the city will be addressed, at all levels of scale - districts, blocks, individual buildings and their various systems will be integrated as complex metabolic systems.

Prototype for Eco-city Design

This workshop proposes the development of a prototype for an 'Eco-city' of the future.

The prototype is expected to address all the parameters of sustainability - the natural environment, existing building traditions, issues of social and economic opportunities, and urban management.

An Intelligent City

As an intelligent city, the Eco-City will operate much like an organism, monitoring its various component systems and responding accordingly to potential or actual changes of state in order to maintain equilibrium.

A Zero-energy City

Furthermore, it is proposed that the Eco-City is a 'Zero-Energy City', with a net energy consumption of zero per year.

The zero-energy approach aims to address a range of social and environmental issues, including reducing carbon emissions, dependence on oil power, fuel imports, and the use of fossil fuels in general, as well as providing a measure of energy security against future energy crises.

A Cultural City

By incorporating a zero-energy approach in the historical layers of the city, as well as in new buildings, we may create a truly sustainable city which retains its own traditional values while supporting growth.

A Healthy City

As a result of the reduced pollution and environmental effects of a Zero-energy city, a 'healthy' city will be created for the well-being of its inhabitants and visitors.

A Competitive City

The creation of an innovative, intelligent, cultural, healthy and sustainable Eco-city, can only increase the attractiveness of Hu Lu Dao as a place to visit and live, and its competitiveness in the global market place

Key Design Issues

Urban Design Factors

The Workshop will focus on the following key design issues, paying particular attention to the topic of Urban Morphology:

Built Environment & Urban Morphology

- Urban Structure / Patterns
- Urban Design / Landscape
- Integrated Planning
- Urban Functions and Public Spaces
- Urban Comfort
- Architectural Typologies
- Urban Fabric / Building Density (Height, Scale, Land Use, Distances between buildings...)
- Solar gain / orientation

To be consistent with future computer calculation of urban energy performance, our eco-city concepts will focus on an urban block area of 800m x 800m.



Other Important Factors

Of course, other important parameters of sustainable planning should also be taken into consideration, including:

Ecology

- Nature
- Agriculture / Food Production

Social - Economy

- Health / Well-being (Human Care, etc...)
- Community
- Culture Identity / Heritage
- Costs
- Marketing

Energy and Material Consumption

- Water
- Waste
- Building Technology and Materials

Transport and Infrastructure

- Mobility and Accessibility
- Sustainable Means of Transport (Public, Private)
- Connections / Nodes

Education and Research

- Research and Development
- Schools/Universities
- Sustainability Education Program

Key Design Strategies

In developing a prototype Eco-city, the Workshop will utilise the following design strategies:

Strategy 1: Global Sustainability

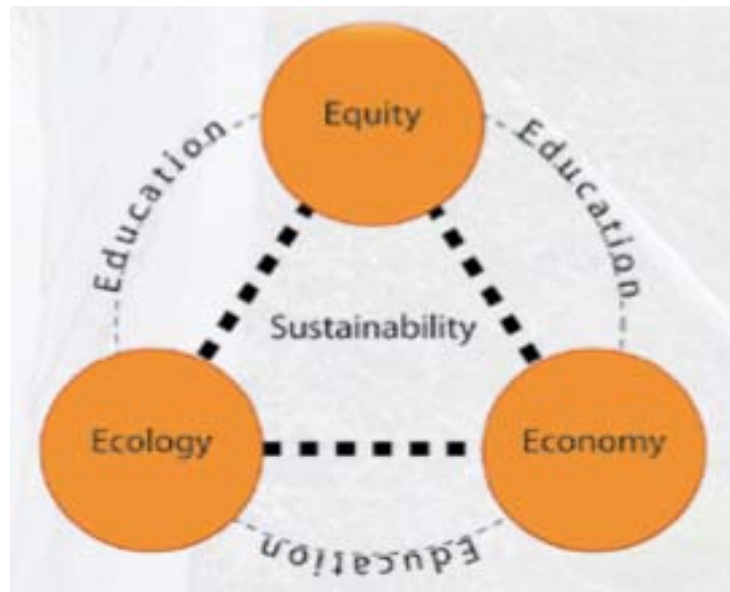
The Studio will first propose an integrated sustainable design strategy that addresses Eco-city design at the global scale. While the local situation of Hu Lu Dao is our primary concern, we feel it is also important to address the macro-level problems of China's environmental crisis.

The studio will adopt the "3 E" principles of sustainability: Ecology, Economy and Equity. It will endeavour to improve the district's air and water quality, expand renewable energy sources and reduce waste, while creating real estate value and expanding a competitive economy. Moreover, the Studio will seek to create an equitable design catering for all sectors of society. The "3 E" approach provides a framework in which to develop design guidelines and utilise the 4th E – Education.

The Studio will seek to propose design strategies in a way that will improve both ecological and social conditions, in terms of access to housing, transportation, jobs, education and recreation for all residents. Sustainability implies that urban planners must preserve adequate space for environmental processes and then determine the capacity for urban development.

Cleaner production means incorporating recycling and reuse production methods into the manufacturing process instead of using "end of pipe" methods to clean up contaminants post-production. The Urban design studio and the further technological workshop will work with manufacturing companies to propose cleaner production and operation processes.

The 3 E Approach to Sustainability:



Ecology, Equity, and Economy
Education is a vital part of this process

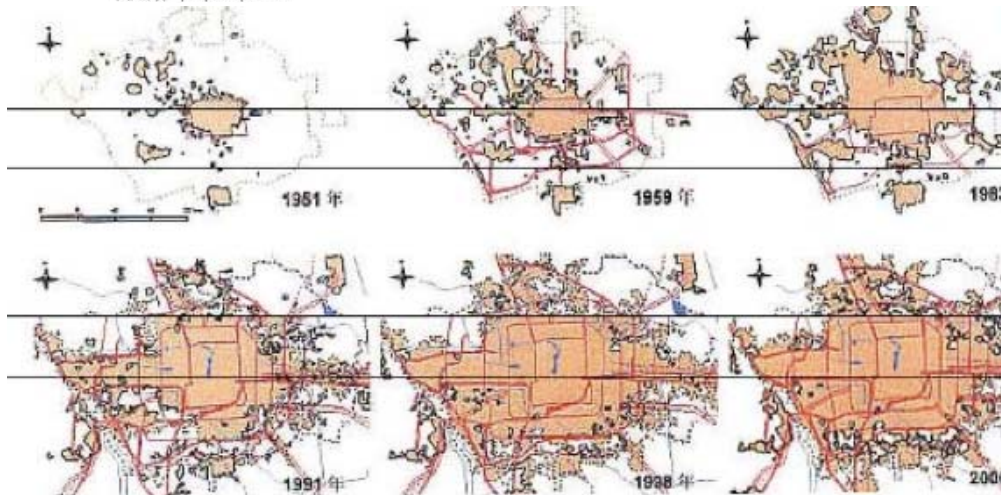
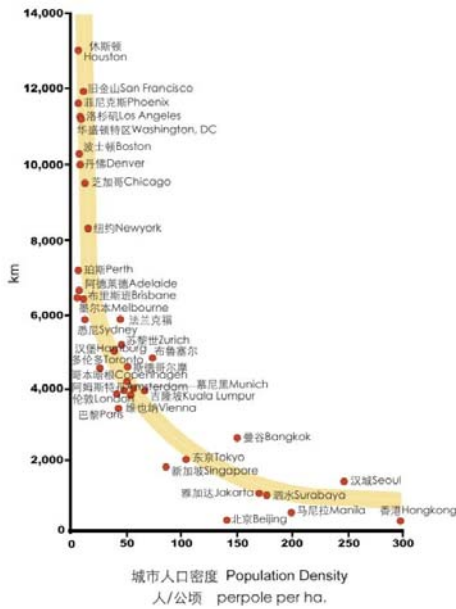
Strategy 2: Optimisation of Density

It is a well established fact that increasing density has a strong positive impact on reducing energy needs. Energy needs for transportation as demonstrated by Kenworthy on 35 world cities is a reverse function of density. Density does not mean necessarily high-rise and in many cases high-rise means surprisingly low built densities. Paris is both low rise (6 floors) and high density with FAR superior to 4.5 and demographic density superior to 40,000 people/km² in most parts of the center. Hong Kong is high-rise with new developments rising above 30 floors with in some cases a FAR at 3.1 and a density

lower than that of Paris while in other cases the FAR is above 10. With the same high-rise towers the density in mainland China is usually very low, with a FAR under 1.2 in many new Shanghai and Guangzhou new developments. Beijing is characterized by recent urban sprawl and low-density development.

Different forms of density have a strong impact on energy needs.

The Urban Design Studio will explore different scenarios of density for eco-neighbourhoods and their energy impacts.



北京城市空间“摊大饼”式地蔓延扩张 (资料来源: 清华大学 GIS 实验室)

Strategy 3: Optimisation of Urban Fabric

Cities are altogether built volume, empty spaces, buildings, streets networks, parks, etc. These compose urban forms. One city presents different urban forms, and so do different cities. All these elements interact with the micro-climate and influence the energy consumption of buildings and transportation. Urban morphologies can be characterized by a range of indicators such as built density, Floor Area Ratio, porosity, sinuosity, and occlusivity. Recent research by CSTB has shown that these morphological parameters can influence energy consumption by a factor of 2.

Thus urban design factors such as building arrangements and heights, block proportions and street network of the design proposals will be compared to the latest conclusions of the CSTB-CAUP Urban Morphology Research Program on Chinese urban fabrics. (see Appendix 1)

Urban Morphology Parameters

- i. Building mass organization (built-up area, FAR, contiguity, building height, compacity...)
- ii. Openness to the sky (occlusivity, solar admittance)
- iii. Passive volume
- iv. Street networks

Urban Morphology: Parameters



Urban Morphology: Scale



Urban Morphology study of Paris : 2 different scales

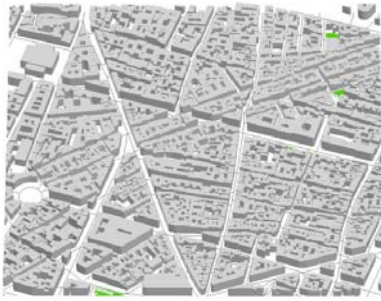


Kyoto at five different scales: the third best shows the city's urban morphology



Source: Chinese University of Hong Kong

Current CSTB - CAUP Comparative Research on French & Chinese Urban Morphology



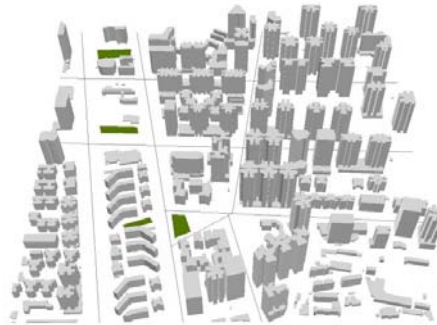
Paris

plot ratio: 4,36



Guangzhou

plot ratio: 2,90



Shanghai

plot ratio: 1,23

Strategy 4: Respect of Identity and Culture

Hu Lu Dao's history and culture have shaped its design and architecture, from the magnificent fortified city of Xingcheng to its high-rise industrial oil refineries.

Development of Hu Lu Dao should reflect the City's identity and acknowledge its many past achievements, including space exploration and its role as a military base.



Oil distillation tower



Square dedicated to the first Chinese astronaut



The fortified city of Xingcheng

Strategy 5: Diversifying the Mobility Options

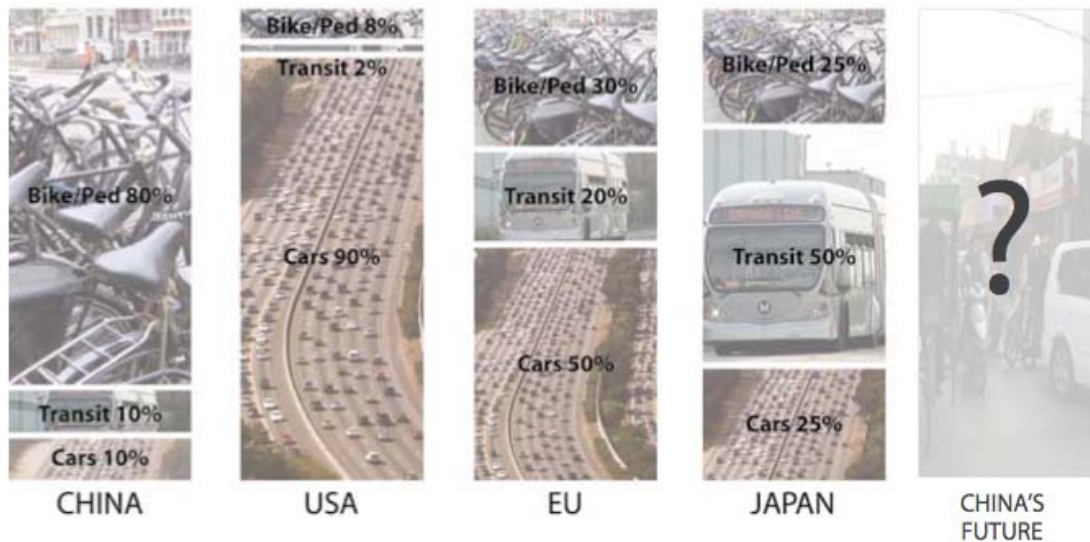
Walking, biking and public transit are more sustainable transportation options compared to driving. Automobiles contribute to air pollution, carbon emissions and traffic congestion. Public transit alleviates these effects through economies of scale, while walking and biking have added health benefits.

The graphs below estimate relative difference in travel mode share. Currently, China boasts the lowest vehicle use rate and the highest proportion of trips by bicycling and walking. In contrast, mode share in the United States is the opposite, with the vast majority of travel by car. Japan and Europe reflect more mixed mode share, with high levels of bike, pedestrian and transit use, but still a substantial amount of car travel. As China develops, which mode share will it resemble? It is essential that policymakers in China confront the effects of travel modes and align development patterns and transportation priorities.

The sizing and topology of urban fabric is an essential tool to foster walking and biking. The city fabric in the US has been designed to favour car driving while the city fabric in Japan is optimal for bikes, pedestrian and transit. The current city fabric in Chinese recent developments is more car-driving friendly than pedestrian friendly.

The movement of people and goods is essential to a thriving economy and a high quality urban experience. By encouraging sustainable modes of transit, including walking, biking and public transit, the Eco-city can limit carbon emissions and air pollution and create safe convenient circulation.

The Design Studio will develop a mobility plan that emphasizes sustainability through multiple travel options. By reducing the necessity of car use and supporting alternative modes, we can create more sustainable Eco-cities.



Source: Debra Lam (ed.) *Green Jiaxing , Sustainable Design Principles for a Harmonious City*, the Regents of the University of California, 2007.

Ecological Urban Design of Hu Lu Dao

Hu Lu Dao's location raises the question of the bioclimatic urban design of coastal cities. With a temperate monsoon climate of very cold dry winters and hot and rainy summers, the design of its urban forms will need to be addressed in order to minimize energy usage while providing for a comfortable living environment for its inhabitants.

Design of Energy-Efficient Urban Forms

This Urban Design Studio aims to make a contribution in terms of environmental sustainability by proposing energy-efficient urban forms. Morphological optimization of city fabric reduces heating and cooling loads, helps to dissipate pollutants through enhanced rugosity factors, reduces artificial light supplied by electricity, reduces internal thermal loading caused by heat dissipation due to electric light, and minimizes CO₂ due to energy generation that in turn consumes fossil fuel. We would like to concentrate our analysis not only on the improvement of building systems, but also on human

behaviour, urban morphology, and bioclimatic architecture.

Urban morphology will be analysed with state-of-the-art software in order to rate the final proposals of the workshop based on the most relevant parameters: FAR, solar admittance and street connectivity. We will be able to determine which urban texture is more energy-efficient, and which morphological parameters are more relevant, in order to assess the energy-efficiency of an urban design proposal in a given context. (See Appendix 1)

Q: What is the most energy-efficient urban morphology for Hu Lu Dao's climate and location, and how can it be integrated with the existing urban fabric?



Existing Examples of Urban Morphology and Street Network Configuration in Hu Lu Dao

Street Network Design

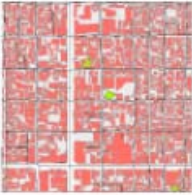



Research has shown that there is a striking difference between accessibility-related parameters for the traditional districts around Shijo in Kyoto, Japan, and the new residential developments of Gangzhou, China.

This is often due to poor street hierarchy in China, dominated by oversized highways too dangerous to cycle on and unpleasant to live and walk by. In addition is a segregation of residential and commercial functions, making car-

dependency a must in order to access zoned areas such as shopping centres.

The street connectivity of a city is also related to the well-being of its citizens. Accessibility is critical when it comes to welcoming an aging population with limited mobility.

Q: How can the design of Hu Lu Dao's street network improve connectivity and its accessibility to its inhabitants?

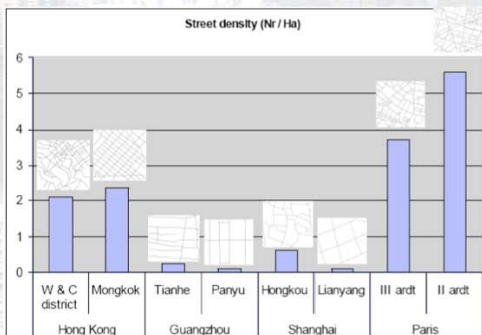
	Kyoto	Guangzhou
		
		
Cyclomatic number	83	6
Average distance btw intersections	52	518
Intersection density	19.24	1.93



Street Patterns in Hu Lu Dao



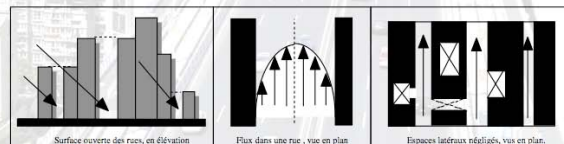
Optimizing the street network and block size



The CSTB Urban Morphologies study considers a comprehensive set of parameters regarding street network: **connectivity, intersection density, average distance between intersections, cyclomatic number, average number of dead ends, and average width of the streets.**

The conclusions from both this session of Les Ateliers and the Urban Morphology study of Chinese cities will guide the participants towards a city design which optimizes those street grid parameters.

To meet these street network parameters target, a reduced block size is necessary. Too large blocks have resulted in a disturbed neighborhood life, and have increased need for motorized transportation. **High density blocks can and will be combined with smaller scale blocks and improved street web.**



Transport Infrastructure Design

Personal automotive transportation is a major source of emissions and pollution, and is also increasingly expensive. By offering key amenities within a new development and integrating residential and employment opportunities, the necessity for travel can be greatly reduced. Public transit alleviates these effects through economies of scale, while walking and biking have added health benefits. Currently, China boasts the lowest motor vehicle-usage rate and the highest proportion of trips by cycling and walking. In contrast, modal share in the United States is the opposite, with the vast majority of travel done by car. Japan and Europe reflect a greater mix of modes, with higher levels of bike, pedestrian and transit use, but still a substantial amount of car travel. As China develops, which modal share will it resemble?

It is essential that policy makers in China confront the effects of travel modes and align development patterns and transportation priorities. The size and topology of urban fabric is an essential tool to foster walking and biking. The current city fabric in recent Chinese developments is more car-friendly than pedestrian-friendly. Hu Lu Dao is criss-crossed by vast and wide roads, and the preferred mode of transport appears to be the car. However, the city is already advertising that Beijing is only two and a half hours away while Shenyang, the capital of Liaoning, is only one and a half. Bearing in mind the influx of tourists, developing an efficient public transport system is a must.

Q: What transport infrastructure design will develop equitable transit in Hu Lu Dao with less environmental impact?



Current advertising to promote rail use



Traffic conditions in Hu Lu Dao



Future choice of transport infrastructure in the city?



Landscape Design

The Urban Design Studio will explore landscape design and the potential of both green space and water to be both amenity and identity for the Eco-city of Hu Lu Dao.

Green space

Green systems drain and clean storm water, provide a recreation amenity, delineate a transportation network for bicyclists and pedestrians, and should be planned in advance of urban development.

The studio will explore the potential of greenway connections to create a fully connected green system: a network for water treatment, flood protection, recreation, and pedestrian and bicycle transportation. In addition, they will increase comfort by act as 'cooling lungs'. Abundant street trees and plantings will provide shade for pedestrians and cyclists, as well as shade the ground's surface. Small community and residential parks will create recreational opportunities at the district scale.

Integration of green space with the existing community pedestrian plan will articulate a continuous open space network to enable access to both neighbourhood and city-level green space.



Hu Lu Dao has some beautifully landscaped urban parks which perform both recreational and environmental functions for the city

Water

The important role of water in the Eco-city will be explored by this Workshop - not only as a sustainable component of infrastructure, but as landscape feature –. It will form an important part of this coastal city's identity, and should be successfully integrated into Hu Lu Dao's urban fabric.

The studio will explore the potential of creating a waterway system for all of water's essential purposes in the Eco-city: transportation, flood protection, habitat, recreation and household purposes.

The Urban Design studio will focus mainly on the integration of water in the design of the city fabric, while clean water technologies will be developed further on by the Sustainable Technologies Studio.

Q: How can we both respect and develop the natural landscape of Hu Lu Dao: appreciating its natural beauty and amenity; addressing its fragility; promoting its environmental function?



Hu Lu Dao's stunning coastal location is already a great attracting force for tourists, and should be both protected and enhanced

Design Brief Summary

Overall Design Issues

In order to achieve the objectives of the Eco-city proposal, the following Design Issues should be taken into consideration:

- Sustainable urban planning
- Urban design of an energy efficient urban morphology
- Mobility
- Green space and landscaping
- Green urban block design
- Green and intelligent building
- Energy
- Water
- Waste management

(Further information on design issues will be provided to selected participants at a later date)

Urban Design Studio Focus

The Urban Design Studio will focus on developing the following factors directly related to Urban Morphology Design:

Urban Morphology Factors to be addressed:

- I- Land-use
- II- Density
- III- Block Design
- IV- Street Network Design
- V- Streetscape Design
- VI- Landscape Design
- VII- Building Design

Sustainable Technologies Studio Focus

The more technical factors will be developed further by the Sustainable Technologies Studio:

Technology Factors to be later developed by Sustainable Technologies Studio:

- VIII- Energy production and distribution
- IX- Water and waste management
- X- Choice of Materials
- XI- Building construction components and systems
- XII- Building energy management (intelligent systems)

Workshop Organisation

The Method

Based on 26 years of experience, the method of *Les Ateliers* Professional Workshops is essentially a competition between 3 different teams, composed of professionals of different nationalities and different specializations. The teams work non-stop during 2 weeks on a problematic of urban design, planning and development, chosen by the local authorities.

- The participants are not paid, but all expenses are covered.
- There are no awarded financial prizes or contracts from local authorities.
- **The project proposals do not in any way commit the local authorities.**

The Participants

The participants are professionals of different specialization: planners, architects, engineers, landscape designers, economists... who compose 3 multidisciplinary teams.

Composition of the teams:

- 2 Chinese experts (chosen by Tongji University or local authorities) -> 6 Chinese participants
- 5 international experts (chosen by *Les Ateliers* and Serge Salat)->15 international participants

The Jury

The Jury is essential for the success of a workshop. It is composed of local and national decision makers and international experts. International experts are invited to stay 4 to 5 days, so as to participate in work sessions on the problematic studied by the teams.

Composition of the Jury:

- 12 Chinese members, chosen by Tongji and local authorities
- 8 members, chosen by *Les Ateliers* and Serge Salat.



Jury deliberation, Vietnam, 2007

Workshop Schedule

It is proposed that the workshop be held during the 2 last weeks of March 2009:

<i>Saturday</i>	Arrival of participants Welcome dinner
<i>Sunday</i>	Visit of the city Meeting with the managing team

Week 1:

<i>Monday</i>	Visit of the site Lectures Official opening
<i>Tuesday</i>	Lectures Formation of the 3 teams Start workshop
<i>Wednesday</i>	Workshop
<i>Thursday</i>	Workshop
<i>Friday</i>	Workshop First presentation to local authorities. Discussion
<i>Saturday</i>	Workshop
<i>Sunday</i>	Day off

Week 2:

<i>Monday</i>	Workshop
<i>Tuesday</i>	Workshop <i>Arrival of foreign members of the jury</i> <i>Welcome dinner</i>
<i>Wednesday</i>	Workshop / Delivery of A3 documents <i>Visit and lectures for jury members</i>
<i>Thursday</i>	Rehearsal of oral presentations Delivery of A0 panels <i>First lecture and work discussion of jury</i>
<i>Friday</i>	Final presentation of the projects Jury deliberation Final ceremony
<i>Saturday</i>	Final Check-out

Call for Participation

General conditions to apply:

- Fluent English
- Capacity for group work
- Special knowledge or experience linked to urban design and/or planning (architecture, engineering, landscape, hydrology, planning, geography, economics ...)

Previous experience of “Eco” design and planning will be highly considered.

Retribution

Participants are not paid for their participation, but their expenses will be covered (Economy flight, hotel, restaurant).

Deadline

Applicants must get in contact with Les Ateliers before the 20th of January 2009. They should send all applications to this address: claire.vigehelie@ateliers.org

Please send us your résumé and tell us how you would approach the subject. Feel free to send us examples of your work.

The definitive list of participants will be set at the end of January 2009.

Contacts

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Urban Morphologist	Ms Sara ADHITYA	+61407980663	sara.adhitya@gmail.com

Scientific Direction

Pr WU Siegfried Zhiqiang - Dean of Tongji CAUP

Deputy-Mayor Liu Ning SUI – Deputy-Mayor of Hu Lu Dao Municipal People’s Government

Serge SALAT - Chief Architect & Planner CSTB – Director, Urban Morphologies Laboratory

Pierre-André PERISSOL - Chairman of *Les Ateliers* - Former French Minister of Housing

About Les Ateliers

The work of les ateliers

les ateliers is a non-profit and non-governmental organization. It consists of an international network of universities and professionals dedicated to urban planning, development and design.

les ateliers was created in 1982 by the town planners of *Cergy-Pontoise*, one of the 5 “new towns” that have been developed around Paris.

les ateliers organizes international workshops for students or professionals, on topics chosen with the local authorities of a city, state or region. The method consists of gathering participants of different nationalities and various specializations: landscape designers, architects, engineers, economists..., promoting their cross-fertilization in multi-disciplinary teams. At the end of the workshop, the teams present their project to an international jury composed of local authorities and international experts.

Each workshop offers new and innovative urban development proposals, assessed by the members of the jury and transcribed into a document of synthesis delivered 4 months after the workshop. These workshops are also a source of training for all the participants, whether they are local or international.

les ateliers has great experience in the Paris Region, having organized a Student Workshop every summer since 1982, in which the local authorities are very much involved.

les ateliers has also organized 10 workshops in Asia (including 2 in China): 7 Student Workshops (Hanoi, Tokyo, Doi Tung, Guangzhou, Shanghai, Ho Chi Minh and Phnom Penh) and 3 Professional Workshops (An Giang, Can Gio and Bangkok). **les ateliers** has recently diversified their fruitful work by combining workshops along the Mediterranean Sea (Casablanca, Marseille and Alexandria of Egypt) and in Africa and South America (Benin, Senegal and Brazil).

les ateliers in China

1999 – Student Workshop in Guangzhou

The town planning of high density housing:

How to create a city around the new urban axis of Business Central District of Guangzhou.

2000 – Student Workshop in Shanghai

The world fair in Shanghai in 2010 - Planning and urban design.

Other recent experience

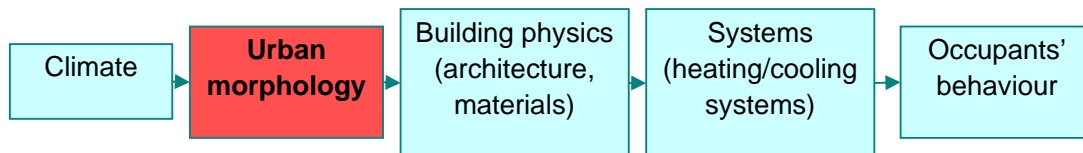
2008	Bangkok – Thailand	Bangkok River City
2008	Cergy-Pontoise- France	Great infrastructures in an urban environment
2007	Paris Airports - France	Towards an AEROPOLIS?
2007	An Giang - Vietnam	Urban Development in the Mekong Delta
2007	Marseille - France	Development of the Harbor Area (160 Ha)
2006	North Paris - France	Urban Renewal, densification and metropolitan integration
2006	Casablanca - Morocco	Urban Projects for the Inncercity Former Airport (450 ha)
2005	Can Gio - Vietnam	A New Ecological City
2005	Saclay - France	Metropolitan territory of high scientific competitiveness
2005	Porto Novo - Benin	Identity and Development of an African Capital City
2004	Cergy-Pontoise- France	Polycentrality in metropolitan space
2003	Seine&Marne - France	The river's confluence: A new gate for Paris.
2002	Cergy-Pontoise- France	From the “new town” to the city: images and ambitions
2001	Le Bourget - France	Sustainable effects of short-lived events: the 2004 technology fair
2000	Pontoise - France	The city center of Pontoise

Appendix 1: Urban Morphology

Urban Morphology and Energy Performance

The energy performance of a particular city fabric can be attributed to several factors, such as building technology, energy-systems, people behaviour and urban morphology. The multiplication of these factors provides an indication of the energy difference between the least efficient and the most efficient classes of city fabric.

While the main focus of research in energy efficiency of the built environment is often limited to that of a single building, the potential for Urban Morphology to reduce energy consumption has been under-utilised. However, with our research showing that the urban morphology alone has an impact on energy performance of the order 2 - ie. the potential to halve or double a city's carbon footprint - it is a lever of change too large to ignore.



What is Urban Morphology?

Urban Morphology is the specific 'texture' of a city informed by such parameters as:

- Building form
- Street pattern
- Population density

Together, these parameters work to define urban archetypes, best recognisable at a scale larger than an urban block and smaller than the entire urban system (and viewed at a distance of approximately 2km above ground level). In the case of Paris, these range from 18th century districts and 19th century Haussmanian districts, to 1970's high-rise towers in the Southeast of the city and the medium height urban blocks post 1980's.



Three different morphologies in Paris

From these primary parameters, it is then possible to calculate underlying parameters such as compactness, porosity, proportion of passive zone, built form density, FAR, and solar admittance. Associating each selected archetypal area with its respective calculated parameters, and then with its energy consumption, it is possible to determine which urban texture is more energy efficient, and which parameters have the greatest impact.

Urban Morphology Research: Results Thus Far

Some first conclusions through a joint research program with CSTB Urban Morphologies Laboratory, Tongji CAUP and Hong Kong University were drawn as to energy sustainability thanks to the most relevant parameters: FAR, solar admittance, street connectivity.

Intensities







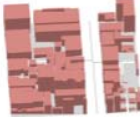


even before considering energy consumption data, intensities indicators give interesting informations :

	Paris	Shanghai	Guangzhou	Kyoto
Floor Area Ratio	4,12	1,74	1,94	2,33
Built density	65%	30%	23%	49%

Higher FARs in Hong Kong and Paris than in Chinese new developments mean a more efficient use of the space. Weak street connectivity in China mainland also implies more energy consumption for transportation. On the other hand, low solar admittance in some packed old districts of Paris has counter effects, and the proposed Urban Design studio and its further development will explore different scenarios of land use and FAR optimization.

Japan and Europe VS China

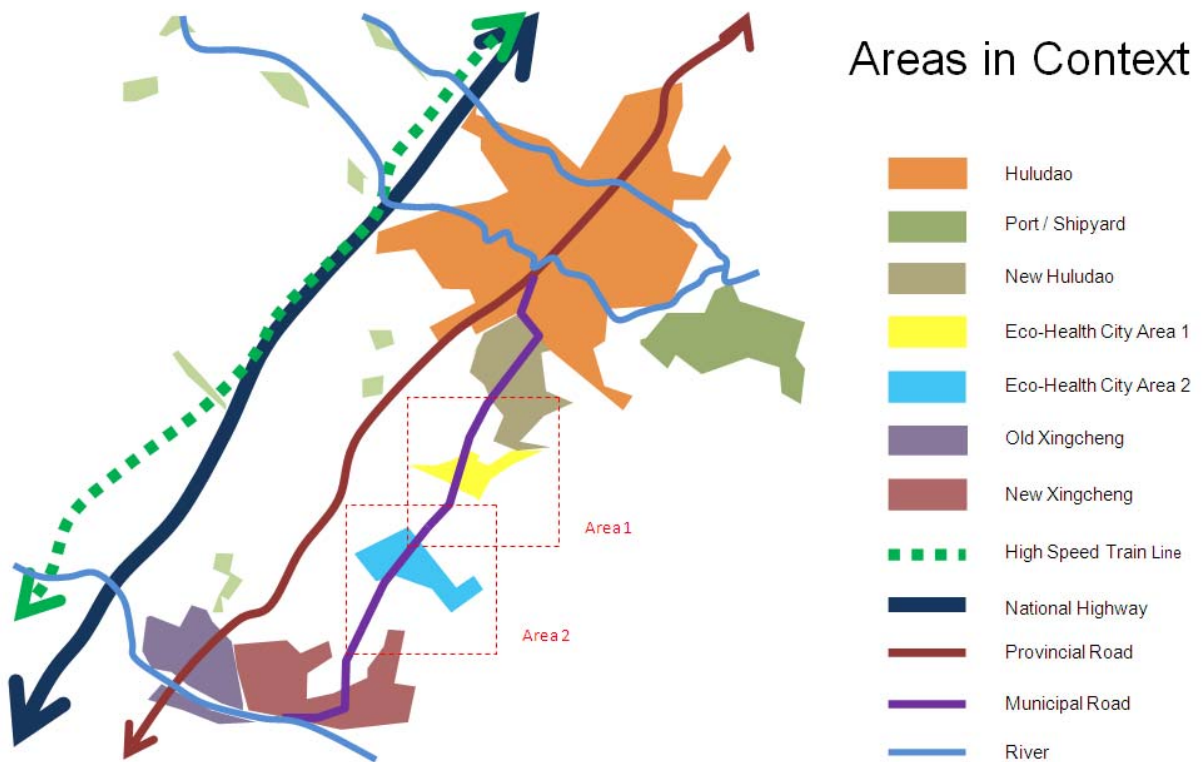
Compared urban morphologies

	Paris	Shanghai	Gangzhou	Kyoto	features
traditional urban fabric					*low rise, contiguous buildings. *tight street network
modern high-rise urban fabric					*high rise, detached towers. *loose street network
modern low-rise urban fabric					*low rise, detached houses. *loose street network
features	<ul style="list-style-type: none"> * average height : 5-6 storeys * contiguous buildings * tight and hierarchised street grid 	<ul style="list-style-type: none"> * disappearing traditional housing * high-rise newly developed districts * no contiguity, loose street grid * not suitable for foot or bicycle use * high perceived density, but equivalent actual density 		<ul style="list-style-type: none"> * max height : 45m (strict building height regulation) * very little space between buildings * low street width * well connected street network 	

Appendix 2: Hu Lu Dao Site Information



The new district will be built between the two urbanized areas



The Site



Area 1

Approx. 8 km²

- Eco City Masterplan 1
- New Huludao Expansion
- Existing Settlements
- Hills / Green Belt
- Agriculture / Fields
- Orchards
- Provincial Road
- Municipal
- Coastal Road
- River
- Path



Area 2

9 km²

- Eco City Masterplan 2
- New Huludao Expansion
- Existing Settlements
- Hills / Green Belt
- Agriculture / Fields
- Lake
- Provincial Road
- Municipal
- Coastal Road
- River
- Path

Note: Extent and boundary of Area 2 masterplan still needs to be defined. Shown as indicative only.